FOR PRE-BID QUESTIONS CONCERNING
THE COUNTY CONSTRUCTION OUTREACH
PROGRAM, CALL MOSES DE LOS REYES
AT (510) 670-5243

FOR TECHNICAL QUESTIONS CONCERNING
THE PLANS AND SPECIFICATIONS,
CALL (510) 670-5785

FOR ALL OTHER INQUIRIES,
CALL (510) 670-5450

SPECIFICATION NO. 1903

ALAMEDA COUNTY Metric

VOLUME 1 OF 2

SPECIAL PROVISIONS

NOTICE TO BIDDERS

PROPOSAL AND CONTRACT

FOR THE RELOCATION OF

VASCO ROAD

FROM THE VICINITY OF MILEPOSTS 3.0 AND 4.3

IN MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA

FEDERAL AID PROJECT NO. RPSTPL 5933 (074)

CONTRACTOR'S LICENSE REQUIRED: CLASS A OR CLASS C-12

For use with the Standard Specifications dated July 1999 and Standard Plans dated July 2004, and the subsequent erratas and amendments, of the California Department of Transportation

Transportation · Buildings · Water Resources
PUBLIC WORKS

"To Serve and Preserve Our Community"

ALAMEDA COUNTY PUBLIC WORKS AGENCY
399 ELMHURST STREET, HAYWARD, CA 94544

Daniel Woldesenbet, Ph.D., P.E., Director-County Engineer

BID OPENING DATE: Wednesday, July 23, 2008, 10:00 a.m.

Specification No. 1903

SPECIAL PROVISIONS

NOTICE TO BIDDERS

PROPOSAL AND CONTRACT

FOR

THE RELOCATION OF

VASCO ROAD

FROM THE VICINITY OF MILEPOSTS 3.0 AND 4.3

IN MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA

FEDERAL AID PROJECT NO. RPSTPL 5933 (074)

Daniel Woldesenbet, Ph.D., P.E.
Director of Public Works
County Engineer
Civil Engineer No. 60306
Expiration Date: June 30, 2010

Specification No. 1903

SPECIAL PROVISIONS

FOR

THE RELOCATION OF VASCO ROAD

FROM THE VICINITY OF

MILEPOSTS 3.0 TO 4.3

IN MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA

FEDERAL AID PROJECT NO. RPSTPL 5933 (074)

Prepared By:

Moffatt & Nichol

1300 Clay Street, Suite 550

Oakland, California, 94612

Under the Direction of:

6-26-08

Thomas E. Hillesland, P.E.
Moffatt & Nichol
Civil Engineer No. 54200
Expiration Date: December 31, 2009

Specification No. 1903

RELOCATION OF VASCO ROAD

FROM THE VICINITY OF MILEPOSTS 3.0 AND 4.3

IN MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA

FEDERAL AID PROJECT NO. RPSTPL 5933 (074)

SPECIAL PROVISIONS SECTIONS PERTAINING TO RETAINING WALLS, EARTHWORK, AND GEOSYNTHETIC MATERIALS WERE PREPARED BY:

CAL ENGINEERING & GEOLOGY, INC.
1870 Olympic Boulevard, Suite 100
Walnut Creek, California 94105

Under the Direction of:

6-23-08

Phillip Gregory, P.E., G.E.
Cal Engineering & Geology, Inc.
Civil Engineer No. 40728
Geotechnical Engineer No. 2193
Expiration Date: March 31, 2009

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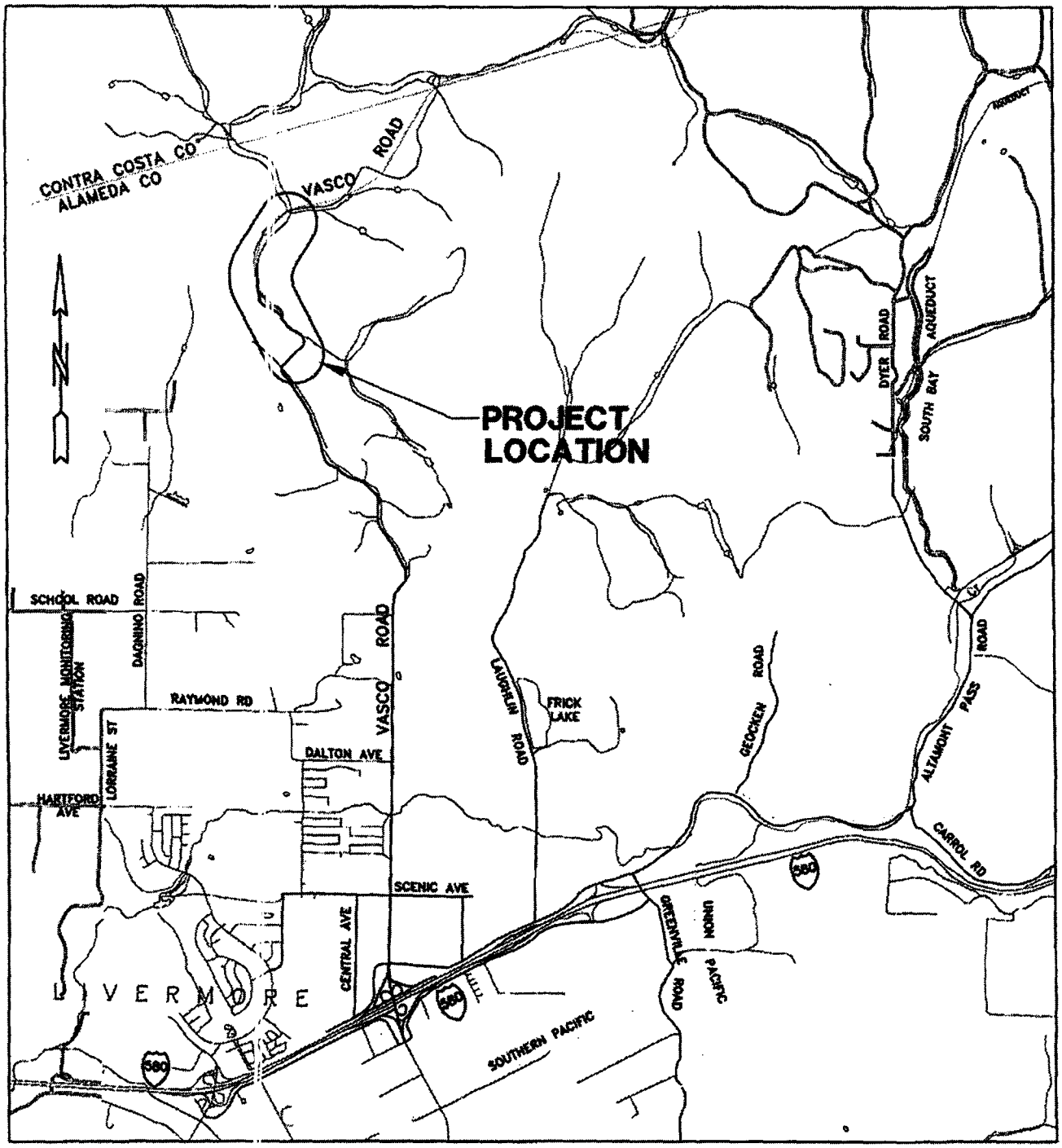

