CITY OF LAFAYETTE

3675 Mt. Diablo Boulevard, Suite 210
(925) 284-1951
www.ci.lafayette.ca.us

NOTICE TO CONTRACTORS
BID PROPOSAL
CONTRACT AGREEMENT
CONTRACT SPECIAL PROVISIONS

FOR

CITY OF LAFAYETTE
RELIEZ STATION ROAD
SIGNALIZATION IMPROVEMENTS

Project No. 014-9707-1

Bid Opening Date
Wednesday, May 18, 2016, 2:00 p.m.

TABLE OF CONTENTS

Page No.

NOTICE TO CONTRACTORS N-1

BID PROPOSAL P-1
BID SCHEDULE P-2
NONCOLLUSION DECLARATION P-6
PROPOSAL GUARANTEE "BID BOND" WITH NOTORIZED SHEETS P-7
PROPOSAL SIGNATURE SHEET P-8
PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION P-9

CONTRACT AGREEMENT FOR CONSTRUCTION C-1
PAYMENT BOND C-5
PERFORMANCE BOND C-6

SPECIAL PROVISIONS

SECTION SP-1 – GENERAL……. S-1
SECTION SP-2 – NOT USED S-1
SECTION SP-3 – NOT USED S-1
SECTION SP-4 – PLANS AND SPECIFICATIONS (GENERAL) S-2
SECTION SP-5 – CONTROL OF WORK AND MATERIALS S-5
SECTION SP-6 – LEGAL RELATIONS AND RESPONSIBILITIES S-5
SECTION SP-7 – UTILITY PROTECTION S-6
SECTION SP-8 – PROGRESS OF WORK S-7
SECTION SP-9 – NOT USED S-9
SECTION SP-10– NOT USED S-9
SECTION SP-11– NOT USED S-9
SECTION SP-12– MOBILIZATION S-9
SECTION SP-13– CONSTRUCTION AREA SIGNS S-10
SECTION SP-14– TRAFFIC CONTROL, AND TEMPORARY PAVEMENT DELINEATION S-10
SECTION SP-15– DUST CONTROL S-12
SECTION SP-16– CLEARING AND GRUBBING, TREE TRIMMING, AND TREE PROTECTION S-12
SECTION SP-17– EXISTING HIGHWAY FACILITIES S-14
SECTION SP-18– EXCAVATIONS S-18
SECTION SP-19– AGGREGATE BASE S-20
SECTION SP-20– ASPHALT CONCRETE S-21

SECTION SP-21– CONCRETE CONSTRUCTION S-23
SECTION SP-22– UNIT PAVERS S-25
SECTION SP-23– MICELLANEOUS CONSTRUCTION S-27
SECTION SP-24– TRAFFIC STRIPES, PAVEMENT MARKINGS, AND MARKERS S-29
SECTION SP-25– TRAFFIC SIGNS S-30
SECTION SP-26– SIGNALS, LIGHTING, AND ELECTRICAL S-31

APPENDIX A: WASTE MANAGEMENT PLAN INSTRUCTIONS
APPENDIX B: STANDARD PLANS
APPENDIX C: POTHOLE LOG

NOTICE TO CONTRACTORS

Sealed proposals will be accepted at the office of the City Clerk, 3675 Mt. Diablo Boulevard, Suite 210, Lafayette, California until 2:00 P.M., Wednesday, May 18, 2016, at which time they will be publicly opened and read, for construction of **Reliez Station Road Signalization Improvements, Project No. 014-9707-1**, including, but not limited to: mobilization; traffic control and construction signage; potholing utilities; clearing and grubbing including tree protection and trimming; tree removal; removal and disposal of asphalt concrete pavement and subgrade, concrete and asphalt curb, gutter, flatwork; removal of existing poles and pedestrian signal equipment, removal of striping, , excavating, grading, and compacting pavement subgrade and base materials; construction of minor concrete structures, concrete and/or asphalt curb, gutter, driveways, asphalt concrete pavement, brick paver driveways and walkways, installation of traffic signal equipment with safety lighting, including agency-furnished poles and controllers; pullboxes, conduits, conductors, signs, traffic stripes, markers, and markings; adjustment of utility covers; and all other miscellaneous work as shown on the Plans and as described in the Specifications to provide a complete project.

The Engineer's cost estimate is $473,000.

Beginning Thursday, April 21, 2016, the contract documents, including the Plans and Specifications, will be available and may be obtained through the City of Lafayette Engineering Services Division by contacting the Engineering Assistant at tkain@lovelafayette.org or (925)284-1951.

This project shall be constructed in accordance with the March 2013 edition of the City of Lafayette Standard Specifications, which may be obtained at the contact above. The cost of the Standard Specifications is $20 per set. The cost of mailing is an additional $8. If you already have the Standard Specifications (dated March 2013), you do not need to purchase a new copy.

Bids shall be submitted in a sealed envelope titled **"Proposal: City of Lafayette, Reliez Station Road Signalization Improvements, Project No. 014-9707-1".**

The Contractor shall possess a Class "A" or Class "C-10" license at the time this contract is awarded. Bidder's attention is directed to requirements in Sections 2 and 3 of the Standard Specifications General Provisions. All bids shall be accompanied by a cashier's or certified check, or a bidder's bond executed by a corporate surety insurer. The bidder's guarantee shall be in the amount equal to at least ten (10) percent of the total bid and shall be made payable to the City of Lafayette. The successful bidder shall furnish a payment bond and a performance bond.

The City Council has ascertained the General Prevailing Rates of Wages applicable to this work, and these rates are on file in the office of the City of Lafayette Engineering Services Division. The City of Lafayette reserves the right to waive any informalities or to reject any or all bids.

Time of completion allowed for this project will be 45 working days. Bidder's attention is directed to the order of work stated in Section 5 of the Special Provisions.

Questions regarding the project Plans or Specifications may be directed to Farzaneh Sanders, City Engineer's Office, (925) 299-3209.

The plan holders list, as well as the City Standard Specifications, the Project Special Provisions and the General Prevailing Rates of Wages applicable to this work may be downloaded free of charge from the City of Lafayette web page at http://www.ci.lafayette.ca.us (click on *Public Works and Construction* under the *Quick Links* section on the homepage, then *City Construction Projects*; **Reliez Station Road Signalization Improvements** is accessible under *Projects Out to Bid*). Or you may contact the Engineering Assistant at (925) 284-1951.

CITY OF LAFAYETTE

Date: 4/14/ 2016 By: _____

Tony Coe, City Engineer

CITY OF LAFAYETTE
CALIFORNIA

BID PROPOSAL

RELIEZ STATION ROAD SIGNALIZATION IMPROVEMENTS

PROJECT NO. 014-9707-1

TO THE CITY COUNCIL OF THE CITY OF LAFAYETTE:

In compliance with the annexed notice inviting sealed proposals, the undersigned bidder hereby proposes and agrees to perform the work therein described and to furnish all labor, materials and equipment necessary therefor, in accordance with the Plans and Specifications therefor, and further agrees to enter into a contract therefor, at the following prices:

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL

(SEE ATTACHED BID SCHEDULE)

NOTES:
- All unit prices shall be considered the prices for providing a complete, in-place facility.
- In the event of a discrepancy between the unit price and item total on the Bid Schedule, the unit price shall be used.

o o o

Bidder acknowledges the receipt of the following addenda to the drawings and specifications.

Addendum No.	Date	Addendum No.	Date
_____	_____	_____	_____
_____	_____	_____	_____

o o o

BID SCHEDULE

ITEM NO.	DESCRIPTION		ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Mobilization	(SP-12)	1	LS		
2	Project Identification Signs	(SP-12)	3	EA		
3	Construction Area Signs	(SP-13)	10	EA		
4	Traffic Control	(SP-14)	1	LS		
5	Remove Conc. Sidewalk and Ramps	(SP-17)	315	SF		
6	Remove Conc. Curb at Inlets	(SP-17)	1	LF		
7	Remove AC Pavement	(SP-17)	3,210	SF		
8	Remove AC Dike	(SP-17)	105	LF		
9	Remove Paver Driveway	(SP-17)	430	SF		
10	Remove Pavement Markers and Thermoplastic Stripes and Markings	(SP-17)	1	LS		
11	Adjust Existing Water Box	(SP-17)	2	EA		
12	Adjust Existing Private Drain Box	(SP-17)	1	EA		
13	Clearing and Grubbing, Tree Trimming, and Tree Protection	(SP-16)	1	LS		
14	Tree Removal (22" Diameter)	(SP-16)	1	EA		
15	Roadway Excavation (F)	(SP-18)	130	CY		
16	Aggregate Base at Grading Conform Areas	(SP-19)	10	CY		
17	AC Conform Paving	(SP-20)	1,155	SF		
18	AC Dike	(SP-20)	49	LF		
19	AC Berm	(SP-20)	34	LF		
20	AC Walkways	(SP-20)	1,059	SF		
21	Header Board	(SP-20)	135	LF		
22	Paver Driveway	(SP-22)	626	SF		
23	Paver Walkway	(SP-22)	97	SF		
24	Concrete Curb	(SP-21)	261	LF		
25	Concrete Aprons at Existing Inlets	(SP-21)	3	EA		
26	Concrete Sidewalk and Islands	(SP-21)	92	SF		
27	Concrete Driveway	(SP-21)	34	SF		
28	Concrete Curb Ramp and Blended Walkway Transitions	(SP-21)	350	SF		

(F) Denotes Final Pay Quantity per Section 9-6 of the General Provisions of the Standard Specifications

ITEM NO.	DESCRIPTION		ESTIMATED QUANTITY	UNIT	UNIT PRICE	TOTAL
29	Concrete Walk with 6" Monolithic Curb	(SP-21)	392	SF		
30	Detectable Guide Strip set in Concrete	(SP-21)	56	LF		
31	Split Rail Fence	(SP-23)	14	LF		
32	Metal Bollard - Removable	(SP-23)	2	EA		
33	Temporary Pavement Delineation	(SP-14)	1	LS		
34	Striping Detail 23	(SP-24)	200	LF		
35	Striping Detail 27B	(SP-24)	200	LF		
36	Striping Detail 38	(SP-24)	25	LF		
37	Striping Detail 39	(SP-24)	220	LF		
38	Striping Detail 39A	(SP-24)	160	LF		
39	Striping Detail 40	(SP-24)	145	LF		
40	Thermoplastic Pavement Legends & Markings	(SP-24)	1,787	SF		
41	Painted Green Bike Lane Treatment	(SP-24)	625	SF		
42	Remove Signs	(SP-25)	1	LS		
43	Install New Sign on Existing Pole/Post	(SP-25)	4	EA		
44	Install New Sign & Post	(SP-25)	2	EA		
45	Video Detection Cameras	(SP-26)	11	EA		
46	Traffic Loop Detectors	(SP-26)	6	EA		
47	Traffic Signal Installation at Reliez Station Road & Beechwood/Olympic	(SP-26)	1	LS		
48	Traffic Signal Installation at Reliez Station Road & Las Trampas/Richelle	(SP-26)	1	LS		
	TOTAL BASE BID					

(F) Denotes Final Pay Quantity per Section 9-6 of the General Provisions of the Standard Specifications

Bidder agrees that in case of default in executing and returning the required contract and bonds within ten (10) calendar days after having received the contract, proceeds of the guarantee accompanying his bid will become the property of the City of Lafayette.

o o o

In conformance with Subsection 2-13 "Listing of Proposed Subcontractors" of the Standard Specifications, the name and location of the place of business of each subcontractor is as follows:

NAME	DIR NUMBER	ADDRESS	WORK TO BE PERFORMED
1.			
2.			
3.			
4.			
5.			

o o o

Bidder certifies that he is licensed in accordance with an act providing for the registration of Contractors as follows:

License No. _____ Class _____

o o o

Bidder certifies that he has not, nor have any of his or its agents, officers, representatives, or employees, been guilty of collusion with any officer or representative of the City of Lafayette or with any other party or parties in the submission of this Proposal; nor has said bidder received any preferential treatment by any officer or employee of the City of Lafayette in the matter of making or submitting this proposal. The undersigned declares under penalty of perjury that the foregoing is true and correct.

o o o

Bidder certifies that there will be no discrimination in employment with regard to race, color, religion, sex, sexual orientation, or national origin; that all Federal, State, and local directives and executive orders regarding nondiscrimination in employment will be complied with and that the principle of equal opportunity in employment will be demonstrated positively and aggressively.

All bidders that have not had a contract with the City of Lafayette during the past three (3) years shall list below previous jobs that they have successfully completed and shall also show the amount of the contract

therefor.

Name and Address of Agency or Individual for Whom Work was Done	Phone Number	Date Completed	Contract Price
1.			
2.			
3.			
4.			
5.			
6.			

NONCOLLUSION DECLARATION

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.
Title *Firm*

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, at
Date

_____, _____.
City *State*

By:_____
Signature

Name:_____
Printed or Typed

Date:_____

Title:_____

PROPOSAL GUARANTEE

BID BOND

RELIEZ STATION ROAD SIGNALIZATION IMPROVEMENTS

PROJECT NO. 014-9707-1

KNOW ALL PERSONS BY THESE PRESENTS that _____, as BIDDER, and _____, as SURETY, are held and firmly bound unto City of Lafayette, as Owner, in the penal sum of _____ dollars ($) which is ten percent of the total amount bid by BIDDER to Owner for the above stated project, for the payment of which sum, BIDDER and SURETY agree to be bound, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, whereas BIDDER is about to submit a bid to Owner for the above stated project, if said bid is rejected, or if said bid is accepted and a contract is awarded and entered into by BIDDER in the manner and time specified, then this obligation shall be null and void, otherwise it shall remain in full force and effect in favor of Owner.

IN WITNESS WHEREOF the parties hereto have set their names, titles, hands, and seals this ____ day of _____, 2016.

BIDDER _____

_____

_____

SURETY _____

_____

_____

Subscribed and sworn to this ___ day of _____, 2016.

NOTARY PUBLIC _____

PROPOSAL SIGNATURE SHEET

The completed proposal submitted herewith includes all sheets numbered "P-1 through P-10" at the bottom. The following required attachments have been executed and are included:

a. Bid Proposal (with Addenda acknowledgement)
b. Bid Schedule
c. Noncollusion Declaration
d. Proposal Guarantee "Bid Bond" with Notarized Signatures
e. Proposal Signature Sheet
f. Public Works Contractor Registration Certification

Legal Name of Firm: _____

Business Address: _____

Telephone Number: ( ) _____

Type of Organization: ( ) Individual ( ) Partnership ( ) Corporation

Joint Venture Proposal?: ( ) Yes ( ) No

Authorized Signature: _____

Name: _____

Position: _____

Date of Execution: _____

For a partnership, name all co-partners below,
For a corporation, name president, secretary, treasurer and manager.

NAME	**TITLE**
_____	_____
_____	_____
_____	_____
_____	_____

Corporate Seal:

PUBLIC WORKS CONTRACTOR REGISTRATION CERTIFICATION

Pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public work must be registered with the Department of Industrial Relations. See http://www.dir.ca.gov/Public-Works/PublicWorks.html for additional information.

No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work.

Contractor hereby certifies that it is aware of the registration requirements set forth in Labor Code sections 1725.5 and 1771.1 and is currently registered as a contractor with the Department of Industrial Relations.

Name of Contractor: _____

DIR Registration Number: _____

Contractor further acknowledges:

1. Contractor shall maintain a current DIR registration for the duration of the project.

2. Contractor shall include the requirements of Labor Code sections 1725.5 and 1771.1 in its contract with subcontractors and ensure that all subcontractors are registered at the time of bid opening and maintain registration status for the duration of the project.

3. Failure to submit this form or comply with any of the above requirements may result in a finding that the bid is non-responsive.

Signature: _____

Name and Title: _____

Dated: _____

CITY OF LAFAYETTE

CONTRACT AGREEMENT FOR CONSTRUCTION

THIS AGREEMENT is made and entered into as of _____, 2016, by and between the CITY OF LAFAYETTE ("City") and _____ ("Contractor").

RECITALS

A. City desires to retain the services of Contractor to provide services for Construction of **Reliez Station Road Signalization Improvements, Project No. 014-9707-1**, ("Project") including, but not limited to: mobilization; traffic control and construction signage; potholing utilities; clearing and grubbing including tree protection and trimming; tree removal; removal and disposal of asphalt concrete pavement and subgrade, concrete and asphalt curb, gutter, flatwork; removal of existing poles and pedestrian signal equipment, removal of striping, , excavating, grading, and compacting pavement subgrade and base materials; construction of minor concrete structures, concrete and/or asphalt curb, gutter, driveways, asphalt concrete pavement, brick paver driveways and walkways, installation of traffic signal equipment with safety lighting, including agency-furnished poles and controllers; pullboxes, conduits, conductors, signs, traffic stripes, markers, and markings; adjustment of utility covers; and all other miscellaneous work as shown on the Plans and as described in the Specifications to provide a complete project.

B. Contractor has represented to City that it has the expertise, experience and qualifications to perform the services described in Paragraph A, above, and those services which are more fully described below.

NOW, THEREFORE, in consideration of the foregoing and the covenants and agreements set forth below, City and Contractor agree as follow:

1. Contract Documents. The contract documents for the aforesaid project shall consist of the Notice to Contractors, Bid Proposal, General Provisions, Technical Provisions, Special Provisions including appendices, Design Drawings, and all referenced specifications, details, standard drawings, and their appendices; together with this Contract Agreement and all required bonds, insurance certificates, permits, notices and affidavits; and also including any and all addenda or supplemental agreements clarifying, amending, or extending the work contemplated as may be required to insure its completion in an acceptable manner. All of the provisions of said contract documents are made a part hereof as though fully set forth herein.

2. Services. For and in consideration of the payments and agreements to be made and performed by City, Contractor agrees to furnish all materials and perform all work required for the above-stated project, and to fulfill all other obligations as set forth in the aforesaid contract documents. Contractor agrees to receive and accept the prices set forth in the Proposal as full compensation for furnishing all materials, performing all work, and fulfilling all obligations hereunder. Said compensation shall cover all expenses, losses, damages, and consequences arising out of the nature of the work during its progress or prior to its acceptance including those for well and faithfully completing the work and the whole thereof in the manner and time specified in the aforesaid contract documents; also including those arising from actions of the elements, unforeseen difficulties or obstructions encountered in the prosecution of the work, suspension or discontinuance of the work, and all other unknowns or risks of any description connected with the work.

3. Employment by City. City hereby promises and agrees to employ, and does hereby employ, Contractor to provide the materials, do the work, and fulfill the obligations according to the terms and conditions herein contained and referred to, for the prices aforesaid, and hereby contracts to pay the same at the time, in the manner, and upon the conditions set forth in the contract documents.

4. Worker's Compensation. Contractor acknowledges the provisions of the State Labor Code requiring every employer to be insured against liability for worker's compensation, or to undertake self-insurance in accordance with the provisions of that Code, and certifies compliance with such provisions. Limits shall be not less than those specified in the insurance requirements contained in the General Provisions of the Standard Specifications, and as modified in these Special Provisions.

5. Insurance. With respect to performance of work under this contract, Contractor shall maintain and shall require all of its subcontractors to maintain insurance as required in the General Provisions of the Standard Specifications, and as modified in these Special Provisions.

6. Indemnity. Contractor shall comply with the indemnification requirements contained in the General Provisions of the Standard Specifications.

7. Assignment. This contract is not assignable nor the performance of either party's duties delegable without the prior written consent of the other party. Any attempted or purported assignment or delegation of any of the rights or obligations of either party without the prior written consent of the other shall be void and of no force and effect.

8. Non-discrimination. Contractor shall not discriminate in the hiring of employees or the employment of subcontractors on any basis prohibited by law.

9. Independent Contractor. Contractor is and shall at all times remain as to City, a wholly independent contractor. Neither City nor any of its agents shall have control of the conduct of Contractor or any of the Contractor's employees, except as herein set forth. Contractor shall not at any time or in any manner represent that it or any of its agents or employees are in any manner agents or employees of City.

10. Contractor and Subcontractor Registration. Effective March 1, 2015, pursuant to Labor Code sections 1725.5 and 1771.1, all contractors and subcontractors that wish to bid on, be listed in a bid proposal, or enter into a contract to perform public works must be registered with the Department of Industrial Relations. No bid will be accepted nor any contract entered into without proof of the contractor's and subcontractors' current registration with the Department of Industrial Relations to perform public work. Contractor is directed to review, fill out and execute the Public Works Contractor Registration Certification contained in the Bid Proposal prior to contract execution.

11. Labor Compliance. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be the Contractor's sole responsibility to evaluate and pay the cost of complying with all labor compliance requirements under this Contract and applicable law.

12. Notices. All notices and communications shall be sent to the parties at the following addresses:

CITY: City Engineer
City of Lafayette
3675 Mount Diablo Boulevard, Suite 210
Lafayette, California 94549

CONTRACTOR: _____

_____

_____

_____

13. Authorized Signature. Contractor affirms that the signatures, titles, and seals set forth hereinafter in execution of this contract agreement represent all individuals, firm members, partners, joint ventures, and/or corporate officers having a principal interest herein.

14. Entire Agreement; Modification. This contract supersedes any and all other agreements either oral or written, between the parties and contains all of the covenants and agreements between the parties pertaining to the work of improvements described in Paragraph A of the Recitals herein above. Each party to this contract acknowledges that no representations, inducements, promises, or agreements, orally or otherwise, have been made by any party, or anyone acting on behalf of any party, which are not embodied herein, and that any other agreement, statements or promise not contained in this contract shall not be valid or binding. Any modification of this contract will be effective only if signed by the party to be charged.

15. Claims Procedure. In the event of a dispute between the parties regarding a) a time extension demand, b) payment arising for work performed by or on behalf of the contractor which is not otherwise expressly provided for, or c) an amount the payment of which is disputed by the City, the procedure in Section 10 of the City of Lafayette Standard Specifications shall be used.

IN WITNESS WHEREOF the parties hereto for themselves, their heirs, executors, administrators, successors, and assigns do hereby agree to the full performance of the covenants herein contained and have caused this Contract Agreement to be executed in duplicate by setting hereunto their names, titles, hands, and seals this ____ day of _____ 2016.

Contractor: _____
<***Type Business Name Here***>

Name: _____

Title: _____

Contractor's License No. _____

Agency Business License No. _____

Federal Tax Identification No. _____

Subscribed and sworn to this ___ day of _____ 2016.

Notary Public _____

Agency: _____
City Manager of the City of Lafayette

Attested: _____
City Clerk of the City of Lafayette

Date: _____

PAYMENT BOND

(TO BE EXECUTED WITHIN TEN [10] CALENDAR DAYS OF CONTRACT AWARD)

WHEREAS, the City of Lafayette (Owner) has awarded to _____, as Contractor, a contract for the work described as follows: Construction of **Reliez Station Road Signalization Improvements, Project No. 014-9707-1**, including, but not limited to: mobilization; traffic control and construction signage; potholing utilities; clearing and grubbing including tree protection and trimming; tree removal; removal and disposal of asphalt concrete pavement and subgrade, concrete and asphalt curb, gutter, flatwork; removal of existing poles and pedestrian signal equipment, removal of striping, , excavating, grading, and compacting pavement subgrade and base materials; construction of minor concrete structures, concrete and/or asphalt curb, gutter, driveways, asphalt concrete pavement, brick paver driveways and walkways, installation of traffic signal equipment with safety lighting, including agency-furnished poles and controllers; pullboxes, conduits, conductors, signs, traffic stripes, markers, and markings; adjustment of utility covers; and all other miscellaneous work as shown on the Plans and as described in the Specifications to provide a complete project.

AND WHEREAS, said Contractor is required to furnish a bond in connection with said contract, to secure the payment of claims of laborers, mechanics, materials persons, and other persons as provided by law;

NOW, THEREFORE, we, the undersigned Contractor and surety, are held firmly bound unto the Owner in the sum of _____Dollars ($_____), for which payment well and truly to be made we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH:

That if said Contractor, its heirs, executors, administrators, successors, or assigns, or subcontractors, shall fail to pay any of the persons named in Civil Code Section 3282, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Contractor and its subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, that the surety or sureties herein will pay for the same in any amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the said surety will pay a reasonable attorney's fee to the Owner in an amount to be fixed by the court.

This bond shall insure to the benefit of any of the persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this ____ day of _____, 2016.

CONTRACTOR:_____ SURETY_____

Print Name:_____ NAME_____

Title:_____ ADDRESS_____

TELEPHONE_____

PERFORMANCE BOND

(TO BE EXECUTED WITHIN TEN [10] CALENDAR DAYS OF CONTRACT AWARD)

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, the City of Lafayette (Owner) has awarded to _____, as Contractor, a contract for the work described as follows: Construction of **Reliez Station Road Signalization Improvements, Project No. 014-9707-1**, including, but not limited to: mobilization; traffic control and construction signage; potholing utilities; clearing and grubbing including tree protection and trimming; tree removal; removal and disposal of asphalt concrete pavement and subgrade, concrete and asphalt curb, gutter, flatwork; removal of existing poles and pedestrian signal equipment, removal of striping, , excavating, grading, and compacting pavement subgrade and base materials; construction of minor concrete structures, concrete and/or asphalt curb, gutter, driveways, asphalt concrete pavement, brick paver driveways and walkways, installation of traffic signal equipment with safety lighting, including agency-furnished poles and controllers; pullboxes, conduits, conductors, signs, traffic stripes, markers, and markings; adjustment of utility covers; and all other miscellaneous work as shown on the Plans and as described in the Specifications to provide a complete project.

AS WHEREAS, the Contractor is required to furnish a bond in connection with said contract guaranteeing the faithful performance thereof;

NOW, THEREFORE, we, the undersigned Contractor and surety, are held firmly bound unto the Owner in the sum of _____Dollars ($_____), to be paid to the Owner, its successors and assigns, for which payment well and truly to be made we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH:

That if said Contractor, its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by and well and truly keep and perform the covenants, conditions, and agreements in the foregoing contract and any alteration thereof made as therein provided on its or their part to be kept and performed at the time and in the manner therein specified and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Owner, its officers, and agents, as therein stipulated, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect. In case suit is brought upon this bond, the said surety will pay a reasonable attorney's fee to the Owner in an amount to be fixed by the court. Surety, for value received, hereby stipulates and agrees that no amendment, change, extension of time, alteration, or addition to said contract, and of any feature or item or items of performance required therein or thereunder, shall in any manner affect its obligations on or under this bond; and said surety does hereby waive notice of any such amendment, change, extension of time, alteration, or addition to said contract, and of any feature or item or items of performance required therein or thereunder, shall in any manner affect its obligations on or under this bond; and said surety does hereby waive notice of any such amendment, change extension of time, alteration, or addition to said contract, and of any feature or item or items of performance required therein or thereunder.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this ____ day of _____, 2016.

CONTRACTOR:_____ SURETY_____
Print Name:_____ NAME_____
Title:_____ ADDRESS_____
TELEPHONE_____

SPECIAL PROVISIONS SECTION SP-1

GENERAL
(NO BID ITEM)

SP1-01 REFERENCES

The work to be done under this contract, except as modified or supplemented herein, shall conform to the following:

- The City of Lafayette General Provisions of the Standard Specifications dated March 2013, herein referred to as the "General Provisions of the Standard Specifications".

- The City of Lafayette Technical Provisions of the Standard Specifications dated March 2013, herein referred to as the "Technical Provisions of the Standard Specifications".

Where specifically referred to, the work shall also conform to the following:

- The State of California Department of Transportation (Caltrans) Standard Specifications, For Construction of Local Streets and Roads, 2010 Edition, herein referred to as the "State Specifications" or "State Standard Specifications".

- The State of California Department of Transportation (Caltrans) Standard Plans, 2010 Edition, herein referred to as the "State Standard Plans".

- The Contra Costa County Public Works Department Standard Plans, most current edition, herein referred to as the "County Standard Plans".

These Special Provisions are additions, modifications, or clarifications to the referenced Standard Specifications and generally supersede the referenced or applicable sections of said Standard Specifications. Refer to Section 5-4, "Precedence of Contract Documents", of the General Provisions of the Standard Specifications for the order of precedence of Contract Documents. Where ambiguity or conflict exist in the interpretation of precedence, the provision resulting in the highest quality or most expensive grade of construction or product shall govern.

SPECIAL PROVISIONS SECTION SP-2, 3 (NOT USED)

SPECIAL PROVISIONS SECTION SP-4

PLANS AND SPECIFICATIONS (GENERAL)
(NO BID ITEM)

The provisions of Section 4, "Plans and Specifications (General)," of the General Provisions of the Standard Specifications shall apply in their entirety and as supplemented herein.

SP4-01 SCOPE OF WORK

The work to be performed under this contract including, but not limited to: mobilization; traffic control and construction signage; potholing utilities; clearing and grubbing including tree protection and trimming; tree removal; removal and disposal of asphalt concrete pavement and subgrade, concrete and asphalt curb, gutter, flatwork; removal of existing poles and pedestrian signal equipment, removal of striping, excavating, grading, and compacting pavement subgrade and base materials; construction of minor concrete structures, concrete and/or asphalt curb, gutter, driveways, asphalt concrete pavement, brick paver driveways and walkways, installation of traffic signal equipment with safety lighting, including agency-furnished poles and controllers; pullboxes, conduits, conductors, signs, traffic stripes, markers, and markings; adjustment of utility covers; and all other miscellaneous work as shown on the Plans and as described in the Specifications to provide a complete project.

SP4-02 PAYMENT

No separate payment will be made for preparing and submitting "As-Built Drawings." Full compensation for preparing and submitting "As-Built Drawings" shall be considered as included in the prices paid for various contract items of work, and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-5

CONTROL OF WORK AND MATERIALS
(NO BID ITEM)

The provisions of Section 5, "Control of Work and Materials," of the General Provisions of the Standard Specifications shall apply in their entirety and as supplemented herein.

SP5-01 CONSTRUCTION SURVEY STAKING

The Engineer will provide paint markings for pavement conforms, driveway paving conform limits, removal and replacement of pavement, curb, gutter, and driveways of all kinds.

The City shall provide all construction survey staking for alignment and grades of roadway, curb, gutter, and other items which, in the opinion of the Engineer, require survey staking. The Contractor shall submit staking requests in writing at least five (5) working days in advance of beginning work that requires construction survey staking. The Contractor shall be responsible for paying the cost of resetting survey stakes which are damaged or obliterated by the Contractor's operations.

Survey stakes for roadway alignment and grade will be set on one side of the roadway only. These stakes will provide offset distances, and cuts or fills to the new crown or control line grade breaks, and where applicable, new curb and/or left and right edges of pavement.

The Contractor will be responsible for providing traffic control for the City's survey crew as necessary for any required offset stakes which will need to be set in the roadway, including providing a lane closure and/or flaggers when required. The Engineer will notify the Contractor a minimum of 48 hours prior to the required survey staking in order to coordinate traffic control.

SP5-02 MATERIAL SAMPLING AND TESTING

Compaction tests and/or material sampling and testing may be performed by the City's representatives on roadway subgrade, aggregate base, portland cement concrete, asphalt concrete, and other work and materials, which in the opinion of the Engineer, require sampling or testing. Test locations shall be determined by the Engineer. The Contractor shall coordinate and cooperate with the Engineer and testing personnel, and no claims of delays or inconvenience due to testing and/or sampling shall be allowed.

SP5-03 SUBMITTALS

At minimum, the Contractor shall provide submittals to the Engineer for the following materials. Additional submittals may be found in the various sections of the Special Provisions for the Work.

- Aggregate Base Class 2 (Material Source)
- Asphalt Concrete Mix Designs of All Types
- Portland Cement Concrete Mix Designs of All Types
- Reinforcing Steel
- Geotextile Fabrics
- Pavement Markers
- Thermoplastic Striping Material
- Sign and Post Materials
- Unit Pavers
- Header board
- Conduits, including fittings and couplings
- Conductors

- Cut Sheets for Traffic Signal Equipment
- Cut Sheets for Audible signal units
- Cut Sheets fro ADA push buttons
- Data Sheet and Samples for Truncated Domes and Guide Strips
- Water Pollution Control Plan
- Waste Management Plan
- Traffic Control Plan and Certification of Qualified Personnel
- CAL/OSHA Excavation Permit

SP5-04 ORDER OF WORK

Unless otherwise directed by the Engineer, the following major items of work shall be performed in the following general order. Not every item of Contract Work is shown. Contractor shall accordingly coordinate miscellaneous and coincidental work related to or associated with major work items in order to avoid out-of-sequence construction and conflicts. Not all stages of work apply to every location within the Project.

1) Order Traffic Signal Equipment.
2) Notify Underground Service Alert (USA) to have utilities marked.
3) Install construction area signs and project identification signs one week in advance of the start of work on a specific street or work area.
4) Install water pollution control measures.
5) Install tree protection.
6) Submit waste management plan prior to commencing any demolition work.
7) Perform utility potholing work to confirm depths of existing utility lines. No additional excavation work will be permitted until Contractor's Utility Pothole Log (Appendix to Standard Specifications) is submitted to the Engineer.
8) Clearing, grubbing, tree trimming and tree removal.
9) Remove, replace, and/or construct concrete curb, gutter, sidewalk, driveways, and other flatwork.
10) Install traffic signal and PPB foundations
11) Install traffic signal equipments
12) Remove, and reconstruct brick paver walkway & driveway,
13) Sawcut and remove pavement at transverse conform joints at limits of paving.
14) Sawcut, remove, and place asphalt concrete. Place temporary roadway delineation.
15) Place asphalt concrete berms.
16) Pave driveway conforms and walkway conforms
17) Raise/adjust all existing utility frames and covers to final grade. Place permanent striping, markers and legends.

18) Complete all other construction work and punch list items.
19) Remove tree protection, construction area signs and project identification signs.
20) Submit as-built plans.

The Contractor's attention is directed to Section SP-8-02, "Progress Schedule", of these Special Provisions.

Any deviation from these requirements and provisions shall be sufficient cause for the Engineer to suspend the work in accordance with the provisions of Section 8-3, "Temporary Suspension of the Work", of the General Provisions. The contractor will not be permitted to resume the work until Contractor has remedied said deviation in accordance with the provisions of the Contract.

SP5-05 PAYMENT

No separate payment will be made for conforming to the provisions of this section. Full compensation for conforming to all the provisions of this section shall be considered as included in the prices paid for various contract items of work and no additional compensation will be allowed therefor.

SPECIAL PROVISIONS SECTION SP-6

LEGAL RELATIONS AND RESPONSIBILITIES

(NO BID ITEM)

The provisions of Section 6, "Legal Relations and Responsibilities," of the General Provisions of the Standard Specifications shall apply in their entirety and as supplemented herein, and in other related sections of these Special Provisions.

SP6-01 PUBLIC NOTIFICATIONS

Notification requirements in Section 6-10, 6-12.3, and 6-13 of the Standard Specifications General Provisions shall apply. Notices for driveway closures must be issued each time driveway or roadway access is restricted and must indicate the specific date and time of the anticipated restricted access.

SP6-02 PAYMENT

No separate payment will be made for conforming to the provisions of this section. Full compensation for conforming to all the provisions of this section shall be considered as included in the prices paid for various contract items of work and no additional compensation will be allowed therefor.

SPECIAL PROVISIONS SECTION SP-7

UTILITY PROTECTION
(NO BID ITEM)

The provisions of Section 7, "Existing Utilities," of the General Provisions of the Standard Specifications shall apply in their entirety and as supplemented herein.

SP7-01 GENERAL

The Contractor shall expose, by hand digging, protect, and support, all existing utility mains and service laterals that cross, are adjacent to, or are within, trench or excavation areas.

The Contractor shall verify the location of existing utility main lines and service lines that are marked by USA or shown on the plans, prior to starting excavation for signal pole foundations, and sign foundations by potholing to verify the horizontal and vertical alignment of the utility main lines.

The Contractor is hereby notified that during construction, it will be necessary to coordinate the operation specifically with Pacific Gas and Electric Company, AT&T, U.S. Sprint, East Bay Municipal Utility District, Central Contra Costa Sanitary District, and Comcast (Cable) for the rearrangement of obstructions as needed for the construction of this project. The Contractor shall prepare, maintain, and keep at the construction site, a list of all utility contact persons and their emergency telephone numbers.

The City reserves the right to make adjustments in the grades and/or alignment of the proposed improvements to avoid obstructions. Where it becomes necessary to relocate the obstructions for the construction of the proposed improvements, the Contractor shall assume responsibility for notifying the City, and for the coordination of this work. In either case, no additional compensation will be allowed to the Contractor for delays or inconveniences. The Contractor may request that the City adjust the contract working days by the number of days that it takes to resolve the obstructions, if the controlling item of work is delayed.

SP7-02 PG&E GAS TRANSMISSION LINES AT OLYMPIC BLVD INTERSECTION

Gas transmission lines run along Olympic Blvd., EBRPD Trail, and along Reliez Station Road at Beechwood. Although the road reconstruction activities do not appear to impact the PG&E gas facilities, "Site 2 – Reliez Station Road/Olympic Blvd/Beechwood Dr" has been designated on the plans as a Special Construction Zone and the following additional conditions shall apply within this zone:

1. A PG&E gas transmission standby inspector must be present during any activities within 10 feet of the gas pipeline. This includes all excavation, grading, compaction, paving and gas line

depth verifications (potholes). This inspection can be coordinated through the Underground Service Alert (USA) service at 811. A minimum notice of 48hours is required.

2. To prevent damage to the buried gas pipeline, the following allowable wheel loading limits must be adhered to:

Allowable Wheel Loading	
Cover	Pounds per Wheel (Half Axle)
2 ft	15,000
3 ft	30,000
4 ft	50,000

3. The horizontal and vertical location of the gas transmission pipeline must be positively confirmed by potholing every 5 feet along the length of the gas transmission line within the paved surface of the road.
4. Subgrade shall be compacted using a jumping-jack-style compactor not exceeding 200 pounds and the asphalt concrete base lifts shall be compacted with a small roller not exceeding 6200 pounds, unless otherwise authorized in writing in advance by the Engineer or the PG&E representative.

SP7-03 PAYMENT

Excavation associated with the Special Construction Zones shall be included in the Contract Lump Sum price for “Roadway Excavation” per SP-18. Paving associated with the Special Construction Zones shall be measured and paid as “Asphalt Concrete Pavement” per SP-20.

No separate payment will be made for conforming to the other provisions of this section. Full compensation for conforming to all the provisions of this section shall be considered as included in the prices paid for various contract items of work and no additional compensation will be allowed therefor.

SPECIAL PROVISIONS SECTION SP-8

PROGRESS OF WORK

(NO BID ITEM)

The provisions of Section 8, “Progress of Work," of the General Provisions of the Standard Specifications shall apply in their entirety and as supplemented herein.

SP8-01 PRE-CONSTRUCTION MEETING

A pre-construction meeting for this project will be held on Thursday, June 02, 2016 at 2:00 p.m. at the City Offices. The Contractor shall submit all required bonds, insurance, and signed contracts prior to this meeting. The Notice to Proceed will be issued to the Contractor at the pre-construction meeting. Note: The prime contractor's full-time on-site superintendent or foreman for the project, along with any major subcontractor are required to attend the preconstruction meeting.

At the pre-construction meeting, representatives of the Owner, the Contractor, Subcontractors, and the Engineer will discuss in detail certain procedural aspects of the Work, including, but not limited to:

- Administrative procedures for transmittals, approvals, change orders, and similar items;
- Review of the method of application for payment, progress payments, retention; and final payment;
- Review of the Contractor's construction progress schedule;
- Clarifications of any questions regarding the contract Plans and Special Provisions;
- Review of traffic control procedures;
- At the preconstruction meeting the Contractor shall provide a Cal/OSHA trenching permit;
- Contractor shall submit a traffic control plan and provide a certification of "Qualified Personnel".

SP8-02 PROGRESS SCHEDULE

The Contractor shall submit the construction progress schedule to the Engineer at the pre-construction meeting. Contractor shall also submit an updated schedule by no later than Friday morning of each work week, and as requested by the Engineer per Section 8-2, "Progress Schedule," of the General Provisions of the Standard Specifications.

Attention is directed to Section SP5-04, "Order of Work," of these Special Provisions. Each schedule shall specifically note the timeframe and work to be performed by all subcontractors. Subcontractors shall receive all updated schedules so they can plan an appropriate work force to meet the prime Contractor's timeframe.

SP8-03 WORKING HOURS

Without prior written approval by the Engineer, and except for emergency work, work or activity of any kind shall be limited to the hours from 8:00 a.m. to 5:00 p.m. Monday through Friday.

Contractor's attention is directed to hours for lane closures in Section SP-14 of these Special Provisions.

SP8-04 TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall complete the entire Work in this Contract within forty-five (45) working days from the start date, including completion of all "Punch List" work. Liquidated damages shall be assessed per Section 8-10, "Liquidated Damages," the General Provisions of the Standard Specifications.

SP8-05 PAYMENT

No separate payment will be made for conforming to the provisions of this section. Full compensation for conforming to all the provisions of this section shall be considered as included in the prices paid for various contract items of work and no additional compensation will be allowed therefor.

SPECIAL PROVISIONS SECTION SP-9, 10, 11 (NOT USED)

SPECIAL PROVISIONS SECTION SP-12

MOBILIZATION
(BID ITEM NO. 1 AND 2)

The provisions of Section 1, "Mobilization," of the Technical Provisions of the Standard Specifications shall apply in their entirety except as modified or supplemented herein.

SP12-01 MEASUREMENT AND PAYMENT

The lump sum Contract Price paid for **"Mobilization"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals, and for all the work involved in mobilization of forces, equipment, materials, and meeting all general conditions and provisions of Contract Documents and as directed by the Engineer, and no additional compensation will be allowed therefor.

The Contract Price paid for each **"Project Identification Sign"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals, and for doing all the work involved in coordinating with the City to obtain the sign, transporting, installing signs on barricades, maintaining signs, removing signs and barricades, and returning signs to the City as specified in the Standard Specifications and these Special Provisions and as directed by the Engineer and no additional compensation will be allowed therefor.

SPECIAL PROVISIONS SECTION SP-13

CONSTRUCTION AREA SIGNS

(BID ITEM NO. 3)

SP13-01 GENERAL

The Engineer shall approve all locations prior to the Contractor installing signs. Signs shall be in place on the project site at least two (2) days prior to the start of work on each street, but not more than seven (7) days prior to the start of work. Signs shall be removed within five (5) days of completing all work on each street. The Contractor shall notify the regional notification center for operators of subsurface installations (USA-Underground Service Alert: 1-800-227-2600), at least four (4) working days, but not more than fourteen (14) calendar days, prior to commencing any excavation for construction area sign posts.

The bottom of the mounted sign panel shall be seven (7) feet above existing grade.

SP13-02 MEASUREMENTS AND PAYMENT

Construction area signs shall be counted and paid based on the number of sign panels installed regardless of the number of sign posts installed.

The Contract Price paid per each for **"Construction Area Sign"** shall be considered as full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals, and for doing all work involved in furnishing, erecting, maintaining, and removing all construction area signs, as shown on the Plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

SPECIAL PROVISIONS SECTION SP-14

TRAFFIC CONTROL

(BID ITEM NO. 4)

TEMPORARY PAVEMENT DELINEATION

(BID ITEM NO. 33)

SP14-01 GENERAL

Work shall conform to the requirements of Section 6-12, "Traffic Control," of the General Provisions and Section 15-4, "Removal of Existing and Temporary Traffic Stripes and Pavement Markings," of the Technical Provisions of the Standard Specifications. Nothing in these Special Provisions shall be

construed as relieving the Contractor from his/her responsibilities as specified in said sections. Any traffic striping or markings that are removed due to any phase of work shall be replaced, or re-aligned if required, with temporary traffic stripes or pavement markings. All temporary striping and markings shall be placed the same day the permanent striping or markings are removed and they shall be placed before opening the roadway to public traffic.

SP14-02 LANE CLOSURES AND HOURS

Contractor's attention is directed to noticing requirements in Section SP6-01. In addition, beginning at least one (1) week prior to the first lane closure, the Contractor shall furnish and place changeable message signs on westbound Olympic Boulevard near Reliez Station Road, and at the intersection of Reliez Station Road & Glenside Drive and as directed by the Engineer. The changeable message signs shall remain in full, continuous operation throughout the entire construction.
At least one ten (10') foot wide vehicular traffic lane in each direction must be open to public traffic at all times for all contract work. A minimum of two flaggers are required when lane closures result in only one open lane for two-directional traffic.

Lane closures shall conform to the details shown on State Standard Plan T13, "Traffic Control System for Lane Closure on Two Lane Conventional Highways."

Lane closure hours shall be allowed between 8:30 a.m. and 4:30 p.m. between June 20th and August 19, 2016 and between 9:00 a.m. and 2:30 p.m. on all other workdays.

Contractor shall stage and sequence work such that lane closures and disruptions to mobility of the public are minimized. Even under lane closure conditions, Contractor shall make best efforts to allow passage of vehicles through the work zone when doing so does not interfere with active, critical work. This includes but is not limited to accommodating residents with medical, health, or safety-related needs (doctor appointments, emergency access, and access requirements due to physical disabilities). If work requiring closure is not actively in progress during allowed closure hours, the Engineer may order the road opened to public traffic. The Contractor shall coordinate lane closures with garbage and recycling collection to ensure continuation of service during the construction period.

The full width of the traveled way shall be open for use by public traffic at all other times. Notwithstanding anything to the contrary, emergency vehicles shall be provided immediate access through the construction area at all times.

SP14-03 MEASUREMENT AND PAYMENT

The contract lump sum price paid for **"Traffic Control"** shall be considered as full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals needed to perform all traffic control work, for all phases of the work performed by the Contractor or the Contractor's "subcontractors" including, but not limited to, all signs, barricades, steel plates, traffic control plan,

maintaining traffic, lane closures, flagmen, changeable message signs, and all other traffic control devices; and all other work as shown on Standard Plans, as specified in the Standard Specifications, the State Specifications, these Special Provisions, and as directed by the Engineer and no additional compensation shall be allowed therefor. There shall be no additional compensation for traffic control due to an increase in the quantities shown on the bid proposal for pay items within the project limits.

Traffic Control required by work which is classified as extra work, as provided in Section 9.3, "Extra Work", of the General Provisions of the Standard Specifications, will be paid for as part of said extra work.

The contract lump sum price paid for **"Temporary Pavement Delineation"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals and for doing all the work necessary to lay out, place, maintain, and remove temporary pavement striping, legends, arrows, glue down delineators, markers and markings, and all other work as shown on the Plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-15

DUST CONTROL
(NO BID ITEM)

The provisions of Section 4, "Dust Control and Watering", of the Technical Provisions of the Standard Specifications shall apply in their entirety and as supplemented herein.

SP15-01 PAYMENT

No separate payment shall be made for conforming to the provisions of this section. Full compensation for conforming to all the provisions of this section shall be considered as included in the prices paid for various contract items of work and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-16

CLEARING AND GRUBBING, TREE TRIMMING, AND TREE PROTECTION
(BID ITEM NO. 13 & 14)

The provisions of Section 2, "Clearing and Grubbing," Section 21, "Tree Trimming and Removal," and Section 22-3, "Tree and Plant Protection," of the Technical Provisions of the Standard Specifications shall apply in their entirety except as modified or supplemented herein.

SP16-01 GENERAL

In addition to requirements of the Standard Specifications, clearing and grubbing work shall also include removing and/or relocating landscape borders, decorative rocks, and similar decorative features that conflict with planned construction. Where they occur, Contractor shall salvage these features by placing removed items in a neat stack at an adjacent location on the property frontage to be designated by the Engineer.

All cleared and grubbed areas shall be approved by the Engineer before further grading commences.

SP16-02 EXISTING IRRIGATION

The Contractor's attention is directed to the existing irrigation controller and cabinet at the northwest corner of Reliez Station Road and Las Trampas which is to be removed and salvaged, as shown on the plans. Contractor shall remove the wires and plug the existing conduits (which shall be cut flush with the concrete pad to remain). Salvaged items shall be delivered to the City in accordance with Section 2-4 "Salvaging of Materials" of the Technical Provisions. This work shall also conform to Section 19 "Landscape Irrigation" of the Technical Provisions.

The Contractor's attention is directed to portions of existing irrigation lines required by the plans to be relocated to allow for the construction of the new driveway at #829 Reliez Station Road. This work shall conform to Section 19 "Landscape Irrigation" of the Technical Provisions. Existing irrigation facilities that are to remain or to be relocated, and that are within those areas where clearing and grubbing or earthwork operations are to be performed, shall be checked for missing or damaged components and proper operation prior to performing clearing and grubbing or earthwork operations. Existing irrigation facilities outside of work areas that are affected by the construction work shall also be checked for proper operation.

Relocate existing irrigation facilities shall consist of relocating existing sprinklers, pipes, risers, riser supports, check valves, and any concrete protectors, and other facilities shown on the plans or specified in these special provisions.

Existing irrigation facilities, shown on the plans to be relocated, that are, in the opinion of the Engineer, unsuitable for the purpose intended, shall be replaced in conformance with the provisions in Section 15-2.04, "Reconstruct," of the State Standard Specifications. After irrigation facilities have been relocated, the Contractor shall demonstrate that the relocated facilities function properly in the presence of the Engineer.

The Details for this work shall be approved by the Engineer prior to construction.

SP16-03 MEASUREMENT AND PAYMENT

The contract lump sum price paid for **"Clearing & Grubbing, Tree Trimming, and Tree Protection"**

shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals, and for doing all the work involved in implementing tree protection measures, clearing and grubbing, tree trimming, shrub trimming and removal, removing salvaging and relocating decorative rocks/small boulders, other minor removals, relocating existing irrigation lines, removal and salvaging of the existing irrigation controller, and all other work as shown on the Plans, as specified in the Standard Specifications, these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

The contract price paid per each **"Tree Removal (22" Diameter)"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals, and for doing all the work involved in tree removal, but not limited to, tree removal and disposal off site, grinding roots, and all other work shown on the Plans, as specified in the standard Specifications and these Special Provisions and as directed by the Engineer and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-17

EXISTING HIGHWAY FACILITIES

(BID ITEM NO. 5 THROUGH 12)

SP17-01 GENERAL

Work shall consist of removing, abandoning, relocating, or protecting existing facilities which interfere with construction. Work performed in connection with various existing highway facilities shall conform to applicable provisions of Section 7, "Existing Utilities," of the General Provisions, Section 2, "Clearing and Grubbing," and Section 22, "Protection and Restoration of Existing Improvements," of the Technical Provisions of the Standard Specifications, these Special Provisions, and as directed by the Engineer.

The Contractor shall fully document pre-construction conditions at all points around the work area. This documentation shall consist of notes, still photographs, and video. Special effort shall be made to document the existing conditions at all buildings and private improvements not to be disturbed. These documents shall be available to the City upon request.

If Contractor damages or destroys materials or facilities designated on the Plans, in these Special Provisions, or by the Engineer to be protected, salvaged or reused, he shall repair or replace them in kind at his sole expense and to the satisfaction of the Engineer.

SP17-02 REMOVALS

Contractor's attention is directed to Section 6-11, "General Safety," of the Standard Specifications General Provisions, and Section SP-14, "Temporary Pavement Delineation," of these Special Provisions.

Removals of existing road facilities not considered to be included in other Contract Work include—concrete, brick paver, or asphalt concrete driveway, pathway, sidewalk, shoulder, and other flatwork; concrete curb and gutter; and other miscellaneous structures. These items shall be removed and disposed of in accordance with Section 6-16, "Disposal Outside Project Limits", of the General Provisions of the Standard Specifications. All other removals as shown on the drawings and as directed by the Engineer to accommodate new construction as intended by Contract, for which no specific Bid Item is shown, shall be considered as incidental work.

Then Contractor's attention is directed to the existence of approximately 0.125' of RHMA-G asphalt concrete top lift on Reliez Station Road. Portions of this existing section will require removal to construct the new AC conforms. Replacement asphalt concrete shall be as specified in this Special Provisions.

Where existing curb is to be removed and replaced, and the adjacent pavement is intended to remain, removal work shall include the removal of said curb and a sufficient area of the adjacent pavement to a proper depth to allow the forming and construction of the replacement new curb.

After removal, excavations which are within the limits of new improvements or are in the roadway area shall be backfilled with Class II aggregate base, ¾" maximum, conforming to Section 8, "Aggregate Base", of the Technical Provisions of the Standard Specifications and these Special Provisions. Aggregate base shall be compacted to 95% relative compaction.

After removal, excavations which are outside the limits of new improvements or outside of the roadway area shall be backfilled with, native material free of organic material and free of material greater than two (2) inches in greatest dimension and approved by the Engineer for use as backfill material, unless shown to be backfilled otherwise on the plans. Native material shall be compacted to 90% relative compaction.

For removals that involve sawcutting, all sawcut lines shall be approved by the Engineer prior to sawcutting. Sawcutting of gutter lips shall be to a neat, straight line in alignment with the projected gutter lip line of adjacent sections.

Removals of area in preparation for new construction shall extend to a depth that is sufficient to accommodate the new improvements to be constructed, including any necessary subgrade. Otherwise, removal shall extend to a depth at least six inches below the surface of the final condition required by Contract.

Storm drain facilities adjoining proposed improvements shall be protected.

Relocation and repair of sanitary sewer laterals, if required, shall conform to Section 22-8 of the Technical Provisions of the Standard Specifications.

Where existing facilities such as pavers, flagstones, fencing, and miscellaneous property frontage improvements are required to be removed temporarily to provide clearance for construction, upon completion of said construction they shall be reset to their original location and alignment, in a condition equal to or better than that pre-existing.

The Engineer may direct Contractor to salvage components of private improvements designated to be removed. In such cases, Contractor shall take care to remove the components in a manner to reasonably minimize damage and stockpile them neatly in a location designated by the Engineer.

All existing pavement markers and thermoplastic stripes and legends within the roadway paving limits shall be completely removed immediately prior to asphalt concrete paving. Markers, stripes, or legends which are removed shall be replaced with temporary markers, stripes and legends prior to opening the roadway to vehicular or pedestrian traffic. Pavement delineation removal shall conform to the provisions of Section 15-4, "Removal of Existing and Temporary Stripes and Pavement Markings," of the Technical Provisions of the Standard Specifications. Removal by sandblasting will not be allowed.

Contractor shall comply with the requirements of Section 5-19 "Reuse and Recycling" of the General Provisions of the Standard Specifications.

SP17-03 MONUMENTS AND PROPERTY CORNERS

All monuments and property corners are to be preserved unless designated on the plans to be replaced. The Contractor shall bear the expense of replacing and recording with the County any monument or benchmark that is disturbed and was not designated to be replaced. Replacement shall be done only under the direction of and in the presence of the Engineer or a licensed surveyor.

Should the Contractor during the course of construction encounter a survey monument or benchmark not shown on the plans, he/she shall promptly notify the Engineer so that the monument or bench marks may be referenced accordingly.

The Contractor's attention is directed to at least two existing property corners within the limits of work that will be replaced by the City's Surveyor. The Contractor is responsible for coordinating his work with the City's Surveyor and providing a minimum of 5 days notice to the Surveyor, allowing for the existing points to be temporarily referenced. The Contractor shall not disturb the Surveyors set reference points (outside of proposed limits of Construction) during the course of his construction. City will provide Contractor with a sketch showing the set reference points locations for coordination and information purposes.

SP17-04 UTILITY BOX ADJUSTMENTS

Where utility boxes are encountered within the limits of the planned work, Contractor shall adjust utility boxes to the new finished grade. Said adjustment shall include relocation of boxes to a new location as necessary to accommodate new construction. Relocation shall require Contractor to modify and extend the associated existing plumbing or conduit to the new location.

For all adjustments, the top surface of the adjusted facility shall be within 1/8 inch of the adjacent finished grade. In asphalt concrete pavement areas, no facility shall be adjusted to grade until the adjacent pavement or surfacing has been completed.

For water meters, Contractor shall coordinate with EBMUD to obtain new utility boxes and integrate them into the Work. All boxes shall be placed securely in place on a compacted base in native material, asphalt concrete, or concrete as applicable, in a manner that would not result in settling over time. The boxes shall be set so that they are accessible by utility personnel.

EBMUD at its sole discretion may elect to adjust its own facilities. In that case, the quantities shown on the Bid Schedule shall be adjusted accordingly, and Contractor shall comply with Section 22-9.3 of the Technical Provisions of the Standard Specifications.

SP17-05 MEASUREMENT AND PAYMENT

No separate payment shall be made for conforming to the provisions of this section, with the exception of the items specified below. Full compensation for conforming to all the provisions of this section, including minor removal work and the resetting of temporary removals, for which no specific payment is allowed in Contract, shall be considered to be incidental work included in prices paid for various other contract items of work, and no additional compensation will be allowed therefor.

The Contract Prices paid per square foot for **"Remove Concrete Sidewalk and Ramps," "Remove Paver Driveway,"** and **"Remove AC Pavement,"** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals necessary to sawcut, remove, dispose of and/or salvage existing improvements, and all excavation and preparation required to accommodate new improvements as shown on the contract plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

The Contract Prices paid per linear foot for **"Remove Concrete Curb at Inlets"** and **"Remove AC Dike"** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals necessary to remove and dispose of existing asphalt dike and concrete curb, adjacent asphalt pavement or other paving as necessary to accommodate form boards, and all sawcutting, excavation and backfill as required to accommodate new improvements as shown on the contract plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

The lump sum contract price paid for **"Remove Pavement Markers and Thermoplastic Stripes and Markings"** shall be considered full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in removing stripes, markings, markers, and delineation of all kinds where existing markers and markings are in conflict with those shown on the Plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensations shall be made therefor.

The contract unit prices paid per each for **"Adjust Existing Water Box,"** and **"Adjust Existing Private Drain Box,"** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in relocating and adjusting the facilities to grade complete in place, including all required excavation, backfilling, compaction, concrete collars, placing of temporary asphalt concrete, and permanent restoration to match surrounding materials, plumbing modifications, and all other work as shown on the plans and/or applicable standard plans, and as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor. Contract quantities may be reduced or eliminated based on work to be performed by others. No adjustment in the bid item price shall be allowed due to any change in contract quantities.

SPECIAL PROVISIONS SECTION SP-18

EXCAVATIONS
(BID ITEM NO. 15)

SP18-01 GENERAL

Excavation of all kinds shall conform to Section 3, "Earthwork," of the Standard Specifications Technical Provisions.

Contractor's attention is directed to Section 6-5, "Weight Limitation," of the General Provisions of the Standard Specifications.

SP18-02 EXCESS MATERIAL AND CONFORMS TO EXISTING TERRAIN

Conforming new improvements to surrounding unimproved terrain shall be made using select material from the excavation. Only select fill generated by project excavation may be reused for fill. Select fill shall conform to Section 3-9 "Select Material" of the Technical Provisions of the Standard Specifications and shall be free of all organic materials, rocks, concrete, asphalt, foreign objects, and other deleterious materials.

The Contractor's attention is directed to conform grading areas at #829 Reliez Station Road where the plans call for conforming with imported "topsoil." This work shall conform to Section 3-3 "Topsoil" of the Technical Provisions of the Standard Specifications. Backfill depth of topsoil shall be a minimum of 6 inches.

It is the Contractor's responsibility to store clean native soils for reuse as fill. There will be a net excess of excavated material after all conforms are made. Excess material shall be disposed of in accordance with Section 3-8 "Surplus Materials" of the Technical Provisions.

SP18-03 PROTECTION OF EXCAVATED PORTION OF THE ROADWAY

At the end of each day's roadway excavation and paving operations the contractor shall protect the longitudinal drop-off between lanes by constructing temporary asphalt concrete ramps with a 5:1 or flatter slope. In addition the longitudinal edge shall have 3 foot tall "post tube" delineators with reflective markings and weighted bases placed every 5 feet. The adjacent lane of traffic shall be reconstructed the next day thereby eliminating the longitudinal drop off in this area. No longitudinal drop off shall be permitted over a weekend.

Transverse joints in the roadway shall receive a temporary hot-mix asphalt ramp to the level of the existing pavement and tapered on a slope of 30:1 or flatter to the level of the excavated area.

Asphalt concrete for temporary ramps and tapers shall be commercial quality and may be spread and compacted by any method that will produce a smooth riding surface. The ramps shall be completely removed, including all loose material from the underlying surface, before placing the permanent surfacing. Permanent asphalt concrete paving shall commence within seventy-two (72) hours of the removal of the existing roadway.

These conditions shall in no way relieve the Contractor of any of his or her liability associated with construction of the improvements. If in the Contractor's opinion additional protective measures are needed these measures shall be implemented.

SP18-04 SHORING AND BRACING

The provisions of Section 18-1.6, "Bracing Excavations," of the Technical Provisions of the Standard Specifications shall apply.

Excavations shall be adequately shored and braced so that the earth will not slide, move, or settle and so that all existing improvements of any kind will be fully protected from damage.

Removal of shoring shall only be accomplished during backfill operations and in such a manner as to prevent any movement of the ground or damage to the conduit, piping, or other structures.

SP18-05 MEASUREMENT AND PAYMENT

Unless otherwise provided by a Contract Bid Item, there is no separate measurement or payment for excavation associated with various Contract Work, such as curb and gutter, walkway, driveways, and

minor structures. All excavation and backfill necessary to construct all Contract Work shall be considered as included in the Contract Prices paid for the various items of work.

The Contract price per cubic yard for "**Roadway Excavation**" shall include full compensation for all labor, materials, tools, equipment and incidentals, and all work involved, to remove, load, handle, off-haul, dispose of materials, import topsoil, stockpile, deposit, spread, water and compact select materials, as shown on the Plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

The quantities shown for "Roadway Excavation" on the bid schedule shall be a "Final Pay Quantity" in accordance with the provisions of the Section 9-6 of the General Provisions of the Standard Specifications.

Full compensation for all required Shoring and Bracing, including furnishing all labor, materials, tools, equipment and incidentals and for performing all work necessary to design and install shore and brace any open trench or excavation requiring shoring and bracing as specified in these Special Provisions and as directed by the Engineer, shall be considered included in the price of the items requiring shoring and bracing, and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-19

AGGREGATE BASE
(BID ITEM NO. 16)

The provisions of Section 8, "Aggregate Base", of the Technical Provisions of the Standard Specifications shall apply in their entirety except as modified or supplemented herein.

SP19-01 GENERAL

This work shall consist of furnishing and placing Class 2 Aggregate Base to the lines and grades shown on the Plans and where directed by the Engineer.

SP19-02 MATERIALS

Class 2 Aggregate Base shall conform to the ¾ inch maximum grading and quality requirements as specified in Section 8-2.2 of the Technical Provisions of the Standard Specifications.

SP19-03 MEASUREMENT AND PAYMENT

The contract unit price paid per cubic yard for **"Aggregate Base at Grading Conform Areas"** shall include full compensation for the furnishing of all labor, tools, equipment, materials, and incidentals necessary to complete the work for the construction and completion of the aggregate base for the areas shown on the plans calling for regrading the surface with aggregate base adjacent to the existing roadway or sidewalks, including aggregate base material, placement, watering, and

compaction, as shown on the Plans, as directed by the Engineer, and as specified in these Special Provisions.

There shall be no separate measurement or payment for furnishing and placing the aggregate base used in the construction of all other various items of work shown on the Plans, bid proposal, and specified herein, and full compensation shall be considered as included in the contract unit prices paid for those bid items requiring aggregate base, and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-20

ASPHALT CONCRETE

(BID ITEM NO. 17 THROUGH 21)

The provisions of Section 9, "Asphalt Concrete", of the Technical Provisions of the Standard Specifications shall apply in its entirety except as modified or supplemented herein.

All asphalt concrete shall be ½" maximum sized aggregate, PG64-10 Asphalt.

SP20-01 PATHWAYS AND CONFORM PAVING

Asphalt driveway, pathway and shoulder conform limits are approximate. The Engineer will delineate actual conform lines prior to the start of work. Substrate conditions for conform paving differ depending on the project location as shown on the Plans. Conform paving may be installed on existing pavement, on existing base, or on new subbase. In all cases, a paint binder (tack coat) conforming to Section 9-11 of the Technical Provision of the Standard Specification shall be required. When conform paving is installed on unpaved base materials, the minimum thickness of finish asphalt concrete paving is four (4) inches.

Where a new subbase is required per the Contract Plans, the subgrade shall be excavated and compacted to the required depth to accommodate the design structural section. New subbase shall be six (6) inches minimum, consisting of Class II aggregate base conforming to SP-19 and compacted to 95% relative compaction.

Headerboards and anchoring system for pathways shall conform to details shown on the contract plans.

All conforms shown adjacent to a berm of any type shall be paved at the same time as the berm placement and shall be compacted with a vibraplate, small roller, or similar compactor, at the time of placement.

SP20-02 ASPHALT DIKE AND BERM

Berms and dikes, shall be in accordance with applicable details shown on State Standard Plans and the Contract Plans. Berm and Dike locations include those shown on the Plans.

Prior to placement of the berm and/or dike, the underlying pavement shall be thoroughly cleaned and a tack coat shall be applied to the pavement surface per Section 9-11 of the Technical Provisions of the Standard Specifications. The berm shall be placed and compacted utilizing a self-propelled mechanical extruding machine capable of achieving the lines and grades shown on the Plans and the finished dimensions for the specified type of berm. The Contractor shall protect newly-placed berm to allow sufficient time for curing. Berms or dikes that slough, fall apart, or otherwise become damaged before curing shall be completely removed and replaced at the Contractor's expense. If a section of berm or dike looks "patched," it shall be entirely removed and replaced with a conforming berm or dike that is smooth and uniform in appearance.

Berms at driveways shall conform to the height of the adjacent berm, or if no adjacent berm, shall conform to the details shown on the contract plans. The top of the berm at driveways shall be compacted with a vibraplate, or similar compactor, at the time of placement. Driveway and shoulder conforms adjacent to any asphalt concrete berms shall be placed and compacted at the same time as the berms to achieve a monolithic construction.

The ends of new dikes shall be painted white with two coats of traffic paint for a minimum length of two feet, and a Type "C" pavement marker shall be placed on top of the dike where it tapers to end. Top of berms shall be painted with 12" thermoplastic yellow bars (3 feet on-center) across the entire width and length of berm.

All berms shall be backed with either asphalt concrete conform paving, select fill, pulverized material, aggregate base, topsoil, gravel, or other material that matches the existing surrounding shoulder material.

SP20-03 MEASUREMENT AND PAYMENT

The contract unit prices paid per square foot for **"AC Walkways,** and **"AC Conform Paving"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals and for doing all work involved including but not limited to- excavation required to install required structural section; subgrade preparation; cleaning; tack coat; furnishing, placing, spreading, and compacting the underlying aggregate base (if applicable) and asphalt concrete to the specified depths; installing and removing temporary asphalt concrete ramps; and all other work as shown on the Plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

The contract unit prices paid per linear foot for **"AC Berm"** and **"AC Dike"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals necessary to construct the asphalt concrete dike and berm including but not limited to- cleaning;

tack coat binder; placing, compacting; white traffic paint and Type "C" markers on dike ends; yellow bars across top of berm; and all other work as shown on the Plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

The contract unit prices paid per linear foot for **"Header Board"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals necessary to construct the wood header board at the back of new AC Walkway as shown on the Plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-21

CONCRETE CONSTRUCTION

(BID ITEM NO. 24 THROUGH 30)

The provisions of Section 17, "Concrete Construction," of the Technical Provisions of the Standard Specifications shall apply in their entirety except as modified or supplemented herein.

SP21-01 GENERAL

All new curb, gutter, and driveways shall conform to the latest applicable Contra Costa County (CCC) Public Works Department "Standard Plans" unless otherwise specified or modified by Contract Documents. All new concrete construction shall include installation of a subbase consisting of a minimum six (6)-inch-thick layer of Class 2 aggregate base, conforming to SP-19, compacted to 95% relative compaction. Work also includes constructing dowelled connections between new and existing facilities.

For all existing inlet tops within limits of work, the Contractor shall install a City-furnished sticker, stating "No Dumping – Drains to Creek." affixed to the curb or other logical nearby location.

The void between the back of new concrete curbs, inlets, and driveways and the surrounding terrain shall be filled with material to match existing surrounding material. This material is typically topsoil, gravel or base rock. Fill material shall be placed and compacted to the top of the new concrete improvements and sloped at a maximum of 3:1 to conform to the existing terrain. The fill material shall be compacted to 90% relative compaction. In areas where topsoil is placed, a 1-inch layer of mulch shall be placed over the topsoil.

SP21-02 CONCRETE REQUIREMENTS

Concrete used for all items on this project shall be Class 564-C-3250 with minimum 28-day compressive strength of 3,250 pounds per square inch, unless otherwise specified in the Contract Plans or these Special Provisions. The maximum slump shall be four (4) inches.

SP21-03 MINOR CONCRETE CONSTRUCTION

Curb shall match existing curb configuration except that 6 inches of base rock shall be placed under new curb and gutter.

The ends of new curbs shall be painted white with two coats of traffic paint for a minimum length of two feet (24-inches), and a Type "C" pavement marker shall be placed on top of the curb where it tapers to end.

Dowels used in connections between new and existing facilities shall be #4 rebars, 12" long. The dowels shall be in drilled holes, grouted and spaced in conformance with the details shown on CCC Standard Plan CA74 and these Special Provisions. All dowels shall have a minimum 1 ½" concrete cover.

Contractor's attention is directed to the potential existence of private irrigation facilities located behind the existing curb and gutter or at drain inlet locations. Coordination, protection, and relocation of these facilities are considered incidental to Contract Work per Section SP16-02 of the of these Special Provisions. Contractor shall repair any damage on the same day that it is caused by his activities, to a fully functional condition.

SP21-04 PATH OF TRAVEL TACTILE SURFACES

The color of detectable tactile warning panels shall be onyx black (Federal Color No. 17038) and guide strips shall be brick red (Federal Color No 22144). Contractor shall submit a six (6)-inch square sample of the product to be used, along with the manufacturer's product data and "cut-sheets" for review and approval prior to ordering. The detectable warning surface shall conform to:

1. Americans with Disabilities Act (ADA) Title III Regulations, 28 CFR Part 36 "ADA Standards For Accessible Design," Appendix A, Section 4.29 for "Detectable Warnings."

2. Division of the State Architect - Access Compliance (DSA-AC) approved detectable warning products as provided in the California Code of Regulations (CCR) Title 24, Part 2, Section 205 definition of "Detectable Warning."

City may accept products from ADA solutions (800-372-0519), Answer Industries (909-230-4064), and Armor-Tile (916-844-4132).

SP21-05 MEASUREMENT AND PAYMENT

Concrete sidewalks and islands shall be measured by the square foot, and do not include construction of adjacent curbs regardless of whether poured separately or monolithically with concrete flatwork. Curbs shall be paid for by the linear foot as measured along the exposed face of curb.

The Contract Price paid per linear foot for **"Concrete Curb," "Detectable Guide Strip Set in Concrete,"** per square foot for **"Concrete Walk with 6" Monolithic Curb," "Concrete Driveway," "Concrete Sidewalk and Islands," "Concrete Curb Ramp and Blended Walkway Transitions"** and per each for **"Concrete Aprons at Existing Inlets"** shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals necessary to complete the work, including but not limited to- sawcutting; excavation and preparing subbase; dewatering; loading, hauling, and disposal of spoils; forming, placing, and finishing concrete; backfill; doweled connections; setting tactile surfaces in accordance with manufacturer's instructions, and all other work necessary to construct the facility complete and in place as shown on the plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

"Concrete Curb Ramp" shall be measured as the ramp area up to the outer most groove line defining the ramp, up to and including the adjacent retaining curb where it exists, and inclusive of the detectable panel. The retaining curb associated with a curb ramp shall not be paid separately as a curb item.

"Concrete Monolithic Walk with 6" Curb" square footage shall be measured to include the walk and the monolithic curbs.

SPECIAL PROVISIONS SECTION SP-22
UNIT PAVERS
(BID ITEM NO. 22 AND 23)

SP22-01 GENERAL

Material used for unit pavers shall be free of cracks, seams or other imperfections that impair their structural integrity or function. Inherent color variations characteristic of the quarry from which it is obtained will be acceptable.

Samples: Submit samples, of sufficient size to represent color, texture and finish, for each type of unit paver and finish specified.

Maintenance Materials: Deliver to City ten (10) units of each type and finish specified, store as directed.

Field Samples: Prior to placement of unit pavers, construct field samples 6 feet by 6 feet minimum,

representative of colors, patterns, etc. shown on drawings or directed by Engineer. Make corrections after review by Engineer until approval is obtained. At contractor's option, samples may be constructed in place and incorporated into the final construction after approval.

SP22-02 MATERIALS

Fabricator and Installer: In the fabrication installation of unit pavers, capable of furnishing evidence of successful quarrying, cutting, finishing and installation of unit pavers for projects with similar scope and complexity.

Obtain unit pavers from manufacturer having adequate capacity and facilities to meet specified requirements. Do not change source of supply without permission of Engineer.
Manufactured Units (for both Driveway and Pathways):
Concrete Pavers: Cobble Stone by CastleLite Block – 8615 Robben Road, Dixon, CA 95620. Tel: (707) 678-3465. Fax: (707) 678-3185, or approved equal.
Standard Color: Mojave Blend
Pattern: Mission 3 (Giant – 43%, Rectangle – 43%, Square – 14")
Border: Soldier Course set in Concrete
Base Course: Class 2 AB, ¾" max.
Geotextile Fabric: Type shall be per manufacturer's recommendation.
Concrete: per Section SP-21 of these Special Provisions.

SP22-03 PREPARATION AND LAYOUT

Examine surfaces to receive unit pavers, and conditions under which unit pavers are to be installed. Correct unsatisfactory surfaces and conditions prior to commencement of installation.

Ensure that conduits, pipes, gratings, etc. that penetrate or are covered by unit pavers are in place prior to commencement of installation.

Prepare subgrade in accordance with Section 6 of the Technical Provisions of the Standard Specifications.

Tolerances: Place to levels shown on drawings. Installation: Place pavers in accordance with Manufacturers recommendations.

SP22-04 WARRANTY

The brick paver walkway and driveway shall have five (5) year warranty on material and installation.

SP22-05 MEASUREMENT AND PAYMENT

The Contract Price paid per square foot for **"Paver Driveway"** and **"Paver Walkway"** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all work involved in constructing these structures including, but not limited to, concrete, excavation, off-haul, backfill, compaction, steel plates, aggregate base, reinforcement, geotextile fabric, concrete unit pavers, and all other work necessary to construct the facilities and structures complete, in place

as shown on the plans and as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

SPECIAL PROVISIONS SECTION SP-23
MISCELLANEOUS CONSTRUCTION
(BID ITEM NO. 31 and 32)

SP23-01 GENERAL

Miscellaneous work covered under this section includes:

- Metal Bollard - Removable
- Split Rail Fence

SP23-02 METAL BOLLARD

Metal bollards shall be furnished and installed by the Contractor in conformance with the details shown on the plans, these special provisions, and as directed by the Engineer.

Removable metal bollards shall conform to the details shown on the contract plans.

All bollards shall have a finished surface colored safety yellow for high visibility.

SP23-03 SPLIT RAIL FENCE

All timber members shall be Pressure Treated Douglas Fir #2. Preservative treatment shall be pentachlorophenol (heavy oil borne) preservative. Pressure treatment shall conform to AWPA C2 (for ground contact), and shall be marked with an AWPA, or AWPB stamp. All field cuts shall be field treated in accordance with AWPA M4. Contractor shall provide a sample of treated timber for approval prior to ordering materials.

The new wood rail fence shall conform to the details shown on the Contract Plans. Submit sample to Engineer for approval prior to ordering materials. Provide end and lines posts as required, per layout. Contractor to sand any splinters or protrusions from wood surface.

SP23-04 MEASUREMENT AND PAYMENT

The contract unit price paid per each for **"Metal Bollard – Removable"** shall include full compensation for furnishing all labor, materials, including mounting hardware, tools, equipment, and incidentals, and for doing the work involved in fabricating, furnishing and installing bollards complete in place, including excavation, backfill, foundations, materials, and all other work as shown on the Plans, specified by these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

The contract unit price paid per linear foot (LF) for **"Split Rail Fence"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing the fence, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

SPECIAL PROVISIONS SECTION SP-24

TRAFFIC STRIPES, PAVEMENT MARKINGS & MARKERS
(BID ITEM NO. 34 THROUGH 41)

Thermoplastic TRAFFIC STRIPES, PAVEMENT MARKINGS & MARKERS shall comply with Section 15, "Pavement Striping, Markers and Delineation" of the Technical Provisions, and with Section 84 "Traffic Stripes and Pavement Markings" and Section 85 "Pavement Markers" of the State Standard Specifications and these special provisions.

SP24-01 GENERAL

Temporary "cat tracking" and layout marks shall be placed by the Contractor for all striping (including limit lines and crosswalks). Temporary "cat tracks" shall be approved by the Engineer prior to final striping.

Traffic stripes and pavement markings shall be thermoplastic, except green paint for bike lane treatment where shown on the Plans. Where required on the Plans, thermoplastic shall be skid resistant. Contractor shall submit product data, including "cut sheets" and color sample for green paint and skid-resistant thermoplastic for review and approval by Engineer prior to installation.

Adhesive shall be hot melt bituminous adhesive conforming to Section 85 of the State Standard Specifications.

Correction of errors and correction of any damage to the newly placed markers due to the failure of the Contractor to protect the work shall be repaired by the Contractor at no additional cost.

Permanent traffic stripes, pavement markings and markers shall not be placed on new asphalt concrete surfacing until the roadway has been opened to public traffic for a period of not less than seven (7) days.

When performing pavement delineation work, contractor shall comply with all provisions of SP-14, "Traffic Control."

SP24-02 MEASUREMENT & PAYMENT

Traffic stripes shall be measured by the linear foot along the line of the traffic stripe without deductions for the gaps, shown on the standard details. Deductions will be made for gaps at cross streets and driveways.

Measurement for legends and markings shall be per the areas shown on State Standard Plans.

The contract prices paid per linear foot for various thermoplastic stripes and striping details, and per square foot for **"Thermoplastic Pavement Legends & Markings,"** and **"Painted Green Bike Lane Treatment,"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including any necessary cat tracks, dribble lines and layout work; and all other work as shown on the Plans, the State Standard Plans, and as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-25

TRAFFIC SIGNS

(BID ITEM NO. 42 THROUGH 44)

TRAFFIC SIGNS shall comply with Section 16, "Traffic Signs" of the Technical Provisions, of the Standard Specifications and with Section 56 "SIGNS" of the State Standard Specifications, City of Lafayette Street Name Signs Standards, and these Special Provisions.

SP25-01 GENERAL

New roadside sign posts shall be galvanized 1-3/4" square Ulti-Mate square post systems or approved equal. Refer to Appendix B "Sign Post & Accessories" for post and hardware details.

All roadside signs shall be installed with a minimum of 7' of vertical clearance measured from the lowest point of the sign panel to the ground surface. Roadside signs and posts shall be furnished and installed by the Contractor as shown on the plans, as specified in these specifications, and as directed by the Engineer.

Hardware and foundations for the new signs mounting on the 1-B poles (existing or new) shall conform to the State Standard Plans and Specifications.

Existing post and foundation shall be completely removed and the excavation backfilled with material matching the surrounding area and adjacent grades.

At no additional cost to the City, Contractor shall replace all signs damaged by Contractor's operations or lost while in Contractor's possession.

The Contractor shall notify the regional notification center for operators of subsurface installations, USA (Underground Service Alert) 1-800-227-2600, at least two (2) working days, but not more than fourteen (14) calendar days, prior to commencing any excavation for sign posts.

SP25-02 PAYMENT

The lump-sum Contract Price paid for **"Remove Signs"** shall be considered full compensation for complete removal, disposal, and or salvage of signs of all kinds, including panels, posts, and foundations, and backfill of resulting excavation and restoration to match surrounding grades and materials, and all other work as shown on the Plans, as specified in the Standard Specifications and in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

The Contract Price paid per each for "**Install New Sign on Existing Pole/Post**" and "**Install New Sign & Post**" shall be considered full compensation and for furnishing all labor, materials, tools, equipment, and incidentals, in furnishing and installing sign panels, posts, and all miscellaneous hardware to complete installation in place, including but not be limited to- excavation, concrete foundations, sign brackets, straps, and all necessary hardware for post mounted signs; backfilling holes and restoration surfaces to match adjacent grades and materials, and all other work as shown on the Plans, as specified in the Standard Specifications and in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefor.

SPECIAL PROVISIONS SECTION SP-26

SIGNALS, LIGHTING AND ELECTRICAL

(BID ITEM NO. 45 THROUGH 48)

Modifying traffic signals, controller assemblies, service enclosures, conductors and cables shall conform to the provisions in Section 86, "ELECTRICAL SYSTEMS" of the State Specifications and these Special Provisions. Full compensation for conforming to these Special Provisions shall be included in the prices paid for the various contract electrical items of work and no additional compensation will be allowed therefor.

SP26-01 EQUIPMENT LIST AND DRAWINGS

The controller cabinet schematic wiring diagram and intersection sketch shall be combined into one drawing and placed in the cabinet drawer. When the cabinet door is open, the drawing shall be oriented with the intersection.

Within five (5) days after the date of the Notice of Award of the Contract, the Contractor shall submit a complete list of electrical materials to be incorporated into the project stating the Special Provision section, the vender's name, the manufacturers name if different from vendor's, trade name, and model number or code for each product. Within five (5) calendar days after the date of Notice to Proceed, the Contractor shall provide to the Engineer a copy of all purchase orders for equipment and materials used in reference to traffic signals and lighting. The Contractor shall also provide copies of all correspondence with equipment and materials suppliers concerning availability, delivery dates, anticipated delays, and shipment notices within five days of each letter.

References to costs may be omitted. Consideration for recommending time extensions for materials and equipment delivery delays will not be made unless these provisions are met.

The Contractor shall furnish two maintenance and operation manuals for all cabinets, controller units, vehicle detector sensor units, and any other auxiliary equipment furnished. The maintenance manual and operation manual may be combined into one manual. The maintenance manual or combined maintenance and operation manual shall be submitted at the time the controllers are delivered for testing, or, if ordered by the Engineer, previous to purchase.

The maintenance manual shall include, but not be limited to, the following items:

(a) Specifications
(b) Design characteristics
(c) General operation theory
(d) Function of all controls
(e) Trouble shooting procedure (diagnostic routine)
(f) Block circuit diagram
(g) Geographical layout of components
(h) Schematic diagrams
(i) List of replaceable component parts with stock numbers

SP26-02 MAINTAINING EXISTING ELECTRICAL SYSTEMS

Maintaining existing electrical systems shall conform to the provisions of Section 86 1.06, "Maintaining Existing and Temporary Electrical Systems", of the State Specifications. Existing electrical system, consisting of existing traffic signal controller and advanced messaging signs at Reliez Station Road and Las Trampas Road shall be kept in effective operation for the benefit of the traveling public during the progress of the work, except when shutdown is permitted. The electrical system shutdowns shall be limited to the hours as specified in the contract plans, and shall be permitted only during the installation of new signal wiring and switch over from existing to new operation, unless prior approval is obtained from the Engineer.

SP26-03 SCHEDULING OF WORK

Scheduling of work shall conform to the provisions in Section 86-1.07, "Scheduling of Work", of the State Standard Specifications. The first sentence in the first paragraph of Sec. 86-1.07, "Scheduling of Work", of the State Specifications is deleted.

In the event that the Contractor is unable to respond to a problem that develops during the functional test, or that for any reason he is unable to correct the problem in a timely fashion as determined by the City, the City may have its own maintenance personnel work on the problem. Any such work performed by the City shall not invalidate the guarantee required by the Contract Documents, and shall be at the Contractor's expense.

SP26-04 LOCATING ITEMS OF WORK

The Contractor shall be responsible for locating and marking the positions of all signal standards, controller cabinets, service equipment cabinets and pull boxes. The Engineer may assist the Contractor in locating the above items. All locations shall be approved by the Engineer before any work is performed.

SP26-05 REMOVING OR SALVAGING ELECTRICAL EQUIPMENT

Unless otherwise noted or shown on the Plans, all electrical materials and equipment that are no longer needed, including poles, cabinets, luminaries, etc. shall become the property of the Contractor and shall be hauled off-site and disposed of in accordance with the provisions in Section 6 of the General Provisions of the Standard Specifications.

The Contractor shall provide equipment, as necessary, to safely load and remove the materials from the project site. Any materials salvaged for reuse in the contract but are damaged as a result of the Contractor's handling, moving, or reinstalling those materials shall be replaced in kind with new materials to the satisfaction of the Engineer.

SP26-06 EXCAVATING AND BACKFILLING

The excavations required for the installation of conduit, foundations, and other appurtenances shall be performed in such a manner as to avoid any unnecessary damage to streets, sidewalks, landscaping, and other improvements as directed by the Engineer.

SP26-07 FOUNDATIONS

Foundations shall conform to the provisions in Section 86-2.03, "Foundations", of the State Specifications, the Plans and these Special Provisions.

Concrete shall conform to Section 17 of the City Standard Technical Provisions. Classification shall be 590-C-3250 for piles. Certification of the concrete shall be received from the vendor and delivered to the City Inspector at the time the concrete is poured.

Contractor shall provide for dewatering of the foundation excavations prior to setting footings.

SP26-08 STANDARDS, STEEL PEDESTALS AND POSTS

Traffic signal poles and push button posts will be furnished by City to be installed by Contractor. Contractor's attention is directed to Section 5-11 of the General Provisions of the Standard Specifications, except that materials will be delivered to the job site at no charge to Contractor. Contractor shall coordinate with the Engineer and City's supplier to arrange for delivery and acceptance of materials at the job site. Contractor shall be responsible for any costs arising from his failure to

perform said coordination, including costs associated with re-scheduling a delivery, additional handling, storage, and transportation charges incurred by City. Poles are scheduled to be delivered by August 10, 2016.

Upon delivery, Contractor shall be responsible for the care and protection of the poles and the repair of any damage to them, including touch-up painting per these Special Provisions. Contractor shall furnish all miscellaneous hardware and perform all incidental work necessary to install poles and attach signal equipment per the referenced Standard Plans, Specifications, these Special Provisions, and as directed by the Engineer.

Handholes for signal standards shall be located 90° clockwise from the traffic signal mast arm.

All signal standards shall have a minimum of 2" and a maximum of 3" of grout installed between the bottom of the base plate and the finish grade.

Traffic signal poles shall be set back from face of curb no less than 30 inches to face of standard or pole, and the base plate installed parallel to the stop bar, unless otherwise specified by the Engineer. The Contractor shall mark and obtain approval of all pole locations in the field prior to excavating for foundations. All poles shall be made leveled and plumb using a level.

SP26-09 CONDUIT

Conduit shall be non-metallic Schedule 40 PVC, except conduits passing through foundations or inside concrete structures (e.g. gateway wall) which shall be rigid metal. Minimum size for conduit shall be 2". All conduits shall be terminated with bushings/end bells. All conduits shall enter the pull box as shown on the plans. All conduits shall have a ¼" pull rope installed in them. All conduit joints shall be glued.

After conductors have been installed, the ends of conduit terminating in pull boxes and controller cabinets shall be sealed with a U.L. approved plug or duct seal.

When a standard coupling cannot be used for coupling metal type conduit, a U.L. listed threaded union coupling, as specified in the third paragraph in Section 86-2.05C, "Installation", of the Standard Specifications, or a concrete tight split coupling or concrete tight set screw coupling shall be used.

Subject to approval by the Engineer, conduit runs shown on the plans to be located behind curbs may be installed in the street, within 2 foot of, and parallel to the face of the curb but not in the traffic wheel path, by the "Trenching in Pavement Method" described below. Pull boxes shall be located behind the curb or at the locations shown on the plans.