W.O. NO. 23265 SPEC. NO. 1903

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

THE RELOCATION OF VASCO ROAD IN THE VICINITY OF MILEPOSTS 3.0 TO 4.3

LOCATION MAP

DRAWN	AL/BN	DATE	MAY 2007
CHECKED	BN	SCALE	NTS
		FILE NO. —	SHEET NO. 1 OF 1

NOTICE TO BIDDERS

On February 19, 2008, the Alameda County Board of Supervisors approved the following project and invites all qualified contractors to submit proposals for all labor, material, equipment, mechanical workmanship, transportation and services required for the entire work to be performed on:

THE RELOCATION OF VASCO ROAD
FROM THE VICINITY OF MILEPOSTS 3.0 TO 4.3
MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA
FEDERAL AID PROJECT NO. STPL-5933 (074)

BID OPENING: **Wednesday, July 23, 2008, 10:00 a.m.**, Public Works Agency, 951 Turner Court, Room 100, Hayward, CA 94545. Bids are required for the entire work described herein.

General Work Description: The project consists of grading, constructing roadway pavement structural section, installing median barriers, constructing retaining walls, installing drainage systems, and installing mitigation features.

THIS PROJECT IS SUBJECT TO THE "BUY AMERICA" PROVISIONS OF THE SURFACE TRANSPORTATION ASSISTANCE ACT OF 1982 AS AMENDED BY THE INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT OF 1991.

This project is subject to all Local, State, and Federal laws, rules and guidelines contained in the plans and specifications, including but not limited to payment prevailing wages. Contractor shall possess a Class A or a Class C-12 license at the time this contract is awarded.

A mandatory pre-bid meeting required for all prime contractors is scheduled for **Tuesday, July 8, 2008 at 9:30 a.m.** at 6089 Madigan Road, Dublin, CA. 94568, Main Conference Room. An optional on-site visit will be conducted after the pre-bid meeting. Four - Wheel drive vehicles will be required for this excursion. Bid Proposals from prime contractors that fail to attend this mandatory prebid meeting will be rejected. This meeting is to inform bidders of project requirements and subcontractors of subcontracting and material supply opportunities.

The contract is subject to state contract nondiscrimination and compliance requirements pursuant to Government Code, Section 12990.

DETAILED PLANS, SPECIFICATIONS AND PROPOSAL FORMS: Are available at the Public Works Agency, 951 Turner Court, Room 100, Hayward, CA 94545, for a non-refundable cost of $150.00 per set. An electronic version of the geotechnical report is also available upon request for a nominal fee. Technical questions should be directed to Bond Ng at (510) 670-5785, Maritoni Maravilla at (510) 670-6550, or James Chu at (510) 670-5566.

Inquiries or questions based on alleged patent ambiguity of the plans, specifications or estimate must be communicated as a bidder inquiry prior to bid opening. Any such inquiries or questions, submitted after bid opening, will not be treated as a bid protest.

The successful bidder shall furnish a payment bond and a performance bond.

The County of Alameda affirms that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation.

The DBE BID Information Sheet must be submitted with the Bid Proposal.

Bidders are advised that, as required by federal law, the State has established a statewide overall DBE goal. This Agency federal-aid contract is considered to be part of the statewide overall DBE goal. The Agency is required to report to Caltrans on DBE participation for all Federal-aid contracts each year so that attainment efforts may be evaluated.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, available at the Contract Compliance Office at the offices of the Public Works Agency of the County of Alameda. The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in the books issued for bidding purposes entitled "Proposal and Contract," and in copies of said book that may be examined at the offices described above where project plans, special provisions, and proposal forms may be seen. Addenda to modify the Federal minimum wage rates, if necessary, will be issued to holders of "Proposal and Contract" books. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

Attention is directed to the Federal minimum wage rate requirements in the books entitled "Proposal and Contract". If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate which most closely approximates the duties of the employees in question.

The U.S. Department of Transportation (DOT) provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., eastern time, Telephone No. 1-800-424-9071. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

The Board of Supervisors reserves the right to reject any or all bids and any or all items of such bids.

BY ORDER OF THE BOARD OF SUPERVISORS,
COUNTY OF ALAMEDA, STATE OF CALIFORNIA
ON TUESDAY, FEBRUARY 19, 2008

Clerk of the Board of Supervisors
County of Alameda, State of California

END OF NOTICE TO BIDDERS

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
1		PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	100%
2		CONSTRUCTION SITE MANAGEMENT	LS	100%
3		PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	100%
4		WATER POLLUTION CONTROL	LS	100%
5		MOBILIZATION	LS	100%
6	*	TEMPORARY EROSION CONTROL BLANKET	m2	4,470
7	*	TEMPORARY FIBER ROLL	m	27,450
8	*	HIGH VISIBILITY ESA FABRIC	m	475
9	*	TEMPORARY PERIMETER/SILT FENCE	m	6,000
10	*	TEMPORARY CONSTRUCTION ENTRANCE	EA	4
11	*	TEMPORARY COVER	m2	10,000
12	*	TEMPORARY CHECK DAM	m	1,550
13		TEMPORARY DRAINAGE INLET PROTECTION	EA	35
14	*	DELIVER OFFICE TRAILER	EA	1
15	*	DELIVER STORAGE CONTAINER	EA	1