Directional Drilling Method

The directional boring method shall be used for the installation of conduit except where short conduit runs are required and right-of-way is limited for setting up boring equipment. In those cases, open-trenching shall be permitted subject to approval by the City Engineer.

Work shall conform to Section 24 of the Technical Provisions of the Standard Specifications and these Special Provisions. The minimum depth of 36" shall be maintained by the directional boring method except in the vicinity of entering or leaving a pull box or a cabinet, unless otherwise directed by the Engineer.

Placement of the directional boring equipment and alignment of bore shall be approved by the Engineer prior to boring operation. Pavement shall not be disturbed without permission from the Engineer. In the event obstructions are encountered, upon approval from the Engineer, small holes may be cut in the pavement to locate or remove the obstruction

Excessive use of water, such that pavement might be undermined or subgrade softened, will not be permitted.

Trenching Installation of Conduits

When trenching in pavement is allowed, the conduit installation shall meet the trench in pavement requirements of the "Trenching in Pavement Method" specified in the State Standard Specifications Section 86-2.05C.

Conduit shall be installed with a minimum of 18" of cover in concrete sidewalk areas and curbed median areas, and 30" below finished grade elsewhere outside the paved roadway.

Trenching installation of conduit shall be done per detail(s) shown on the Plans. The top of the installed conduit shall be a minimum of 18" below finished grade. In roadway areas, the trench shall be backfilled with commercial quality concrete and capped with at least 3" of asphalt concrete conforming to these Special Provisions. Payment for surface restoration shall be included in the price paid for conduits.

During Construction, all trenches shall be duly maintained by the Contractor. New trenched areas where vehicular traffic is permitted shall be backfilled and compacted to no more than 1" below the street grade at all times.

All trenches shall be finish-paved within 24 hours of the installation of the concrete backfill. If the Contractor does not comply with this section, the Engineer will order the work done by others and deduct the cost of doing the work from monies due the Contractor.

Conduit installed to a PG&E service point location(s) shall be 2 inches in size. The conduit in a foundation and between a foundation and the nearest pull box shall be the rigid metallic type.

The ends of conduits in pull boxes shall have a bell bushing and shall be a minimum of 4 inches above surface of rock and a minimum of 6 inches below the top of the pull box.

SP26-10 PULL BOXES

Pull boxes shall conform to the provisions in Section 86-2.06, “Pull Boxes” of the State Standard Specifications and State Revised Standard Detail RSP ES-8A & ES-8B, unless otherwise specified.

Grout in the bottom of pull boxes will not be required. Pull box sumps shall be constructed from 2-inch minimum clean, washed river run rock. All pull boxes shall be "PCC Type", unless permitted otherwise by the Engineer. Lids shall be marked “TRAFFIC SIGNAL”.

Recesses for suspension of ballasts will not be required.

Reinforced plastic/fiberglass lids for No. 6 pull boxes are permitted, all others shall be concrete.

SP26-11 CONDUCTORS AND WIRING

Conductors and Wiring shall conform to the provisions in Section 8-2.08, "Conductors and Cables”, of the State Specifications, the Plans and these Special Provisions.

At least 6 foot of slack shall be provided in the pull box nearest each signal or lighting standard, for those conductors terminating in that standard; and 3 foot of slack shall be provided in each conductor in all other pull boxes. The wire bundle entering the controller cabinet shall be coiled in the bottom of the cabinet in order to obtain as much slack as possible.

Signal Cable may be allowed at the Engineer’s discretion. If signal cable is allowed some conduit sizes may need to be increased in size, at the Contractor’s expense, to accommodate the total volume of the cable.

Straight splices in signal neutral and multiple lighting conductors shall be insulated in conformance with Method B, tap splices in signal neutral and multiple lighting conductors shall be Type C, and conductors shall be spliced by the use of C-shaped compression connectors; as shown on State Standard Plan ES-13A.

Identification bands shall be constructed from a nylon cable tie with a .35” by .75” label flag attached. The marking pen shall be one recommended by the manufacturer of the cable tie or it shall be an indelible marking pen compatible with writing on the nylon material. No other method of labeling will be acceptable. All phase conductors and detector cables shall be labeled in the pull box nearest their termination, and in the controller cabinet. Phase conductors shall be labeled with phase designation. Detector cables shall be labeled with phase and loop number. Lighting conductors (street or sign) shall be labeled as appropriate. Spare conductors need not be labeled.

Conductors shall not be pulled into conduits until the pull boxes have been set to grade, rock sumps have been installed, and conduits have been bonded and grounded. All pull boxes shall be inspected and approved prior to pulling any conductors. Conductors shall not be pulled into conduits unless the Engineer is present to observe the operation. The ends of all unused cables shall be sealed.

The Contractor shall provide to the Engineer a Certificate of compliance from the Manufacturer of all the conductors and cables furnished for the project that they comply with the requirements of this Contract.

SP26-12 TESTING

Any damage to new equipment installed as part of a modified facility prior to or during the "five-day functional test" shall be repaired by the Contractor at the Contractor's expense. After successful completion of the five-day test, the City will assume maintenance for the signal. The "five-day functional test" will begin on the day the intersection is turned on. Maintenance by the City will not relieve the Contractor of repairing any deficiency found prior to the acceptance of the contract.

SP26-13 PAINTING

Lighting standards, traffic signal poles, mast arms, service and control cabinets and hardware shall be painted black. Work shall conform to the following:

General

Paint system is divided into two (2) parts:

- The paint that is applied at the *factory* or point of fabrication and;
- The *field painting and touchup* paint that is required at the installation site in Lafayette, California.

The final finish of the poles, in place, shall be free of all scratches, gouges and defects of any kind.

Factory/Fabrication Site

Paint System:

- Prime: Two-part polyamidoamine epoxy, series 69 hi-build epoxoline II by Tnemec Company, or approved equal. Apply by spray to a dry film thickness of 3.0 to 5.0 mils (75 to 125 microns) D.F.T.

- Top Coat: Two-part aliphatic acrylic polyurethane, series 75 semi-gloss by Tnemec Company, or approved equal. Apply by spray to a dry film thickness of 5.0 mils (125 microns) D.F.T.

- Surface Preparation: All scale, rust and other contaminates shall be removed and all surfaces cleaned to steel structures Painting Council (SSPC) SP-6 commercial blast cleaning standard. Prior to prime and topcoat application, all surfaces must be clean, dry and free of oil, grease, fingerprints and other contaminants. The application, curing temperature and metal temperature must be above 60 degrees Fahrenheit (16 degrees Celsius).

- Total Film Thickness: 8 to 10 mils (200 to 250 microns).

- Color: Black or other as specified herein.

- Application Method: Airless, air or H.V.L.P. spray, or electrostatic spray.

Powder Coating:

TGIC-Polyester coating system, Alesta by DuPont/Axalta Coating Systems, PFB652S6 "Vulcan Black" or approved equal, with film thickness of 3.5 to 5.0 mils using cold electrostatic spray application and cured at 400 degrees Fahrenheit for 10 minutes.

Field Painting or Field Touch-Up

- Surface Preparation: Area to be touched-up shall be scarified with a palm sander, pole sander or scotch brite pad. All rust shall be removed to bright metal. All oil, grease, fingerprints and other contaminants shall be removed with clean solvent and clean rags.

- Prime: Two-part polyamide epoxy. Color: Black (or other as specified herein) Tnemec series 27 E.C. epoxy, or approved equal. Apply by brush or roller to 3.0 to 4.5 mils (75 to 110 microns) dry film thickness. This may require two or three coats to reach required D.F.T.

- Top Coat: Two-part aliphatic acrylic polyurethane – series 75 semi-gloss by Tnemec or approved equal. Color: Black (or other as required to match existing top coating). Apply by brush or roller to 3.5 to 5.0 mils (88 to 125 microns) D.F.T. This may require several coats to reach the required D.F.T.

- Total Dry Film Thickness: match factory applied coatings.

- Color: Black or other as specified herein.

- Application Temperature: Shall be 60 degrees Fahrenheit (16 degrees Celsius) or higher. Application temperature is critical for proper adhesion and curing properties. It is best to do the touch-up mid to late mornings so as to allow the higher afternoon temperatures to help these two-part paints to cure properly.

Substitutions

Other coating systems may be substituted for the products specified herein. A complete submittal package shall be submitted to the City Engineer for review and approval prior to the coating operation.

SP26-14 SERVICE

The Contractor shall furnish and install a Type III-AF Service Equipment Cabinets at Reliez Station Road & Olympic Boulevard and a cabinet-mountable service equipment cabinet at Reliez Station Road & Las Trampas Road, as shown on the signal plans and as provided in the State Specifications, and these Special Provisions. Service cabinet shall conform to the following:

1. All hinges shall be continuous stainless steel piano type.
2. Cabinet shall be painted black in accordance with section SP 27-13 "PAINTING" of these Special Provisions. Interior may be constructed from cold rolled galvanized steel. Inside paneling shall be white.
3. A copy of the service cabinet wiring diagram shall be furnished to the Engineer for approval prior to fabrication of the cabinet.
4. The meter enclosure shall be provided with factory-installed bypass facilities as required by the serving utility.
5. All interior bussing shall be copper.
6. All exterior seams shall be welded.
7. "POP RIVETS" shall not be used for assembly of exterior of the cabinet. "POP RIVETS", bolts, or nuts shall not be visible from the exterior.
8. The luminaire termination points shall be capable of holding up to four conductors.
9. The serving utility terminations shall be in the meter area.
10. Wiring shall be labeled with permanent clip sleeve wire markers. Felt, pencil, and stick back markers are not acceptable.
11. The lexan window shall be no less than ¼" and shall be sealed.
12. All circuit breakers shall be installed in a vertical position.
13. The service neutral shall be terminated in the customer area of the cabinet.
14. All overlapping exterior seams and doors shall meet the requirements for TYPE 3R enclosures specified in the NEMA Enclosure Standards.
15. The bottom of the lowest circuit breaker shall be 600 mm minimum above the bottom of the service equipment enclosure.
16. The neutral conductor shall run from the service equipment enclosure to the controller cabinet without splicing to any other neutral conductor.

The Contractor shall coordinate with PG&E well in advance of the project for service connection. The Contractor shall furnish and install all materials and equipment necessary to complete the electrical connection between the terminating point of PG&E and the electrical system, as shown on the plans. Engineer will arrange for inspection of service cabinet at no cost to Contractor.

Notwithstanding any provisions in the State Specifications, labor and materials costs for the entire service conduit connection from the service cabinet or controller cabinet to the service location of the serving utility company shall be considered as included in the Contract Price, and no additional compensation will be allowed therefore.

SP26-15 CONTROLLER ASSEMBLY

Preprogrammed controllers will be furnished by City. Contractor shall install controllers in the cabinets and make all electrical connections as necessary to operate the intersection as shown on the Plans.

SP26-16 CONTROLLER CABINET

Attention is directed to the provisions in Section 86-3, "Controller Assemblies", of the State Specifications and these Special Provisions.

At the "Las Trampas" location, the existing cabinet shall be used to house equipment to operate the new signal. Contractor shall make all electrical connections and wiring necessary to provide a functional system.

At the "Olympic" location, Contractor shall furnish and install one Model 332 stainless steel cabinet, made ready to accept controller as furnished by City. The Model 332 cabinet shall be completely wired, including wiring for the conflict monitor (absence of Red indication).

The Type 332 cabinet shall contain the following components along with all other items required for satisfactory operation:

Description	Model	Quantity
Load Switch	200	12
Vehicle Detector Unit, 2-channel	222	12
DC Isolator, 2-channel	242	4
Flasher Unit Module	204	4
Conflict Monitor Unit	210*	2
Internal Modem	400	2

*Conflict monitor unit shall monitor for Red failure (absence of Red indications)

Cabinet shall be painted black in accordance with section SP 27-13 "PAINTING" of these special provisions. Inside paneling shall be white.

The Contractor shall construct the controller cabinet foundation as shown on Standard Plan ES-3C for the Model 332 cabinet (including furnishing and installing anchor bolts), and shall install the controller cabinet on said foundation and shall make all field wiring connections to the terminal blocks in the controller cabinet.

When installed on the foundation, the door of the cabinet shall face away from traffic so that a technician servicing the cabinet is able to simultaneously observe the operation of the intersection.

In the event that the traffic signal equipment does not comply with the specifications, Contractor shall remove said equipment for repair or replacement within five working days after notification that the equipment is rejected. In the event the equipment is not removed within five days, it may be shipped to Contractor at his/her expense.

The cabinet shall be pre-tested and delivered to the site for installation accompanied with a testing certificate. Testing shall be performed in compliance with Section 86-2.14 of the Caltrans Standard Specifications

SP26-17 SIGNAL FACES AND SIGNAL HEADS

Traffic Signal Faces and Fittings shall conform to Section 86-4 Traffic Signal Faces and Fittings of the State Standard Specifications and these special provisions.

All lamps for traffic signal units shall be furnished by the Contractor. All traffic signal units shall be LED lamps conforming to the State Specifications. Contractor shall provide a Certificate of Compliance from the Manufacturer certifying that the LED signal modules comply with the requirements of these specifications. The certificate shall also include a copy of all applicable test reports on the LED signal modules.

Signal section housing shall be metal and lens door fasteners shall be stainless steel (wing nuts, fastening bolts, etc.).

Mast arm mounted signal heads shall be provided with type “MAS” mounts.

All signal heads shall have 12-inch signal faces.

Terminal compartments, MAS mounts, and slip fitters shall be bronze; framework, elbows and curved washers shall be galvanized steel or bronze. Signal lamps shall be furnished and installed by the Contractor.

"KO" type seals are not acceptable for sealing unused pipe thread connections to terminal compartments, or top/bottom of signal heads. Connections shall be sealed with threaded fittings with a rubber gasket, or by the use of a "beauty plug" designed for such purpose.

All traffic signal heads, backplates, visors and frameworks shall be painted black in accordance with section SP 27-13 “PAINTING” of these Special Provisions. All signal heads shall be factory assembled with their respective frameworks and tagged by intersection and pole location.

Replacement Modules

Three extra modules of each size and type that are furnished for this project shall be delivered to the Engineer for use as replacements for modules that may fail. Within one year of contract acceptance, any units that have been used to replace defective modules shall be replaced in kind by the Contractor.

Warranty

The manufacturer shall provide a written warranty against defects in materials and workmanship for the LED signal modules for a period of five (5) years after installation of the modules. Modules that fail during this period shall be replaced at no cost to the City.

The replacement modules shall be delivered to the City Corp Yard, ATTN: Mike Moran. Deliveries shall be made on Monday through Friday between 8:00 AM and 5:00 PM. Replacement modules shall be provided promptly after receipt of modules that have failed at no cost to the City, except cost of shipping of the failed modules to the manufacturer. All warranty documentation shall be given to the City prior to installation.

SP26-18 PROGRAMMED VISIBILITY VEHICLE SIGNAL FACES

Programmed visibility signal face and its installation must comply with sections 86-4.02 of the State Standard Specifications. Contractor shall make all necessary adjustments as necessary in the presence of the Engineer to satisfy the angle of view and visibility of signal indication desired by the Engineer based on actual field conditions.

SP26-19 PEDESTRIAN SIGNALS

Pedestrian signals shall be furnished by the Contractor and shall conform to the requirements of Section 86-4.03 “Pedestrian Signal Faces”, of the State Standard Specifications and these Special Provisions.

All pedestrian heads, visors and frameworks shall be factory painted black in conformance with Section 27-13 “Painting” of these Special Provisions. All heads shall be factory assembled with their respective frameworks and tagged by location and intersection. Pedestrian heads and frameworks, as a unit, shall be installed by the Contractor’s workmen at the job site. Extreme care shall be taken by the Contractor’s workmen during the installation of the signals, frameworks and heads. Any scar marks, or cosmetic damage to the equipment caused from tools or installation processes shall be cause for rejection.

Gaskets for the mounting of pedestrian signal heads shall be installed on the outside of the housing to provide a watertight seal, and the Contractor shall take extra care to ensure that the gaskets are properly installed.

Type SP-1-T pedestrian signal mountings shall have an upper and lower mounting bracket attached to the pedestrian signal housing in the same manner as that shown on the plans for Type SP-2-T mounting.

All pedestrian signals shall be "Countdown". Pedestrian signals installed on new signal poles shall be furnished with all heads, visors, frameworks and mountings necessary for the intended operation. The pedestrian and countdown LED traffic signal modules installed as replacements to existing signals mounted on existing traffic signal poles to remain or be relocated shall be designed as a retrofit replacement for the message bearing surface of a 16"x18" pedestrian and countdown traffic signal housing built to the PTCSI Standard.

Countdown Pedestrian Signals

General

All indications shall consist of an array of light emitting diode (LED) pixels. Pedestrian and countdown LED traffic signal modules shall be Diolux Model P16MAD-S or approved equal. The message-bearing surface of the module shall be supplied with an outline "HAND" and "MAN" symbol, overlapping, that comply with PTCSI standard for these symbols for a message-bearing surface of the size specified. The numbers 00 to 99 on the numerical display shall have a minimum height of 7 inches. This message-bearing surface shall be designed so that it can be removed from the sealed unit for replacement without further damage to the module.

a) LED pedestrian and countdown signal modules shall not require special tools for installation.
b) LED pedestrian and countdown signal modules shall fit into existing traffic housings built to the VTCSH Standard without any modification to the housing.
c) LED pedestrian and countdown signal modules shall be weather tight, fit securely in the housing and shall connect directly to existing electrical wiring.
d) Installation of a replacement LED module into the existing pedestrian housing shall only require the removal of the existing optical unit components, i.e., lens, lamp, gaskets, and reflector.
e) Each retrofit shall include all necessary components to complete conversion including a one-piece gasket.
f) Each pedestrian and countdown module shall have a sticker attached stating compliance to the ITE Standard for color. (Portland orange and white; red and green is optional)

LED Signal Lens

a) The lens of the LED pedestrian and countdown signal modules shall be polycarbonate UV stabilized and a minimum ¼" thick.
b) The exterior of the lens of the LED pedestrian countdown signal module shall be smooth and frosted to prevent sun phantom.

LED Pedestrian and Countdown Signal Module Construction

a) The LED pedestrian and countdown signal modules shall be a single, self-contained device, not requiring on-site assembly for installation into the existing traffic signal housing.
b) All Portland Orange LEDs shall be "AIInGaP" technology or equal, and rated for 100,000 hours or more at 25° C and 20 mA. "ALGaAS" technology is not acceptable. White LEDs must be InGaN technology.
c) All internal LED and electronic components shall be adequately supported to withstand mechanical shock and vibration from high winds and other sources.
d) The signal module shall be made of UL94VO flame-retardant materials. The lens is excluded from this requirement.
e) Each individual LED traffic module shall be identified for warranty purposes with the manufacture's trade name, serial number and operating characteristics, i.e., rated voltage, power consumption, and volt-ampere.

Environmental Requirements

a) The LED pedestrian and countdown signal modules shall be rated for use in the ambient operating temperature range of -40° C to +60° C (-40° F to +140° F).
b) The LED pedestrian and countdown signal modules, when properly installed with gasket, shall be protected against dust and moisture intrusion per requirements of NEMA Standard 250-1991, sections 4.7.2.1 and 4.7.3.2, for type 4 enclosures to protect all internal LED, electronic, and electrical components.

Luminous Intensity

a) Pedestrian and countdown LED signal modules shall be designed to operate over the specified ambient temperature and voltage range, attract the attention of, and be readable to, a viewer (both day and night) at all distances from 3 m to the full width of the area to be crossed. A minimum of 150 LEDs should be used in the Portland orange hand symbol and 100 LEDs in the white man symbol.
b) The luminous intensity of the LED pedestrian and countdown signal module shall not vary more the +/-10% for voltage range of 80 VAC to 135 VAC.

Chromaticity

The measured chromaticity coordinates of the LED signal modules shall conform to the chromaticity requirements of Section 5.3 and Figure C of the PTCSI standard.

Electrical

a) The secured, color coded, 914 mm (36 in) long, 600 V, 20 AWG minimum, jacketed wires, conforming to the National Electrical Code, rated for service at +105° C, ½ inch stripped and tinned are to be provided for electrical connection.
b) The LED pedestrian and countdown signal module shall operate from a 60 +/-3 Hz AC line over a voltage range of 80 VAC to 135 VAC. Rated voltage for all measurements shall be 120 +/-3 volts rms.
c) The LED circuitry shall prevent perceptible flicker over the voltage range specified above.
d) The LED pedestrian and countdown signal module shall include voltage surge protection against high-repetition noise transients and low-repetition noise transients as stated in Section 2.1.6, NEMA Standard TS-2, 1992.
e) Catastrophic failure of one LED light source shall not result in the loss of more than the light from that one LED.
f) The LED pedestrian and countdown signal module shall be operationally compatible with the currently used controller assemblies. The LED pedestrian and countdown signal module shall be operationally compatible with conflict monitors.
g) The LED pedestrian and countdown signal module including its circuitry must meet Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of noise.
h) The LED pedestrian and countdown signal module shall provide a power factor of 0.90 or greater over the operating voltage range and temperature range specified above for modules with 6 watts of more.
i) Total harmonic distortion (current and voltage) induced into an AC power line by an LED pedestrian and countdown module shall not exceed 20% over the operating voltage range and temperature range specified above.

Functions

Basic Operation

The control and regulation module shall be of the “smart” type in order for the countdown displays to be automatically adjusted with the programmed intervals of the traffic controller. The system must also be equipped with a dimming circuit to automatically reduce the brightness of the messages with regard to the ambient lighting. This circuit must have a reaction delay to refute sudden and temporary lighting changes due to automobile headlights.

The countdown pedestrian face module shall incorporate a white, digital “countdown” display of the time remaining in the pedestrian walk and/or clearance intervals along with standard white walking man and Portland orange upraise hand displays. The countdown digits display shall be blank when not counting down. Count down shall start at the “flashing hand stage” and shall be blank during the “walking man” stage.

Signal Type Automatic Identification

The different sequences of the pedestrian and countdown signal listed below will automatically be identified by the control module, without manual intervention or modification necessary.

Type 1: When sound activated signals are combined with the signal display or when this type of signal is required, the pictogram of the walking man only must be displayed during the first phase or walking period. During the clearance phase, the flashing hand pictogram must be displayed.

Type 2: Flashing-walking man followed by flashing hand outline.

Type 3: Steady walking man only, followed by steady hand.

Type 4: Steady walking man only, followed by flashing hand outline which is the actual method used for regular pedestrian signals.

Type 5: Steady walking man only, followed by flashing walking man and back to steady hand.

Type 6: Steady walking man only, followed by flashing walking man then flashing back to steady hand (type 4 and 5 combined).

Power Failure

The equipment must maintain a consistent countdown during short power failures (<1 second). A longer failure or an absence of signal superior to one (1) second must turn off display and trigger a restart system, as it is done for the NEMA traffic controller. On the other hand, the timings set in the control module's memory shall be kept regardless of the length of the failure.

Quality Assurance

LED Pedestrian and countdown modules shall be manufactured in accordance with a Vendor quality assurance (QA) program including both design and production quality assurance. All QA process and tests results documentation described below shall be kept on file for a minimum of seven years.

Production Quality Assurance

The following Production Quality Assurance tests shall be performed on each new LED signal module prior to shipment. Failure to meet requirements of any tests shall be cause for rejection.

a) Pedestrian and countdown Module Burn-In – All LED signal modules (or boards) shall be energized for a minimum of 24 hours, at 100 percent duty cycle, in an ambient temperature of 60° C (140° F).
b) After burn-in, all LED pedestrian and countdown modules shall be tested for rated initial luminous intensity. Each module shall be energized at the rated voltage for a five-minute stabilization period before measurement is made. The ambient temperature for this measurement shall be the ambient operating temperature range of -40° C to +60° C (-40° F to140° F).
c) After burn-in, all LED pedestrian and countdown modules shall be tested for power factor and shall meet the requirements defined in this specification.
d) After burn-in, all LED pedestrian and countdown modules shall be measured for current flow in amperes. The measured current values shall not exceed 110% of the design qualification measurements (described in the next section).
e) All LED pedestrian and countdown modules shall be visually inspected for any exterior physical damage or assembly anomalies. Careful attention shall be paid to the surface of the lens to ensure there are no scratches, cracks, chips, discoloration, or other defects.

Design Qualification Testing

Design Qualification testing described below shall be completed, documented, and submitted with the equipment quotation. All Design Qualification testing shall be performed after a burn-in (module energized for a minimum of 24 hours, at 100 percent duty cycle, in an ambient temperature of +60° C (+140° F).

a) The LED pedestrian and countdown modules shall be measured for wattage by an independent testing laboratory.
b) The LED pedestrian and countdown module shall be measured for chromaticity per the requirements defined in this specification using a spectrometer at an ambient temperature of +25° C (+77° F).
c) The LED pedestrian and countdown modules shall be measured for power factor per the requirements defined in this specification by an independent testing laboratory.
d) The LED modules shall be measured for total harmonic distortion per the requirements defined in the specification by an independent testing laboratory.
e) The LED pedestrian and countdown modules shall be tested for electronic noise per the requirements defined in this specification with reference to Class A emission limits referenced FCC Title 47 Subpart B, Section 15 by an independent testing laboratory.
f) The LED pedestrian and countdown modules shall be tested fro transient immunity (e.g. early electronic component mortality failures, component reliability problems) using NEMA Standard TS 2-1992 by an independent testing laboratory.
g) Temperature cycling shall be performed on the LED pedestrian countdown modules, by an independent testing laboratory, in accordance with MIL-STD-883, Test Method 1010. Using the temperature range of -40° C to +60° C (-40° F to140° F), twenty cycles (minimum) with a thirty-minute transfer time between temperature extremes and with a

thirty-minute dwell time at each extreme shall be performed. Modules under test shall not be energized. Modules that fail to function properly or show evidence of cracking of the lens or housing shall be rejected.

NOTE: With respect to design changes, if the construction of the modules has not been modified, documentation of testing described in items 2.2.5, 2.2.6, and 2.2.7 on older modules is acceptable at time of bid. Updated documentation will be required prior to first shipment.

Manufacturer Qualification

Manufacture/Distributor/Vendor must have experience with furnishing LED lighting for the installation of at least 5,000 LED traffic signals on any one project.

Warranty

a) The unit shall be repaired by the contractor if it exhibits a failure due to workmanship or material defect within the first five years after project acceptance.
b) The unit shall be repaired or replaced if the intensity level falls below 50% of the original values within 36 months of delivery.

SP26-20 PEDESTRIAN PUSH BUTTON ASSEMBLIES

General:

Pedestrian push button assemblies shall comply with Section 86-5.02, "Pedestrian Push Button Assemblies", of the State Specifications.

Type B Push Button Assemblies

The first paragraph in Section 86-5.02, "Pedestrian Push Button Assemblies", of the State Specifications is amended to read: The housing shall be metallic. The assembly shall be weatherproof and shall be shockproof in any weather condition.

Pedestrian pushbutton will be a highly vandal resistant button with essentially no moving parts. Button shall be pressure activated and when the switch activates, there shall be a two tone beep and the LED will flash.

Body Material: Aluminum, Powder Coated
Color: Black
Button Material: 316 Stainless Steel
Piezo Driven Solid State Switch:
Operating Force: 3 lbs. Maximum
Operating Temperature: -30°F to 165°F (-34°C to 70°C)
Operating Voltage: 15-36V DC or 12-28V AC

On Resistance: 10 ohms typical.
Operating Life: Greater than 100 million operations.
Switch Hold Time: 6 seconds Minimum
Operating Standby Current: 10µA typical (equivalent to 2 M W at 20V)
LED: Operating Mode: Approx. 0.025 sec flash each time button is pressed.
Luminous Intensity: Greater than 1200 mcd (ultra bright red)
Viewing Angle: 160°
Beeper: Sounds simultaneously with LED flash.
Different tones for press and release, 2.3 kHz & 2.6 kHz.
Beeper uses power from existing switch wires.

The pedestrian pushbutton actuator surface shall have a diameter of 2" or greater and meet or exceed all ADA accessibility guidelines for pedestrian pushbuttons.

SP26-21 ACCESSIBLE PEDESTRIAN SIGNALS AND PUSH BUTTONS

If Accessible Pedestrian Signals and Push Buttons (APS) are called out on the plans, the pedestrian signals and push button assemblies shall have accessibility features conforming to the following requirements.

Accessible Push Buttons

1. Accessible pedestrian signal pushbuttons shall clearly indicate by means of tactile arrows which crosswalk signal is actuated by each pushbutton.
   a. Tactile arrows shall be located on the pushbutton.
   b. Tactile arrows shall be raised 0.03 inch minimum and shall be 1.5 inch minimum in length.
   c. Tactile arrows shall have visual contrast (light on dark or dark on light) with the background.
   d. Tactile arrows shall be aligned parallel to the direction of travel on the associated crosswalk.
2. Accessible pedestrian pushbuttons shall incorporate a locator tone.
   a. Pushbutton locator tones shall have a maximum duration of 0.15 seconds and shall repeat at 1-second intervals.
   b. Pushbutton locator tones shall be intensity responsive to ambient sound and be audible within 10 feet from the pushbutton. Pushbutton locator tones shall be no more than 5dBA louder than ambient sound and shall not be audible at more than 15 feet from the pushbutton.
   c. Pushbutton locator tones shall operate during the FLASHING DON'T WALK and the DON'T WALK intervals only.
   d. Pushbutton locator tones shall be deactivated during flashing operation of the traffic signal.

3. If an extended pushbutton press is used to provide any additional feature(s), a pushbutton press of less than one second shall actuate only the pedestrian timing and any associated accessible WALK signal. A pushbutton press of one second or more shall actuate the pedestrian timing, and associated accessible WALK signal, and any additional feature(s).
4. If used, a pilot light or other means of indication installed with a pedestrian pushbutton shall not be illuminated until actuated. Once it is actuated, it shall remain illuminated until the pedestrian's WALK signal indication is displayed. Each activation shall be accompanied by the speech message "Wait".

Audible Walk Indications

1. Accessible pedestrian signals shall have an audible walk indication during the WALK interval only. The audible walk indication length shall be adjustable for a range of 4 seconds to 50 seconds, or the audible walk indication can be programmed to be 'on' throughout the entire WALK interval. When the pedestrian signal rests in walk, the accessible walk signal shall be capable of being recalled by a button press during the WALK interval
2. The audible walk indication shall be by tone or by speech method.
3. Audible tone walk indications shall be a percussive tone consisting of multiple frequencies with a dominant component at 880Hz. The tone shall repeat at 8 to 10 ticks per second. Audible tone shall be the default walk indication.
4. The audible walk indication shall be set to be no more than 5 dBA louder than ambient sound except when a louder signal is provided in response to an extended button press. Automatic volumes adjustment in response to ambient traffic sound shall be provided up to a maximum volume of 100 dBA.

Installation of Accessible Pedestrian Push Button Assemblies

APS Signals and Push Buttons shall be installed as shown on the plans at Reliez Station Road and Olympic Boulevard intersection only, at the following locations:

- Westbound pedestrian crossing - north crosswalk – Pole 'A'
- Eastbound pedestrian crossing - north crosswalk – Pole 'O'
- Southbound pedestrian crossing - east crosswalk – Pole 'B'
- Northbound pedestrian crossing – east crosswalk – Pole 'C'
- Westbound pedestrian crossing – south crosswalk – Pole 'C'
- Eastbound pedestrian crossing – south crosswalk – Pole 'L'

SP26-22 DETECTORS

Loop wire shall be Type 1. The loop lead-in cable shall be Type B. The "drain" wire from the cable shall be run to the chassis ground in the cabinet. Stop bar loops shall be "Type D" and all other loops shall

be “Type E Loop Detector Configuration”, per Caltrans Revised Standard Plan ES-5B unless indicated otherwise on the plans.

Each cable shall be identified in the pull-box nearest the loop and in the controller cabinet as to its "phase and loop number”.

Detector sensor units shall be "Detector Systems Model 222", or, approved equal. Detector sensor units furnished shall function without "locking up". If the detector sensor units furnished for the contract continually lock up when tuned for a motorcycle, all sensor units shall be replaced with another brand of detector.

Conductors to be buried in the pavement shall be installed only in the presence of the Engineer. All loops shall be connected in series.

"Overcoat Loop Filler”, or approved equal, shall be used to install the detector loops. Epoxy shall not be used except in concrete surfaces. Asphalt concrete shall be used to fill all curb termination points.

The seventh paragraph of Section 86-5.01A(4), "Installation Details”, of the Standard specifications is amended to read:

Slots cut in the pavement shall be washed clean, blown out and thoroughly dried before installing conductors. Residue resulting from slot cutting operations shall not be permitted to flow across shoulders or lanes occupied by public traffic and shall be removed from the pavement surface before any such material flows off of the pavement surface.

The second paragraph of Section 86-5.01, "Vehicle Detectors”, of the Standard Specifications is amended to read:

Sensor units, control units and amplifiers shall meet the requirements of the "Transportation Electrical Equipment Specifications”, issued by the State of California, Department of Transportation, and to the addenda thereto at the time of project advertising. The units shall not be affected by transient voltages when tested in accordance with California Test 667.

SP26-23 VIDEO IMAGE VEHICLE DETECTION SYSTEM

The video detection system shall be Iteris Vantage RZ4, or approved equal, and shall include the following features:

Camera Specifications:

- Color or monochrome image sensors available
- Latest CCD Sensing element and DSP technology
- Electronic shutter and auto iris lens
- Auto focus with manual override

Camera Housing Specifications:

- Sealed housing to IP67 specification
- Integrated adjustable sunshield
- Auto-sensing power supply – 115/240 VAC 50/60 Hz
- Internal heater with proportional power control
- Integrated mounting bracket
- Separate connectors for power and video

Each video detection processor shall have the ability to process video from minimum of 4 and maximum of 8 cameras. The video detection processor shall be installed in a standard TS2 detector rack and shall interface directly with the controller via the SDLC communications bus. Loop detectors and other devices may be installed in the same rack as the video detection processor.

Video cable between the cameras and controller cabinet shall be as recommended by the manufacturer. Power cable between the cameras and controller cabinet shall be any #18-3 type for use in underground conduit and UV stabilized. Zoom and focus controls shall be available from the controller cabinet. One copy of software or one each of the control unit required for zoom & focus functions at the cabinet shall be provided by the VDS manufacturer to the City.

Initial setup and subsequent maintenance of the video detection configurations shall be accomplished using a video monitor and standard USB Mouse. Video detection system at Reliez Station Road and Olympic Boulevard shall be shall be equipped with a 19" LCD color monitor for viewing the video and setting up the detection zones. The video detection system shall allow viewing of up to 8 cameras on the monitor without moving video cables. Video detection system at Reliez Station Road and Las Trampas Road shall be set up for portable connection to the laptop.

Each video detection system shall be IP Addressable and shall provide streaming video using MPEG4 and/or H.264 video compression. All setup, maintenance, and data acquisition functionality shall be available from a remote site using TCP/IP communications protocol. The system shall provide a minimum of 16 video streams without utilizing third party video compression devices. All functionality shall be integrated into the VDS Communications interface.

The video detection cameras shall be specifically designed for vehicle detection applications and optimized to work with the manufacturers advanced detection algorithms. The cameras shall utilize technology providing full motion 30 fps NTSC video. The lens shall provide full zoom function with auto focus providing a horizontal field of view to detect the vehicles as shown on the Plans. The sealed housing shall meet the IP67 specification and utilize an advanced proportional heater to keep the lens clear during inclement weather. The cameras sunshield shall be adjustable without altering any other camera FOV adjustments.

The cameras shall be mounted on the traffic signal luminaire mast arm or as indicated on the Plans.

Mounting brackets used on luminaire mast arms shall be universal in nature and shall allow for mounting camera on pole shaft if required.

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

On site hands-on Training shall be provided at no added cost to the using agency. The training will consist of 8 hours of instruction and practice. Training will be conducted on two consecutive days to provide for on-street staffing. Dates for the training will be coordinated between the city and the video detection manufacturer.

The Contractor may use metal screw for mounting to the signal bridge. Metal screw and mounting to the signal bridge shall be waterproof and painted to match the signal bridge. The Contractor shall submit show drawings for mounting to the signal bridge for approval by the Engineer. The Contractor shall not proceed without approval by the Engineer.

Contractor shall perform proper testing to ensure full functional video detection system. Testing shall be completed with the presence of the City engineer and shall be performed to the satisfaction of the Engineer. If the Engineer determines that the video detection system does not meet the performance requirements, Contractor shall re-calibrate and retest the unit, and resubmit new test data within 7 days. After 3 failed attempts, Contractor shall replace the video detection system with a new unit.

Notify the Engineer 20 days before the unit is ready for acceptance testing. Acceptance testing must be scheduled to be completed before the end of a normal work shift. Contractor shall demonstrate that all video detection systems satisfy the functional requirements.

SP26-24 SAFETY LIGHTING

Luminaires for safety lighting shall be Philips Lumec Roadfocus, RFS-35W16LED4K-T-R3S-UNIV-DMG-FAWS-API-BK, 35-watt LED fixtures (Contact John Benson, ALR, telephone: 510.638.3800 x183, johnbenson@alrinc.com), or approved equal. Fixtures shall include a "Field Adjustable Wattage Selector (FAWS)" option, allowing for multi-positional field adjustments of the lamp wattage down to 40% of the maximum illumination output.

Contractor shall submit product cut sheets and technical data on the fixture to be provided for review and approval prior to ordering.

Notwithstanding provisions regarding functional testing elsewhere in these Special Provisions, testing of safety lighting luminaires shall include field adjustments of the lamp wattage to refine illumination output of each fixture to the satisfaction of the Engineer. Upon installation, fixtures shall be set at the "normal" maximum output level. The Engineer will observe the lighting operations for three (3) days. If directed, Contractor shall make a field adjustment to the lamp wattage using the FAWS option in each fixture to a level determined by the Engineer, who will observe the lighting operations for three (3) additional days. If directed, Contractor shall make a second and final

adjustment to lamp wattage to a level determined by the Engineer. The functional test period shall be considered to commence with the final wattage adjustment.

SP26-25 EMERGENCY VEHICLE PREEMPTION EQUIPMENT

The Contractor shall furnish and install required emergency vehicle detector system, which shall include optical detectors, rack(s), phase discriminator cards (minimum two), cables, etc., (complete and operable) as shown on the plans and according to the manufacturer's recommendations.

The Engineer will mark the optical detector location for the Contractor. The Contractor shall notify the Engineer at least 48 hours prior to installing the optical detector.

Mounting of the optical detector conform to the following:

- Signal Mast Arm - Install on the preinstalled coupling as shown on the plans or if approve by engineer can be installed per Detail B on Revised Caltrans Standard Plans ES-4E.
- Type 1 Standards - Install per Detail B on Revised Caltrans Standard Plan ES-4E.

Optical detectors shall be GTT Model 752, or approved equal, compatible with the City and Contra Costa County Consolidated Fire Prevention District (CCCCFPD).

Optical cables shall be labeled in the controller cabinet and in the pull boxes adjacent to the signal standards with appropriate phase designations.

Cable shall be as specified by the manufacturer and shall be installed with six feet of slack in controller cabinet and pull boxes. The cable shall not be spliced. The City and/or the CCCCFPD will test the optical system. Tests will be performed at a distance between 300 feet to 1,800 feet between the emitter and the detector being tested.

Contractor shall submit product data, including “cut sheets,” for equipment to be provided for review and approval of Engineer prior to ordering. It is Contractor’s responsibility to coordinate with Contra Costa Consolidated Fire District in order to submit a product that is compatible with emergency vehicles deployed within the Lafayette operational area. Approval of a submittal shall not relieve Contractor of his sole responsibility to install a functional system that is compatible with the District’s operational requirements to activate preemption.

SP26-26 EXTINGUISHABLE MESSAGE SIGN (EMS) (“PREPARE TO STOP”)

The extinguishable message sign (“PREPARE TO STOP”) shall be an internally illuminated weathertight and dust tight unit which will produce a clearly visible message only when internally illuminated and shall conform to these special provisions.

The design of each sign shall be as shown on the plans. Minor details of construction shown are typical and may be modified subject to approval by the Engineer. Six sets of shop drawings shall be submitted to the Engineer for review prior to performing work on the signs.

The extinguishable message sign shall be illuminated by the use of yellow (amber) Light Emitting Diodes (LED's) on a powder-coated, black background. The EMS shall be a McCain Traffic Supply, Model (Part) Number M61641 or approved equal.

Housing

The housing shall be ruggedly constructed, shall be rigid, weathertight, dust tight and corrosion resistant, and shall be made of durable materials.

Provisions shall be made for ease of maintenance of components.

Sign panels and housing window shall be made of acrylic plastic which, including painted portions, shall be highly resistant to crazing, staining, discoloration, creep, warping, and the long range deleterious effects of vehicle fumes, direct sunlight, heat (up to 90°C), water, oils and aging.

The housing skin shall be made of Type 5052-H32 aluminum alloy sheet with clad finish. The housing reinforcing and miscellaneous parts shall be made of suitable gages and types of aluminum, except external fasteners, machine screw parts, lock washers, hinge pins, and other mechanical parts, which shall be made of Type 316 stainless steel. The completed assembly shall be factory-coated or field-painted black per these Special Provisions.

Interior metal parts shall be made of suitable gages and types of plated steel or aluminum, except fasteners, machine screw parts, lock washers and other miscellaneous parts shall be made of corrosion resistant metals other than aluminum.

Gaskets shall be uniform and even textured, and shall be highly resistant to stiffening and setting and the long range deleterious effects of vehicle fumes, direct sunlight, heat (up to 70°C), water, oils and aging.

Terminal strips shall be used for input, output and tie point connections and shall be of the molded phenolic, barrier type.

Sign Operation

The sign shall operate as follows:

- During daytime, the lamps shall operate at full rated brightness.
- During nighttime, the lamps shall be dimmed to approximately one-half of daytime brightness.

SP26-27 STREET NAME SIGNS

Street name signs will be furnished by City. Contractor shall be responsible to coordinate with the City to obtain the signs, transport and install signs on signal equipment and poles per applicable

details of the State Standard Plans. All installation straps and visible hardware shall be painted black per these Special Provisions.
Upon receipt of signs, Contractor shall be responsible for the care and protection of said signs. Gouges, scratches and visible cosmetic defects shall be repaired to the satisfaction of the Engineer, or the entire sign shall be replaced in kind, all at the Contractor's sole expense.

SP26-28 MEASUREMENT AND PAYMENT

The contract **lump sum** price paid for **"Traffic Signal Installation at Reliez Station Road and Beechwood/Olympic"** shall include full compensation for furnishing all labor, materials including hardware, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the signals, lighting and electrical systems, combinations or units thereof, including but not limited to foundations; conduit; cable; pull boxes; signal heads; pedestrian signal system; video image vehicle detection system except individual camera units; EMS signs and installation of the associated 1-B pole; installation of agency-furnished street name signs; emergency pre-emption system; controller cabinet and controller; service cabinet; luminaires; trenching; boring; coating and painting; restoring curb, sidewalk, landscaping, pavement, and appurtenances damaged or destroyed during construction; and salvaging existing materials as shown and specified on the plans, as specified in these Special Provisions and as directed by the Engineer, and no additional compensation will be allowed therefore.

The contract **lump sum** price paid for **"Traffic Signal Installation at Reliez Station Road and Las Trampas/Richelle"** shall include full compensation for furnishing all labor, materials including hardware, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the signals, lighting and electrical systems, combinations or units thereof, including but not limited to foundations; conduit; cable; pull boxes; signal heads; pedestrian signal system; video image vehicle detection system except individual camera units; EMS signs; installation of agency-furnished street name signs; emergency pre-emption system;; service cabinet; luminaires; trenching; boring; coating and painting; restoring curb, sidewalk, landscaping, pavement, pavement markings and stripes, and appurtenances damaged or destroyed during construction; and salvaging existing materials as shown and specified on the plans, as specified in these Special Provisions and as directed by the Engineer, and no additional compensation will be allowed therefore.

"Video Detection Cameras" and **"Traffic Loop Detectors"** shall be measured and paid separately from the lump-sum price paid for signal installations. The contract unit price paid for each camera or loop detector shall include full compensation for furnishing all labor, materials including hardware, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing these units complete in place, including all necessary electrical connections, to operate as shown on the plans, as specified in these Special Provisions, and as directed by the Engineer, and no additional compensation shall be allowed therefore.

APPENDICES

APPENDIX A

WASTE MANAGEMENT PLAN INSTRUCTIONS

LAFAYETTE
SETTLED 1848 — INCORPORATED 1968

Planning & Building Department
3675 Mt. Diablo Boulevard, Suite 210
Lafayette, CA 94549-1968
Tel. (925) 284-1976 • Fax (925) 284-1122
http://www.ci.lafayette.ca.us

WASTE MANAGEMENT PLAN INSTRUCTIONS

CONSTRUCTION AND DEMOLITION DEBRIS RECYCLING

GENERAL

The City of Lafayette is mandated by the State of California to divert 50-percent of all solid waste from landfills either by salvage or recycling. To help meet this goal, the City requires completion of a Waste Management Plan (WMP) for covered projects identifying how at least 50-percent of project waste materials will be diverted from the landfill. A "covered project" is defined as:

1. Construction, renovation, and demolition projects where the total costs are projected to be equal to or greater than $50,000; and/or
2. Construction or renovation projects equal to or greater than 1,000 sq. ft.; and/or
3. Demolition projects equal to or greater than 300 sq. ft.

All phases of a project and all related projects taking place on single or adjoining parcels are considered a single project.

GREEN HALO SYSTEMS

For a covered project, applicants are required to submit their WMP to the City using Green Halo Systems. Green Halo is a free web-based service for waste diversion and recycling tracking. Through Green Halo, applicants can establish, monitor and document their waste management plan and compliance online. Applicants can set-up a Green Halo account at www.greenhalosystems.com. For applicants who do not have access to the internet, Green Halo can set-up an account over the phone at 1-888-525-1301. Once an applicant has created a Green Halo account, they can track and manage multiple projects for different jurisdictions on their account.

PROCEDURE

Prior to issuance of a grading, demolition, and/or building permit for a covered project:

1. Submit a non-refundable administrative fee, payable to the City of Lafayette. See "Planning Fees" handout for current rate.
2. Submit a WMP to the City using Green Halo that includes the following:
    a) Identification of all the **materials** you estimate will be recycled, salvaged, or disposed; and
    b) Identification of which certified C&D facilities the various material types will go.
3. Green Halo will notify the City that a WMP has been submitted. The City will review the submitted WMP on Green Halo. The WMP will only be approved when all of the following conditions have been met:
    a) The WMP provides all information noted above; and
    b) The WMP indicates that at least 50% of all construction and demolition debris generated by the project will be diverted.
4. The WMP will be approved or not approved. If the WMP is incomplete and/or fails to meet the required diversion rate, the WMP will not be approved and the applicant will be notified about the reasons for non-approval. No grading, building, and/or demolition permit will be issued until the WMP is approved.

INFEASABILITY EXEMPTION

If an applicant for a covered project experiences unique circumstances that make it infeasible to comply with the diversion requirement, the applicant may apply for an exemption at the time the WMP is submitted. Increased costs to the applicant generally will not be a sufficient basis for an exemption. The applicant shall indicate on the WMP the minimum rate of diversion he/she believes is feasible for each material and the specific circumstances that he/she believes make it infeasible to comply with the diversion requirement.

UPON COMPLETION OF THE PROJECT

Prior to the final inspection of a grading, demolition, and/or building permit and within 30 days after project completion, the applicant shall submit their WMP to the City through Green Halo for final review. The goal of the final review is to provide documentation to the City showing that the diversion requirement has been met. The WMP submitted for final review shall include the following:

1. Receipts from the certified facilities that collected or received each material showing the actual volume or weight of the material received and how the material was disposed of; and
2. Any additional information the applicant believes is relevant to determining its efforts to comply in good faith with the diversion requirement.

Through Green Halo, the City will review the WMP and documentation noted above and a determination will be made if the applicant has complied with the diversion requirement as follows:

1. **Full compliance** - If the applicant has fully complied with the diversion requirement.
2. **Good Faith Effort to Comply** - If the diversion requirement has not been achieved, the City will determine on a case-by-case basis whether the applicant has made a good faith effort to comply with the diversion requirement. In making this determination, the City will consider the availability of markets for the C&D debris landfilled, the size of the project and the documented efforts of the applicant to divert the C&D debris.
3. **Noncompliance** - If the City determines that the applicant has not complied with the diversion requirement, the City may withhold final project approval until full compliance can be established.

No hold on final shall be released, until the WMP has been provided to and approved by the City as either full compliance or good faith effort to comply.

NONCOMPLIANCE

Please note that if the required documentation is not submitted and approved by the City, or the applicant has not made a good faith effort to comply, the applicant is in noncompliance status and is in violation of the Lafayette Municipal Code (LMC) and is liable for a civil penalty, or any other remedy provided in the LMC. This violation makes the property owner liable to the City for a civil penalty of $1,000 or one percent (1%) of the project cost, whichever is less. The project will not be approved and holds will not be released, until the project is in full compliance, meets the good faith effort to comply, or the civil penalty has been paid.

APPEAL

Appeal of the determination made by the City shall be made to the City Council within 30 days of the City's determination. To appeal, an applicant must submit a letter to the city manager concisely stating the facts of the case and the grounds of appeal. The city manager will schedule a meeting before the city council and notify the applicant of the date, time, and place. The decision of the city council is final. Appeals shall be limited to:

1. The granting or denial of an exemption; or
2. Whether the applicant has made a good faith effort to comply with the WMP.

NOTE: The applicant and property owner are responsible for the actions of their contractors or other agents with regard to the diversion requirement. Therefore, when reviewing proposals from project managers, contractors, site cleanup, vendors, and other building professionals, all aspects of the proposal should be considered and not just the cost.

APPENDIX B

STANDARD PLANS

CALTRANS STANDARD PLANS

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

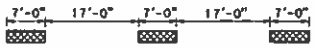
May 20, 2011
PLANS APPROVAL DATE

Roberta L. McLaughlin
C40375
3-31-13
CIVIL
STATE OF CALIFORNIA

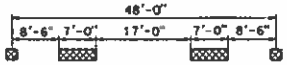
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

CENTERLINES
(2 LANE HIGHWAYS)

DETAIL 1



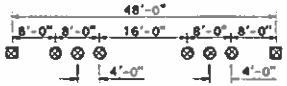
DETAIL 2



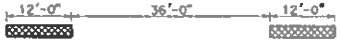
~~DETAIL 3~~

DETAIL 3 DELETED

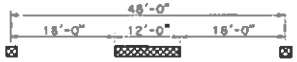
DETAIL 4



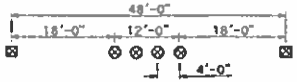
DETAIL 5



DETAIL 6

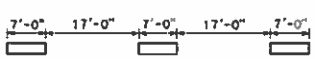


DETAIL 7

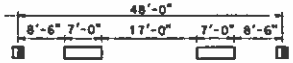


LANELINES
(MULTILANE HIGHWAYS)

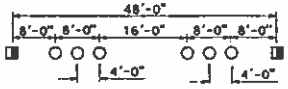
DETAIL 8



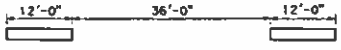
DETAIL 9



DETAIL 10



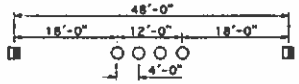
DETAIL 11



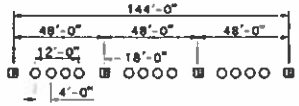
LANELINES (Cont)
(MULTILANE HIGHWAYS)

DETAIL 12

DETAIL 13



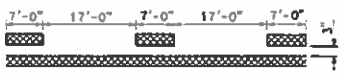
DETAIL 14



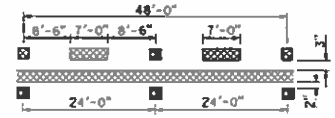
DETAIL 14A

NO PASSING ZONES-ONE DIRECTION

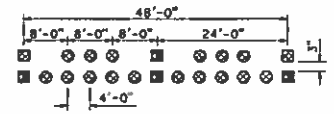
DETAIL 15



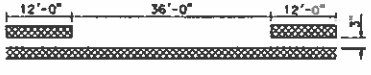
DETAIL 16



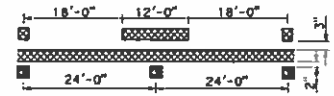
DETAIL 17



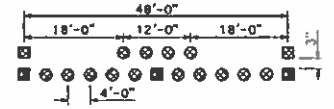
DETAIL 18



DETAIL 19



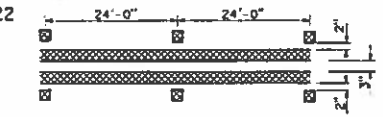
DETAIL 20



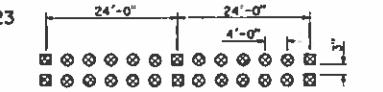
NO PASSING ZONES-TWO DIRECTION

DETAIL 21

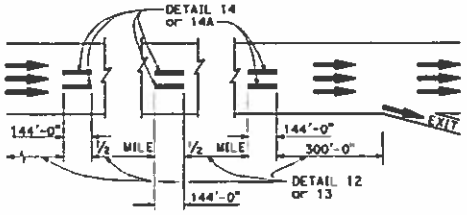
DETAIL 22



DETAIL 23



TYPICAL LANE LINE DELINEATION IN ADVANCE OF EXIT RAMP



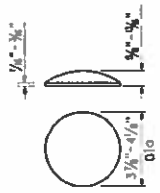
NOTE:
Detail 14 is to be used in combination with Detail 13. Detail 14A is to be used in combination with Detail 12.

LEGEND

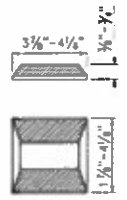
MARKERS
- TYPE A WHITE NON-REFLECTIVE
- TYPE AY YELLOW NON-REFLECTIVE
- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE D TWO-WAY YELLOW RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- TYPE H ONE-WAY YELLOW RETROREFLECTIVE

LINES
- 4" WHITE
- 4" YELLOW
- DIRECTION OF TRAVEL

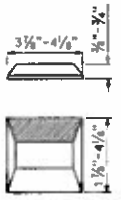
MARKER DETAILS



TYPE A AND TYPE AY



TYPE C AND TYPE D



TYPE G AND TYPE H

RETROREFLECTIVE FACE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

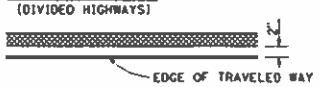
NO SCALE

A20A

LEFT EDGELINES

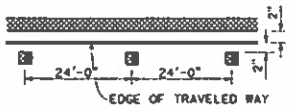
(DIVIDED HIGHWAYS)

DETAIL 24

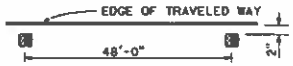


DETAIL 25

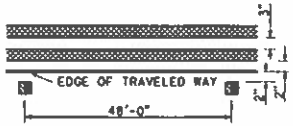
DETAIL 25A



DETAIL 26



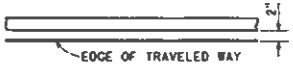
DETAIL 27



RIGHT EDGELINES

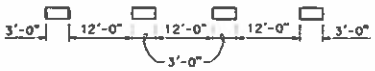
~~DETAIL 27A~~ DETAIL 27A DELETED

DETAIL 27B



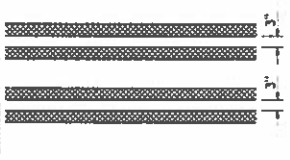
RIGHT EDGELINE EXTENSION THROUGH INTERSECTIONS

DETAIL 27C

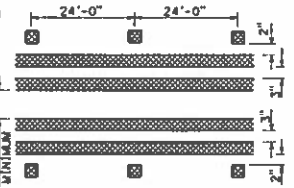


MEDIAN ISLANDS

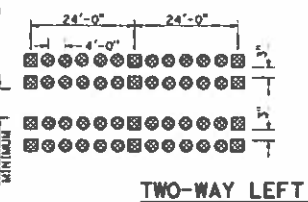
DETAIL 28



DETAIL 29

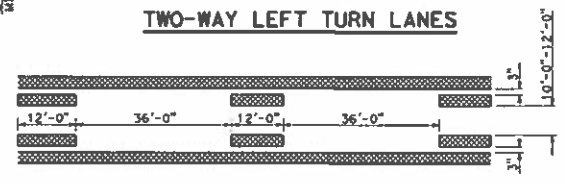


DETAIL 30

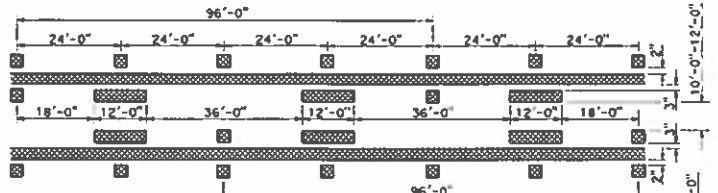


TWO-WAY LEFT TURN LANES

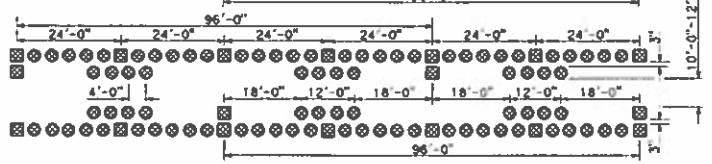
DETAIL 31



DETAIL 32



DETAIL 33



LEGEND

MARKERS

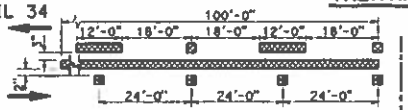
- TYPE AY YELLOW NON-REFLECTIVE
- TYPE D TWO-WAY YELLOW RETROREFLECTIVE
- TYPE H ONE-WAY YELLOW RETROREFLECTIVE

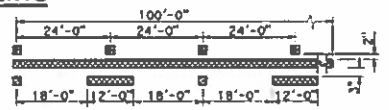
LINES

- 4" WHITE
- 4" YELLOW
- DIRECTION OF TRAVEL

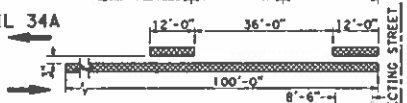
INTERSECTION TREATMENTS

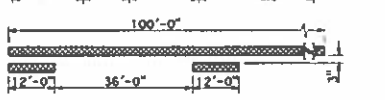
DETAIL 34



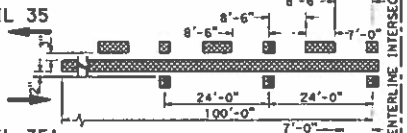


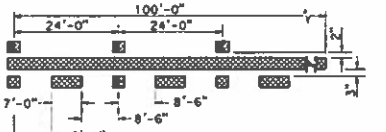
DETAIL 34A



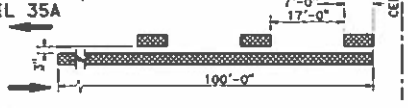


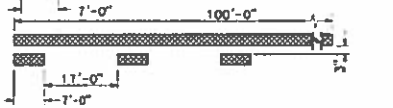
DETAIL 35





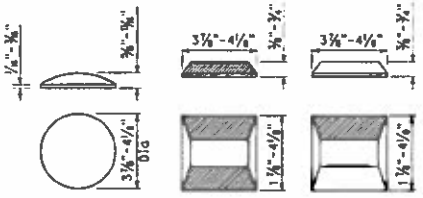
DETAIL 35A





CENTERLINE INTERSECTING STREET

MARKER DETAILS



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

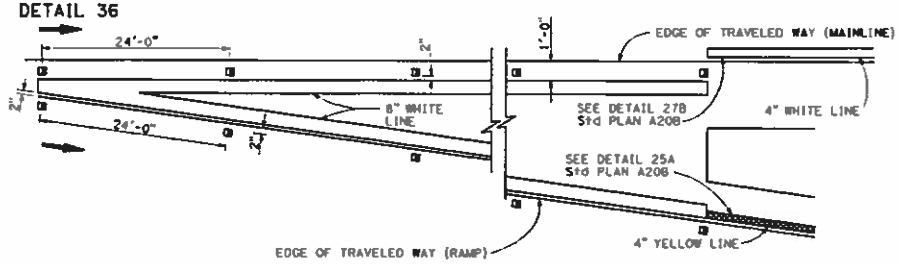
A20B

2010 STANDARD PLAN A20B

10

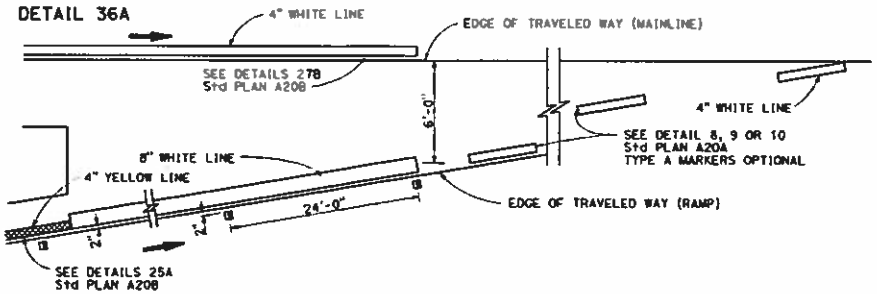
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT

DETAIL 36



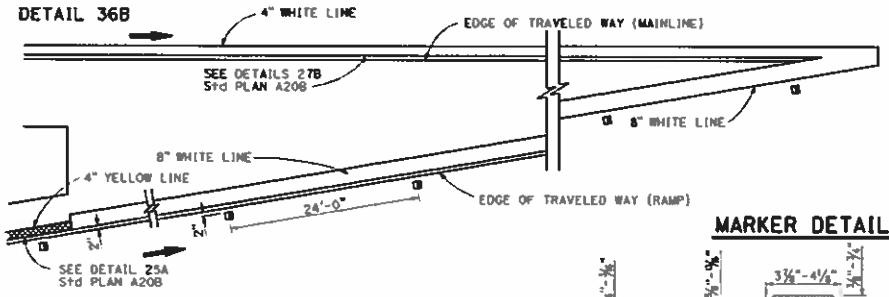
ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT

DETAIL 36A

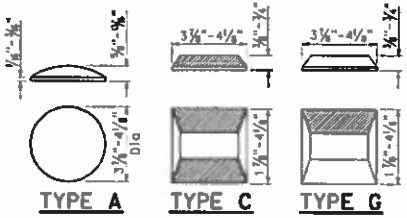


ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

DETAIL 36B



MARKER DETAILS



LEGEND

MARKERS

- TYPE A WHITE NON-REFLECTIVE
- TYPE C RED-CLEAR RETROREFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- DIRECTION OF TRAVEL

STATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 20, 2011

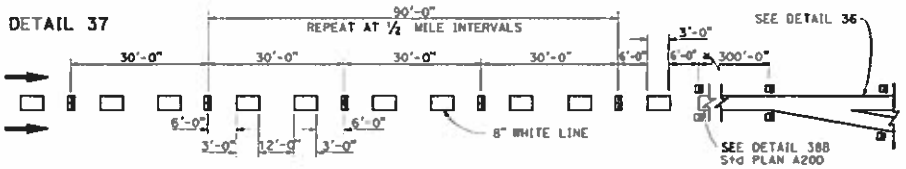
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

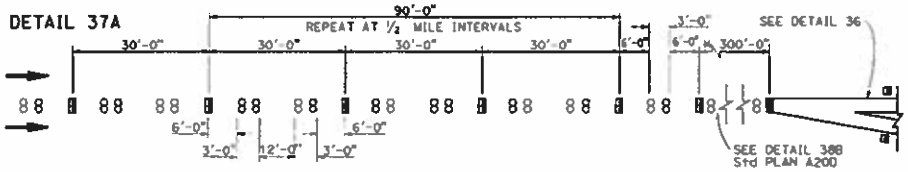
Roberta L. McLaughlin
C40375
3-31-13
CIVIL
STATE OF CALIFORNIA

LANE DROP AT EXIT RAMPS

DETAIL 37



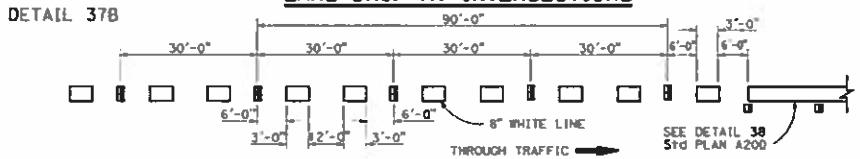
DETAIL 37A



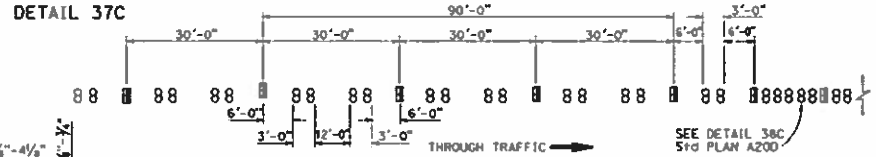
* The solid channelizing line shown may be omitted on short auxiliary lanes where weaving length is critical.

LANE DROP AT INTERSECTIONS

DETAIL 37B



DETAIL 37C



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINE TYPICAL DETAILS

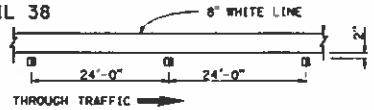
NO SCALE

A20C

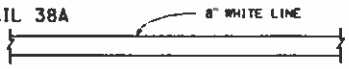
2010 STANDARD PLAN A20C

CHANNELIZING LINE

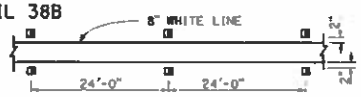
DETAIL 38



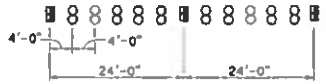
DETAIL 38A



DETAIL 38B

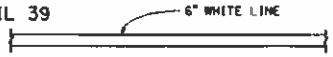


DETAIL 38C



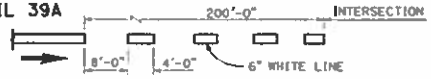
BIKE LANE LINE

DETAIL 39



INTERSECTION LINE BIKE LANE

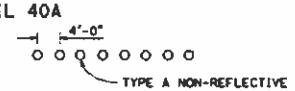
DETAIL 39A



LANE LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 40

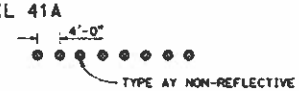
DETAIL 40A



CENTER LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 41

DETAIL 41A

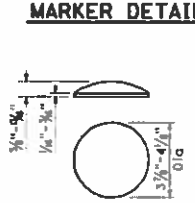


LEGEND

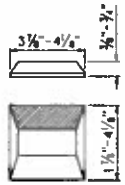
MARKERS

- TYPE A WHITE NON-REFLECTIVE
- TYPE AY YELLOW NON-REFLECTIVE
- TYPE G ONE-WAY CLEAR RETROREFLECTIVE
- 4" YELLOW LINE
- DIRECTION OF TRAVEL

MARKER DETAILS

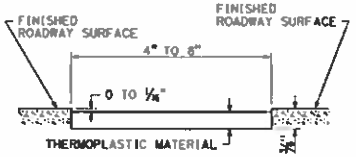


TYPE A AND TYPE AY



TYPE G

RETROREFLECTIVE FACE



DETAIL FOR RECESSED THERMOPLASTIC TRAFFIC STRIPE

See Notes A and B.

RECESSED THERMOPLASTIC NOTES

A. See typical traffic line details for pavement marking patterns.

B. The top of the thermoplastic installed in recessed pavement shall be 0 to ⅛" below the pavement surface.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

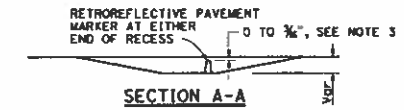
REGISTERED CIVIL ENGINEER

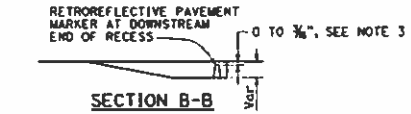
May 20, 2011

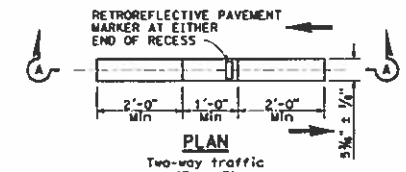
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Roberta L. McLaughlin C40375 rev. 3-31-13

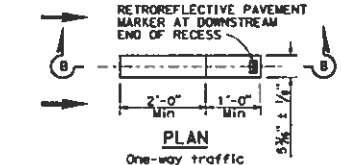






PLAN

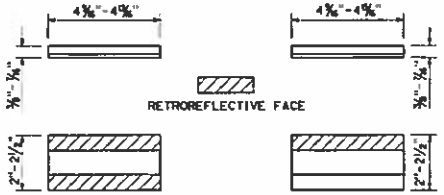
Two-way traffic (Type 2)



PLAN

One-way traffic (Type 1)

RECESS DETAIL FOR RETROREFLECTIVE PAVEMENT MARKER



TYPE C AND TYPE D

TYPE G AND TYPE H

See Notes 1 and 2.

RETROREFLECTIVE PAVEMENT MARKER FOR RECESSED INSTALLATION

RECESSED MARKER NOTES:

1. See typical traffic line details for marker patterns to be used with recessed pavement markers. Detail 14A requires a Type Z recess.
2. The retroreflective pavement markers shown for recessed installations are not to be used for non-recessed installations.
3. The top of pavement markers installed in recesses shall be 0 to ⅜" below the pavement surface.

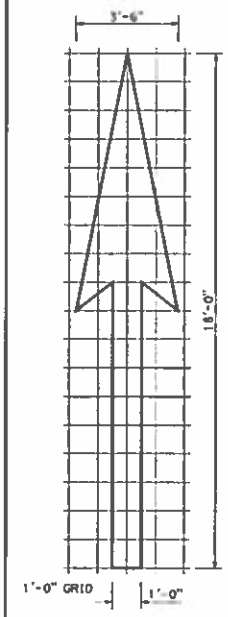
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

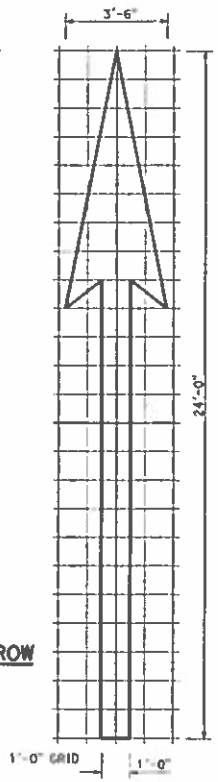
A20D

2010 STANDARD PLAN A20D



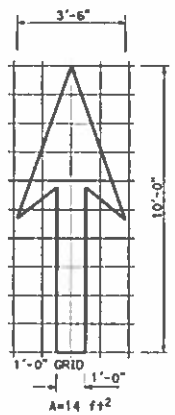
A=25 ft²

TYPE I 18'-0" ARROW



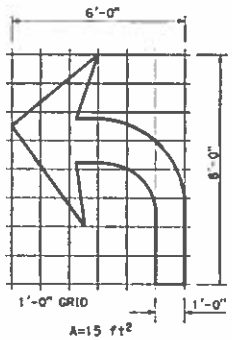
A=31 ft²

TYPE I 24'-0" ARROW



A=14 ft²

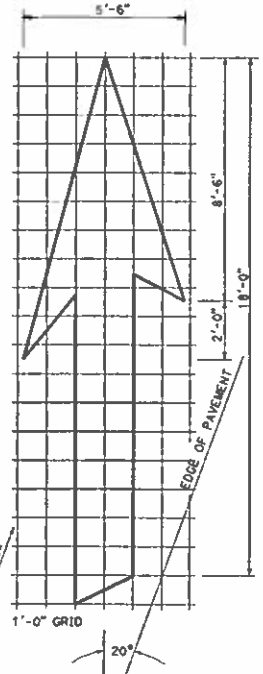
TYPE I 10'-0" ARROW



A=15 ft²

TYPE IV (L) ARROW

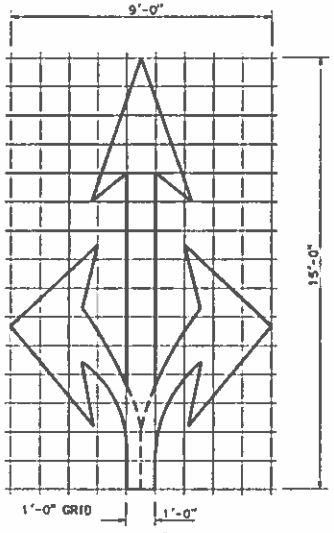
(For Type II (R) arrow, use mirror image)



A=42 ft²

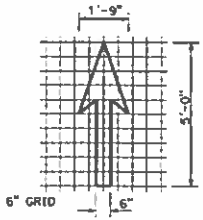
TYPE VI ARROW

Right lane drop arrow (For left lane, use mirror image)



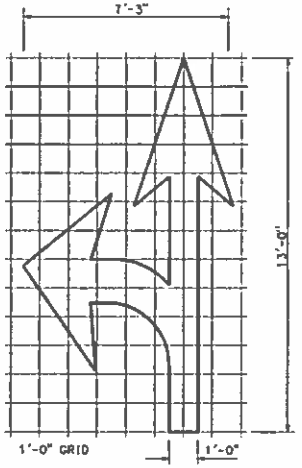
A=36 ft²

TYPE VIII ARROW



A=7 ft²

BIKE LANE ARROW



A=27 ft²

TYPE VII (L) ARROW

(For Type III (R) arrow, use mirror image)

NOTE:
Minor variations in dimensions may be accepted by the Engineer.

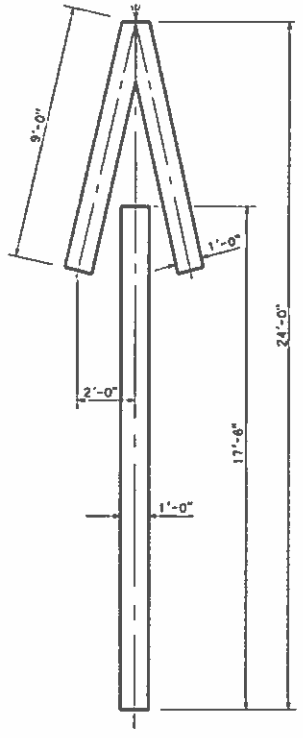
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Roberto L. McLaughlin
C40375
REG. 3-31-13
CIVIL
STATE OF CALIFORNIA



A=33 ft²

TYPE V ARROW

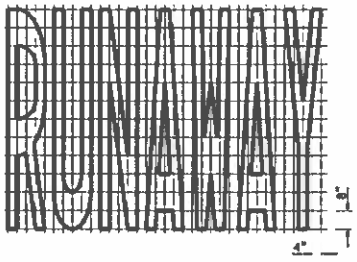
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS ARROWS

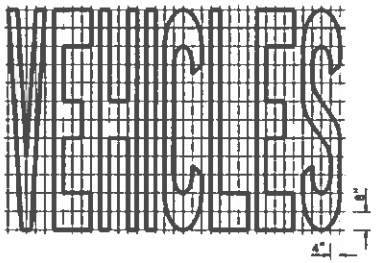
NO SCALE

A24A

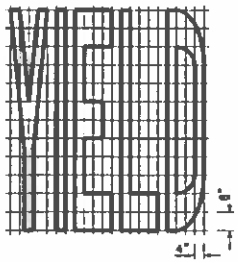
2010 STANDARD PLAN A24A



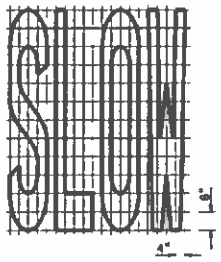
A=43 ft²



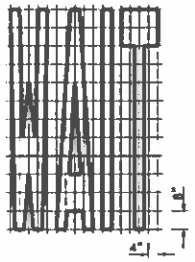
A=42 ft²



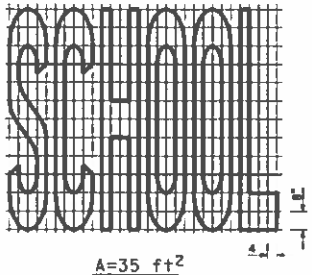
A=24 ft²



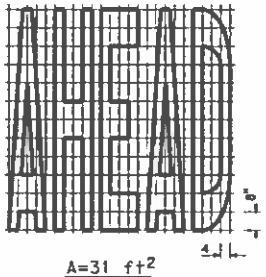
A=23 ft²



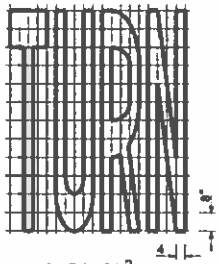
A=19 ft²



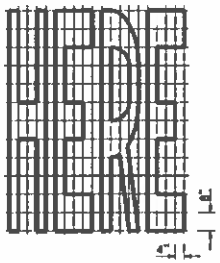
A=35 ft²



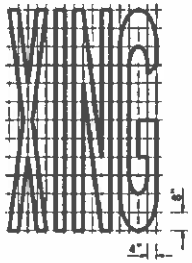
A=31 ft²



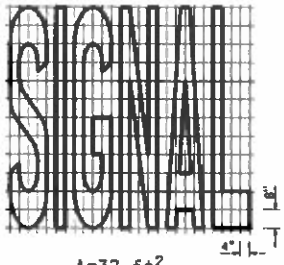
A=24 ft²



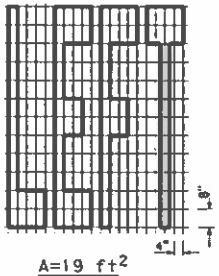
A=26 ft²



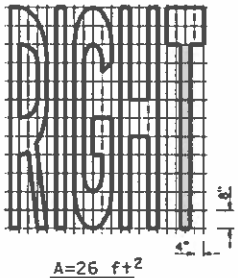
A 21 ft²



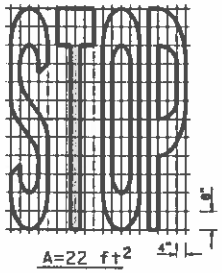
A=32 ft²



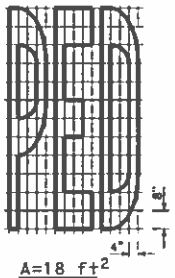
A=19 ft²



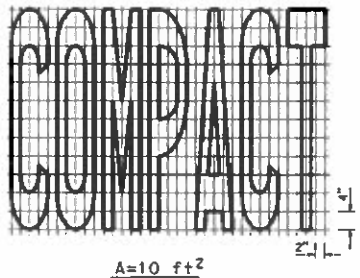
A=26 ft²



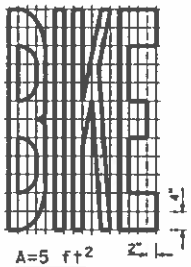
A=22 ft²



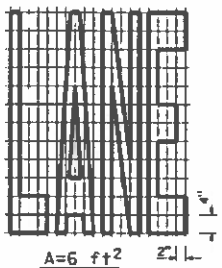
A=18 ft²



A=10 ft²



A=5 ft²



A=6 ft²

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET

Roberta L. McLaughlin
C40375
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

NOTES:

1. If a message consists of more than one word, it should read "UP", i.e., the first word should be nearest the driver.
2. The space between words should be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.

WORD MARKINGS

ITEM	ft²	ITEM	ft²	ITEM	ft²	ITEM	ft²
XING	21	YIELD	24	BIKE	5	PED	18
AHEAD	31	SCHOOL	35	SLOW	23	COMPACT	10
WAIT	19	SIGNAL	32	STOP	22	RUNAWAY	43
LANE	6	TURN	24	LEFT	19	VEHICLES	42
RIGHT	26	HERE	26				

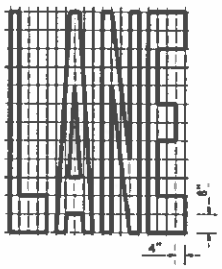
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS WORDS

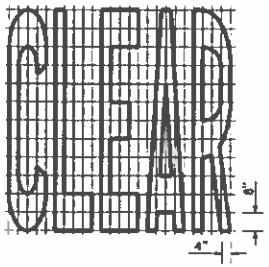
NO SCALE

A24D

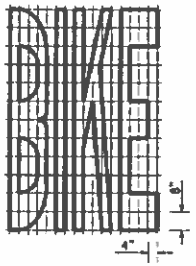
2010 STANDARD PLAN A24D



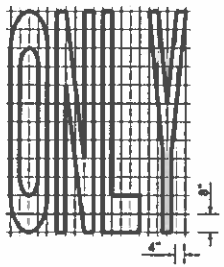
A=24 ft²



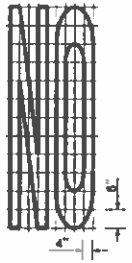
A=27 ft²



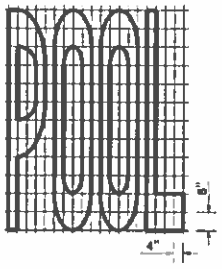
A=21 ft²



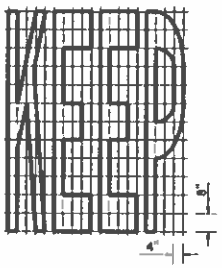
A=22 ft²



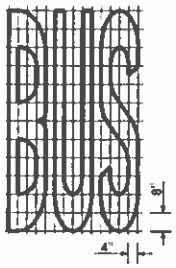
A=14 ft²



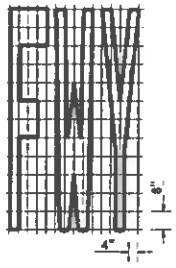
A=23 ft²



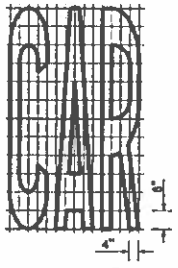
A=24 ft²



A=20 ft²



A=16 ft²

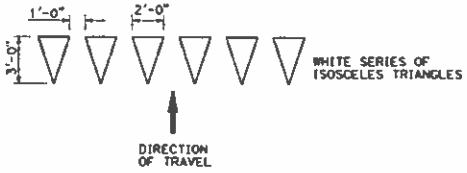


A=17 ft²

WORD MARKINGS			
ITEM	ft²	ITEM	ft²
LANE	24	NO	14
POOL	23	BIKE	21
CAR	17	BUS	20
CLEAR	27	ONLY	22
KEEP	24	FWY	16

A=2 ft²
See Notes 6 and 7

CROSSWALK AND LIMIT LINE
See Note 5



YIELD LINE

NOTES:

1. If a message consists of more than one word, it should read "UP", i.e., the first word should be nearest the driver.
2. The space between words should be at least four times the height of the characters for low speed roads, but not more than ten times the height of the characters. The space may be reduced appropriately where there is limited space because of local conditions.
3. Minor variations in dimensions may be accepted by the Engineer.
4. Portions of a letter, number or symbol may be separated by connecting segments not to exceed 2" in width.
5. Crosswalks contiguous to school grounds are to be 1'-0" yellow lines in place of 1'-0" white shown.
6. The words "NO PARKING" pavement marking is to be used for parking facilities. For typical locations of markings, see Standard Plans A90A and A90B.
7. The words "NO PARKING", shall be painted in white letters no less than 1'-0" high on a contrasting background and located so that it is visible to traffic enforcement officials.

Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Roberto L. McLaughlin
C40375
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS WORDS AND CROSSWALKS

NO SCALE

A24E

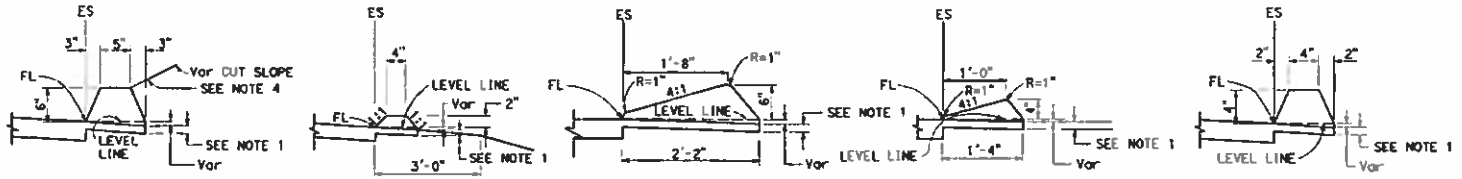
2010 STANDARD PLAN A24E

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



TYPE A
See Note 3

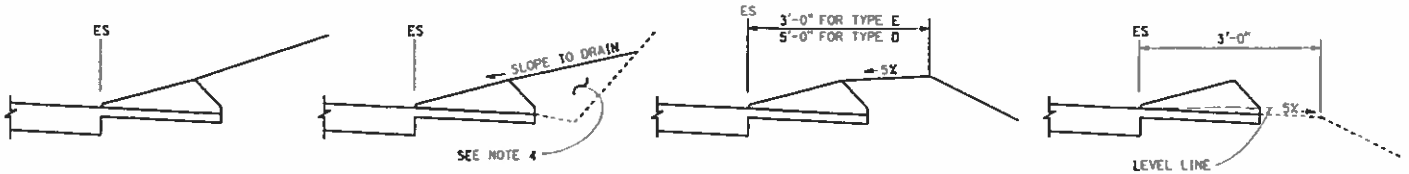
TYPE C

TYPE D

TYPE E

TYPE F
See Note 5

DIKES



CASE C-1
Cut Slope

CASE C-2
Cut Slope

CASE F

CASE R
See Note 2

TYPE D AND E BACKFILL DETAILS

NOTES:

1. For HMA shoulders only, extend top layer of HMA placed on the shoulder under dike with no joint at the ES. For projects with OGFC shoulders, do not extend OGFC under dike. See project plans for modified dike detail.
2. Case R applies to retrofit only projects where restrictive conditions do not provide enough width for Case F backfill.
3. Type A dike only to be used where restrictive slope conditions do not provide enough width to use Type D or Type E dike.
4. Fill and compact with excavated material to top of dike.
5. Use Type F dike, where dike is required with guard railing installations. See Standard Plan A77C4 for dike positioning details.

DIKE QUANTITIES

TYPE	CUBIC YARDS PER LINEAR FOOT
A	0.0135
C	0.0038
D	0.0293
E	0.0130
F	0.0066

Quantities based on 5% cross slope.