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
16	*	DELIVER LAPTOP COMPUTER	EA	2
17		CONSTRUCTION AREA SIGNS	LS	100%
18		TRAFFIC CONTROL SYSTEM	LS	100%
19	*	TEMPORARY TRAFFIC STRIPE	m	7,000
20	*	TEMPORARY TRAFFIC PAVEMENT MARKING	m2	50
21	*	TEMPORARY PAVEMENT MARKERS	EA	2,000
22	*	CHANNELIZER (SURFACE MOUNTED)	EA	30
23		FLASHING BEACON (PORTABLE)	EA	4
24		PORTABLE CHANGEABLE MESSAGE SIGN	EA	8
25	*	DELIVER PORTABLE CHANGEABLE MESSAGE SIGN	EA	2
26	*	TEMPORARY RAILING (TYPE K)	m	4,510
27	*	TEMPORARY CRASH CUSHION MODULE	EA	410
28	*	TEMPORARY CRASH CUSHION (TYPE ABSORB 350, TL-2, 5-element)	EA	2
29		REMOVE AND SALVAGE TEMPORARY SHORING AND CABLE RAILING	m	145
30	*	REMOVE METAL BEAM GUARD RAILING	m	230

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
31		REMOVE CONCRETE BARRIER	m	550
32	*	CONCRETE REMOVAL	m3	10
33		TRAFFIC STRIPES, CHANNELIZERS, PAVEMENT MARKINGS AND MARKERS REMOVAL	LS	100%
34		SLURRY FILL RETIRED GAS LINE (555 mm)	m	470
35		SLURRY FILL RETIRED GAS LINE (900 mm)	m	165
36		REMOVE RETIRED GAS LINE	m	490
37		CLEARING AND GRUBBING	LS	100%
38		CONTINUOUS GRADE BEAM FOR EXCLUSION FENCE	m	3,700
39	*	ROADWAY EXCAVATION	m3	367,000
40	*	EXCAVATE, REMOVE, & REPLACE UNSUITABLE MATERIAL	m3	10,000
41	*	HYDROSEEDING	m2	150,000
42		DEVELOP WATER SUPPLY	LS	100%
43		ASPHALT TREATED PERMEABLE BASE	m3	500
44	*	CLASS 2 AGGREGATE BASE	m3	15,550
45		PAVEMENT REINFORCING FABRIC	m2	1,200

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
46		ASPHALT CONCRETE DIKE (TYPE A)	m	2,250
47		ASPHALT CONCRETE DIKE (TYPE C)	m	275
48		ASPHALT CONCRETE DIKE (TYPE E)	m	1,510
49		ASPHALT CONCRETE DIKE (TYPE F)	m	125
50		SHOULDER RUMBLE STRIP (AC, ROLLED-IN)	m	8,550
51		WATER QUALITY AND HYDROMODIFICATION BASIN	LS	100%
52		STORM WATER TREATMENT UNIT	EA	1
53		1200 mm x 1200 mm REINFORCED CONCRETE BOX	m	90
54		CONCRETE STRUCTURE	m3	30
55		ROADSIDE SIGN AND TWO POST	EA	25
56		INSTALL ROADSIDE SIGN PANEL ON EXISTING POST	EA	10
57		ROADSIDE SIGN AND POST	EA	35
58		RELOCATE ROADSIDE SIGN AND POST	EA	10
59	*	450 mm CORRUGATED PLASTIC PIPE	m	25
60	*	300 mm CORRUGATED METAL PIPE	m	25

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
61	*	450 mm CORRUGATED METAL PIPE	m	25
62		450 mm REINFORCED CONCRETE PIPE (CLASS III)	m	950
63		450 mm REINFORCED CONCRETE PIPE (CLASS V)	m	90
64		600 mm REINFORCED CONCRETE PIPE (CLASS IV)	m	30
65		1500 mm REINFORCED CONCRETE PIPE (CLASS V)	m	265
66		INSTALL 1500 mm REINFORCED CONCRETE PIPE (CLASS V)	m	22
67		450 mm CONCRETE COLLAR	EA	3
68		900 mm STEEL FLARED END SECTION	EA	2
69		1500 mm STEEL FLARED END SECTION	EA	2
70		TRENCH SAFETY	LS	100%
71		STANDARD CONCRETE MONUMENT	EA	7
72		TYPE I DRAINAGE INLET	EA	9
73		TYPE IV DRAINAGE INLET	EA	8
74		TYPE VI DRAINAGE INLET	EA	10
75	*	ROCK SLOPE PROTECTION (FACING CLASS, METHOD B)	tonne	1,150

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
76	*	CONCRETE DITCH LINING	m	700
77	*	SHOULDER GRAVEL SWALE	m	600
78		LUMINAIRES	EA	8
79		CONDUIT (FOR LUMINAIRES)	m	1,000
80		EXCLUSION FENCE	m	3,700
81		TYPE CL-1.8 CHAIN LINK FENCE	m	70
82		REFLECTIVE MARKERS (CONCRETE BARRIER)	EA	130
83		CULVERT/MILEPOST MARKER	EA	55
84		DELINEATOR (TYPE F, CLASS 1)	EA	5
85		GUARD RAIL REFLECTOR ASSEMBLY	EA	555
86		METAL BEAM GUARD RAILING (WOOD POST)	m	1,565
87		ALTERNATIVE IN-LINE TERMINAL	EA	8
88	*	OVERSIDE DRAIN	m	50
89		CRASH CUSHION (TYPE ADIEM)	EA	2
90		CONCRETE BARRIER (TYPE 60)	m	1,765

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
91		MODIFIED CONCRETE BARRIER (TYPE 60)	m	250
92		THERMOPLASTIC PAVEMENT MARKING	m2	60
93		100 mm THERMOPLASTIC TRAFFIC STRIPE	m	10,300
94		150 mm THERMOPLASTIC TRAFFIC STRIPE	m	9,690
95		200 mm THERMOPLASTIC TRAFFIC STRIPE	m	270
96		PAVEMENT MARKER (NON-REFLECTIVE)	EA	40
97		PAVEMENT MARKER (RETROREFLECTIVE)	EA	575
98	*	GEOGRID REINFORCED EMBANKMENT FILL	m3	30,000
99	*	GEOGRID, TYPE 1	m2	16,000
100	*	GEOGRID, TYPE 3	m2	20,200
101	*	GEOGRID, TYPE 4	m2	9,900
102	*	SEGMENTAL RETAINING WALL	m2	925
103	*	PERMANENT SHORING	m	35
104	*	HORIZONTAL DRAINS	m	500
105	*	EMBANKMENT DRAIN, SIDE HILL FILL	m	1,500