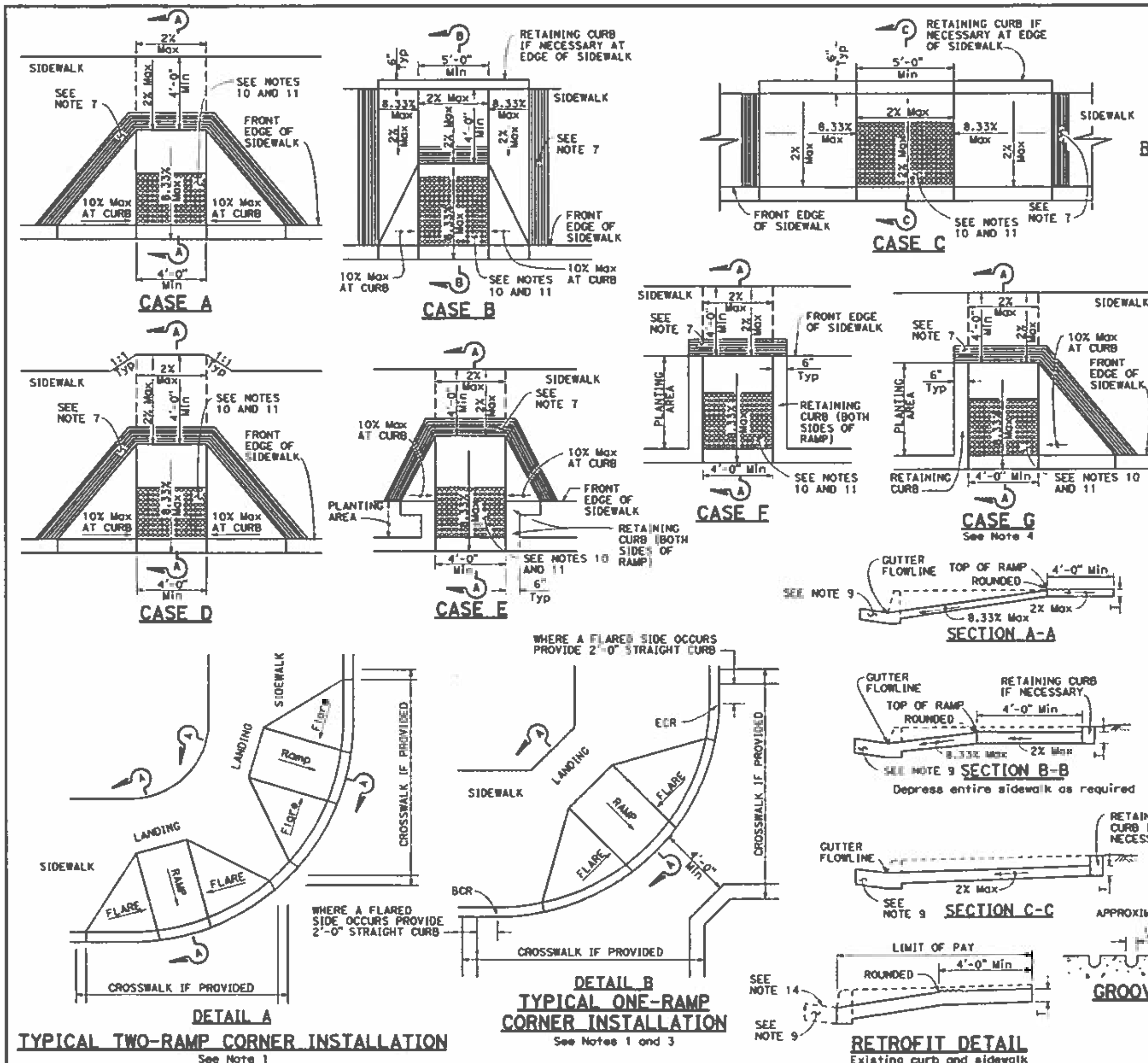
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

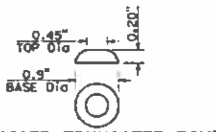
HOT MIX ASPHALT DIKES

NO SCALE

A87B

3-20-10



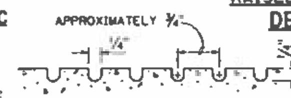


RAISED TRUNCATED DOME

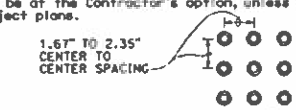
REGISTERED CIVIL ENGINEER
May 20, 2011
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTES:

1. As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
2. If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-0" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
3. When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
4. As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
5. If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-0".
6. Side slope of ramp flares vary uniformly from a maximum of 10% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
7. The curb ramp shall be outlined, as shown, with a 1'-0" wide border with 1/4" grooves approximately 3/4" on center. See grooving detail.
8. Transitions from ramps and landing to walks, gutters or streets shall be flush and free of abrupt changes.
9. Maximum slopes of adjoining gutters, the road surface immediately adjacent to the curb ramp or accessible route shall not exceed 5 percent within 4'-0" of the top and bottom of the curb ramp.
10. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Special Provisions.
11. The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
12. Sidewalk and ramp thickness, "T", shall be 3½" minimum.
13. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
14. For retrofit conditions, removal and replacement of curb apron will be at the Contractor's option, unless otherwise shown on project plans.



GROOVING DETAIL



RAISED TRUNCATED DOME PATTERN (IN-LINE)

DETECTABLE WARNING SURFACE

See Note 10

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CURB RAMP DETAILS

NO SCALE

A88A

LEGEND:

AB	ABANDON. IF APPLIED TO CONDUIT, REMOVE CONDUCTORS
BC	INSTALL PULL BOX IN EXISTING CONDUIT RUN
BP	PEDESTRIAN BARRICADE, TYPE AS INDICATED ON PLAN
CB	INSTALL CONDUIT INTO EXISTING PULL BOX
CC	CONNECT NEW AND EXISTING CONDUIT. REMOVE EXISTING CONDUCTORS AND INSTALL CONDUCTORS AS INDICATED
CF	CONDUIT TO REMAIN FOR FUTURE USE. REMOVE CONDUCTORS. INSTALL PULL TAPE
DH	DETECTOR HANDHOLE
FA	FOUNDATION TO BE ABANDONED
IS	INSTALL SIGN ON SIGNAL MAST ARM
NS	NO SLIP BASE ON STANDARD
PEC	PHOTOELECTRIC CONTROL
PEU	PHOTOELECTRIC UNIT
RC	EQUIPMENT OR MATERIAL TO BE REMOVED AND BECOME THE PROPERTY OF THE CONTRACTOR
RE	REMOVE ELECTROLIER, FUSES AND BALLAST. TAPE ENDS OF CONDUCTORS
RL	RELOCATE EQUIPMENT
RR	REMOVE AND REUSE EQUIPMENT
RS	REMOVE AND SALVAGE EQUIPMENT
SC	SPLICE NEW TO EXISTING CONDUCTORS
SD	SERVICE DISCONNECT
TSP	TELEPHONE SERVICE POINT

ABBREVIATIONS

AC+	UNDERGROUNDED CONDUCTOR	MAT	MAST ARM MOUNTING TOP ATTACHMENT
APS	ACCESSIBLE PEDESTRIAN SIGNAL	MAS	MAST ARM MOUNTING SIDE ATTACHMENT
Batt	BATTERY	MBPS	MANUAL BYPASS SWITCH
BBS	BATTERY BACKUP SYSTEM	M/M	MULTIPLE TO MULTIPLE TRANSFORMER
BC	BOLT CIRCLE	Mtg	MOUNTING
Blk	BLACK	MV	MERCURY VAPOR LIGHTING FIXTURE
BP	BYPASS	MVDS	MICROWAVE VEHICLE DETECTION SYSTEM
BPB	BICYCLE PUSH BUTTON	N	NEUTRAL (GROUNDED CONDUCTOR)
C	CONDUIT	NB	NEUTRAL BUS
CB	CIRCUIT BREAKER	NC	NORMALLY CLOSE
CCTV	CLOSED CIRCUIT TELEVISION	NO	NORMALLY OPEN
Ckt	CIRCUIT	P	CIRCUIT BREAKER'S POLE
CMS	CHANGEABLE MESSAGE SIGN	PB	PULL BOX
Ctid	CALTRANS IDENTIFICATION	PBA	PUSH BUTTON ASSEMBLY
Comm	COMMUNICATION	PEC	PHOTOELECTRIC CONTROL
Cntl	CONTROL	Ped	PEDESTRIAN
DF	DEPARTMENT-FURNISHED	PEU	PHOTOELECTRIC UNIT
DLC	LOOP DETECTOR LEAD-IN CABLE	PT	CONDUIT WITH PULL TAPE
EMS	EXTINGUISHABLE MESSAGE SIGN	PTR	POWER TRANSFER RELAY
EVUC	EMERGENCY VEHICLE UNIT CABLE	RE	RELOCATED EQUIPMENT
EVUD	EMERGENCY VEHICLE UNIT DETECTOR	RM	RAMP METERING
FB	FLASHING BEACON	RWIS	ROADSIDE WEATHER INFORMATION SYSTEM
FBCA	FLASHING BEACON CONTROL ASSEMBLY	SB	SLIP BASE
FBS	FLASHING BEACON WITH SLIP BASE	SIC	SIGNAL INTERCONNECT CABLE
FO	FIBER OPTIC	Sig	SIGNAL
G	EQUIPMENT GROUNDING CONDUCTOR	SMA	SIGNAL MAST ARM
GB	GROUND BUS	SNS	STREET NAME SIGN
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SP	SERVICE POINT
Grn	GREEN	TB	TERMINAL BOARD
HAR	HIGHWAY ADVISORY RADIO	TDC	TELEPHONE DEMARCATION CABINET
Hex	HEXAGONAL	Temp	TEMPERATURE
HPS	HIGH PRESSURE SODIUM	TMS	TRAFFIC MONITORING STATION
IISNS	INTERNALLY ILLUMINATED STREET NAME SIGN	TOS	TRAFFIC OPERATIONS SYSTEM
ISL	INDUCTION SIGN LIGHTING	UPS	UNINTERRUPTABLE POWER SUPPLY
LED	LIGHT EMITTING DIODE	UPSC	UNINTERRUPTABLE POWER SUPPLY CONTROLLER
LMA	LUMINAIRE MAST ARM	Veh	VEHICLE
LPS	LOW PRESSURE SODIUM	VIVDS	VIDEO IMAGE VEHICLE DETECTION SYSTEM
Ltg	LIGHTING	Wht	WHITE
Lum	LUMINAIRE	WIM	WEIGH-IN-MOTION
M	METERED	Xfmr	TRANSFORMER

MISCELLANEOUS ELECTROLIERS

NEW	EXISTING	
		LUMINAIRE ON WOOD POLE
		NON-STANDARD ELECTROLIER (SEE PROJECT LEGEND)
		CITY ELECTROLIER
		ELECTROLIER FOUNDATION (FUTURE INSTALLATION)

STANDARD ELECTROLIER

NEW	EXISTING	STANDARD TYPE
		15
		15D
		15 STRUCTURE
		15D STRUCTURE
		21
		21D
		21 STRUCTURE
		21D STRUCTURE
		30
		31
		32

SOFFIT AND WALL-MOUNTED LUMINAIRES

- PENDANT SOFFIT LUMINAIRE, 70 W HPS UNLESS OTHERWISE SPECIFIED
- FLUSH-MOUNTED SOFFIT LUMINAIRE, 70 W HPS UNLESS OTHERWISE SPECIFIED
- WALL-MOUNTED LUMINAIRE, 70 W HPS UNLESS OTHERWISE SPECIFIED
- EXISTING SOFFIT OR WALL-MOUNTED LUMINAIRE TO REMAIN UNMODIFIED
- (M) EXISTING SOFFIT OR WALL-MOUNTED LUMINAIRE TO BE MODIFIED AS SPECIFIED

NOTE:
Arrow indicates "street side" of luminaire.

COMMONLY USED SYMBOLS FOR UNITED STATES CUSTOMARY UNITS OF MEASUREMENT:

SYMBOL	DEFINITIONS
Ω	OHMS
min	MINUTE
s	SECOND
bps	BITS PER SECOND
Bps	BYTES PER SECOND
A	AMPERE
V	VOLT
V_{dc}	VOLT (DIRECT CURRENT)
V_{ac}	VOLT (ALTERNATING CURRENT)
FC	FOOT - CANDLE
W	WATTS
VA	VOLT-AMPERE
M	MEGA
k	KILO
m	MILLI
μ	MICRO
P	PICO
Hz	HERTZ

NOTES:

1. LED luminaires shall be 235 W when installed on Type 21, 21D, 30, 31 and 32 Standards, unless otherwise specified. LED luminaires shall be 165 W when installed on other type standards or poles, unless otherwise specified.
2. Luminaires shall be the cutoff type, ANSI Type II medium cutoff lighting distribution, unless otherwise specified.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER
October 30, 2015
PLANS APPROVAL DATE
Theresa Aziz Gabriel E15129 exp. 6-30-16 ELECTRICAL REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

NO SCALE

RSP ES-1A DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-1A DATED JULY 19, 2013 AND STANDARD PLAN ES-1A DATED MAY 20, 2011 - PAGE 425 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-1A

2010 REVISED STANDARD PLAN RSP ES-1A

9-29-15

CONDUIT

NEW	EXISTING	
		LIGHTING CONDUIT, UNLESS OTHERWISE INDICATED OR NOTED
		TRAFFIC SIGNAL CONDUIT
C	c	COMMUNICATION CONDUIT
T	t	TELEPHONE CONDUIT
F	f	FIRE ALARM CONDUIT
FO	fo	FIBER OPTIC CONDUIT
		CONDUIT TERMINATION
R	r	CONDUIT RISER ATTACHED TO THE STRUCTURE OR SERVICE POLE

SERVICE EQUIPMENT

NEW	EXISTING	
OH	oh	OVERHEAD LINES
U	U	WOOD POLE, "U" INDICATES UTILITY OWNED
		POLE GUY WITH ANCHOR
		UTILITY TRANSFORMER - GROUND MOUNTED
III	III	SERVICE EQUIPMENT ENCLOSURE TYPE. DOOR INDICATES FRONT OF ENCLOSURE
T	T	TELEPHONE DEMARCATION CABINET

POLE-MOUNTED SERVICE DESIGNATION

TYPE H SERVICE, 28'-10" — TYPE OF INSTALLATION AND POLE HEIGHT ABOVE GRADE

FLASHING BEACON

NEW	EXISTING	
R	R	FLASHING BEACON (ONE VEHICLE SIGNAL HEAD WITH BACKPLATE AND VISOR) "R" INDICATES RED INDICATION, "Y" INDICATES YELLOW INDICATION
Y Y	Y Y	FLASHING BEACON WITH TYPE 15-FBS STANDARD AND A SIGN.
R R	R R	FLASHING BEACON WITH TYPES 9, 9A OR 9B SIGN UNLESS OTHERWISE SPECIFIED OR INDICATED

SIGNAL EQUIPMENT

NEW	EXISTING	
		PEDESTRIAN SIGNAL HEAD
		PUSH BUTTON ASSEMBLY POST
		PEDESTRIAN BARRICADE
		VEHICLE SIGNAL HEAD (WITH BACKPLATE AND 3-SECTIONS: RED, YELLOW AND GREEN)
		VEHICLE SIGNAL HEAD WITH ANGLE VISOR
PV	PV	MODIFICATIONS OF BASIC SYMBOL: "L" INDICATES ALL NON-ARROW SECTIONS LOUVERED "LG" INDICATES LOUVERED GREEN SECTION ONLY "PV" INDICATES ALL 12" SECTIONS PROGRAMMED VISIBILITY "8" INDICATES ALL 8" SECTIONS (ONLY WHEN SPECIFIED)
		VEHICLE SIGNAL HEAD CONSISTING OF RED, YELLOW AND GREEN LEFT ARROW SECTIONS
		VEHICLE SIGNAL HEAD CONSISTING OF RED AND YELLOW SECTIONS WITH AN UP GREEN ARROW SECTION
		VEHICLE SIGNAL HEAD (5 SECTION) CONSISTING OF RED, YELLOW AND GREEN SECTIONS WITH YELLOW AND GREEN RIGHT ARROW SECTIONS
		TYPE 15TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		TYPE 21TS STANDARD WITH VEHICLE SIGNAL HEAD AND LUMINAIRE
		STANDARD WITH LUMINAIRE AND SIGNAL MAST ARMS AND ATTACHED VEHICLE SIGNAL HEADS
		TYPE 1 STANDARD WITH ATTACHED VEHICLE SIGNAL HEADS
		STANDARD WITH A SIGNAL MAST ARM, ATTACHED VEHICLE SIGNAL HEADS AND INTERNALLY ILLUMINATED STREET NAME SIGN
		CONTROLLER ASSEMBLY. DOOR INDICATES FRONT OF CABINET

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED ELECTRICAL ENGINEER — Theresa Aziz Gabriel — E15129 — 6-30-16 — ELECTRICAL

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

SIGNAL EQUIPMENT Cont

NEW	EXISTING	
		GUARD POST
		TYPE 1 STANDARD WITH RAMP METERING SIGN
		OPTICAL DETECTOR FOR THE EMERGENCY VEHICLE DETECTION

NOTES:

1. All signal sections shall be 12" unless shown otherwise.
2. Signal heads shall be provided with backplates unless shown otherwise.

ILLUMINATED OVERHEAD SIGN

NEW	EXISTING	
		SINGLE POST, SINGLE ILLUMINATED SIGN, BALANCED BUTTERFLY
		SINGLE POST, DOUBLE ILLUMINATED SIGN, BALANCED BUTTERFLY
		SINGLE POST, SINGLE ILLUMINATED SIGN, FULL CANTILEVER
		DOUBLE POST, SINGLE ILLUMINATED SIGN
		SINGLE ILLUMINATED SIGN MOUNTED ON STRUCTURE
		DOUBLE POST, SINGLE ILLUMINATED SIGN WITH ELECTROLIER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

NO SCALE

RSP ES-1B DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-1B DATED JULY 19, 2013 AND STANDARD PLAN ES-1B DATED MAY 20, 2011 - PAGE 426 OF THE STANDARD PLANS BOOK DATED 2010.

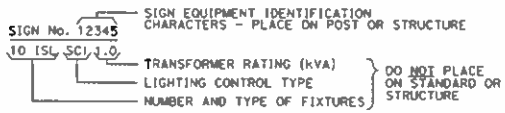
REVISED STANDARD PLAN RSP ES-1B

2010 REVISED STANDARD PLAN RSP ES-1B

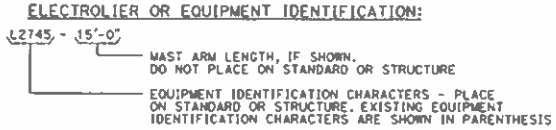
8-12-15

EQUIPMENT IDENTIFICATION

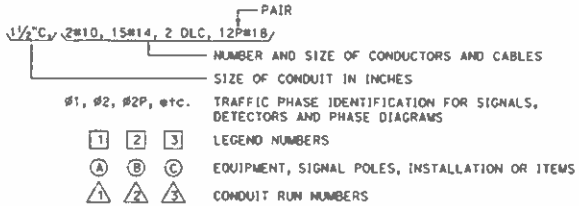
ILLUMINATED SIGN IDENTIFICATION:



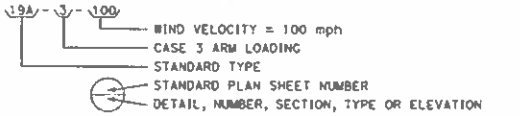
ELECTROLIER OR EQUIPMENT IDENTIFICATION:



CONDUIT AND CONDUCTOR IDENTIFICATION:



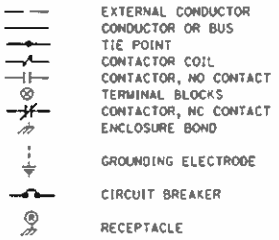
SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



MISCELLANEOUS EQUIPMENT

NEW	EXISTING	
CMS	cms	CHANGEABLE MESSAGE SIGN
		CLOSED CIRCUIT TELEVISION CAMERA
		HIGHWAY ADVISORY RADIO POLE AND ANTENNA
EMS	ems	LED EXTINGUISHABLE MESSAGE SIGN
M V	m v	DETECTION DEVICE M = MICROWAVE SENSOR V = VIDEO IMAGE SENSOR

WIRING DIAGRAM LEGEND



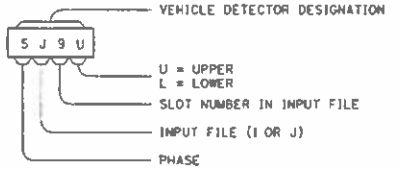
PULL BOXES

NEW	EXISTING	
		PULL BOX, No. 5 UNLESS OTHERWISE INDICATED OR NOTED
3	9A(21)	PULL BOX, ADDITIONAL DESIGNATIONS OR DESCRIPTIONS

3 No. 3½ PULL BOX
5 No. 5 PULL BOX
6 No. 6 PULL BOX
7 No. 7 PULL BOX (CEILING)
8 No. 8 PULL BOX
9 No. 9 PULL BOX (STRUCTURE)
9A No. 9A PULL BOX (STRUCTURE)

(C) COMMUNICATIONS PULL BOX
(E) PULL BOX WITH EXTENSION
(S) SPRINKLER CONTROL PULL BOX
(21) ANCHOR BOLTS AND CONDUIT FOR FUTURE INSTALLATION OF TYPE 21 STANDARD
(T) TRAFFIC PULL BOX

VEHICLE DETECTORS



NEW	EXISTING	
		TYPE A LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE B LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE C LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE D LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE E LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
		TYPE Q LOOP DETECTOR. OUTLINE OF SAW CUT SHOWN
DH	dh	DETECTOR HANDHOLE
		MICROWAVE OR VIDEO DETECTION ZONE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

Theresa Aziz Gabriel No. E13129 Exp. 6-30-16 ELECTRICAL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LEGEND AND ABBREVIATIONS)

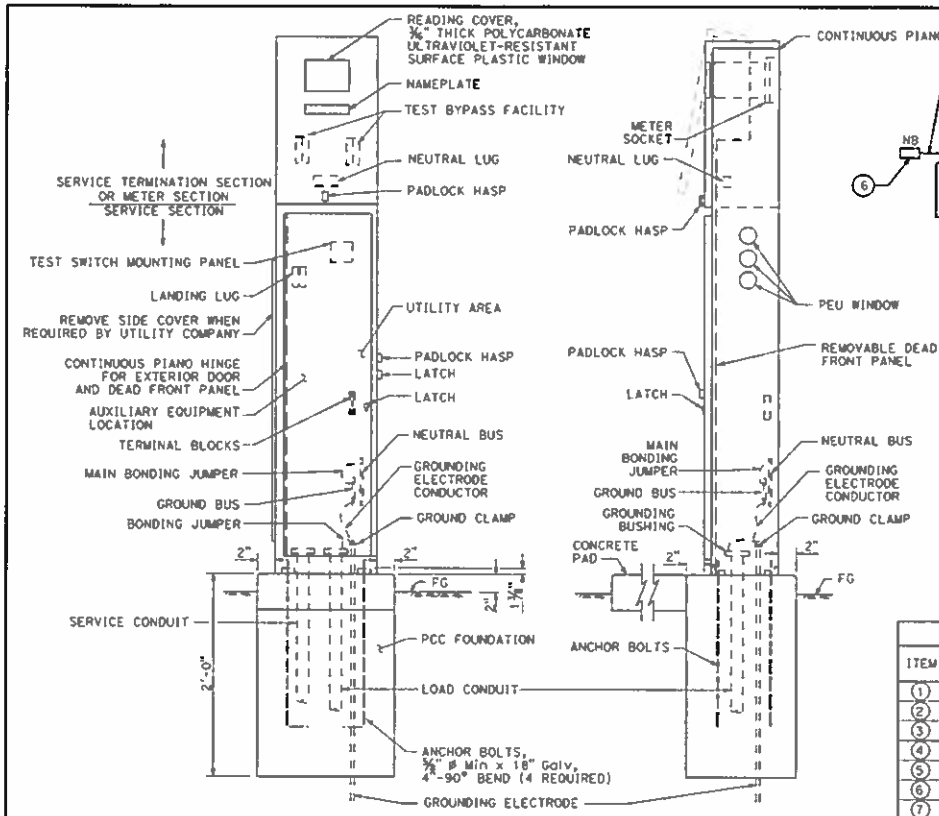
NO SCALE

RSP ES-1C DATED APRIL 15, 2016 SUPERSEDES RSP ES-1C DATED OCTOBER 30, 2015 AND RSP ES-1C DATED JULY 19, 2013 AND STANDARD PLAN ES-1C DATED MAY 20, 2011 - PAGE 427 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-1C

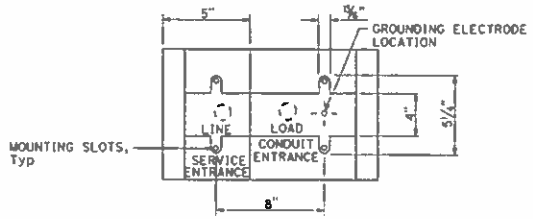
2010 REVISED STANDARD PLAN RSP ES-1C

7-22-15



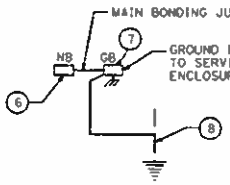
TYPE III-AF SERVICE EQUIPMENT ENCLOSURE (TYPICAL)

DETAIL A

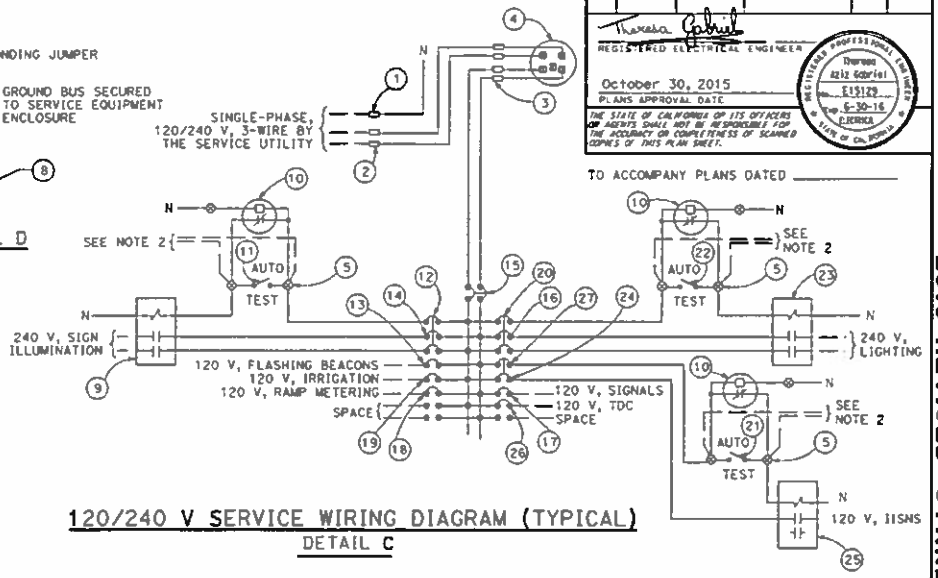


BASE FOR TYPE III-A SERVICE EQUIPMENT ENCLOSURE

DETAIL B



DETAIL D



120/240 V SERVICE WIRING DIAGRAM (TYPICAL)

DETAIL C

TO ACCOMPANY PLANS DATED _____

TYPE III-A SERVICE EQUIPMENT ENCLOSURE LEGEND (120/240 V)					
ITEM	COMPONENT	NAMEPLATE DESCRIPTION	ITEM	COMPONENT	NAMEPLATE DESCRIPTION
(1)	NEUTRAL LUG		(14)	30 A, 240 V, 2P, CB	SIGN ILLUMINATION
(2)	LANDING LUG		(15)	100 A, 240 V, 2P, CB	MAIN BREAKER
(3)	TEST BYPASS FACILITY		(16)	30 A, 240 V, 2P, CB	LIGHTING
(4)	METER SOCKET AND SUPPORT		(17)	50 A, 120 V, 1P, CB	SIGNALS
(5)	TERMINAL BLOCKS		(18)	30 A, 120 V, 1P, CB	RAMP METERING
(6)	NEUTRAL BUS		(19)	20 A, 120 V, 1P, CB	IRRIGATION
(7)	GROUND BUS		(20)	15 A, 120 V, 1P, CB	LIGHTING CONTROL
(8)	GROUNDING ELECTRODE		(21)	15 A, 1P, TEST SWITCH	IISNS TEST SWITCH
(9)	30 A, 2P, NO CONTACTOR	SIGN ILLUMINATION	(22)	15 A, 1P, TEST SWITCH	LIGHTING TEST SWITCH
(10)	PHOTOELECTRIC UNIT (NOTE 4)	PEU	(23)	60 A, 2P, NO CONTACTOR	LIGHTING
(11)	15 A, 1P, TEST SWITCH	SIGN ILLUMINATION TEST SWITCH	(24)	15 A, 120 V, 1P, CB	IISNS
(12)	15 A, 120 V, 1P, CB	SIGN ILLUMINATION CONTROL	(25)	30 A, 2P, NO CONTACTOR	IISNS
(13)	15 A, 120 V, 1P, CB	FLASHING BEACON	(26)	20 A, 120 V, 1P, CB	TELEPHONE DEMARCATION CABINET
			(27)	15 A, 120 V, 1P, CB	IISNS CONTROL

NOTES:

1. Unless otherwise indicated on the plans, service equipment items shall be provided for each service equipment enclosure as shown.
2. Connect to remote test switch mounted on lighting standards, sign post or structure when required.
3. Items (1) and (6) shall be isolated from the service equipment enclosure.
4. Type I photoelectric control shall be used unless otherwise indicated on the plans.
5. Item (12), (20) and (27) shall be ganged operated CB.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SERVICE EQUIPMENT ENCLOSURE AND TYPICAL WIRING DIAGRAM, TYPE III-A SERIES)

NO SCALE

RSP ES-2D DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-2D DATED MAY 20, 2011 - PAGE 431 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-2D

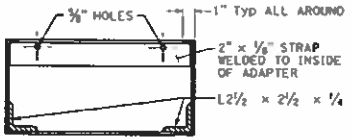
2010 REVISED STANDARD PLAN RSP ES-2D

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

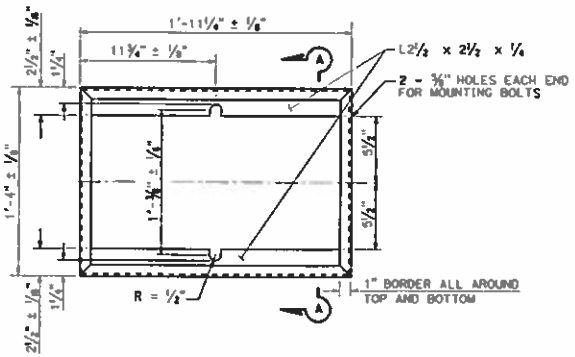
REGISTERED ELECTRICAL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



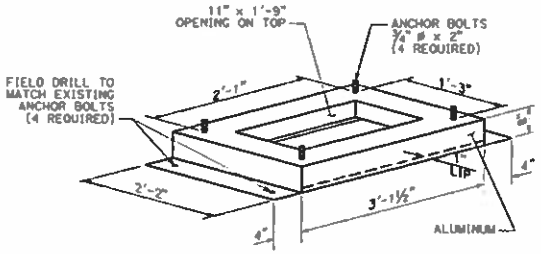
SECTION A-A



TOP VIEW

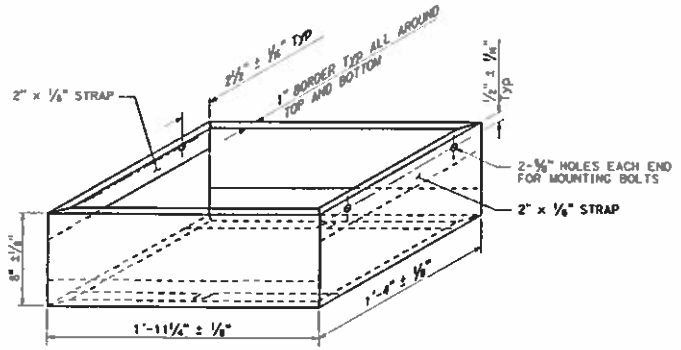
NOTES:

1. Material: 0.188" thickness aluminum plate.
2. Mount adapter on Type P or Type R cabinet foundation.
3. Mount adapter on Type M cabinet foundation.
4. Mounting bolts shall be ⅜" ø minimum size.



TYPE PR CABINET ADAPTER

See Notes 1 and 2



TYPE M CABINET ADAPTER

See Notes 1, 3 and 4

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

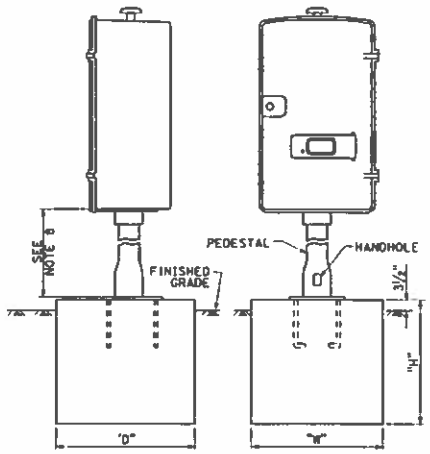
ELECTRICAL SYSTEMS (CONTROLLER CABINET ADAPTER DETAILS)

NO SCALE

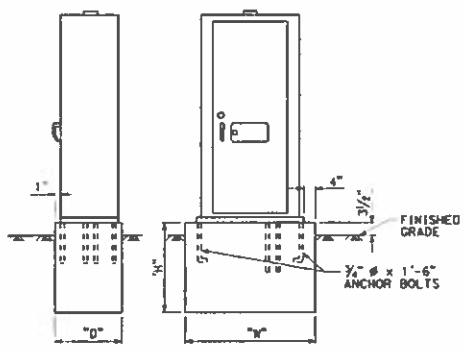
ES-3B

NOTES:

1. Cabinet dimensions are nominal.
2. Foundation shall be located to provide 2'-0" minimum clearance between face of curb and any portion of cabinet.
3. Type G, M, P, R, S and Model 336L cabinets shall be installed with the back toward the nearest lane of traffic.
4. The controller cabinet ground bus shall be bonded to the controller equipment enclosure.
5. In unpaved areas, a raised portland cement concrete pad shall be constructed in front of each controller cabinet. The pad shall be 3'-0" x 3'-0" x 4" for a Type G cabinet and shall be 3'-0" x 4" thick x width of foundation for Type M, P, R, S and Model 336L cabinets.
6. In unpaved areas, the top of foundation for Type G, P, R and S cabinets shall be 6" above surrounding grade. Top of foundation for Type M or Model 336L cabinet shall be 1'-6" above surrounding grade.
7. In sidewalks and other paved areas, top of foundation for Type G cabinet shall be level with surrounding grade. Top of foundation for Type P, R and S cabinets shall be 3½" above surrounding grade.
8. The steel pedestal, base plate, bolt circle and foundation for Type G cabinet shall be the same as that shown for a Type 1-C Standard (see ES-7B). Pedestal shall be 2'-1" to 2'-6" in length. Anchor bolts shall be ¾" ø x 1'-6" with a 2" - 90° bend. Four bolts required per cabinet.
9. Type G cabinet shall be provided with a slipfitter to permit mounting on 4½" outside diameter pedestal. Slipfitter shall be bolted to bottom of the cabinet.
10. Type G cabinet shall be provided with 8 screened, rain tight holes, ½" diameter or larger, in the bottom of the cabinet.
11. A 1" drain shall be provided through the foundation of a Type M or Model 336L cabinet. Drain pipe shall be screened.
12. See Table for cabinet and foundation dimensions; "D" = Depth, "H" = Height and "W" = Width.
13. Cabinet shelves shall be adjustable for vertical spacing and shall be removable. Type M, P, R and S cabinets shall be provided with a minimum of two shelves.
14. Anchor bolts for Type M, P, R, S and Model 336L cabinets shall be ¾" ø x 1'-6" with a 2" - 90° bend.
15. An approved mastic or caulking compound shall be placed on the foundation prior to placing the cabinet to seal openings between bottom of cabinet and foundation.
16. Controller units, plug-mounted equipment, shelf-mounted equipment and wall-mounted equipment shall be located to permit safe and easy removal or replacement without removing any other piece of equipment.
17. Cabinet fan may be installed at an alternate location near the top of the cabinet when approved by the Engineer.
18. Where telephone interconnect is required, a minimum of 5" clear vertical space shall be provided inside the cabinet for the equipment.
19. Telephone interconnect conductors shall be enclosed in a ¾"C or larger conduit through the foundation. Type 4 conduit shall be used to separate telephone and power conductors in cabinets and pedestals.
20. For Model 332L, 334L, 334LC and 336L cabinets details, see "Traffic signal controller equipment specifications".
21. For Model 332L, 334L and 334LC without a battery backup system.

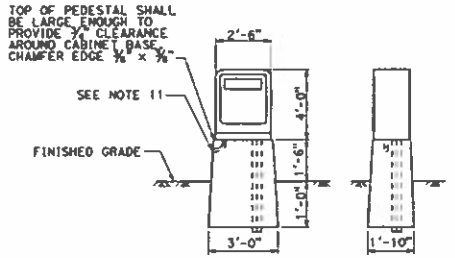


FOUNDATION FOR TYPE G CABINET
DETAIL A

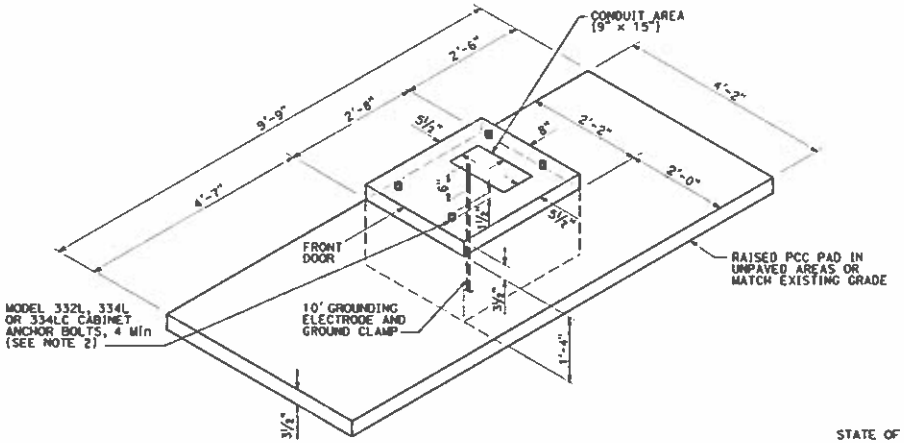


FOUNDATION FOR TYPE P, R AND S CABINETS
DETAIL B

CABINET TYPE	FOUNDATION		
	"W"	"H"	"D"
G	2'-0"	3'-6"	2'-0"
M	3'-2"	2'-6"	1'-6"
P	4'-4½"	1'-6"	2'-4"
R	4'-2"	1'-6"	2'-4"
S	5'-11½"	1'-6"	2'-4"



PEDESTAL FOUNDATION FOR TYPE M OR MODEL 336L CABINET
DETAIL C



FOUNDATION DETAIL
See Note 21
DETAIL D

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CONTROLLER CABINET FOUNDATION DETAILS)

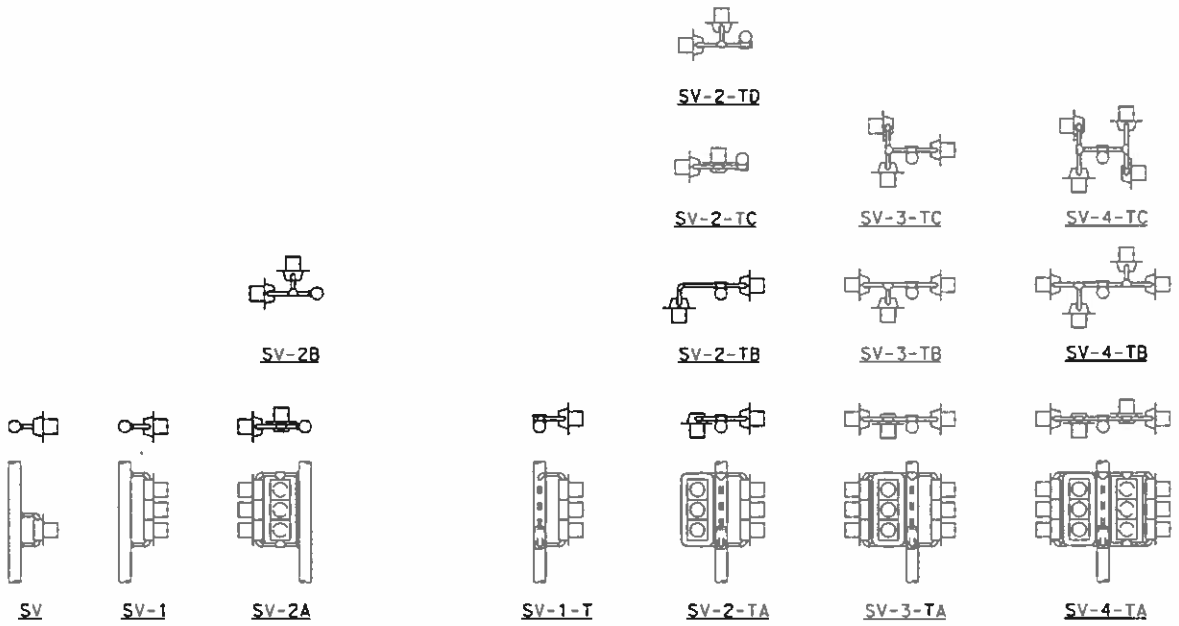
NO SCALE

ES-3C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

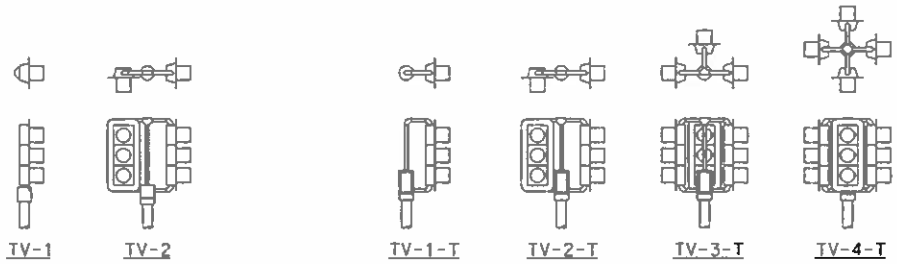
Jeffrey F. McRae
REGISTERED ELECTRICAL ENGINEER
May 20, 2011
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Jeffrey F. McRae — Electrical — No. E-30-12 — ELECTRICAL — STATE OF CALIFORNIA



PLAN VIEW OF OTHER SIDE MOUNTINGS

SIDE MOUNTINGS



PLAN VIEW OF TOP MOUNTINGS

TOP MOUNTINGS

ABBREVIATIONS:

SV	SIDE MOUNTED SIGNAL HEADS
T	TERMINAL COMPARTMENT
TV	TOP MOUNTED SIGNAL HEADS
1, 2, 3, 4	NUMBER OF SIGNAL FACES (3 - SECTION, UNLESS OTHERWISE INDICATED)
A, B, C, D	CONFIGURATION OF SIGNALS

NOTES:

1. Mountings shall be oriented to provide maximum horizontal clearance to adjacent roadway.
2. Bracket arms shall be long enough to permit proper alignment of signals and backplate installation.
3. See Revised Standard Plans RSP ES-4D and RSP ES-4E for attachment fitting details.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER
October 30, 2015
PLANS APPROVAL DATE

Registered Professional Engineer Theresa Aziz Gabriel No. E15129 Exp. 6-30-16 Electrical State of California

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

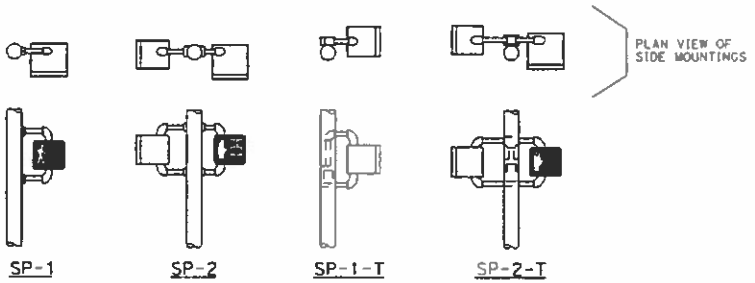
NO SCALE

RSP ES-4A DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-4A DATED JULY 19, 2013 AND STANDARD PLAN ES-4A DATED MAY 20, 2011 - PAGE 443 OF THE STANDARD PLANS BOOK DATED 2010.

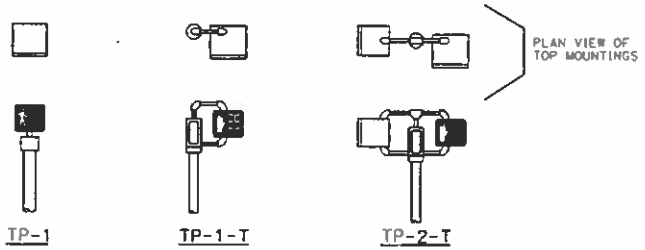
REVISED STANDARD PLAN RSP ES-4A

2010 REVISED STANDARD PLAN RSP ES-4A

9-29-15

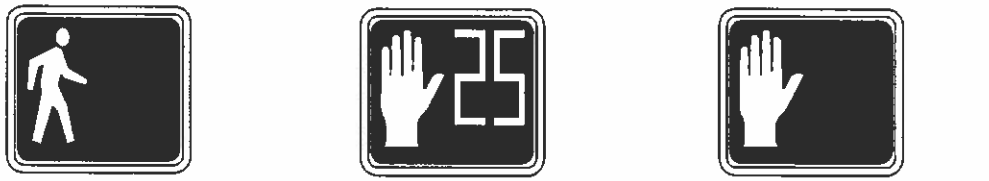


SIDE MOUNTINGS



TOP MOUNTINGS

PEDESTRIAN SIGNAL HEAD MOUNTINGS
DETAIL A



PERSON WALKING INTERVAL FLASHING UPRAISED HAND INTERVAL STEADY UPRAISED HAND INTERVAL

LED COUNTDOWN PEDESTRIAN SIGNAL FACE MODULE
DETAIL B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED ELECTRICAL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

NOTES:

1. Mounting shall be oriented to provide maximum horizontal clearance to adjacent roadway.
2. Bracket arms shall be long enough to permit proper alignment of signals.
3. See Revised Standard Plan RSP ES-4D for attachment fittings details.

ABBREVIATIONS:

1, 2	NUMBER OF SIGNAL FACES
SP	SIDE MOUNTED PEDESTRIAN SIGNAL
T	TERMINAL COMPARTMENT
TP	TOP MOUNTED PEDESTRIAN SIGNAL

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (PEDESTRIAN SIGNAL HEADS)

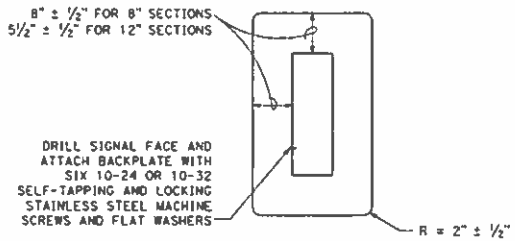
NO SCALE

RSP ES-4B DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-4B DATED JULY 19, 2013 AND STANDARD PLAN ES-4B DATED MAY 20, 2011 - PAGE 444 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-4B

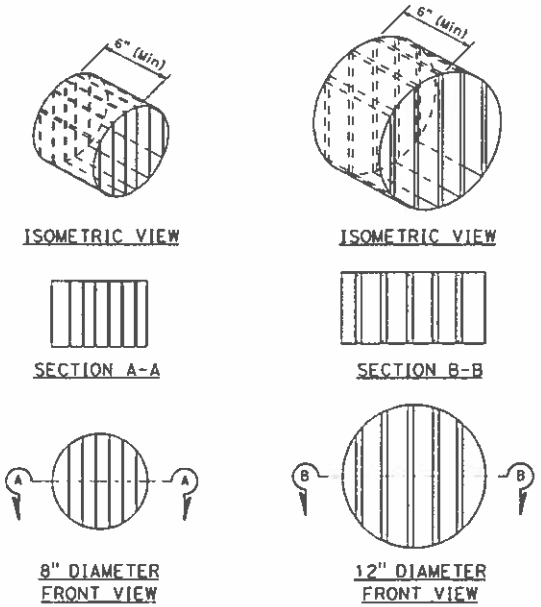
2010 REVISED STANDARD PLAN RSP ES-4B

VISORS



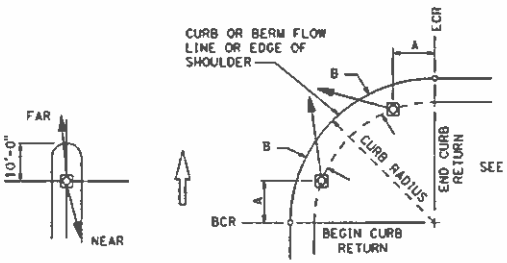
8" AND 12" SECTIONS

BACKPLATE



DIRECTIONAL LOUVER

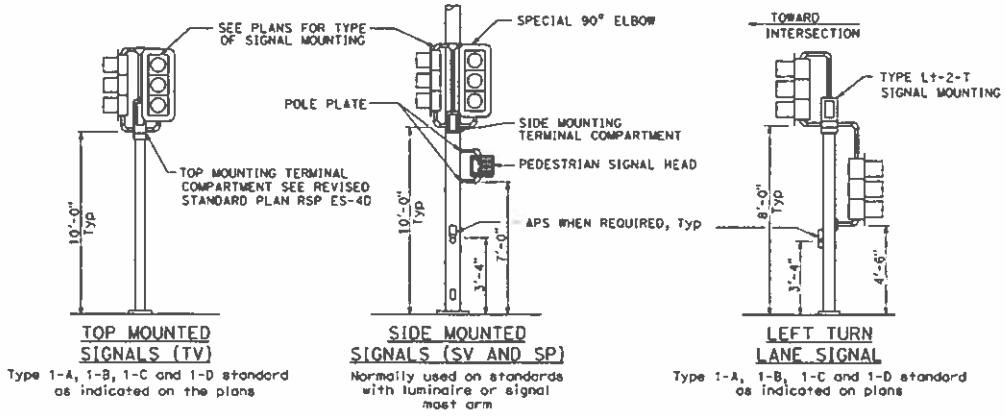
Directional louvers shall be oriented and secured in place with one plated brass machine screw and nut.



NOTES:

1. Typical signal pole placement unless dimensioned on plans.
2. For A and B dimensions, see Pole Schedule.

SIGNAL STANDARD PLACEMENT DIMENSIONS AND EQUIPMENT LOCATIONS



TOP MOUNTED SIGNALS (TV)

Type 1-A, 1-B, 1-C and 1-D standard as indicated on the plans

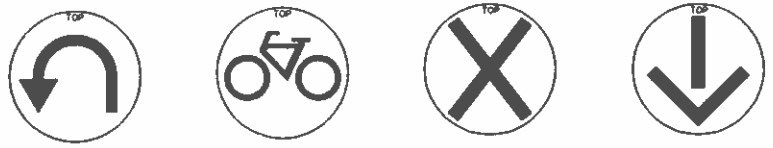
SIDE MOUNTED SIGNALS (SV AND SP)

Normally used on standards with luminaire or signal mast arm

LEFT TURN LANE SIGNAL

Type 1-A, 1-B, 1-C and 1-D standard as indicated on plans

TYPICAL SIGNAL HEAD INSTALLATIONS



U-TURN | BICYCLE | LANE CONTROL | LANE CONTROL

SIGNAL FACES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND MOUNTINGS)

NO SCALE

RSP ES-4C DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-4C DATED JULY 19, 2013 AND STANDARD PLAN ES-4C DATED MAY 20, 2011 - PAGE 445 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-4C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

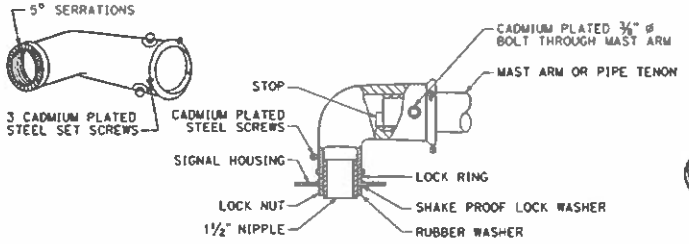
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Theresa Aziz Gabriel
E15129
Exp. 6-30-16
ELECTRICAL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

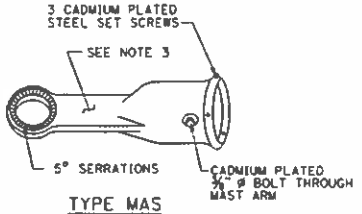
TO ACCOMPANY PLANS DATED _____

2010 REVISED STANDARD PLAN RSP ES-4C

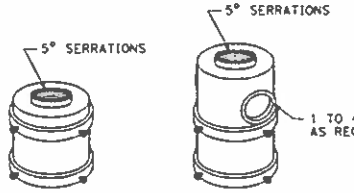
9-29-15



TYPE MAT
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.

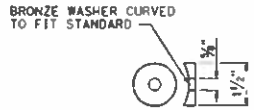


TYPE MAS
MAST ARM MOUNTING
For 2 NPS pipe, see Note 1.

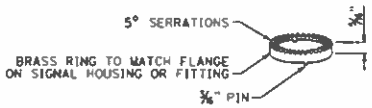


TOP MOUNTINGS
For 4 NPS pipe, see Note 2.

SIGNAL SLIP FITTERS



DETAIL C



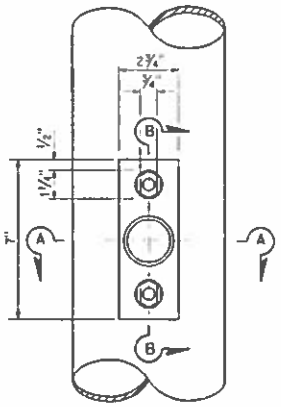
LOCK RING
Use where locking ring is not integral With signal housing or fitting.

SPECIAL 90° ELBOW
One for each signal head, except those With special slip fitter mounting

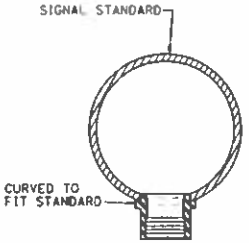
NOTES:

1. After mast arm signal has been plumbed and secured, drill 1/8" hole through mast arm tenon in line with slip fitter hole. Place a cadmium plated 3/8" ø galvanized bolt with washer under bolt head through hole and secure with washer, nut, and locknut. Seal openings between mast arm mountings and mast arm with mastic.
2. (A) Threaded top mounted slip fitter openings shall be 1½" NPS.
   (B) Serrations in fittings shall match those on bottom of signal heads or in lock ring.
   (C) Top opening shall be offset when backplate is used.
3. Wireway shall have a cross section area of 0.95 square inch minimum. Minimum width of ½".

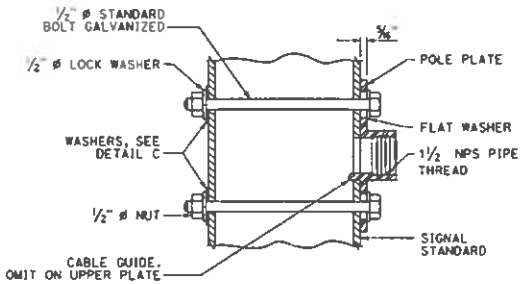
MISCELLANEOUS MOUNTING HARDWARE



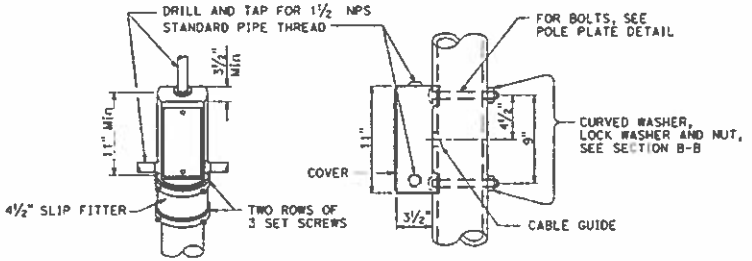
TOP VIEW



SECTION A-A



SECTION B-B



TOP MOUNTING SIDE MOUNTING

TERMINAL COMPARTMENT

POLE PLATE FOR SIDE MOUNTED SIGNAL HEAD WITHOUT TERMINAL COMPARTMENT

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER
October 30, 2015
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.
Theresa Aziz Gabriel E15179 exp. 6-30-16 ELECTRICAL STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEAD MOUNTING)

NO SCALE

RSP ES-4D DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-4D DATED MAY 20, 2011 - PAGE 446 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-4D

2010 REVISED STANDARD PLAN RSP ES-4D

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

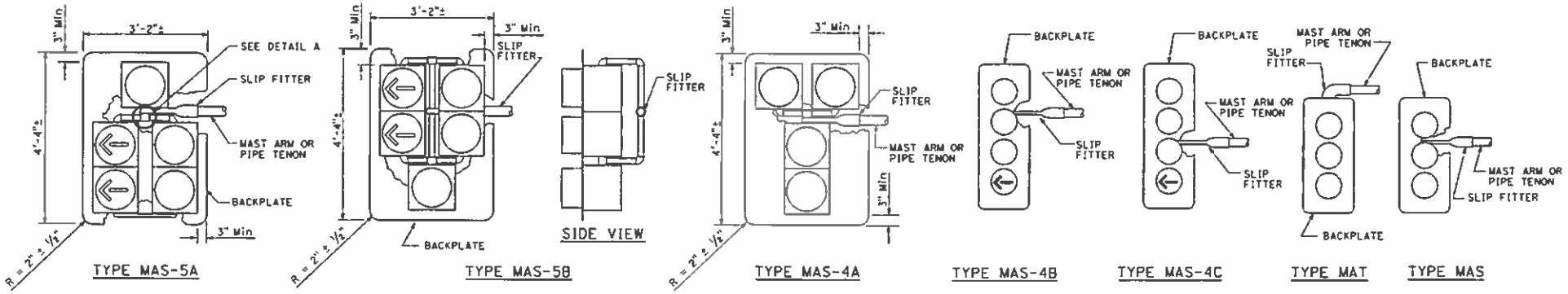
Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

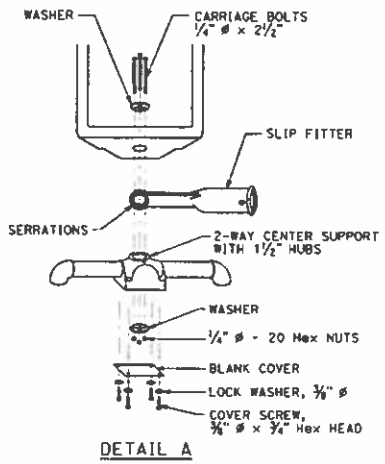
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Theresa Aziz Gabriel — No. E15129 — Exp. 6-30-16 — ELECTRICAL — STATE OF CALIFORNIA

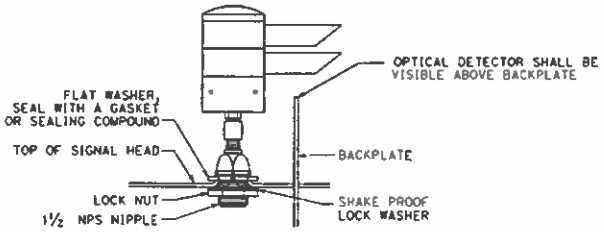
TO ACCOMPANY PLANS DATED _____



MAST ARM MOUNTINGS



DETAIL A



OPTICAL DETECTOR MOUNTING FOR EMERGENCY VEHICLE DETECTION

DETAIL B

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL HEADS AND OPTICAL DETECTOR MOUNTING)

NO SCALE

RSP ES-4E DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-4E DATED JULY 19, 2013 AND STANDARD PLAN ES-4E DATED MAY 20, 2011 - PAGE 447 OF THE STANDARD PLANS BOOK DATED 2010.

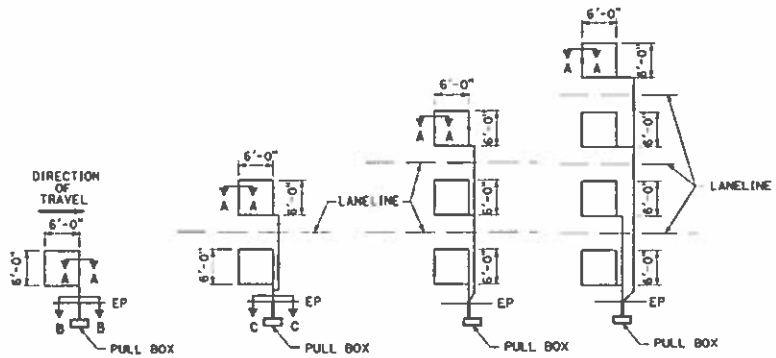
REVISED STANDARD PLAN RSP ES-4E

2010 REVISED STANDARD PLAN RSP ES-4E

4-19-13

LOOP INSTALLATION PROCEDURE

1. Loops shall be centered in lanes.
2. Saw slots in pavement for loop conductors as shown in details.
3. Distance between side of loop and a lead-in saw cut from adjacent detectors shall be 2'-0" minimum. Distance between lead-in saw cuts shall be 6" minimum.
4. Bottom of saw slot shall be smooth with no sharp edges.
5. Slots shall be washed until clean, blown out and thoroughly dried before installing loop conductors.
6. Adjacent loops on the same sensor unit channel shall be wound in opposite directions.
7. Identify and tag loop circuit pairs in the pull box with loop number, start (S) and finish (F) of conductor. Identify and tag lead-in-cable with sensor number and phase.
8. Install loop conductor in slot using a ⅜" to ½" thick wood paddle. Hold loop conductors with wood paddles (at the bottom of the sawed slot) during sealant placement.
9. No more than 2 twisted pairs shall be installed in one sawed slot.
10. Allow additional 5'-0" of slack length of conductor for the lead-in run to pull box.
11. The additional length of each conductor for each loop shall be twisted together into a pair (2 turns per foot minimum) before being placed in the slot and conduit leading to the pull box.
12. Test each loop circuit for continuity, circuit resistance and insulation resistance at the pull box before filling slots.
13. Fill slots as shown in details.
14. Splice loop conductors to lead-in-cable. Splices shall be soldered.
15. End of lead-in-cable and Type 2 loop conductor shall be waterproofed prior to installing in conduit to prevent moisture from entering the cable.
16. Lead-in-cable shall not be spliced between the pull box and the controller cabinet terminals.
17. Test each loop circuit for continuity, circuit resistance and insulation resistance at the controller cabinet location.
18. Where loop conductors are not to be spliced to a lead-in-cable, the ends of the conductors shall be taped and waterproofed with electrical insulating coating.



TYPE 1A INSTALLATION | TYPE 2A INSTALLATION | TYPE 3A INSTALLATION | TYPE 4A INSTALLATION

SAWCUT DETAILS

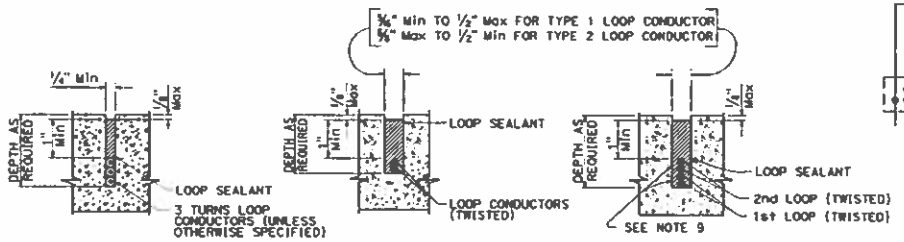
Type A loop detector configurations illustrated

1. 1A thru 4A = 1 Type A loop configuration in each lane.
2. 1B thru 4B = 1 Type B loop configuration in each lane.
3. 1C = 1 Type C loop configuration entering lanes as required.
4. 1D thru 4D = 1 Type D loop configuration in each lane.
5. 1E thru 4E = 1 Type E loop configuration in each lane.
6. 1Q thru 4Q = 1 Type Q loop configuration in each lane.

Use Type A, B, C, D, E or Q loop detector configurations only when specified or shown on plans.

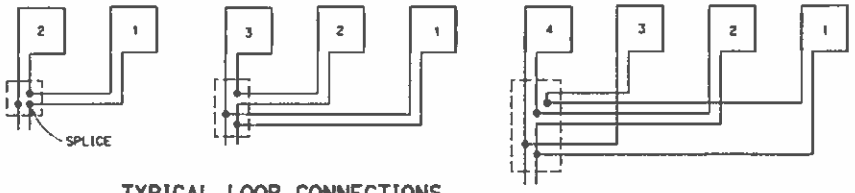
WINDING DETAILS

See Notes 6 and 7



SECTION A-A | SECTION B-B | SECTION C-C

SLOT DETAILS - TYPE 1 AND TYPE 2 LOOP CONDUCTOR



TYPICAL LOOP CONNECTIONS

Dashed lines represent the pull box

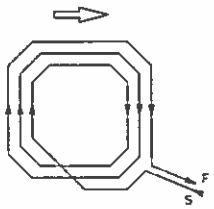
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (DETECTORS)

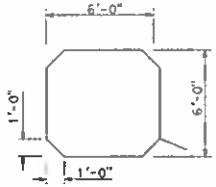
NO SCALE

ES-5A

2010 STANDARD PLAN ES-5A

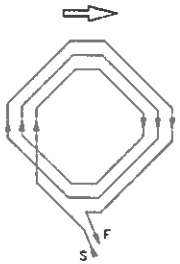


WINDING DETAIL

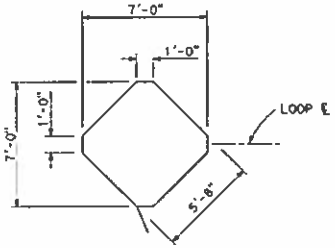


SAW CUT DETAIL

TYPE A LOOP DETECTOR CONFIGURATION

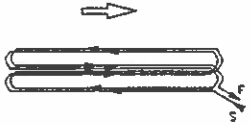


WINDING DETAIL

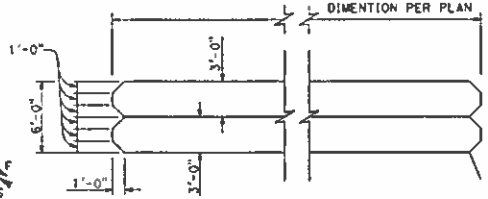


SAW CUT DETAIL

TYPE B LOOP DETECTOR CONFIGURATION

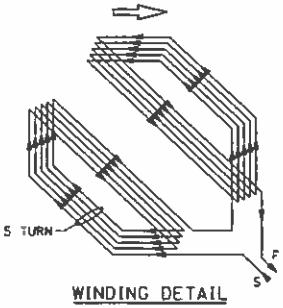


WINDING DETAIL

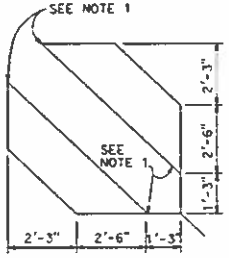


SAW CUT DETAIL

TYPE C LOOP DETECTOR CONFIGURATION

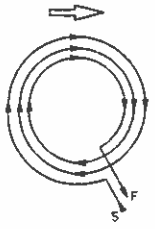


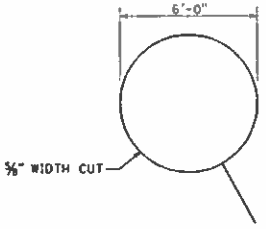
WINDING DETAIL



SAW CUT DETAIL

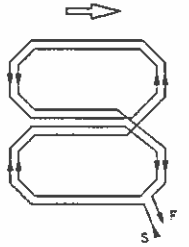
TYPE D LOOP DETECTOR CONFIGURATION

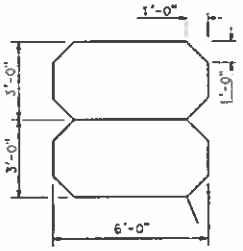




WINDING DETAIL SAW CUT DETAIL

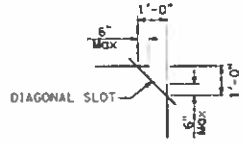
TYPE E LOOP DETECTOR CONFIGURATION





WINDING DETAIL SAW CUT DETAIL

TYPE Q LOOP DETECTOR CONFIGURATION



PLAN VIEW OF DIAGONAL SLOT AT CORNERS

NOTES:

1. Round corners of acute angle saw cuts to prevent damage to conductors.
2. Typical distance separating loops from edge to edge is 10' for Type A, B, D and E installation in single lane.
3. Use Type D loops for limit line detection and bicycle lanes.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER Theresa Aziz Gabriel E15129 Exp. 6-30-16 ELECTRICAL STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (DETECTORS)

NO SCALE

RSP ES-5B DATED APRIL 15, 2016 SUPERSEDES RSP ES-5B DATED OCTOBER 30, 2015 AND RSP ES-5B DATED JULY 19, 2013 AND STANDARD PLAN ES-5B DATED MAY 20, 2011 - PAGE 449 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-5B

2010 REVISED STANDARD PLAN RSP ES-5B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

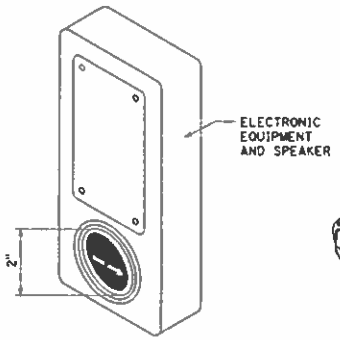
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Theresa Aziz Gabriel E15129 6-30-16 ELECTRICAL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

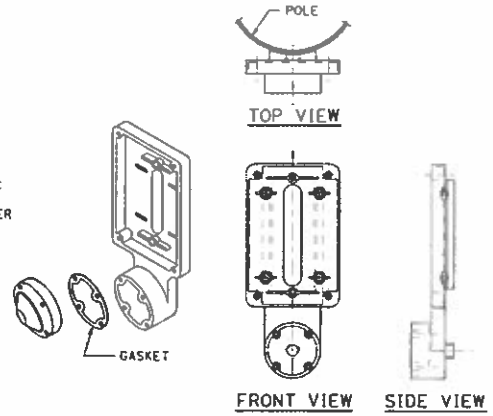
TO ACCOMPANY PLANS DATED _____

NOTES:

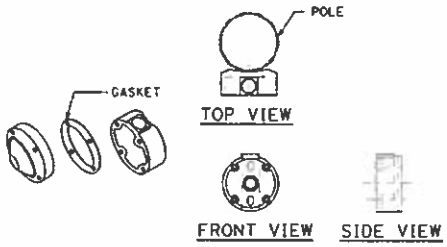
1. Back casting shape to fit curvature of pole.
2. Provide cover fitting for top of post, when PBA is mounted on push button assembly post.
3. Install push button on crosswalk side of standard.
4. Use R10 series regulatory signs and plaques for pedestrian and bicycle facilities.



ACCESSIBLE PEDESTRIAN SIGNAL
DETAIL A



TYPE B PUSH BUTTON ASSEMBLY
DETAIL B



TYPE C PUSH BUTTON ASSEMBLY
DETAIL C

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ACCESSIBLE PEDESTRIAN SIGNAL AND PUSH BUTTON ASSEMBLIES)

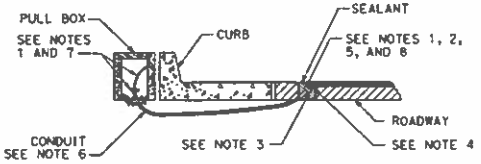
NO SCALE

RSP ES-5C DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-5C DATED JULY 19, 2013 AND STANDARD PLAN ES-5C DATED MAY 20, 2011 - PAGE 450 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-5C

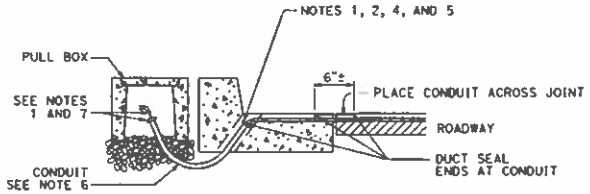
2010 REVISED STANDARD PLAN RSP ES-5C

8-24-15

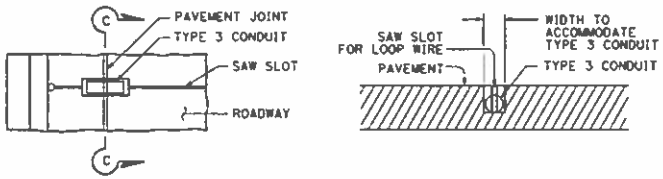


TYPE A

CURB TERMINATION DETAIL



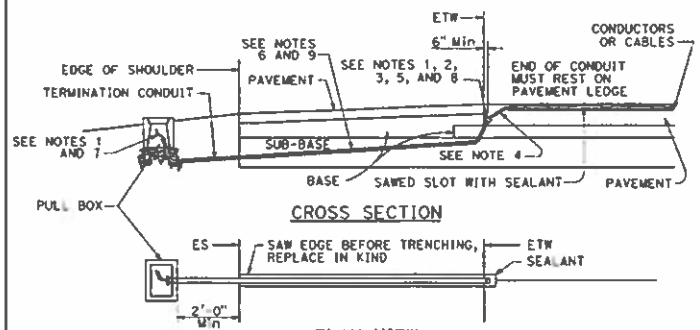
CROSS SECTION



PLAN VIEW SECTION C-C

TYPE B

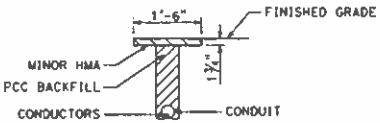
CURB TERMINATION DETAIL



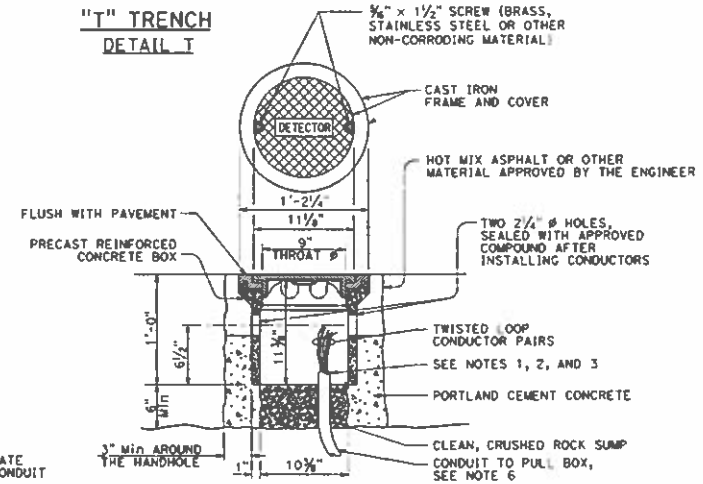
CROSS SECTION

PLAN VIEW

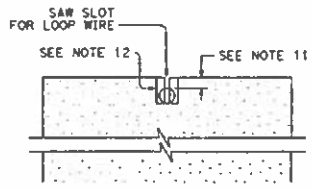
SHOULDER TERMINATION DETAILS



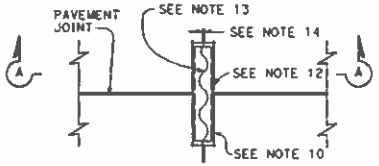
"T" TRENCH
DETAIL T



DETECTOR HANDHOLE DETAIL

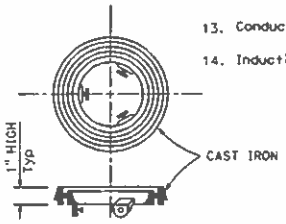


SECTION A-A



PLAN VIEW

TYPICAL LOOP LEAD-IN DETAIL AT PAVEMENT JOINT



LOCKING GRADE RING

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER
October 30, 2015
PLANS APPROVAL DATE
Theresa Aziz Gabriel E15129 Exp. 6-30-16 ELECTRICAL
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

NOTES:

1. Bushing shall be used at end of conduit.
2. Tape detector conductors or cables 3" each side of bushings.
3. Install duct seal compound to each end of termination conduit before installing sealant.
4. Round all sharp edges where detector conductors or cables have to pass.
5. End of conduit shall be 3/8" below roadway surface.
6.

Conduit size	Loop conductors
1"C minimum	1 to 2 pairs
1½"C minimum	3 to 4 pairs
2"C minimum	5 or more pairs

7. Splice detector conductors or cables to detector lead-in-cable.
8. Location of detector handhole when shown on plans.
9. When the shoulder and traveled way are paved with the same material and there is no joint between them, the conduit shall extend only 2'-0" into the shoulder pavement.
10. ¾"C, Type 3 conduit 6" long minimum, plug both ends with duct compound to keep out sealant.
11. ½" Minimum between top of conduit and pavement surface.
12. Sawcut shall not exceed 1" in width and ⅛" longer than conduit to be installed.
13. Conductors with ½" minimum slack inside conduit.
14. Inductive loop detector saw slot.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (CURB AND SHOULDER TERMINATION, TRENCH, AND HANDHOLE DETAILS)

NO SCALE

RSP ES-5D DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-5D DATED JULY 19, 2013 AND STANDARD PLAN ES-5D DATED MAY 20, 2011 - PAGE 451 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-5D

2010 REVISED STANDARD PLAN RSP ES-5D

8-19-15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

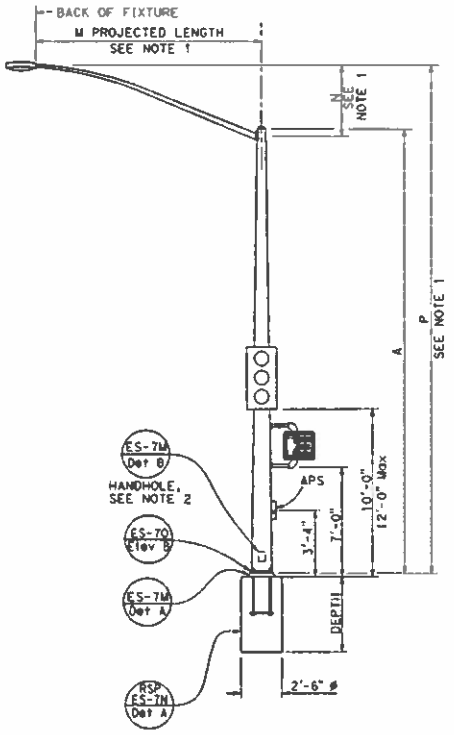
October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

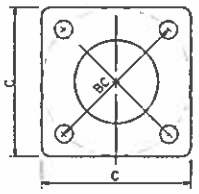
TO ACCOMPANY PLANS DATED _____

NOTES:

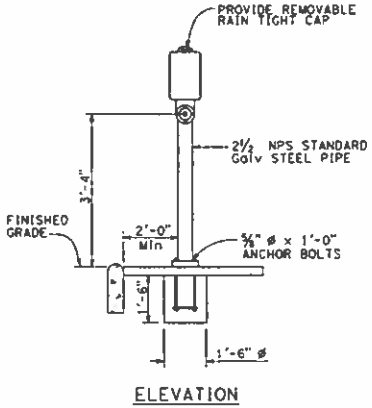
1. For additional notes, details and data for Type 15TS and Type 21TS Standards, see Revised Standard Plan RSP ES-6A.
2. Handhole shall be located on the downstream side of traffic.



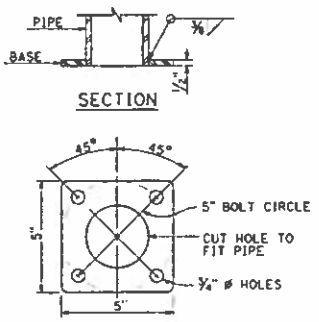
TYPE 15TS AND 21TS STANDARD
ELEVATION A
(See Note 1)



BASE PLATE
TYPE 15TS AND 21TS
DETAIL A

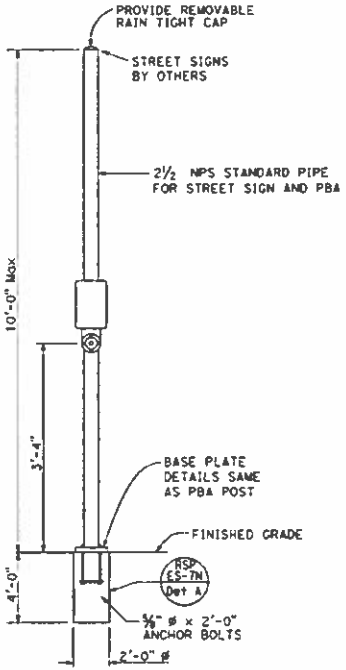


ELEVATION



BASE PLATE
PBA POST

PUSH BUTTON ASSEMBLY POST
DETAIL B



COMBINED STREET SIGN
PUSH BUTTON ASSEMBLY POST
DETAIL C

POLE TYPE	POLE DATA				BASE PLATE DATA				CIDH
	A HEIGHT	Min OD BASE	Min OD TOP	WALL THICKNESS	C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	DEPTH
15TS	30'-0"	8"	3⅛"	0.1793"	1'-1½"	1'-0"	2"	1½" ø x 42"	7'-6"
21TS	35'-0"	9⅜"	3⅛"		1'-3"	1'-2"			8'-6"

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

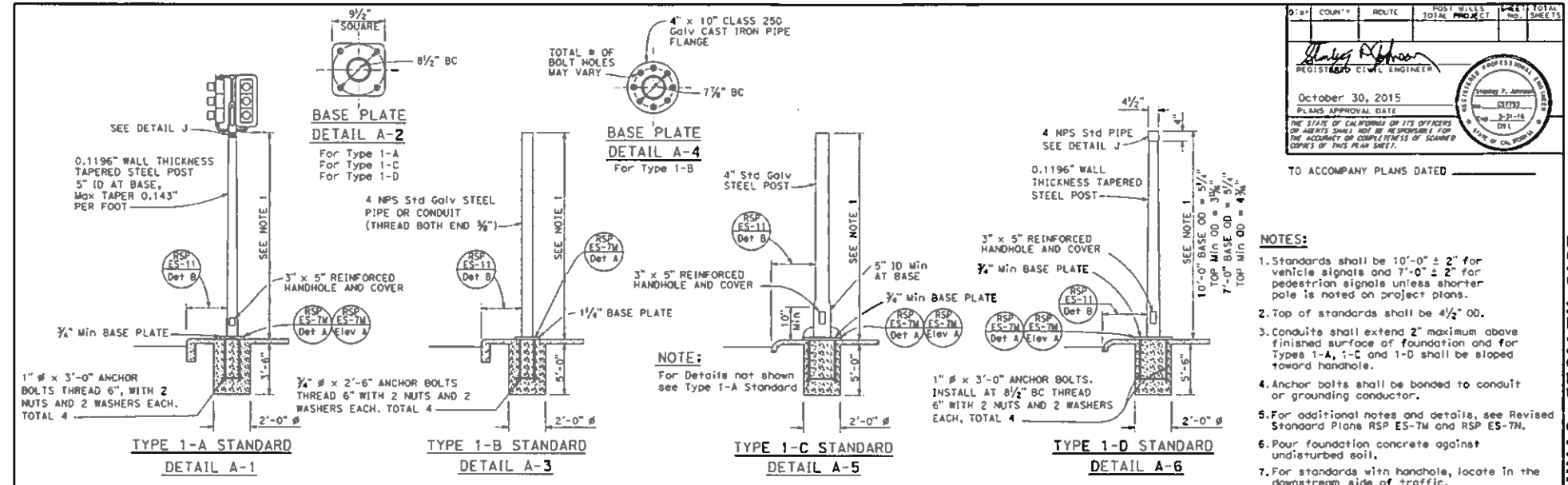
ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, TYPE TS, AND PUSH BUTTON ASSEMBLY POST)

NO SCALE

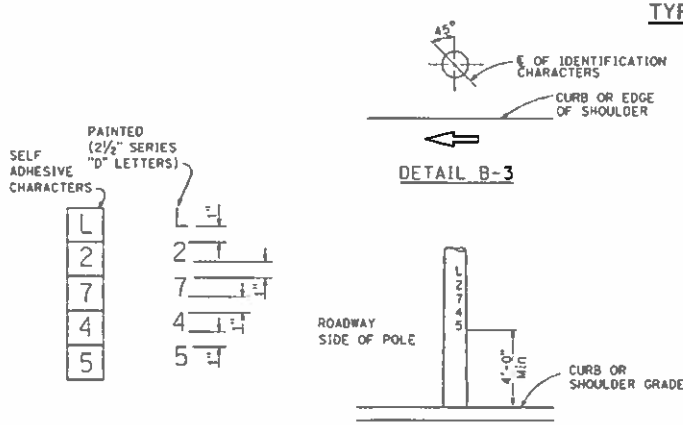
RSP ES-7A DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-7A DATED JULY 19, 2013 AND STANDARD PLAN ES-7A DATED MAY 20, 2011 - PAGE 462 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-7A

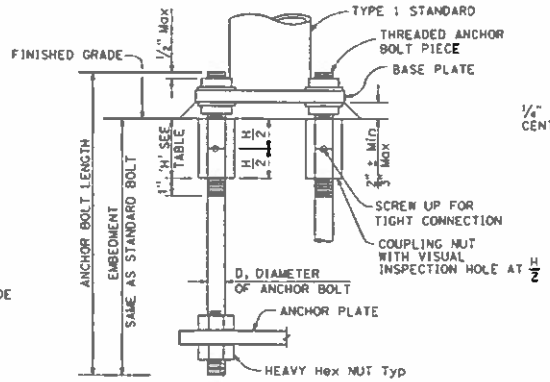
2010 REVISED STANDARD PLAN RSP ES-7A



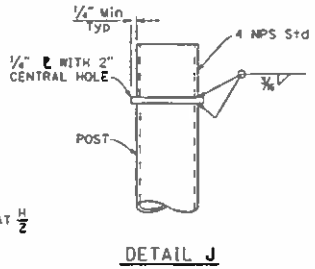
TYPE 1 SIGNAL STANDARDS
DETAIL A



LOCATION OF EQUIPMENT IDENTIFICATION CHARACTERS ON STANDARDS AND POSTS
DETAIL B



ANCHOR BOLTS WITH SLEEVE NUTS
DETAIL C
(See Note 8)



DETAIL J

COUPLING NUT TABLE	
BOLT DIAMETER	NUT TABLE THICKNESS 'H'
¾"	2⅛"
1"	3"

NOTES:

1. Standards shall be 10'-0" ± 2" for vehicle signals and 7'-0" ± 2" for pedestrian signals unless shorter pole is noted on project plans.
2. Top of standards shall be 4½" OD.
3. Conduits shall extend 2" maximum above finished surface of foundation and for Types 1-A, 1-C and 1-D shall be sloped toward handhole.
4. Anchor bolts shall be bonded to conduit or grounding conductor.
5. For additional notes and details, see Revised Standard Plans RSP ES-7M and RSP ES-7N.
6. Pour foundation concrete against undisturbed soil.
7. For standards with handhole, locate in the downstream side of traffic.
8. Coupling nuts to be used only when shown or specified on project plans.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

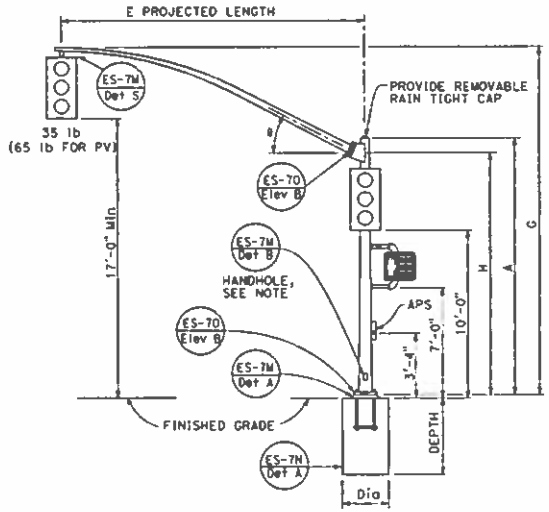
ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, TYPE 1 AND EQUIPMENT IDENTIFICATION CHARACTERS)

NO SCALE

RSP ES-7B DATED OCTOBER 30, 2015 SUPERSEDES STANDARD PLAN ES-7B DATED MAY 20, 2011 - PAGE 463 OF THE STANDARD PLANS BOOK DATED 2010.