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
106		EDGE DRAIN (SLOTTED AND UNSLOTTED)	m	1,145
107	*	300 MM CORRUGATED STEEL PIPE DOWNDRAIN (1.63 MM THICK)	m	170
108	*	900 MM CORRUGATED STEEL PIPE INLET (2.77 MM THICK)	m	5
109		CONCRETE RETAINING WALL (TYPE 6A) AND BARRIER (TYPE 60D)	m3	130
110		CABLE RAILING	m	185
111		BOLLARD	EA	8
112		CONCRETE GUTTER (STD PLAN B3-9)	m	380
113	*	TREE REMOVAL	EA	5
114		CLEANING SITE AND MISCELLANEOUS THINGS	LS	100%
115	*	MILLING	m2	150
116	*	SLURRY SEAL SURFACING (TYPE III)	tonne	100
117		ADJUSTMENT OF EXISTING MONUMENT	EA	1
118		COMPLIANCE WITH ENDANGERED SPECIES REGULATIONS	LS	100%
119	*	CONTINGENCY COORDINATION FOR ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES	DAY	10

* Contingent Bid Item

SUMMARY OF BID ITEMS

ITEM NO.		ITEM	UNIT	QUANTITY
A1		ADDITIONAL BID ITEM #A1: CONSTRUCTION STAKING	LS	100%
A2	*	ADDITIONAL BID ITEM #A2: ASPHALT CONCRETE (TYPE A)	tonne	25,900
A3	*	ADDITIONAL BID ITEM #A3: ASPHALT CONCRETE (TYPE A)	tonne	21,000
A4		ADDITIONAL BID ITEM #A4: TREE: AESCULUS CALIFORNICA (CALIFORNIA BUCKEYE)	EA	55
A5		ADDITIONAL BID ITEM #A5: TREE: POPULUS NIGRA (LOMBARDI POPLAR)	EA	5
A6		ADDITIONAL BID ITEM #A6: TREE: QUERCUS AGRIFOLIA (COAST LIVE OAK)	EA	70
A7		ADDITIONAL BID ITEM #A7 TREE: QUERCUS LOBATA (VALLEY OAK)	EA	40
A8		ADDITIONAL BID ITEM #A8 TREE: SEQUOIA SEMPERVIRENS (COAST REDWOOD)	EA	10
A9		ADDITIONAL BID ITEM #A9: TREE: SEQUOIADENDRON GIGANTEUM (GIANT REDWOOD)	EA	5
A10		ADDITIONAL BID ITEM #A10 PLANT ESTABLISHMENT PERIOD (3 YEARS)	LS	100%

* Contingent Bid Item

INSTRUCTIONS TO BIDDERS

SUBMISSION OF BIDS

The bidders shall carefully examine the Contract Documents and satisfy themselves as to the sufficiency thereof. Should any discrepancies or omissions in the Contract Documents be discovered, bidders shall report such discovery immediately to the Engineer for a decision; and shall not, at any time after the submission of the bids, dispute or complain of such Contract Documents and the directions explaining them or interpreting them, nor assert that there is any misunderstanding in regard to the location, extent, or nature or amount of work to be performed. Bidders are presumed to have visited and inspected the site of the work and familiarized themselves with the conditions there existing, as well as all other conditions relating to the construction and labor under which the work will be performed. The submittal of a bid will be considered an acknowledgment on the part of the bidder of familiarity with conditions at the site of the work.

The bidders are expressly notified prior to the submission of bids that no deviation from the Contract Documents will be allowed unless formally approved in writing by the Public Works Director or his authorized agent and issued as an Addendum.

Bidders desiring explanation concerning any portion of the work during the time of estimating may obtain the same by making application, in writing, to the Engineer or his assigned agent, with the provision that such requests for explanation shall be placed with the Engineer at least five (5) days before the date set for the submission of the bids.

No bid will be accepted from, or a contract awarded to any party or firm in arrears to the County of Alameda, or who is a defaulter as a surety, contractor, or otherwise.

No person, firm, or corporation will be allowed to make or file or be interested in more than one bid for the same work, unless alternative bids are called for. A person, firm, or corporation who has submitted a sub-proposal to a bidder, or who has quoted prices on materials to a bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

No bidder will be considered by the Board of Supervisors unless such bidder is believed by said Board to be authorized by law to execute the contract or perform the work for which such bid is received. However, should it appear to said Board of Supervisors, at any time, that any bidder is not or might not be authorized by law to execute the contract or perform such work, then said Board of Supervisors at its sole discretion may at any time reject any bid, or refuse to execute any contract with such bidder regardless of whether or not the contract had been previously awarded by said Board and without any liability whatever on the part of said County of Alameda, its Board of Supervisors, or any member of said Board of Supervisors, or said County's' officers, employees, or its agents, either as individuals or in official capacities.

When a bid is submitted by a firm, partnership or corporation, it must be signed in the name of such firm, partnership or corporation by a duly authorized officer or agent thereof.

Bidders shall observe in the Contract Documents that provision is made for unit prices covering various items of work, and they shall be required to submit these unit prices, in full, as noted in the BID PROPOSAL forms furnished them by the Public Works Agency.

When provided, the quantities on the BIDDING SHEET are approximate and given for the purpose of comparing bids only. A quantity designated as a final quantity on the Contract Documents or specified under the bid items shall be the quantity for which payment will be made unless the work as shown on the Contract Documents is revised by the Engineer. The County does not expressly or by implication agree or guarantee that the actual amount of work will correspond to the preliminary estimate or to the quantities set forth, but reserves the right, insofar as authorized by law, to increase or decrease the amount of any class or portion of the work, or to omit portions of the work as may be deemed necessary or expedient by the Engineer.

The Bidder shall make his own estimate as to required quantities based upon the Contract Documents and his examination of the site of the work. Work, complete and in place, will be paid for on the unit price basis as set forth in the Bidder's bid proposal for work actually done and as outlined in the Contract Documents. The Bidder must include in his bid price the furnishing of all labor, material, and equipment, and the performance of all work necessary to make a complete job regardless of any omission of details in the Contract Documents.

Bids are required for the entire work. No aggregate bids will be received.

When provided, for each unit price item of work, the Bidder shall set forth a unit price and a total price for the item in the respective spaces provided for this purpose. For each lump sum item of work, the bidders shall set forth only the total price for the item in the respective space provided for this purpose. Prices set forth for each item of work shall be in clearly legible figures, without erasures or interlineations. Bid proposals may be rejected by the Board if the proposals show any alterations of form, additions not called for, conditional bids, incomplete bids, erasures or irregularities of any kind. Additional copies of the BID PROPOSAL forms may be obtained from the Public Works Agency, 951 Turner Court, Room 100, Hayward, California 94545, which is wheelchair accessible. All items on the forms must be filled out, and the signatures of all persons signing must be in longhand. Unless bids are submitted on these prescribed forms, said bids will not be considered by the Board.