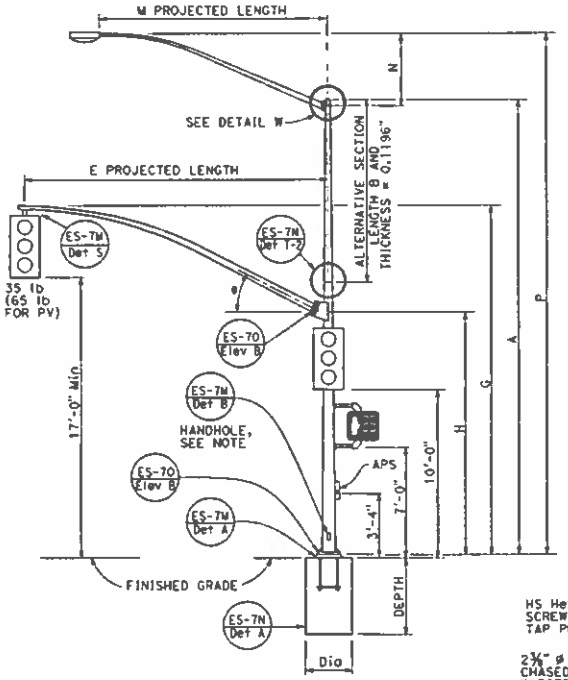
REVISED STANDARD PLAN RSP ES-7B

2010 REVISED STANDARD PLAN RSP ES-7B



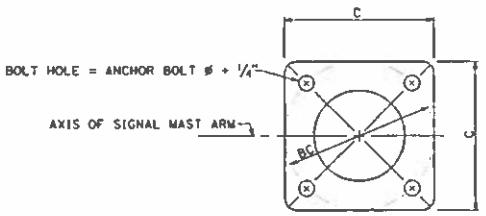
TYPE 16-1-100, 18-1-100

ELEVATION A



TYPE 19-1-100, 19A-1-100

ELEVATION B



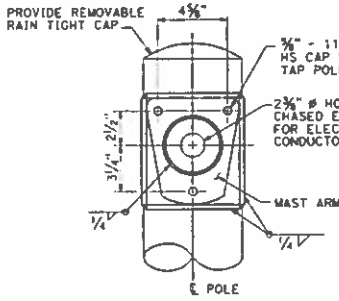
BASE PLATE

DETAIL D

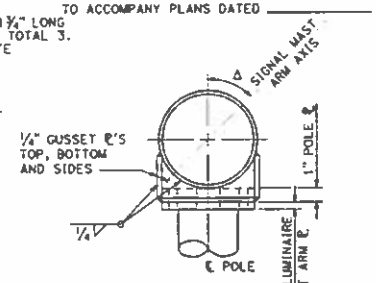
Δ = LUMINAIRE MAST ARM SKEW -90° TO +90°
DEFAULT 0°

NOTE:

Handhole shall be located on the downstream side of traffic.



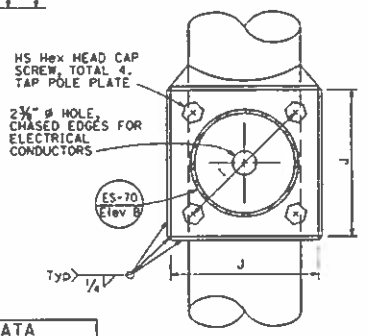
DETAIL W-1



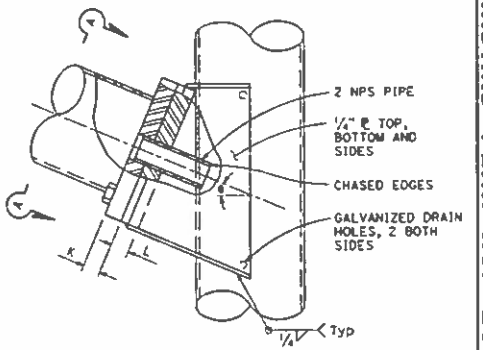
DETAIL W-2

LUMINAIRE MAST ARM CONNECTION

DETAIL W



VIEW A-A



ELEVATION C

SIGNAL MAST ARM CONNECTION

DETAIL C

SIGNAL MAST ARM DATA										
E PROJECTED LENGTH	C MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	J BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ
15'-0"	21'-8"±	17'-6"	7 3/8"	0.1196"	12"	1 1/4"-7NC-3"	1'-0"	1 1/4"	1 1/2"	23°
20'-0"										
25'-0"	22'-8"±	16'-0"								
30'-0"	23'-0"±		8"							

LUMINAIRE MAST ARM DATA						
M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT	
				30'-0" POLE	35'-0" POLE
6'-0"	2'-0"±	3 1/4"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3 1/2"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3 5/8"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4 1/4"		34'-3"±	39'-3"±

POLE DATA								BASE PLATE DATA				LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION		
POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	A HEIGHT	Min OD		THICKNESS	ALTERNATIVE SECTION			C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE			DIAMETER	DEPTH	REINFORCED
				BASE	TOP		B LENGTH	BOTTOM	TOP									
16-1-100	I	100	18'-6"	10 3/4"	8 1/8"	0.1793"	None			1'-5 1/2"	1'-5 1/2"	3"	1 1/2" ø × 42"	NONE	15'-0", 20'-0"	2'-6"	9'-0"	YES
18-1-100			17'-0"		8 5/8"		None							NONE				
19-1-100			30'-0"		6 1/8"		10'-0"	7 1/8"	6 1/8"					6'-15" 12'-0"	25'-0", 30'-0"			
19A-1-100			35'-0"		5 5/8"		15'-0"		5 5/8"					6'-15" 15'-0"				

INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

October 30, 2015

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 1 SIGNAL MAST ARM LOADING, WIND VELOCITY = 100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 30')

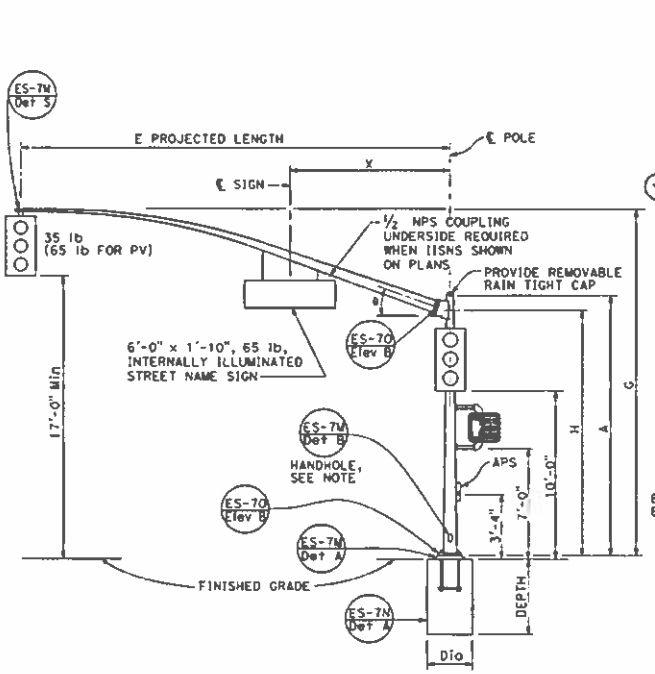
NO SCALE

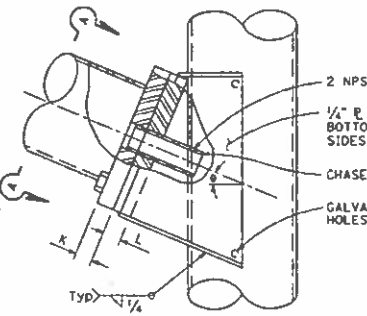
RSP ES-7C DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-7C DATED JULY 19, 2013 AND STANDARD PLAN ES-7C DATED MAY 20, 2011 - PAGE 464 OF THE STANDARD PLANS BOOK DATED 2010.

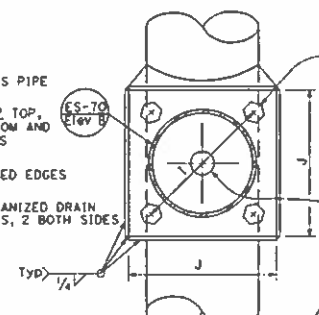
REVISED STANDARD PLAN RSP ES-7C

2010 REVISED STANDARD PLAN RSP ES-7C

6-M-11







NOTE:
Handhole shall be located on the downstream side of traffic.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

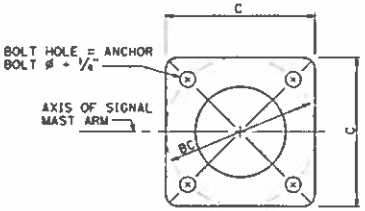
October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

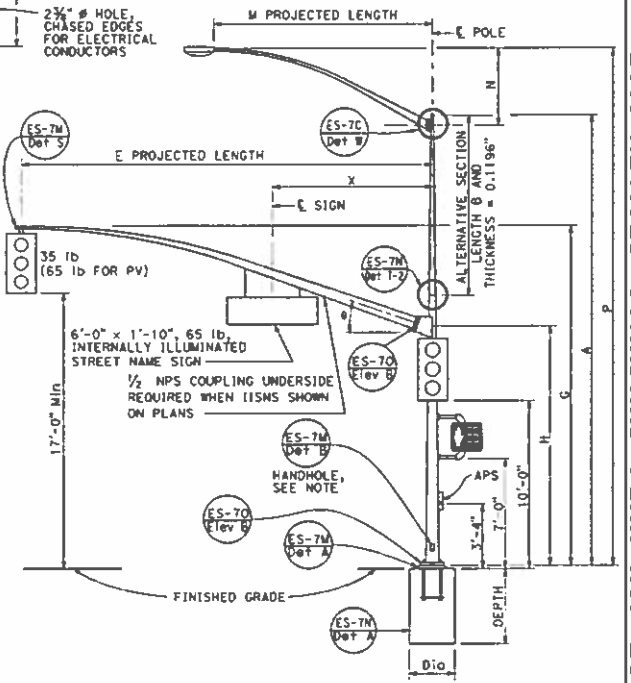
REGISTERED PROFESSIONAL ENGINEER — Bradley P. Johnson — 037795 — 3-31-16 — CIVIL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____

SIGNAL MAST ARM CONNECTION
DETAIL A



BASE PLATE
DETAIL B



TYPE 17-2-100, 17A-2-100, 19-2-100, 19A-2-100
ELEVATION B

SIGNAL MAST ARM DATA

E PROJECTED LENGTH	G MOUNTING HEIGHT	H	Min OD AT POLE	THICKNESS	I BOLT CIRCLE	HS CAP SCREWS	J PLATE SIZE	K MAST ARM ℄ THICKNESS	L POLE ℄ THICKNESS	θ	X Max
15'-0"	21'-8"±	17'-6"	7⅞"	0.1793"	12"	1¼"-7NC-3"	1'-0"	1¼"	1½"	23°	10'-6"
20'-0"	21'-8"±		7⅞"								
25'-0"	22'-8"±	16'-0"	7⅞"								
30'-0"	23'-0"±		8"								

LUMINAIRE MAST ARM DATA

M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3½"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅛"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA: A HEIGHT	Min OD BASE	Min OD TOP	THICKNESS	ALTERNATIVE SECTION B LENGTH	ALTERNATIVE SECTION BOTTOM	ALTERNATIVE SECTION TOP	BASE PLATE DATA: C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION: DIAMETER	DEPTH	REINFORCED
16-2-100	2	100	18'-6"	10¾"	8⅛"	0.1793"	NONE	7⅛"	6⅞"	1'-5½"	1'-5½"	3"	1½"ø x 42"	NONE	15'-0", 20'-0"	2'-6"	9'-0"	YES
17-2-100			30'-0"		6⅞"		10'-0"							6'-15' 12'-0"				
17A-2-100			35'-0"		5⅝"		15'-0"		5⅝"					6'-15' 15'-0"				
18-2-100			17'-0"		8⅛"		NONE							None	25'-0", 30'-0"			
19-2-100			30'-0"		6⅞"	0.2391"	10'-0"	7⅛"	6⅞"	1'-7"			2"ø x 42"	6'-15' 12'-0"			9'-6"	
19A-2-100			35'-0"		5⅝"		15'-0"		5⅝"					6'-15' 15'-0"				

▭ INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 2 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 30')

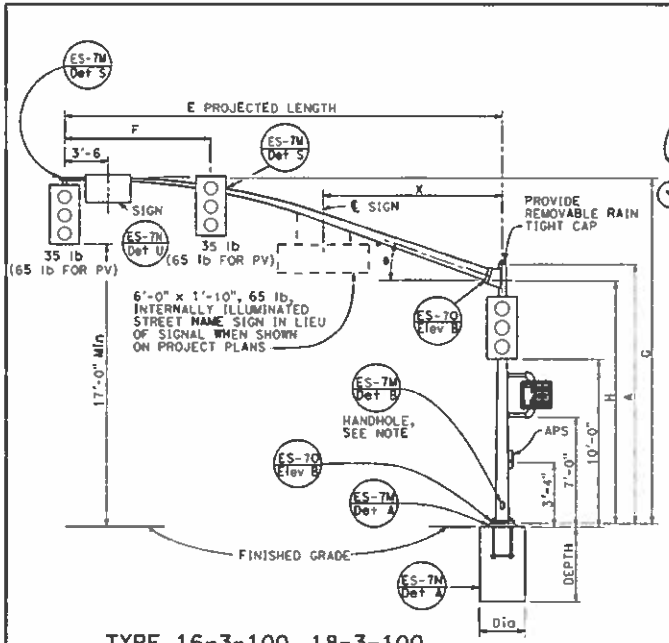
NO SCALE

RSP ES-7D DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-7D DATED JULY 19, 2013 AND STANDARD PLAN ES-7D DATED MAY 20, 2011 – PAGE 465 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-7D

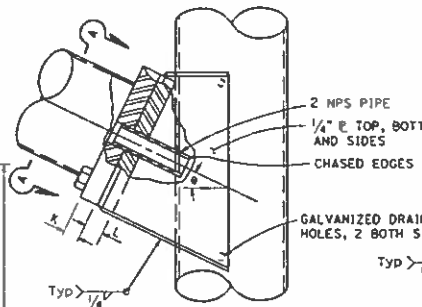
2010 REVISED STANDARD PLAN RSP ES-7D

9-24-13

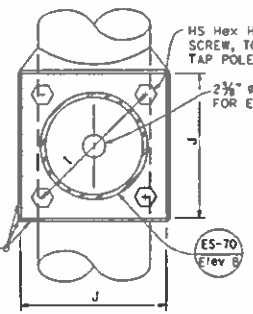


TYPE 16-3-100, 18-3-100, 23-3-100, 27-3-100

ELEVATION A



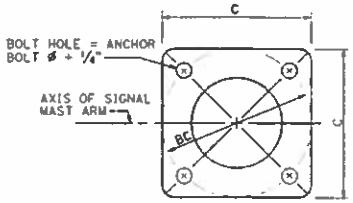
ELEVATION C



VIEW A-A

SIGNAL MAST ARM CONNECTION

DETAIL A

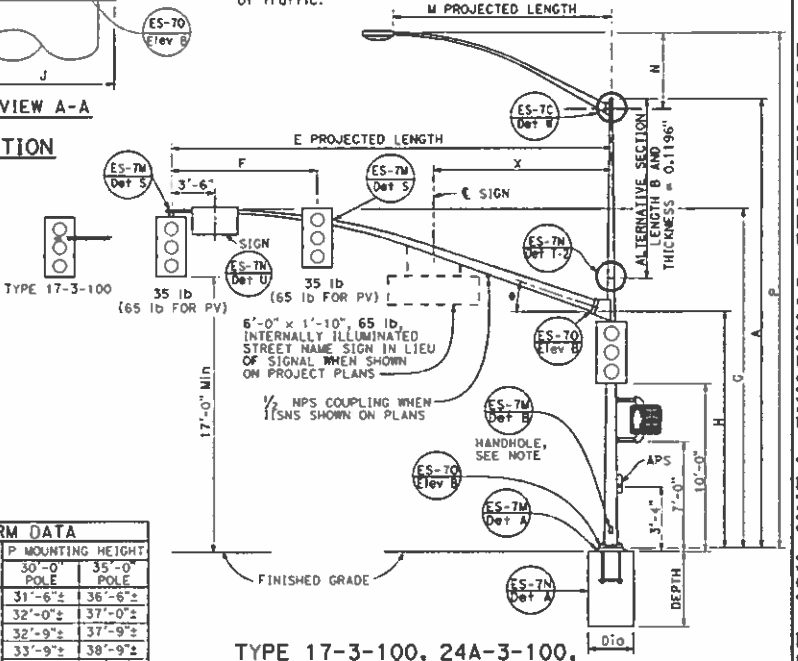


BASE PLATE

DETAIL B

NOTE: TO ACCOMPANY PLANS DATED _____

Handhole shall be located on the downstream side of traffic.



TYPE 17-3-100, 24A-3-100, 19-3-100, 26-3-100, 19A-3-100, 26A-3-100, 24-3-100

ELEVATION B

SIGNAL MAST ARM DATA

E PROJECTED LENGTH	F Min SPACING	G MOUNTING HEIGHT	H	I Min OD AT POLE	THICKNESS	J BOLT CIRCLE	HS CAP SCREWS	K PLATE SIZE	L MAST ARM ℄ THICKNESS	POLE ℄ THICKNESS	θ	X Max
15'-0"	8'-0"	21'-8"±	12'-6"	7¾"	0.1793"	12"	1¼"-7NC-3	1'-0"	1¼"	1½"	23°	-
20'-0"		21'-8"±		7⅞"								
25'-0"	12'-0"	22'-8"±		7⅞"	0.2391"							10'-6"
30'-0"				8"								
35'-0"	14'-0"	23'-0"±	16'-0"	8¼"		13"		1'-1"	1½"	1¾"	21°	
40'-0"	15'-0"			9⅜"							15°	13'-0"
45'-0"		23'-8"±		10⅛"								

LUMINAIRE MAST ARM DATA

M PROJECTED LENGTH	N RISE	Min OD AT POLE	THICKNESS	P MOUNTING HEIGHT 30'-0" POLE	P MOUNTING HEIGHT 35'-0" POLE
6'-0"	2'-0"±	3¼"	0.1196"	31'-6"±	36'-6"±
8'-0"	2'-6"±	3½"		32'-0"±	37'-0"±
10'-0"	3'-3"±	3⅝"		32'-9"±	37'-9"±
12'-0"	4'-3"±			33'-9"±	38'-9"±
15'-0"	4'-9"±	4¼"		34'-3"±	39'-3"±

POLE TYPE	LOAD CASE	WIND VELOCITY (mph)	POLE DATA A HEIGHT	Min OD BASE	Min OD TOP	THICKNESS	ALTERNATIVE SECTION B LENGTH	ALTERNATIVE SECTION BOTTOM	ALTERNATIVE SECTION TOP	BASE PLATE DATA C	BC = BOLT CIRCLE	THICKNESS	ANCHOR BOLT SIZE	LUMINAIRE MAST ARM	SIGNAL MAST ARM	CIDH PILE FOUNDATION DIAMETER	DEPTH	REINFORCED
16-3-100	3	100	18'-6"	10¾"	8⅛"	0.1793"	NONE			1'-5½"	1'-5½"	3"	1½" ø x 42"	NONE	15'-0"	3'-0"	8'-6"	YES
17-3-100			30'-0"		6⅞"		10'-0"	7⅛"	6¾"					6'-15' 12'-0"	20'-0"			
18-3-100			17'-0"		8⅜"	0.2391"	NONE						2" ø x 42"	NONE	25'-0",		9'-6"	
19-3-100			30'-0"	1'-0"	7⅛"		10'-0"	9⅛"	7⅛"	1'-7"				6'-15' 12'-0"	30'-0"			
19A-3-100			35'-0"		6⅝"		15'-0"		6⅝"					6'-15' 15'-0"				
23-3-100			17'-0"		9⅜"		NONE							NONE	35'-0"			
24-3-100			30'-0"		7⅛"		10'-0"	9⅛"	7⅛"					6'-15' 12'-0"				
24A-3-100			35'-0"		6⅝"		15'-0"		6⅝"					6'-15' 15'-0"				
26-3-100			30'-0"	1'-2"	7⅛"	0.3125"	10'-0"	9¼"	7⅛"	1'-11"	1'-9"		2½" ø x 42"	6'-15' 12'-0"	40'-0",	3'-6"	12'-0"	
26A-3-100			35'-0"		7⅛"		15'-0"		7⅛"					6'-15' 15'-0"	45'-0"			
27-3-100			17'-0"		9⅛"		NONE							NONE				

▭ INDICATES MAST ARM LENGTH TO BE USED UNLESS OTHERWISE NOTED ON PLANS.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

October 30, 2015

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARD, CASE 3 SIGNAL MAST ARM LOADING, WIND VELOCITY=100 MPH AND SIGNAL MAST ARM LENGTHS 15' TO 45')

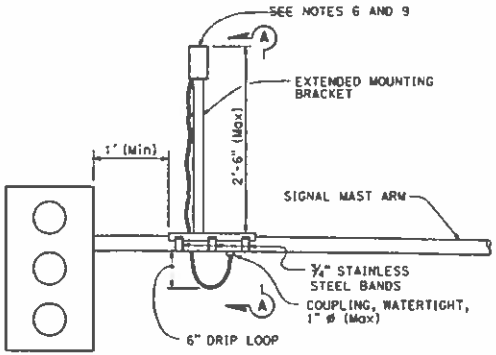
NO SCALE

RSP ES-7E DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-7E DATED JULY 19, 2013 AND ES-7E DATED MAY 20, 2011 - PAGE 466 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-7E

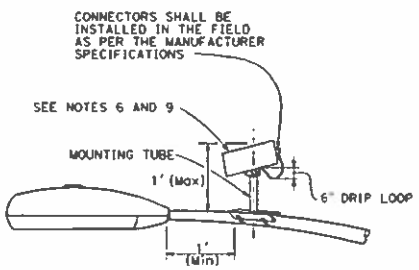
2010 REVISED STANDARD PLAN RSP ES-7E

9-24-15



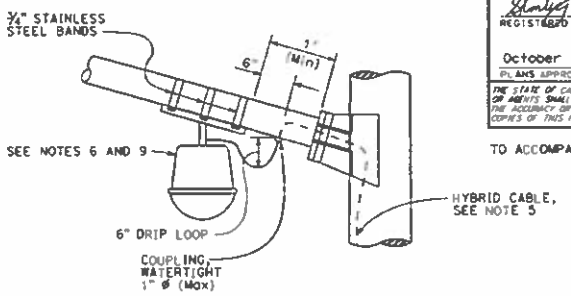
SIGNAL MAST ARM MOUNT

DETAIL A



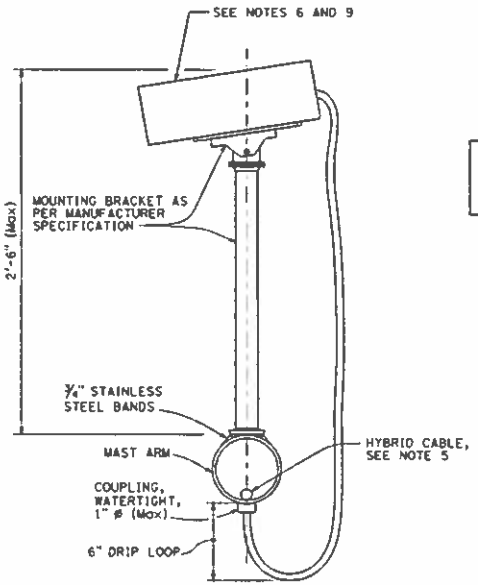
LUMINAIRE MAST ARM MOUNT

DETAIL B

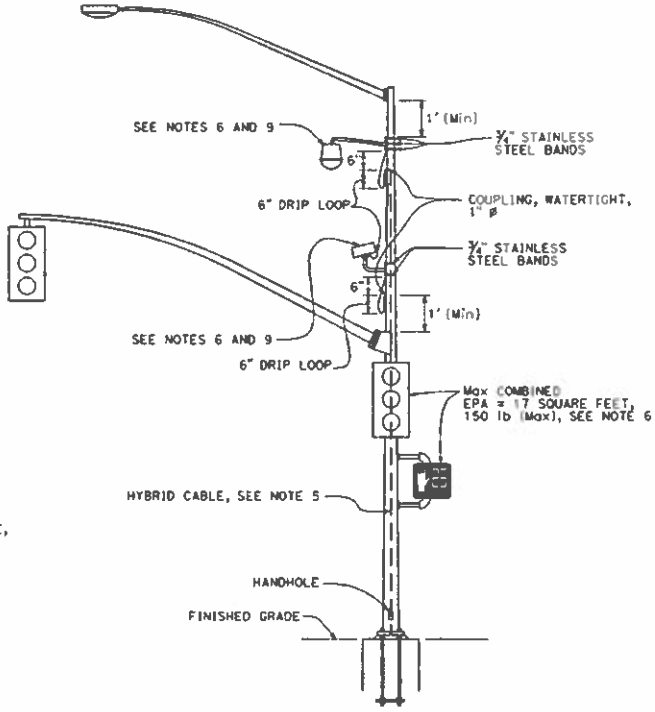


LUMINAIRE MAST ARM MOUNT

DETAIL C



SECTION A-A



SIGNAL POLE MOUNT

DETAIL D

NOTES:

1. Exact mounting location of miscellaneous attachment and bracket shall be approved by the Engineer per manufacturer's recommendation.
2. Location of cable entrances on signal pole shall be a minimum of 1' from any flange or base plate.
3. Hybrid cable entrances on signal pole shall be drilled for weathertight coupling as required.
4. Hybrid cable shall have a drip loop at the entrance into signal pole, luminaire mast arm and signal mast arm.
5. A single hybrid cable shall run continuous and shall not be twisted from the miscellaneous attachment to the controller cabinet. No splices shall be allowed.
6. Use the manufacturer's Effective Projected Area (EPA) for miscellaneous attachment. The maximum EPA for each miscellaneous attachment shall be 1.6 square feet with 10 lb Max.
7. Maximum of two miscellaneous attachments per traffic signal standard.
8. Maximum of one miscellaneous attachment per mast arm.
9. Miscellaneous attachment shall be mounted using clamping devices.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

October 30, 2015
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING, MISCELLANEOUS ATTACHMENT)

NO SCALE

RSP ES-7R DATED OCTOBER 30, 2015 SUPERSEDES RSP ES-7R DATED JULY 19, 2013 AND STANDARD PLAN ES-7R DATED MAY 20, 2011 - PAGE 479 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-7R

2010 REVISED STANDARD PLAN RSP ES-7R

8-21-15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

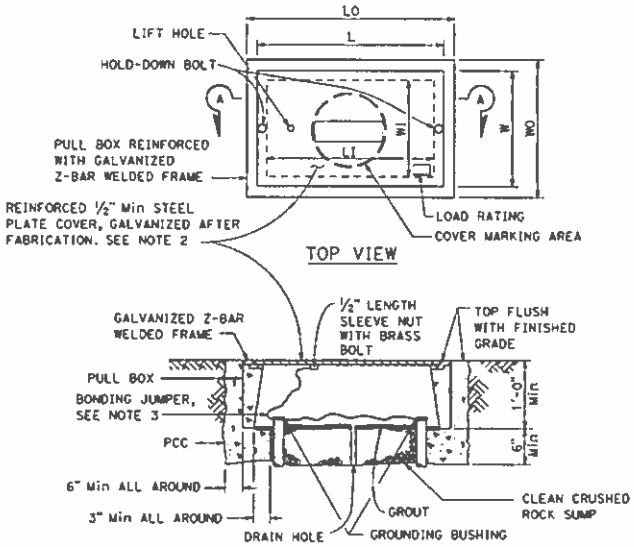
Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

April 15, 2016
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — Theresa Kriz Gabriel — No. E15129 — Exp. 6-30-16 — ELECTRICAL — STATE OF CALIFORNIA

TO ACCOMPANY PLANS DATED _____



SECTION A-A

No. 3½(T), No. 5(T) AND No. 6(T) TRAFFIC PULL BOX

NOTES:

1. Traffic pull box shall be provided with steel cover and special concrete footing. Steel cover shall have embossed non-skid pattern.
2. Steel reinforcing shall be as regularly used in the standard products of the respective manufacturer.
3. Bonding jumper for metal covers shall be 3' long, minimum.
4. The nominal dimensions of the opening in which the cover sets shall be the same as the cover dimensions except the length and width dimensions shall be ⅛" greater.
5. Covers and boxes shall be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces shall be flush within ⅛".

DIMENSION TABLE

PULL BOX	PULL BOX						COVER	
	MINIMUM * THICKNESS	MINIMUM DEPTH BOX AND EXTENSION	LO	LI	WO	WI	L **	W **
No. 3½(T)	1½"	1'-0"	1'-10" - 1'-11"	1'-5" - 1'-6½"	1'-3" - 1'-4"	10" - 1'-0"	1'-8" -1'-8½"	1'-1" - 1'-2"
No. 5(T)	1¾"	1'-0"	2'-5" - 2'-6"	2'-0" - 2'-1"	1'-6" - 1'-7"	1'-1" - 1'-2"	2'-3" - 2'-3½"	1'-4" - 1'-4½"
No. 6(T)	2"	1'-0"	2'-11" - 3'-1"	2'-6" - 2'-7"	1'-10" - 2'-0"	1'-5" - 1'-6"	2'-9" - 2'-9½"	1'-8" - 1'-8½"

* EXCLUDING CONDUIT WEB ** TOP DIMENSION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (TRAFFIC PULL BOX)

NO SCALE

RSP ES-8B DATED APRIL 15, 2016 SUPERSEDES RSP ES-8B DATED OCTOBER 30, 2015 AND RSP ES-8B DATED JULY 19, 2013 AND RSP ES-8B DATED JANUARY 20, 2012 THAT SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP ES-8B

2010 REVISED STANDARD PLAN RSP ES-8B

22-16

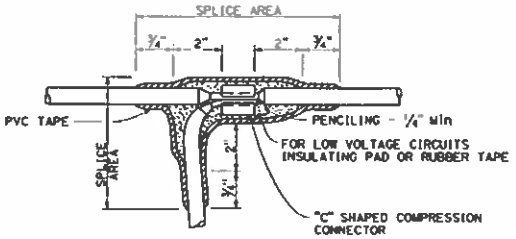
Dist.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED ELECTRICAL ENGINEER

May 20, 2011
PLANS APPROVAL DATE

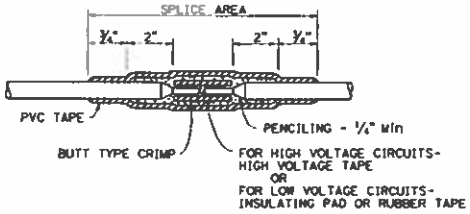
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Anthony S. McRae
No. E14312
Exp. 6-30-12
ELECTRICAL
STATE OF CALIFORNIA



TYPE C SPLICE

See Note 3

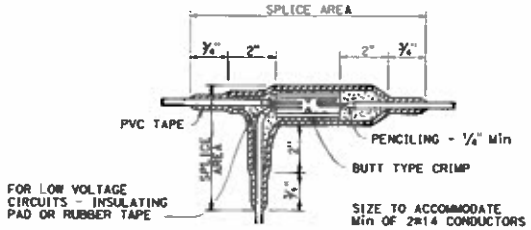


TYPE S SPLICE

See Note 4

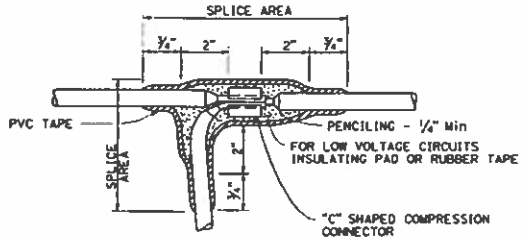
NOTES:

1. Dimensions are minimum.
2. Rubber tapes shall be rolled after application.
3. Between 1 free-end and 1 through conductor.
4. Between 2 free-end conductors.
5. Between 3 free-end conductors.



TYPE ST SPLICE

See Note 5



TYPE T SPLICE

See Note 5

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

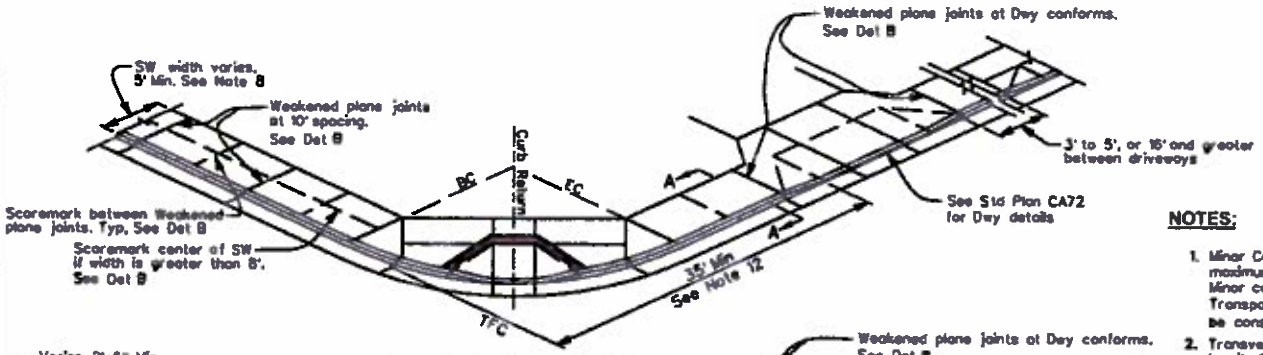
ELECTRICAL SYSTEMS (SPLICING DETAILS)

NO SCALE

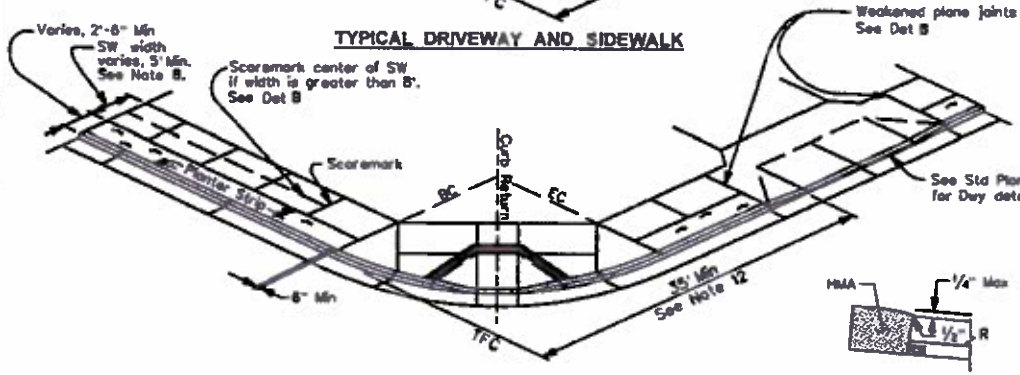
ES-13A

Return to Table of Contents

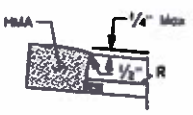
CONTRA COSTA COUNTY
STANDARD PLANS



TYPICAL DRIVEWAY AND SIDEWALK



TYPICAL DRIVEWAY AND SEPARATED SIDEWALK

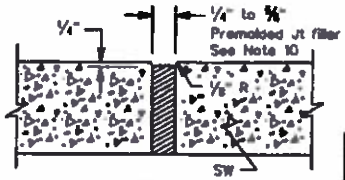


DETAIL A
Gutter Lip Paving

CURB AND SIDEWALK
TYPICAL SECTION A-A

D=1" for Weakened Plane Jt
D=1/4" for Scoremarks

DETAIL B
Scoremarks and Weakened Plane Joints



DETAIL C
Expansion joint

NOTES:

1. Minor Concrete, not less than 505 lbs cementious material per cubic yard, 1" maximum aggregate shall be used for all construction detailed on this plan. Minor concrete shall comply with Section 90 of the California Department of Transportation Standard Specifications. New curb and adjoining sidewalk shall be constructed monolithically.
2. Transverse scoremarks shall be made at 10' intervals on the sidewalk and a longitudinal scoremark shall be made along the centerline of any sidewalk which is 8' or more in width. Weakened plane joints shall be provided at 10' intervals (staggered with scoremarks) in curb and sidewalk. See Standard Plan CA72 for scoremark and weakened plane joint layouts through driveways, and Standard Plan CA75 for scoremark, weakened plane and expansion joint locations for curb ramps.
3. Curb reference stakes shall not be offset more than 3' from the back of curb or more than 2' from the back of the sidewalk.
4. Where there is a planter strip between the sidewalk and the curb, the curb in a driveway depression shall be constructed monolithically with the driveway.
5. When the street slopes away from a curb, the gutter slope shall match the cross slope of the street.
6. Paving at the gutter lip shall conform to Detail A, except when the street slopes away from the curb and at the bottom of curb ramps, the paving shall match the gutter lip.
7. Meter boxes, poles, and fire hydrants locations shall conform to locations shown on Standard Plan CU60.
8. Minimum sidewalk widths, measured from face of curb, are 5'-0" for residential; 6'-6" for multiple zones; 10'-0" for retail business and commercial areas; 8'-0" in retail and commercial areas where right of way is limited.
9. A 3" layer of Class 2 aggregate base shall be placed under all curb and sidewalk sections unless otherwise noted.
10. Expansion joint Detail C shall be installed at or near BC and EC per Standard Plan CA75 and the back of sidewalk at driveways. Premolded joint filler material for expansion joints shall conform to Section 51-1.12C "Premolded Expansion Fillers," of the California Department of Transportation Standard Specifications.
11. See Standard Plan CA71 for curb details.
12. 35' is the minimum offset on low volume, low speed residential streets. For higher volume, higher speed roads, the 35' dimension shall increase to comply with Topic 405 "Intersection Design Standards", Subsection 405.1 "Sight Distance" of the California Department of Transportation Highway Design Manual.
13. All sidewalk inside curb returns shall be 6" minimum thickness from BC to EC.
14. For curb ramp details, see appropriate Caltrans standard plans as specified on the project plans.

PUBLIC WORKS DIRECTOR
March 11, 2014
PLANS APPROVAL DATE

JULIA R. BUERKEN
No. 37857
CIVIL
STATE OF CALIFORNIA

The County of Contra Costa or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA

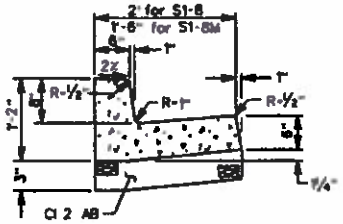
STANDARD PLAN

STANDARD SIDEWALK DETAILS

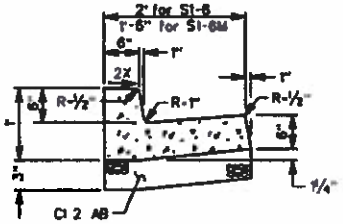
NO.	DATE	REVISION DESCRIPTION	BY

SCALE: NO SCALE | DATE: 3/14
DRAWN BY: H.HUSSEY | PLAN NO. CA70
CHECKED BY: R.HOLLINSWORTH

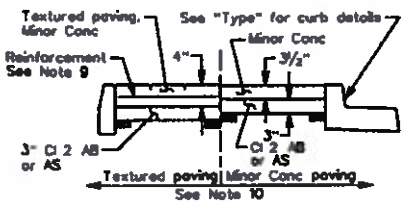
STD. PLAN CA70



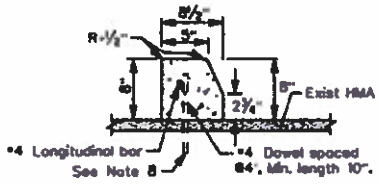
TYPE S1-8 & S1-8M



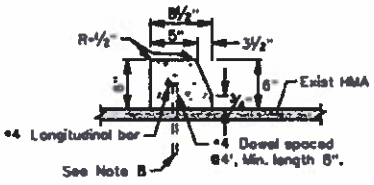
TYPE S1-6 & S1-6M



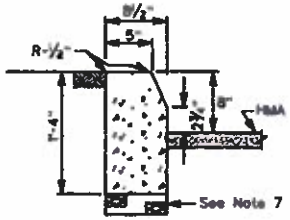
TYPICAL MEDIAN PAVING DETAIL



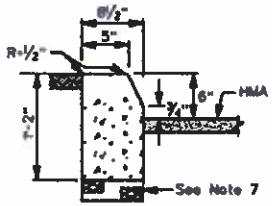
TYPE M3-6 CURB



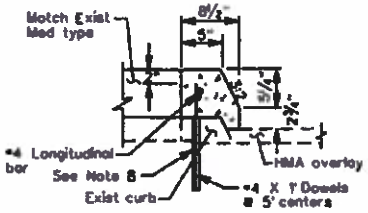
TYPE M3-6 CURB
See Note 6



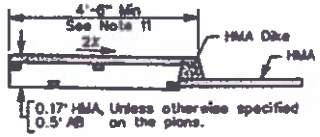
TYPE M1-8 CURB



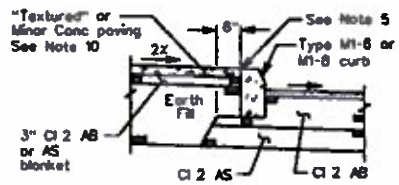
TYPE M1-6 CURB



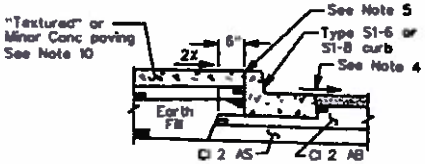
MODIFIED TYPE M3-8 CURB



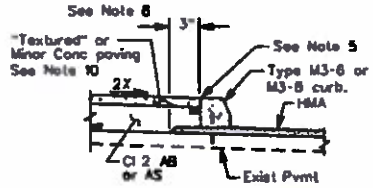
HMA PATH WITH HMA DIKE



TYPE A TRAFFIC MEDIAN
Half Section



TYPE B TRAFFIC MEDIAN
Half Section



TYPE C TRAFFIC MEDIAN
Half Section

NOTES:

1. Minor Concrete in conformance with Section 90-2, "Minor Concrete" of the California Department of Transportation's Standard Specifications containing no less than 505 lb. per cubic yard of cementious material shall be used for all concrete construction detailed on this plan.
2. Weakened plane joints shall be provided at 10' intervals on all curbs. See Standard Plan CA70, "Detail B".
3. All new curb where it conforms to existing facilities shall be doweled as per Standard Plan CA74.
4. When the street slopes away from the curb, the gutter slope shall match the cross slope of the street. Paving at the gutter lip shall conform to Standard Plan CA70 Detail A, except that where the street slopes away from the curb, the paving shall match the gutter lip.
5. Curb may be constructed monolithically with the median paving, in which case a weakened plane joint conforming to Standard Plan CA70 Detail B shall be provided along the back of the curb.
6. Type M3 curb shall be used only when placed on existing or overlayed pavement.
7. A 3" minimum compacted layer of Class 2 aggregate base or subbase shall be placed under Type M1 curb, unless noted otherwise on the plans.
8. Place dowels in 1" diameter drilled hole filled with 1:1 sand grout. Omit dowels when curb is extruded.
9. Reinforcement shall be *4 bars at 18" OC each way or 6" x 6", 8" x 8", 10 gage welded wire fabric.
10. Median paving may be "textured" as approved by the Public Works Department.
11. Width of HMA path shall be a minimum of 4'-6" measured from top face of curb or dike.

PUBLIC WORKS DIRECTOR

PLANS APPROVAL DATE

JULIA R BUERON No. 37937 CIVIL STATE OF CALIFORNIA

The County of Contra Costa or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA

STANDARD PLAN

MEDIAN, CURB AND HMA DIKE DETAILS

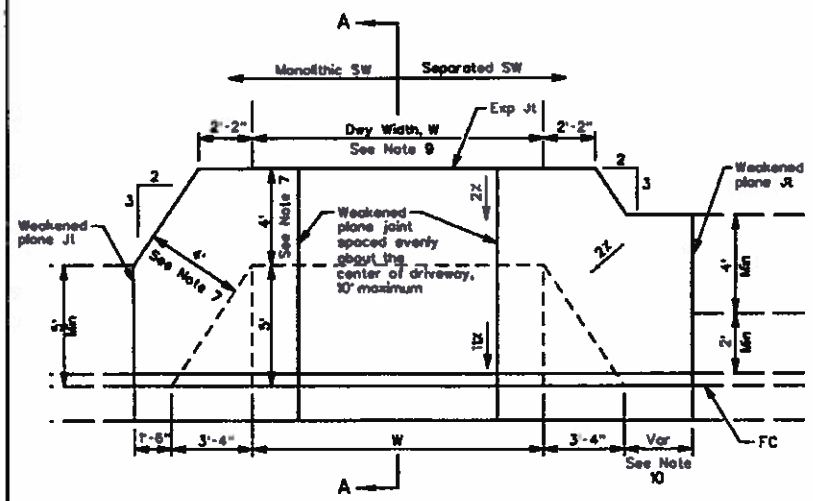
NO	DATE	REVISION DESCRIPTION	BY

SCALE: NO SCALE | DATE: 3/14

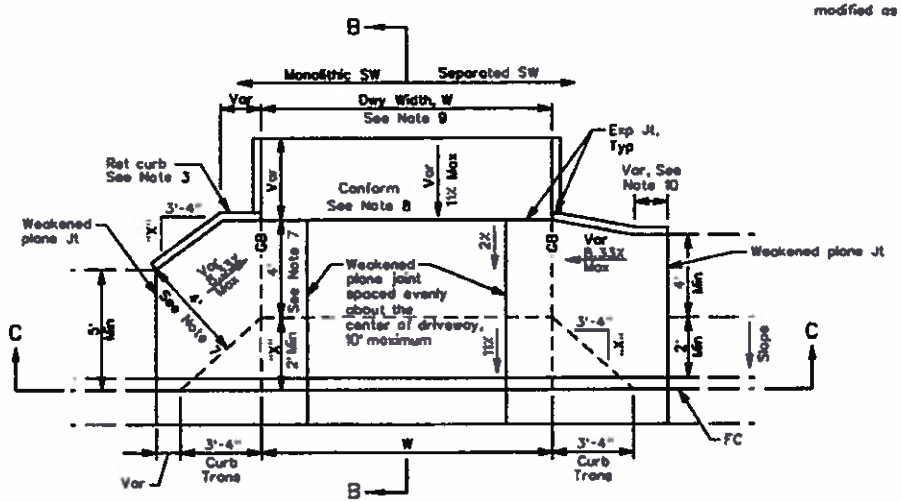
DRAWN BY: H. HUSSEY | PLAN NO. CA71

CHECKED BY: R. HOLLINGSWORTH

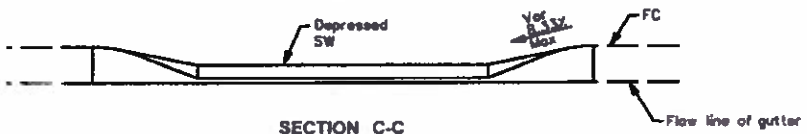
STD. PLAN CA71



STANDARD DRIVEWAY RAMP



MODIFIED DRIVEWAY RAMP
See Note 2

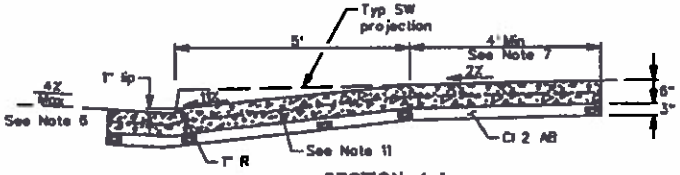


SECTION C-C
MODIFIED DRIVEWAY

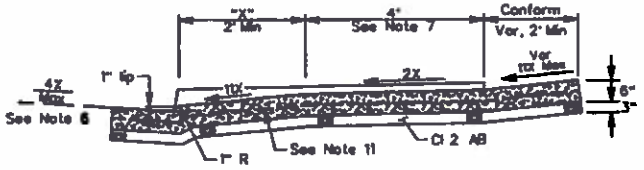
NOTES:

1. New depressed curb and driveway ramps shall be constructed monolithically. Minor Concrete, not less than 505 lb cementious material per cubic yard, 1" maximum aggregate shall be used for all construction detailed on this plan. Minor concrete shall comply with Section 90 of the California Department of Transportation Standard Specifications.
2. When existing road right of way restricts use of standard driveway ramp, the modified driveway may be used when approved by the Public Works Department. "X" shall be as large as possible, and as specified on the plans.
3. Retaining curbs and driveway conforms as required by the Public Works Department. See Standard Plan CA54 for retaining curb details.
4. For depressed driveways (Section B-B) the sidewalk shall be a minimum of 3½" ("X"-2") above the gutter flow line grade. Depth of gutter flows shall be calculated and compared to proposed depressed sidewalk elevations during design to make sure gutter flows are contained.
5. See Standard Plan CA70 for weakened plane joint, expansion joint, and scoremark details. See Standard Plan CA74 for doweling details when conforming to existing curb and sidewalk.
6. If pavement cross slope exceeds 4%, the modified driveway shall be used with the slope of the driveway ramp reduced such that the difference in slope of the driveway ramp and the slope of a line between the gutter and a point on the roadway 5' from gutter flow line shall not exceed 15%. Reduce driveway ramp slope, not the gutter slope. Other dimensions shall be modified as approved by the Public Works Department.
7. Minimum width of clear passage shall be 4' with a 2% cross slope. Where right of way restrictions, natural barriers or other restrictions create an unreasonable hardship, the clear width may be reduced to 3' with a 2% cross slope, with approval of the Public Works Department.
8. Acquisition of construction easement may be necessary where right of way is limited to construct driveway conform.
9. Driveway width, W, as specified on the plans, and in compliance with the following:
   Residential: 10' Min to 26' Max
   Commercial: 20' Min to 35' Max
10. Extend driveway conform beyond curb transition to conform to sidewalk to maintain 8.33% maximum ramp slope.
11. #4 reinforcing steel bars at 18" c-c bothways, for commercial driveways.

PUBLIC WORKS DIRECTOR
March 11, 2014
PLANS APPROVAL DATE
JULIA R BUERKEN No. 37937 CIVIL STATE OF CALIFORNIA
The County of Contra Costa or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



SECTION A-A
STANDARD DRIVEWAY



SECTION B-B
MODIFIED DRIVEWAY
See Note 4

COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA

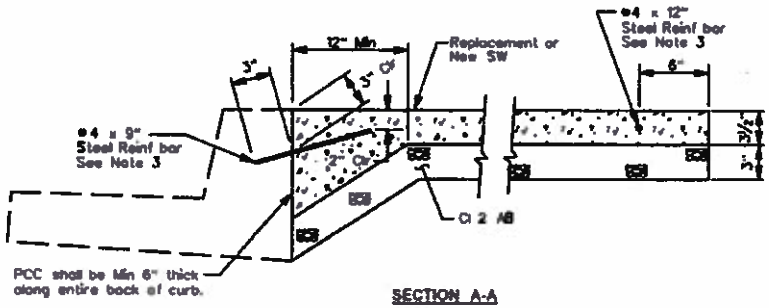
STANDARD PLAN

DRIVEWAY RAMP DETAILS

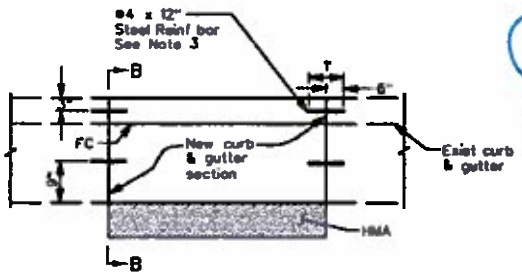
NO.	DATE	REVISION DESCRIPTION	BY

SCALE: NO SCALE | DATE: 3/14
DRAWN BY: H. HUSSEY | PLAN NO. CA72
CHECKED BY: M. HOLLINSWORTH

STD. PLAN CA72

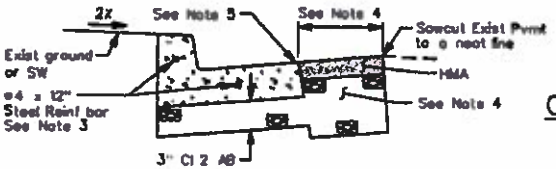


SECTION A-A



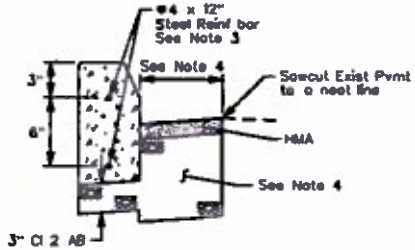
DOWELING LOCATION FOR NEW CURB CONFORMING TO EXISTING CURB

PUBLIC WORKS DIRECTOR
March 11, 2014
PLANS APPROVAL DATE
The County of Contra Costa or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
JULIA R BUERGEN
No. 37937
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA



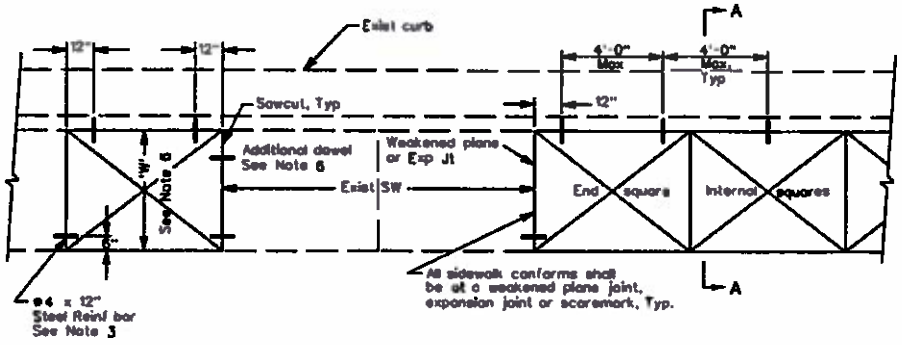
TYPE S1 CURB

OR



TYPE M CURB

SECTION B-B



REPLACEMENT OF ONE SQUARE

REPLACEMENT OF TWO OR MORE SQUARES

LOCATIONS FOR REPLACEMENT SIDEWALK

NOTES:

1. All curb, gutter, and sidewalk shall conform to Standard Plans CA70 and CA71.
2. Concrete sidewalk removed for replacement construction shall be sawcut to a neat line at the nearest weakened plane joint, expansion joint or scoremark.
3. Dowels shall be placed in a ¾" diameter drilled hole filled with 1:1 sand cement grout.
4. When replacing existing curb on existing alignment and grade, sawcut existing pavement 6" from gutter lip (or face of curb for Type "B" curb replacement). Remove existing HMA and base to minimum 8" depth, compact subgrade and replace with full depth HMA. If placing new curb, sawcut pavement minimum of 12" inside existing edge of pavement, EP, unless otherwise directed on project plans. New pavement structural section shall be 0.5' HMA, 0.0' AB minimum unless otherwise specified on the plans or as required by the Public Works Department.
5. Paving at the gutter lip shall conform to Detail A of Standard Plan CA70. When the street slopes away from the curb, the paving shall match the gutter lip.
6. If W>5' add additional doweling, 4' maximum spacing between dowels.

NO.	DATE	REVISION DESCRIPTION	BY

COUNTY OF CONTRA COSTA
PUBLIC WORKS DEPARTMENT
MARTINEZ, CALIFORNIA

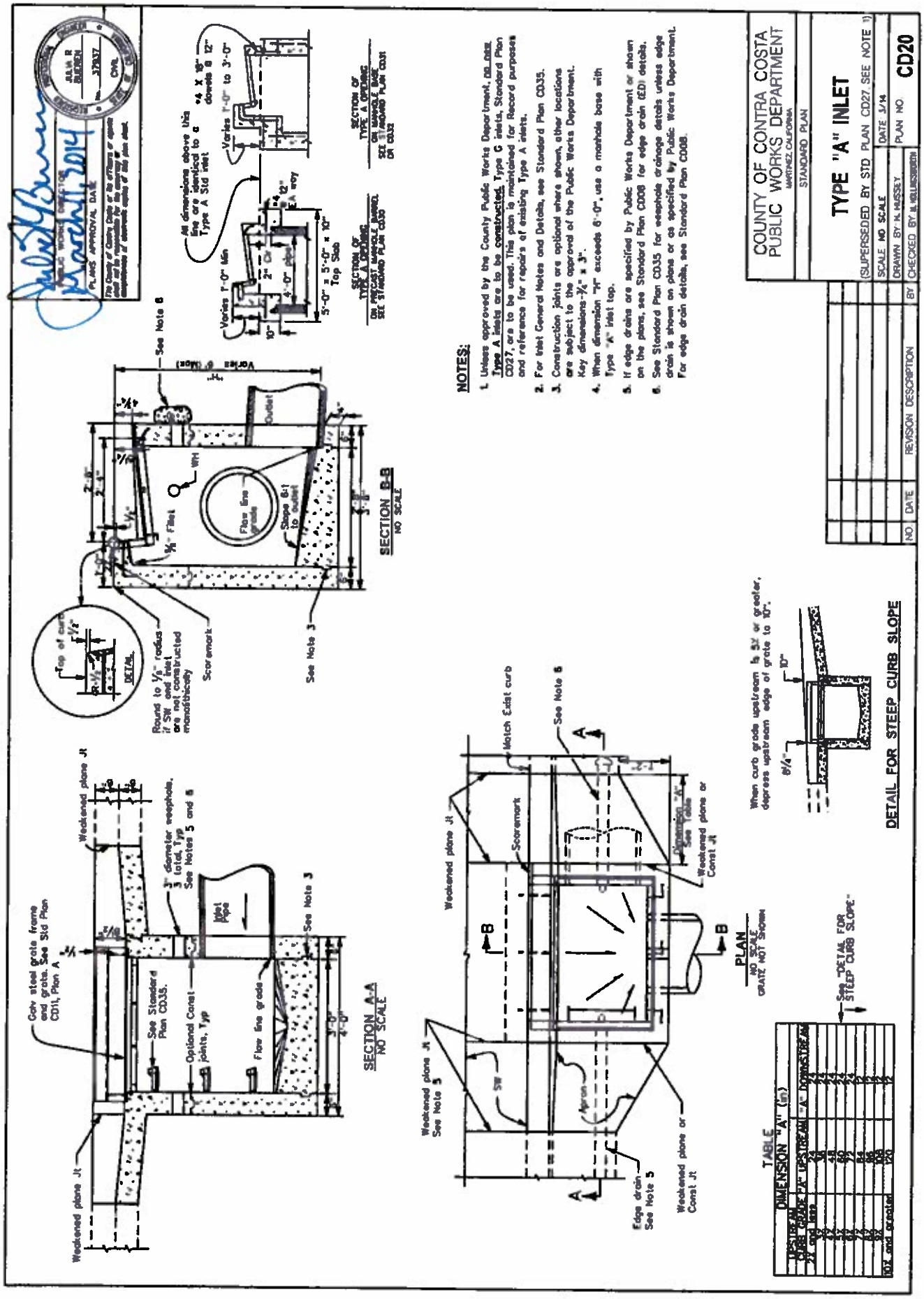
STANDARD PLAN

DOWELING DETAILS FOR CURB AND SIDEWALK

SCALE: NO SCALE | DATE 3/14
DRAWN BY: N. HUSSEY | PLAN NO. CA74
CHECKED BY: B. HOLLINGSWORTH

STD. PLAN CA74

STD. PLAN CD20



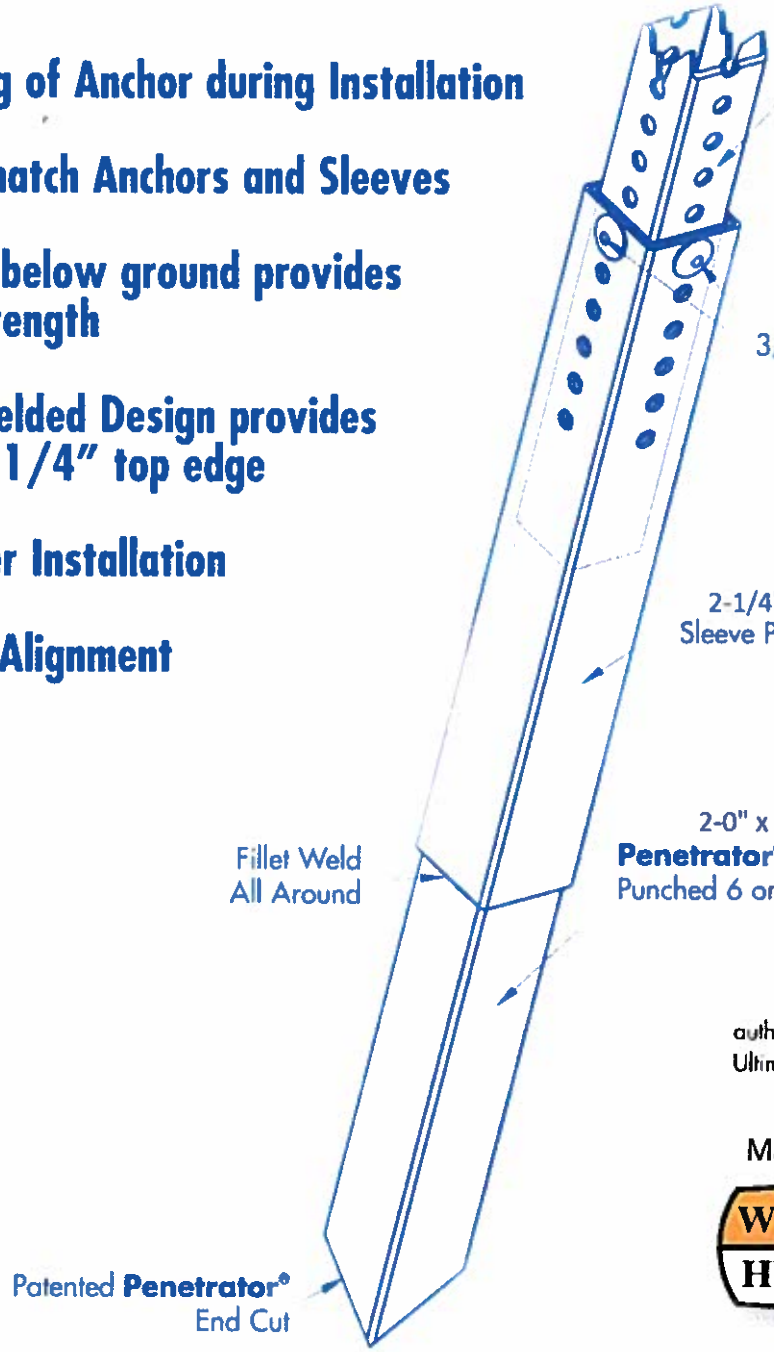
SIGN POST & ACCESSORIES

The Anchor-Mate®

The Best Drivable Anchor in the World!

by Ulti-Mate
The Ultimate Sign Support System

- No Deforming of Anchor during Installation
- No need to match Anchors and Sleeves
- Solid section below ground provides additional strength
- Two Piece Welded Design provides almost a full 1/4" top edge
- Quicker Easier Installation
- Perfect Hole Alignment



For your closest authorized distributor call:
Ultimate Highway Sales @
800.730.4939

Manufactured by

WESTERN HIGHWAY

http://www.westernhighway.com
E-mail:whpsales@westernhighway.com

Ulti-Mate®

The Ultimate Sign Support System

Traffic signs are the primary source of information for motorists. The biggest and brightest sign is only effective if the support it is mounted on keeps the sign in its intended position. Sign supports need to be strong, versatile and cost effective. The Ulti-Mate® sign support system, approved by the Federal Highway Administration, is the most reliable, economical and easiest to install support system available.

MATERIALS & SPECIFICATIONS

The Ulti-Mate sign support system is available in 12 and 14 gage steel complying with ASTM specification A653, hot dip galvanized conforming to coating designation G-140 for excellent corrosion prevention.

- Available with 7/16" holes on 1" centers on 2 or 4 sides (11.1mm on 25.4mm centers).
- The Ulti-Mate sign support system is completely compatible with all existing square posts.
- Mating tube sections allow for fast, safe ground level installations.
- Ground anchor posts allow for rapid replacement installations when necessary.
- Square tube sections provide superior resistance to wind and other forces over U-channel or round posts.
- The Ulti-Mate sign support system provides four flat surfaces for mounting signs in any direction and at any height without the need for additional hardware.
- FHWA approved as meeting safety requirements for sign supports.
- Custom sign support colors available on request.

FHWA APPROVED INSTALLATIONS

DIRECT INSTALLATION

The Ulti-Mate sign post can be installed directly into the ground using power equipment or a sledge-hammer with driving cap.

EZ INSTALLATION

The Ulti-Mate 12 gage anchor system allows crews to work at ground level for fast installations and replacements. The Ulti-Mate anchor is installed directly into the ground, leaving 1 or 2 holes above grade level. The Ulti-Mate sign post slides into the anchor for safe and easy installations.

HI-IMPACT INSTALLATION

The Ulti-Mate double 12 gage system is for areas that require frequent replacements due to damaged sign posts. This unique method utilizes a two-piece breakaway anchor that makes replacement work fast and safe.

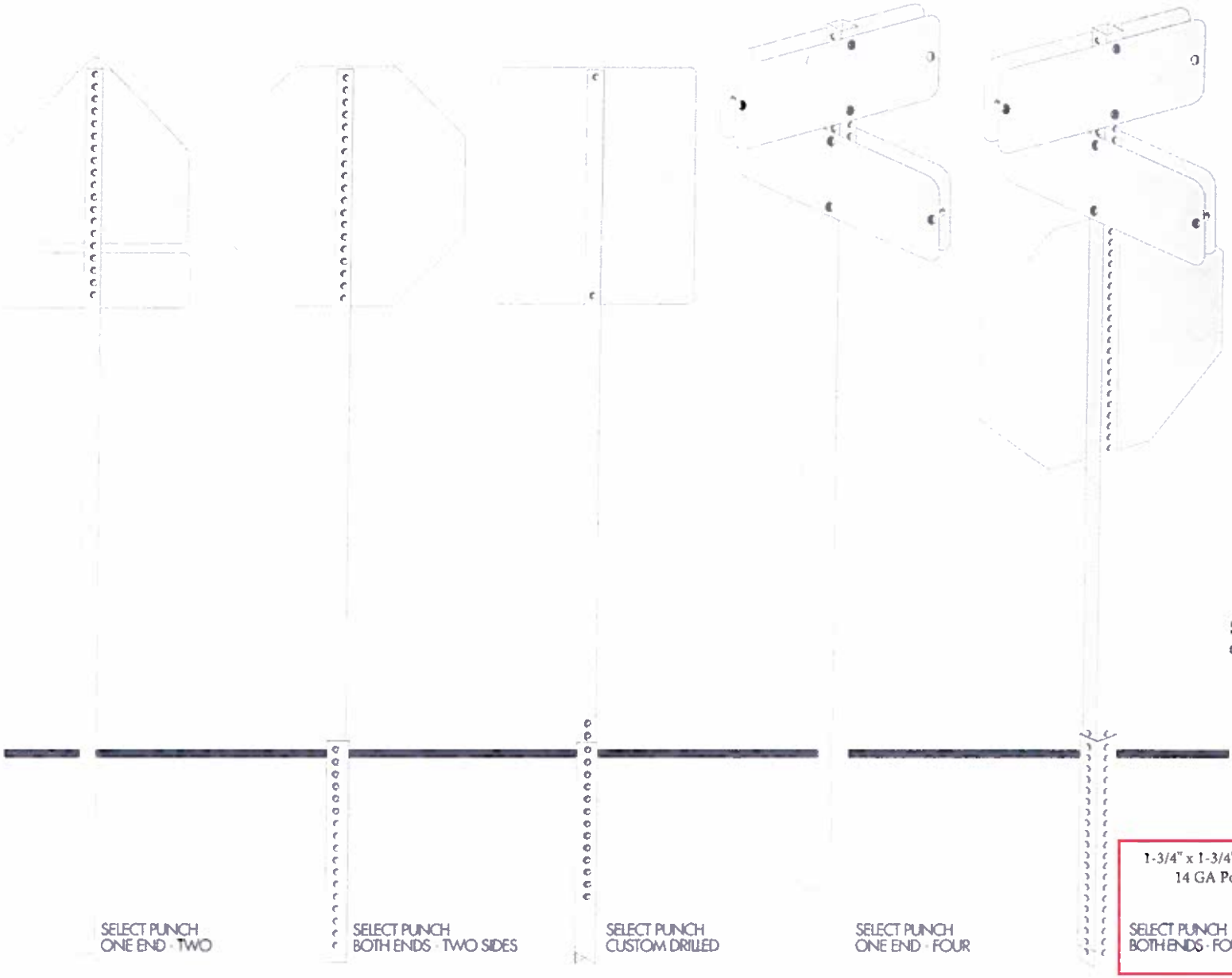
For an easy to follow post-selection ordering guide, contact your local Ulti-Mate distributor.

AVAILABLE PRODUCTS

English				Metric		
	Wall Thickness		Pounds		Wall Thickness	Kilograms
Tube Size	Gage	Inches	Per Foot	Tube Size	(mm)	Per Meter
1.75 x 1.75	14	0.083	1.71	44.45 x 44.45	2.10	2.54
2.00 x 2.00	14	0.083	1.99	50.80 x 50.80	2.10	2.96
2.25 x 2.25	14	0.083	2.28	57.15 x 57.15	2.10	3.39
1.50 x 1.50	12	0.105	1.74	38.10 x 38.10	2.66	2.59
1.75 x 1.75	12	0.105	2.09	44.45 x 44.45	2.66	3.11
2.00 x 2.00	12	0.105	2.44	50.80 x 50.80	2.66	3.63
2.25 x 2.25	12	0.105	2.79	57.15 x 57.15	2.66	4.16
2.50 x 2.50	12	0.105	3.14	63.50 x 63.50	2.66	4.69

Distributed by:

For the name of your closest authorized distributor, call Ultimate Highway Sales at (800) 730-4939



Because you don't need all those holes...

Since the introduction of Ulti-Mate, the Ultimate Sign Support System, we have talked to highway engineers, designers and installers across the country on how to make the best better. The most common response was, "We don't need all those holes". The typical twelve foot post has 564 holes; in most cases only 2 holes are required. With that in mind, we are pleased to offer the Select Punch by Ulti-Mate. Choose the option that best serves your needs... No more unnecessary holes.

- Continuous punching in increments of six, on two or four sides and from either end.
- Custom drilling available to your exact location and hole size as required.
- Also available on all base posts including the Penetrator.
- Minimum of 25 posts per order.

Select Punch by Ulti-Mate. You talked and we listened. **The best just got better.**

Ulti-Mate®
The Ultimate Sign Support System

Manufactured by
WESTERN HIGHWAY

Western Highway Products

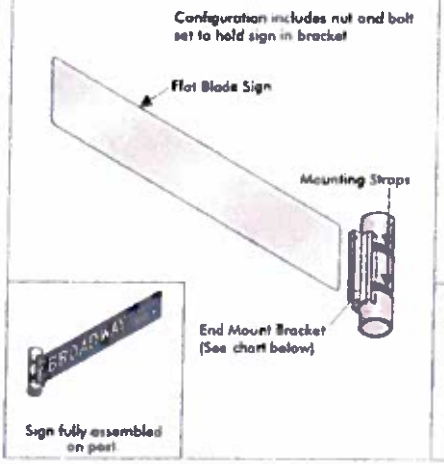
Manufacturers/Distributors of Traffic and Safety Products

WHP Western Highway Products

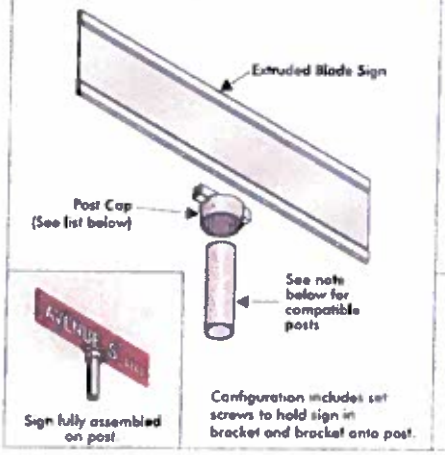
HARDWARE FLAT AND EXTRUDED BLADES

MOUNTING COMPONENTS

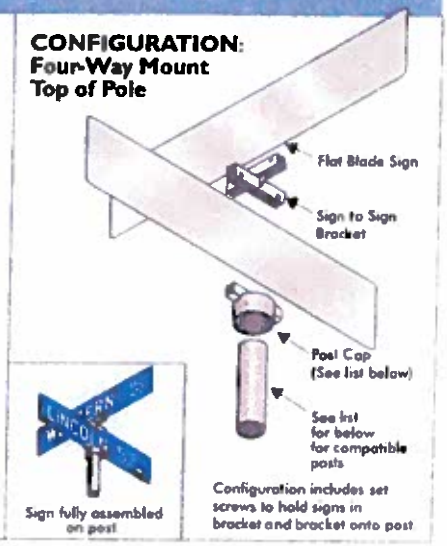
CONFIGURATION: End Mount



CONFIGURATION: Single Mount Top of Pole



CONFIGURATION: Four-Way Mount Top of Pole



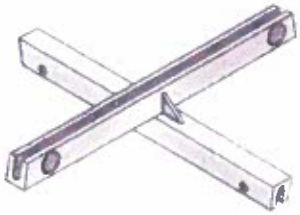
END MOUNT BRACKET
Blade street signs can be held on their ends with this bracket.

EMB-6 for AX-6 or AF-6 signs
EMB-6.75 for AX-6.75 or AF-6.75 signs
EMB-9 for AX-9 or AF-9 signs

MOUNTING STRAP
Stainless Steel Strap/Clamp - inexpensive and convenient for mounting sign brackets and other uses. With a length of 32 inches, the clamp can accommodate poles up to 9 inches wide.

SIGN TO SIGN BRACKETS
Bracket allows two blade signs to be stack on top of one another.

707XCS for AX-6 or AX-6.75 signs
808XCS for AX-9 signs
606FCS for AF-6 or AF-6.75 signs
808FCS for AF-9 signs



812XCS for AX-9 signs
812FCS for AF-9 signs

POST CAPS AND POST INFORMATION

Post caps are recommended for "Single Top of Pole" or "Four-Way Top of Pole" configurations of blade street signs. Western Highway supplies post caps for the most common street sign posts. Use the following chart to see if your posts are compatible with our regularly available post caps.

 Cylindrical Post Caps	**Fits 2" ID Diameter Post** **707X-2** for AX-6 or AX-6.75 **808X-2** for AX-9 signs **606F-2** for AF-6 or AF-6.75 signs **808F-2** for AF-9 signs	**Fits 2-1/2" ID Diameter Post** **707X-2.5** for AX-6 or AX-6.75 **808X-2.5** for AX-9 signs **606F-2.5** for AF-6 or AF-6.75 signs **808F-2.5** for AF-9 signs
 Square Post Cap	**Fits Square Tube Post** **850X** for AX-6, AX-6.75 or AX-9 signs **850F** for AF-6, AF-6.75 or AF-9 signs	Other post caps are available. Please call us to confirm inventory
 U-Channel Post Cap	**Fits U-Channel Post** **707XU** for AX-6 or AX-6.75 signs **808XU** for AX-9 signs **606FU** for AF-6 or AF-6.75 signs **808FU** for AF-9 signs	

10680 Fern Ave. Stanton, CA 90680 | Tel. 800.479.3783 outside Cal. 714.761.4811 fax 714.952.2118 | www.westernhighway.com

SIGN POST

H21-DP
DELINEATOR POSTS
HOT DIPPED
GALVANIZED
OR BAKED ENAMEL
GREEN
5 ft
6 ft
1.12 lb/ft 30 - 3/8" holes on 1" centers. Light weight but strong. Ideal for Delineators or marking utility lines

H21-GP
5 ft, 6 ft. GUIDE POSTS
(FOR MTG. TARGET PLATES)

H21-GP
40 Inch
(for mtg. Type "K" Plates)
California Spec. Flanges slotted ends pointed

PIPE POST

H21-RP2-12
H21-RP2.5-12
H21-RP2
H21-RP2.5
GALVANIZED
STEEL PIPE POSTS
Schedule 40 steel pipe
2 inch and 2 1/2 inch I.D.
10 1/2 ft. and 12 ft. long
IN STOCK

"U" CHANNEL POSTS

HOT DIPPED GALVANIZED OR BAKED ENAMEL GREEN

H21-SP
SIGN POSTS

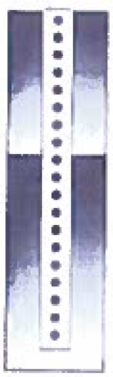
6 ft.	7 ft.
8 ft.	9 ft.
10 ft.	11 ft.
12 ft.	

2 lb per foot

[illegible]

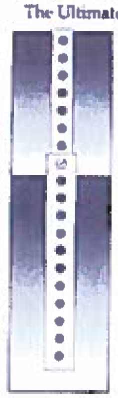
Ulti-Mate®

The Ultimate Sign Support System



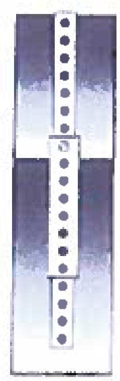
DIRECT INSTALLATION

The Ulti-mate sign post can be installed directly into the ground using power equipment or a sledgehammer with drive cap.



EZ INSTALLATION

The Ulti-mate 12 gage anchor system allows crews to work at ground level for fast installations and replacements. The Ulti-mate anchor is installed directly into the ground leaving 1 or 2 holes above grade level. The Ulti-mate sign post slides into the anchor for safe and easy installations.



HI-IMPACT INSTALLATION

The Ulti-mate double 12 gage system is for areas that require frequent replacements due to damaged sign posts. This unique method utilizes a two-piece breakaway anchor that makes replacement work fast and safe.

English				Metric		
	Wall Thickness		Pounds		Wall Thickness	Kilograms
Tube Size	Gage	Inches	Per Foot	Tube Size	(mm)	Per Meter
1.75 x 1.75	14	0.083	1.71	44.45 x 44.45	2.10	2.54
2.00 x 2.00	14	0.083	1.99	50.80 x 50.80	2.10	2.96
2.25 x 2.25	14	0.083	2.29	57.15 x 57.15	2.10	3.39
1.50 x 1.50	12	0.105	1.74	38.10 x 38.10	2.66	2.59
1.75 x 1.75	12	0.105	2.09	44.45 x 44.45	2.66	3.11
2.00 x 2.00	12	0.105	2.44	50.80 x 50.80	2.66	3.63
2.25 x 2.25	12	0.105	2.79	57.15 x 57.15	2.66	4.16
2.50 x 2.50	12	0.105	3.14	63.50 x 63.50	2.66	4.69

See Separate Literature

SIGN POST ACCESSORIES

H25-4A
DETACHABLE
POST PULLER ONLY
(Any shallow post)
Must be used with Jack

H25-7
POST PULLER JACK
ONLY
Includes Base & Handle

H25-6
Self Locking
U Post Stab

H25-6A
Self Locking
2" Pipe Stab

H25-8
POST DRIVER
For Driving U Channel
Sign Posts
38 lb.

H26-SP
1 1/2" x 48 PIPE ONLY
Painted Black

Use H5 Spacer and H5-2.5
Bolts for mounting signs to
H26-SP

H26-20B
20 lb. Base Only

H26-30B
30 lb. Base Only

H26-40B
40 lb. Base Only

5/16" flat steel plate
base Painted black

ULTI-MATE STOP

TO BE USED FOR
TEMPORARY TRAFFIC
CONTROL SITUATIONS

See separate literature for
complete information

H21-SPDC
MANUAL DRIVE CAP
For U-Channel

H21-SPPDC
POWER DRIVE CAP
6 7/8" SHANK
For U Channel

UM-MDC175
MANUAL DRIVE CAP
For 1 3/4" anchor posts

UM-MDC200
MANUAL DRIVE CAP
For 2" anchor posts

UM-MDC225
MANUAL DRIVE CAP
For 2 1/4" anchor posts

UM-MDC250
MANUAL DRIVE CAP
For 2 1/2" anchor posts

UM-PDCS7/8-125
POWER DRIVE SHANK
7/8" x 2 1/4"

UM-PDCS7/8-425
POWER DRIVE SHANK
7/8" x 4 1/4"

UM-PDCS1-425
POWER DRIVE SHANK
1" x 4 1/4"

UM-PDCS11/8-6
POWER DRIVE SHANK
1 1/8" x 6"

UM-PDCS11/4-6
POWER DRIVE SHANK
1 1/4" x 6"

UM-PDC175
POWER DRIVE CAP
For 1 3/4" anchor posts

UM-PDC200
POWER DRIVE CAP
For 2" anchor posts

UM-PDC225
POWER DRIVE CAP
For 2 1/4" anchor posts

UM-PDC250
POWER DRIVE CAP
For 2 1/2" anchor posts

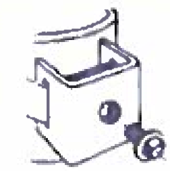
STREET NAME SIGN HARDWARE

WE MANUFACTURE A COMPLETE LINE OF STREET NAME SIGN MOUNTING HARDWARE. LOOK FOR IT IN THE STREET NAME SIGN SECTION OF YOUR WESTERN HIGHWAY PRODUCTS CATALOG

10650 FERN AVENUE, STANTON, CALIFORNIA 90680
(714) 761-4811 (800) 479-3783 FAX (714) 952-2118
http://www.westernhighway.com E-mail whpsales@westernhighway.com

WESTERN HIGHWAY

SIGN MOUNTING HARDWARE



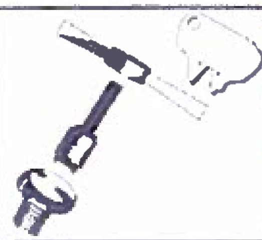
H1-SL
STRAP-ON BRACKET
(Straight Leg)
Extra Heavy 1/8" Steel, Hot dipped galv. with 5/16" tapped hole. Slotted for 3/4" Strap. Mounting Bolt not included

H1-SLSS
STAINLESS STEEL BRACKET
Includes Mounting Bolt

H6-STB
SEAL-TITE BOLT
5/16" X 1/2" bolt with Neoprene washer for mounting Signs with tapped brackets or pipe

H2-FL
STRAP-ON BRACKET
(Flared Leg)
For banding to large poles. Extra heavy 1/8" Steel, Hot dipped galv. with 5/16" tapped hole. Slotted for 3/4" Strap

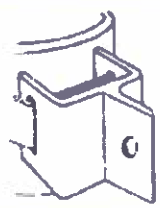
H2-FLSS
STAINLESS STEEL BRACKET
Includes Mounting Bolt



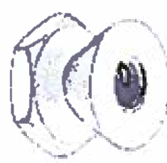
H6-TPBKEY
KEY WRENCH For tamper proof bolt.

H6-TPDR
RACKET DRIVER
For tamper proof bolt

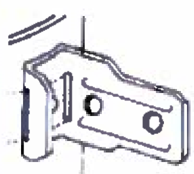
H6-TP
TAMPER PROOF BOLT
5/16" X 1/2" special scanner head bolt.
Use same as H6-STB bolt.



H3-CLB
STRAP-ON BRACKET CANTILEVER
Heavy Gauge Aluminum
Use one for each sign hole. For mounting double face Signs. Slotted for 3/4" strap and punched for 5/16" bolts



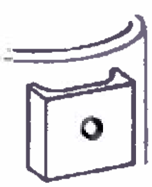
H6-VGNG **For Galv Bolt**
H6-VGNP **For Plated Bolt**
VANDLGARD-NUT
Tamper Proof Nut for Sign Mounting
Call Western Highway for information on this unique, easily installed nut that cuts sign losses



H4-D-007
STRAP-ON L-MOUNT BRKT
Stainless Steel
Double holes for mounting long signs. May be used back to back in pairs for extra rigid cantilever mounting
Slotted for 3/4" Strap

H6-2.5 BG **2 1/2" - Galv.**
H6-2.5 BP **2 1/2" - Plated**
BUTTON THEFT PROOF BOLT
When this button head bolt is used with nut H6-VGN above, theft is almost impossible. 5/16" Diameter. Available in both galvanized and plated

H6-4.5 CB 4 1/2"
Plated Carriage Bolt includes adapter washer. Washer can be sold as separate item.



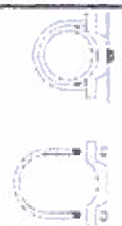
H5
BOLT-ON SPACER
Galv. Channel Iron 1 1/2" x 1 1/2" x 1 5"
Provides flat mounting surface when bolting sign to any size pipe to prevent wobble

H6-23
SIGN MTG. HDWR.
For U Channel Posts.
Aluminum spacer 3 1/2" x 2 1/2", 5/16" x 2 1/2" Bolt, Washer and Nut

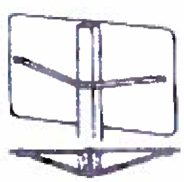
H6-24
GUIDE PLATE MTG. HDWR.
1/4 X 1/2" Bolt, Washer and Lock Nut (6 sets reqd. per Guide Marker)

SIGN MOUNTING HARDWARE

HWSSC
STAINLESS STEEL CLAMP
Inexpensive and convenient for mounting sign brackets and other uses. 32" long fits 2" to 3" diameter pipe pole



H9-2
H9-2.5
CLAMP ON U-BRACKETS
(Single Bracket)
Includes steel zinc coated U bolt with nuts and cast aluminum bracket. Sign fastening bolt not included.
(Use H5-STB or H5-TP)
Fits 2" and 2 1/2" I.D. standard pipe. Eliminates strapping or drilling holes.



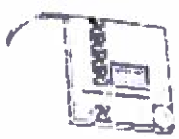
H10-1 (3/16 x 1 x 38")
SIGN BRACE (Galv.)
To fit 4 x 4 posts

H10-2 (3/16 x 1 x 37 1/4")
To fit 4 x 6 posts

H10-4.5HG
HEX HEAD BRACE BOLT
5/16" x 4 1/2" includes nut & washer

H10-6.5HG
HEX HEAD BRACE BOLT
5/16" x 6 1/2" includes nut & washer

H10-8.5HG
HEX HEAD BRACE BOLT
5/16" x 8 1/2" includes nut & washer



H11-C203 3/8"
H11-C204 1/2"
H11-C205 5/8"
H11-C206 3/4"
HEAVY DUTY BANDING TAPE
Stainless Steel 100 Ft. Roll

H16-C253 3/8"
H16-C254 1/2"
H16-C255 5/8"
H16-C256 3/4"
HEAVY DUTY BUCKLES
Stainless Steel 100 per Box

H14-C130
3/4" STRAPPING TAPE
C15 Stainless Steel
200 Ft. Roll

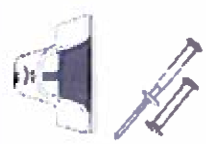
H14-C163
3/4" STRAPPING TAPE
C20 Stainless Steel
200 Ft. Roll

H14-C156
VALUE CLIP
100 per Box

H18-C001
BANDING TOOL
For use with any size Banding or Strapping Tape

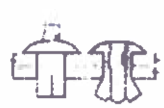
H19-HP2
HAND PLIER RIVETING TOOL
For self-setting rivets. Complete with 4 size Heads - 3/32, 1/8, 5/32, 3/16

H20-AB66A
3/16" SELF-SETTING RIVETS
For fastening C.M. Rail Buttons with Hand Plier. 100 per Box



H20-18
1/4" x 7/8" POP RIVET
100 per Box

H20-26
CHERRY-MATE FASTENER
1/4" X 1 3/8" POP RIVETS
A convenient way to mount signs on the HG1-SP sign posts. 100 per Box



H20-316 3/16" x 9/16"
DRIVE RIVETS
For fastening C.M. Rail Buttons with Hammer

H20-38 3/8" x 1 2"
For sign mounting. 100 per Box

APPENDIX C

UTILITY POTHOLE LOG

UTILITY POTHOLE LOG

(Contractor shall complete and submit to the Engineer prior to commencing excavation work.)

The Contractor shall notify Underground Service Alert (800-227-2600) prior to potholing for utilities. The Contractor shall positively locate all utilities (laterals and mains) marked by utility representatives or identified by the Engineer.

Address	Approx. Station	Offset From Existing Improvement or Centerline	Utility Owner and Type	Depth*
2685 Sample Street	*10+53*	*2' from North Gutter Lip, in Street*	*PG&E (Gas Service)*	*36"*

*Depth measured from existing surface

Contractor shall sign and date, attesting that the above information is true and correct to the best of Contractor's knowledge.

Contractor Name:_____

Signature of Contractors Representative:_____ Date:_____

Signature of City of Lafayette Representative:_____ Date:_____