The amount set forth under the "Total" column, in the case of unit basis items, shall be the extension of the unit price bid on the basis of the estimated quantity for the item. In case of discrepancy between the unit price of the item and the total set forth for the item, the unit price will prevail unless the amount set forth as a unit price is ambiguous, unintelligible, or uncertain for any cause, or is omitted; in the event of any such uncertainty, then the amount set forth in the "Total" column for the item will be divided by the estimated quantity for the item, and the price thus obtained will be the unit price.

The amount set forth under the "Total" column, in the case of lump sum items, will prevail. If any entry is made in the unit price column of a lump sum item, it will be disregarded.

Each bidder shall insert the total amount of a submitted bid in figures. The amount of the bid for comparative purposes, to determine the lowest bidder, will be the total of all items. The contract will be awarded as a whole to the lowest responsible bidder whose proposal complies with all requirements prescribed. The Board reserves the right to waive any non-material irregularities in the bid proposal document.

When the bid items, UTILITY RELOCATION and ADJUSTMENT OF CONTRACT BID ITEMS AND EXTRA WORK ALLOWANCE, have been included in the BID PROPOSAL, said items shall be pre-bid in the amount set forth in said BID PROPOSAL for the purposes specified in the Project Specifications.

The price bid shall include any Federal or State Tax payable on articles to be furnished under the contract.

Bids shall not contain any recapitulation of the work to be done. Alternative proposals will not be considered. No oral, telegraphic or telephonic proposals or modifications will be considered. It is the sole responsibility of the bidder to see that the intended bid is received in proper time. Any bid received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

Whenever the Contract Documents indicate or specify by patent or proprietary name and/or by a name of manufacturer the use or inclusion of any material, process, device or article, such specifications shall be deemed to be used for the purpose of facilitating description of material, process, device or article desired, and shall be deemed to be followed by the words "or approved equal," and the Contractor may offer the County any material, process, device or article which shall be equal in every respect to that so indicated or specified; provided, however, that if the material, process, device or article offered by the Contractor is not, in the opinion of the Engineer, equal in every respect to that specified, then the Contractor must furnish the material, process, device or article specified, or one that, in the opinion of the Engineer, is the equal thereof in every respect.

This project is subject to the "BUY AMERICA" provisions of the Surface Transportation Act of 1982. Refer to Section 5 of these special provisions.

PROPOSAL GUARANTY

All bids for the work shall be accompanied by a deposit equal to ten percent (10%) of the total amount bid.

All bids must be made on BID PROPOSAL forms enclosed with the Project Specifications or obtained at the Public Works Agency, 951 Turner Court, Room 100, Hayward, CA 94545; said forms shall include, but are not limited to: a description locating and describing the proposed work; the amount of the bid; a statement that the Bidder has examined the Contract Documents and the site; and must be signed in longhand by the bidder and accompanied by a deposit in an amount equal to at least ten (10%) percent of the total amount bid (the amount bid shall be the highest amount of the base bid plus any allowances, prebid amounts, and Additional Bid Items),

as indicated on the BID BOND form which is a part of the BID PROPOSAL; and these forms shall be submitted sealed within the BID envelope. This deposit may be cash, cashier's check, certified check (certified without qualification and drawn on a solvent bank of the State of California or a National Bank doing business in the State of California), made payable to the COUNTY OF ALAMEDA, as necessary, or Bid Bond prepared on the form provided by the County, or the bid will not be considered; this aforesaid deposit is to serve as agreed and liquidated damages should the party or parties to whom the contract is awarded fail to enter into the contract after the award, or fail to give the bond required for the faithful performance of the contract, or fail to furnish any other bond required by law.

SUBCONTRACTOR - LISTING OF PERCENT WORK

Pursuant to the Standard Specifications and the provisions of the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code, each bidder shall have listed therein the name and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of one half (1/2) of one percent (1%) of the total bid or $10,000, whichever is greater.

Refer also to the Subcontracting Section of these Special Provisions for the specified minimum percentage of contract work the Contractor is required to perform with his own forces.

PREVAILING WAGES

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project available at the Contract Compliance Office at the offices of the Public Works Agency, County of Alameda. The Federal minimum wage rates for this project as predetermined by the United States Secretary of Labor are set forth in the books issued for bidding purposes entitled "Proposal and Contract," and in copies of said book that may be examined at the offices described above where project plans, special provisions, and proposal forms may be seen. Addenda to modify wage rates, if necessary, will be issued to holders of "Proposal and Contract" books. Future effective general prevailing wage rates which have been predetermined and are on file with the California Department of Industrial Relations are referenced but not printed in the general prevailing wage rates.

Attention is directed to the Federal minimum wage rate requirements in said books entitled "Proposal and Contract". If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor

and subcontractors, the Contractor and subcontractors shall pay not less than the Federal minimum wage rate which most closely approximates the duties of the employees in question.

AFFIRMATIVE ACTION PROGRAM

Bidders are hereby notified that the Affirmative Action Program provides for the participation of disadvantaged business enterprises (DBE).

Disadvantaged Business Enterprise (DBE) firms MUST BE CERTIFIED BY STATE DEPARTMENT OF TRANSPORTATION (CALTRANS) PRIOR TO BID OPENING. Forms can be obtained by calling State Department of Transportation at (916) 654-4576.

The DBE BID INFORMATION SHEET and copies of DBE certifications (see BID PROPOSAL) MUST BE SUBMITTED WITH THE BID PROPOSAL BY ALL BIDDERS. The bidders are to provide the total dollar amount to be subcontracted, including trucking and suppliers, and the individual dollar amounts going to DBEs listed in the BID PROPOSAL on the sheet entitled DBE BID INFORMATION. The information supplied by the bidders shall be certified by a principal of the firm. Dollar amounts will be treated as proprietary, and will be solely for the use of County staff. The DBE supporting documentation is to be submitted to the Public Works Agency, 951 Turner Court, Room 100, Hayward, California 94545.

Bidders are hereby notified that the Project Specifications include a Nondiscrimination Program as stated in these Special Provisions.

BID PROTEST

Any bid protest shall be submitted in writing to the County Engineer before 5:00 p.m. of the fifth (5^{th}) business day following bid opening.

a) The initial protest document shall contain a complete statement of the basis for the protest.

b) The protest shall refer to the specific portion of the document which forms the basis for the protest.

c) The protest shall include the name, address, and telephone number of the person representing the protesting party.

d) The procedure and time limits set forth in this paragraph are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. The Bidder's failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code Claim or legal proceedings. A Bidder shall not rely on a protest submitted by another bidder, but shall timely pursue its own protest.

AWARD OF CONTRACT

The award of the contract, if it is awarded, will be to the lowest responsible bidder whose proposal complies with all the prescribed requirements. Such award, if made, will be made within 30 days after the opening of the PROPOSALS. If the lowest responsible bidder refuses or fails to properly execute the contract and the required bonds within 15 days of receipt of said contract and bonds, the Board of Supervisors may award the contract to the second lowest responsible bidder. Such award, if made, will be made within 45 days after the opening of the PROPOSALS. If the second lowest responsible bidder refuses or fails to properly execute the contract and the required bonds within 15 days of receipt of same, the Board of Supervisors may award the contract to the third lowest responsible bidder. Such award, if made, will be made within 60 days after the opening of the PROPOSALS. The time periods specified above within which the award of the contract may be made shall be subject to extension for such further period of time as may be agreed upon in writing between the County and the Bidder concerned. The Board of Supervisors reserves the right to reject any and all bids.

Failure of the successful bidder, the second successful bidder, or the third successful bidder to properly execute the contract and prescribed bonds as provided herein shall automatically cancel the notice of award and cause the deposit to be retained by the County of Alameda as agreed and liquidated damages because of such default, and not as a penalty therefor.

The cash deposits or the checks of the successful bidder and of the next two lowest bidders will be returned after the contract is duly entered into by the successful bidder. All cash deposits, cashier's checks and certified checks of additional unsuccessful bidders will be returned to the bidders within two weeks from the date set for the submission of bids.

The successful bidder, simultaneously with the execution of the contract, will be required to furnish: comprehensive general liability and workmen's compensation insurance policies as more fully described in these special provisions; Labor and Material and Unemployment Insurance Bonds in an amount equal to one hundred percent (100%) of the contract price, and a Faithful Performance Bond in an amount equal to one hundred percent (100%) of the contract price. These bonds must be issued by a corporation or corporations, duly and legally licensed in the State of California.

The form of contract which the successful bidder, as Contractor, will be required to execute and the forms of bonds which will be required, are on file at the Alameda County Public Works Agency, 951 Turner Court, Room 100, Hayward, California 94545. These forms may be examined upon request. The contract and bonds shall be executed in four (4) original counterparts.

Upon fulfillment of all the requirements for award by the lowest responsible bidder and receipt of a contract executed by the County, the final award is considered made and all the terms and conditions of the Contract Documents shall be binding upon the parties thereto.

BEGINNING OF WORK

The Contractor has ten (10) calendar days in which to begin work, and this 10-day period shall start from the receipt of the NOTICE TO PROCEED. The Contractor shall complete all work in accordance with the Contract Documents, hereto attached, to the entire satisfaction of the Engineer within the time limit stipulated in the Section 4 of these special provisions.

The Director of Public Works will administer the contract, and will decide all questions which may arise as to the quality or acceptability of materials furnished and work performed which is to be in strict accordance with the Contract Documents. In order that the Board can act expeditiously, all communications from the Contractor to the Board will be through the Director of Public Works or his authorized agent and all communications and instructions from the Board to the Contractor will be through the authorized agent of the Director of Public Works. The Board reserves the right to alter this procedure without the consent of the Contractor.

All questions in regard to the interpretations of the scope or meaning of the Contract Documents, and the adjustments of discrepancies within or between the Contract Documents, shall be referred to the Engineer of the County of Alameda whose decision thereon will be final.

If any work is performed by the Contractor, the Contractor will not be paid for the same unless it is done pursuant to a written contract for such work legally entered into between the Contractor and the County of Alameda.

End of Instructions to Bidders

COUNTY OF ALAMEDA

PUBLIC WORKS AGENCY

PROPOSAL AND CONTRACT

FOR

THE RELOCATION OF VASCO ROAD

FROM THE VICINITY OF MILEPOSTS 3.0 TO 4.3

MURRAY TOWNSHIP,

ALAMEDA COUNTY, CALIFORNIA

RPSTPL-5933 (074)

For use in Connection with Standard Specifications dated July 1999 and Standard Plans Dated July 2004, and the subsequent erratas and amendments of the California Department of Transportation, and the Labor Surcharge and Equipment Rental Rates in effect on the date the work is accomplished.

Specification No. 1903

Bid Opening Date: **WEDNESDAY, JULY 23, 2008, 10:00 A.M.**

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Page No.

PROPOSAL TO THE COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY

NAME OF BIDDER _____

BUSINESS P. O. BOX _____

CITY, STATE, ZIP _____

BUSINESS STREET ADDRESS _____
(Please include even if P.O. Box used)

CITY, STATE, ZIP _____

TELEPHONE NO: AREA CODE _____

FAX NO: AREA CODE _____

CONTRACTOR LICENSE NO. _____

The work for which this proposal is submitted is for construction in conformance with the special provisions (including the payment of not less than the State general prevailing wage rates or Federal minimum wage rates), the project plans described below, including any addenda thereto, the contract annexed hereto, and also in conformance with the California Department of Transportation Standard Plans, dated July 2004, the Standard Specifications, dated July 1999, and the subsequent erratas and amendments, the Labor Surcharge And Equipment Rental Rates in effect on the date the work is accomplished.

The project plans and special provisions for the work to be done are entitled:

THE RELOCATION OF VASCO ROAD

FROM THE VICINITY OF MILEPOSTS 3.0 TO 4.3

MURRAY TOWNSHIP,

ALAMEDA COUNTY, CALIFORNIA

RPSTPL-5933 (074)

Bids are to be submitted for the entire work. The amount of the bid for comparison purposes will be the total of all items.

The bidder shall set forth for each unit basis item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for that purpose. In the case of unit basis items, the amount set forth under the "Item Total" column shall be the product of the unit price bid and the estimated quantity for the item.

In case of discrepancy between the unit price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

(a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the item total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price;

(b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc. from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentage wise the unit price or item total in the County's Final Estimate of cost.

If both the unit price and the item total are unreadable or otherwise unclear, or are omitted, the bid may be deemed irregular. Likewise if the item total for a lump sum item is unreadable or otherwise unclear, or is omitted, the bid may be deemed irregular unless the project being bid has only a single item and a clear, readable total bid is provided.

Symbols such as commas and dollar signs will be ignored and have no mathematical significance in establishing any unit price or item total or lump sums. Written unit prices, item totals and lump sums will be interpreted according to the number of digits and, if applicable, decimal placement. Cents symbols also have no significance in establishing any unit price or item total since all figures are assumed to be expressed in dollars and/or decimal fractions of a dollar. Bids on lump sum items shall be item totals only; if any unit price for a lump sum item is included in a bid and it differs from the item total, the items total shall prevail.

The foregoing provisions for the resolution of specific irregularities cannot be so comprehensive as to cover every omission, inconsistency, error or other irregularity which may occur in a bid. Any situation not specifically provided for will be determined in the discretion of the COUNTY OF ALAMEDA, and that discretion will be exercised in the manner deemed by the COUNTY OF ALAMEDA to best protect the public interest in the prompt and economical completion of the work. The decision of the COUNTY OF ALAMEDA respecting the amount of a bid, or the existence or treatment of an irregularity in a bid, shall be final.

If this proposal shall be accepted and the undersigned shall fail to enter into the contract and furnish the 2 bonds in the sums required by the State Contract Act, with surety satisfactory to the COUNTY OF ALAMEDA, within 8 days, not including Saturdays, Sundays and legal holidays, after the bidder has received notice from the COUNTY OF ALAMEDA that the contract has been awarded, the County of Alameda may, at its option, determine that the bidder has abandoned the contract, and thereupon this proposal and the acceptance thereof shall be null and void and the forfeiture of the security accompanying this proposal shall operate and the same shall be the property of the COUNTY OF ALAMEDA.

The undersigned, as bidder, declares that the only persons or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm, or corporation; that he has carefully examined the location of the proposed work, the annexed proposed form of contract, and the plans therein referred to; and he proposes, and agrees if this proposal is accepted, that he will contract with the COUNTY OF ALAMEDA, in the form of the copy of the contract annexed hereto, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that he will take in full payment therefor the following prices, to wit:

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
1		PROGRESS SCHEDULE (CRITICAL PATH METHOD)	100%	LS		
2		CONSTRUCTION SITE MANAGEMENT	100%	LS		
3		PREPARE STORM WATER POLLUTION PREVENTION PLAN	100%	LS		
4		WATER POLLUTION CONTROL	100%	LS		
5		MOBILIZATION	100%	LS		
6	*	TEMPORARY EROSION CONTROL BLANKET	4,470	m2		
7	*	TEMPORARY FIBER ROLL	27,450	m		
8	*	HIGH VISIBILITY ESA FABRIC	475	m		
9	*	TEMPORARY PERIMETER/SILT FENCE	6,000	m		
10	*	TEMPORARY CONSTRUCTION ENTRANCE	4	EA		
11	*	TEMPORARY COVER	10,000	m2		
12	*	TEMPORARY CHECK DAM	1,550	m		
13		TEMPORARY DRAINAGE INLET PROTECTION	35	EA		
14	*	DELIVER OFFICE TRAILER	1	EA		
15	*	DELIVER STORAGE CONTAINER	1	EA		
16	*	DELIVER LAPTOP COMPUTER	2	EA		

* Contingent Bid Item

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
17		CONSTRUCTION AREA SIGNS	100%	LS		
18		TRAFFIC CONTROL SYSTEM	100%	LS		
19	*	TEMPORARY TRAFFIC STRIPE	7,000	m		
20	*	TEMPORARY TRAFFIC PAVEMENT MARKING	50	m2		
21	*	TEMPORARY PAVEMENT MARKERS	2,000	EA		
22	*	CHANNELIZER (SURFACE MOUNTED)	20	EA		
23		FLASHING BEACON (PORTABLE)	4	EA		
24		PORTABLE CHANGEABLE MESSAGE SIGN	8	EA		
25	*	DELIVER PORTABLE CHANGEABLE MESSAGE SIGN	2	EA		
26	*	TEMPORARY RAILING (TYPE K)	4,510	m		
27	*	TEMPORARY CRASH CUSHION MODULE	410	EA		
28	*	TEMPORARY CRASH CUSHION (TYPE ABSORB 350, TL-2, 5-element)	2	EA		
29		REMOVE AND SALVAGE TEMPORARY SHORING AND CABLE RAILING	145	m		
30	*	REMOVE METAL BEAM GUARD RAILING	230	m		
31		REMOVE CONCRETE BARRIER	550	m		
32	*	CONCRETE REMOVAL	10	m3		

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
33		TRAFFIC STRIPES, CHANNELIZERS, PAVEMENT MARKINGS AND MARKERS REMOVAL	100%	LS		
34		SLURRY FILL RETIRED GAS LINE (555 mm)	470	m		
35		SLURRY FILL RETIRED GAS LINE (900 mm)	165	m		
36		REMOVE RETIRED GAS LINE	490	m		
37		CLEARING AND GRUBBING	100%	LS		
38		CONTINUOUS GRADE BEAM FOR EXCLUSION FENCE	3,100	m		
39	*	ROADWAY EXCAVATION	367,000	m3		
40	*	EXCAVATE, REMOVE, & REPLACE UNSUITABLE MATERIAL	10,000	m3		
41	*	HYDROSEEDING	150,000	m2		
42		DEVELOP WATER SUPPLY	100%	LS		
43		ASPHALT TREATED PERMEABLE BASE	500	m3		
44	*	CLASS 2 AGGREGATE BASE	15,550	m3		
45		PAVEMENT REINFORCING FABRIC	1,200	m2		
46		ASPHALT CONCRETE DIKE (TYPE A)	2,250	m		
47		ASPHALT CONCRETE DIKE (TYPE C)	275	m		
48		ASPHALT CONCRETE DIKE (TYPE E)	1,510	m		

* Contingent Bid Item

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
49		ASPHALT CONCRETE DIKE (TYPE F)	125	m		
50		SHOULDER RUMBLE STRIP (AC, ROLLED-IN)	8,550	m		
51		WATER QUALITY AND HYDROMODIFICATION BASIN	100%	LS		
52		STORM WATER TREATMENT UNIT	1	EA		
53		1200 mm x 1200 mm REINFORCED CONCRETE BOX	90	m		
54		CONCRETE STRUCTURE	30	m3		
55		ROADSIDE SIGN AND TWO POST	25	EA		
56		INSTALL ROADSIDE SIGN PANEL ON EXISTING POST	10	EA		
57		ROADSIDE SIGN AND POST	35	EA		
58		RELOCATE ROADSIDE SIGN AND POST	10	EA		
59	*	450 mm CORRUGATED PLASTIC PIPE	25	m		
60	*	300 mm CORRUGATED METAL PIPE	25	m		
61	*	450 mm CORRUGATED METAL PIPE	25	m		
62		450 mm REINFORCED CONCRETE PIPE (CLASS III)	950	m		
63		450 mm REINFORCED CONCRETE PIPE (CLASS V)	90	m		
64		600 mm REINFORCED CONCRETE PIPE (CLASS IV)	30	m		

* Contingent Bid Item

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
65		1500 mm REINFORCED CONCRETE PIPE (CLASS V)	265	m		
66		INSTALL 1500 mm REINFORCED CONCRETE PIPE (CLASS V)	22	m		
67		450 mm CONCRETE COLLAR	3	EA		
68		900 mm STEEL FLARED END SECTION	2	EA		
69		1500 mm STEEL FLARED END SECTION	2	EA		
70		TRENCH SAFETY	100%	LS		
71		STANDARD CONCRETE MONUMENT	7	EA		
72		TYPE I DRAINAGE INLET	9	EA		
73		TYPE IV DRAINAGE INLET	8	EA		
74		TYPE VI DRAINAGE INLET	10	EA		
75	*	ROCK SLOPE PROTECTION (FACING CLASS, METHOD B)	1,150	tonne		
76	*	CONCRETE DITCH LINING	700	m		
77	*	SHOULDER GRAVEL SWALE	600	m		
78		LUMINAIRES	8	EA		
79		CONDUIT (FOR LUMINAIRES)	1,000	m		
80		EXCLUSION FENCE	3,700	m		

* Contingent Bid Item

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
81		TYPE CL-1.8 CHAIN LINK FENCE	70	m		
82		REFLECTIVE MARKERS (CONCRETE BARRIER)	130	EA		
83		CULVERT/MILEPOST MARKER	55	EA		
84		DELINEATOR (TYPE F, CLASS 1)	5	EA		
85		GUARD RAIL REFLECTOR ASSEMBLY	555	EA		
86		METAL BEAM GUARD RAILING (WOOD POST)	1,565	m		
87		ALTERNATIVE IN-LINE TERMINAL	8	EA		
88	*	OVERSIDE DRAIN	50	m		
89		CRASH CUSHION (TYPE ADIEM)	2	EA		
90		CONCRETE BARRIER (TYPE 60)	1,765	m		
91		MODIFIED CONCRETE BARRIER (TYPE 60)	250	m		
92		THERMOPLASTIC PAVEMENT MARKING	60	m2		
93		100 mm THERMOPLASTIC TRAFFIC STRIPE	10,300	m		
94		150 mm THERMOPLASTIC TRAFFIC STRIPE	9,690	m		
95		200 mm THERMOPLASTIC TRAFFIC STRIPE	270	m		
96		PAVEMENT MARKER (NON-REFLECTIVE)	40	EA		

* Contingent Bid Item

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
97		PAVEMENT MARKER (RETROREFLECTIVE)	575	EA		
98	*	GEOGRID REINFORCED EMBANKMENT FILL	30,000	m3		
99	*	GEOGRID, TYPE 1	16,000	m2		
100	*	GEOGRID, TYPE 3	20,200	m2		
101	*	GEOGRID, TYPE 4	9,900	m2		
102	*	SEGMENTAL RETAINING WALL	925	m2		
103	*	PERMANENT SHORING	35	m		
104	*	HORIZONTAL DRAINS	500	m		
105	*	EMBANKMENT DRAIN, SIDE HILL FILL	1,500	m		
106		EDGE DRAIN (SLOTTED AND UNSLOTTED)	1,145	m		
107	*	300 MM CORRUGATED STEEL PIPE DOWNDRAIN (1.63 MM THICK)	170	m		
108	*	900 MM CORRUGATED STEEL PIPE INLET (2.77 MM THICK)	5	m		
109		CONCRETE RETAINING WALL (TYPE 6A) AND BARRIER (TYPE 60D)	130	m3		
110		CABLE RAILING	185	m		
111		BOLLARD	8	EA		
112		CONCRETE GUTTER (STD PLAN B3-9)	380	m		

* Contingent Bid Item

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
113	*	TREE REMOVAL	5	EA		
114		CLEANING SITE AND MISCELLANEOUS THINGS	100%	LS		
115	*	MILLING	150	m2		
116	*	SLURRY SEAL SURFACING (TYPE III)	100	tonne		
117		ADJUSTMENT OF EXISTING MONUMENT	1	EA		
118		COMPLIANCE WITH ENDANGERED SPECIES REGULATIONS	100%	LS		
119	*	CONTINGENCY COORDINATION FOR ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES	10	DAY		

TOTAL BASE BID _____ DOLLARS $ _____
(in words)

ADDITIONAL BID ITEMS:

Except as noted otherwise, Additional Bid Items are subject to the same requirements as the Total Base Bid.

Bidders that fail to furnish prices for the Additional Bid Items, the bid shall be rejected as non-responsive. An Additional Bid of One Dollar ($1.00) shall be considered responsive.

ITEM NO.		ITEM	QUANTITY	UNIT	UNIT PRICE (IN FIGURES)	TOTAL (IN FIGURES)
A1		ADDITIONAL BID ITEM #A1: CONSTRUCTION STAKING	100%	LS		
A2	*	ADDITIONAL BID ITEM #A2: ASPHALT CONCRETE (TYPE A)	25,900	tonne		
A3	*	ADDITIONAL BID ITEM #A3: ASPHALT CONCRETE (TYPE A)	21,000	tonne		
A4		ADDITIONAL BID ITEM #A4: TREE: AESCULUS CALIFORNICA (CALIFORNIA BUCKEYE)	55	EA		
A5		ADDITIONAL BID ITEM #A5: TREE: POPULUS NIGRA (LOMBARDI POPLAR)	5	EA		
A6		ADDITIONAL BID ITEM #A6: TREE: QUERCUS AGRIFOLIA (COAST LIVE OAK)	70	EA		
A7		ADDITIONAL BID ITEM #A7 TREE: QUERCUS LOBATA (VALLEY OAK)	40	EA		
A8		ADDITIONAL BID ITEM #A8 TREE: SEQUOIA SEMPERVIRENS (COAST REDWOOD)	10	EA		
A9		ADDITIONAL BID ITEM #A9: TREE: SEQUOIADENDRON GIGANTEUM (GIANT REDWOOD)	5	EA		
A10		ADDITIONAL BID ITEM #A10 PLANT ESTABLISHMENT PERIOD (3 YEARS)	100%	LS		

TOTAL ADDITIONAL BID _____ DOLLARS $ _____
(in words)

ADDITIONAL BID ITEMS:

The bidder should understand that the ranking of the "Actual Lowest Bid" received shall be established based on the lowest Total Base Bid plus all Additional Bid Items, which shall be the basis for award of contract per Public Contact Code. Upon determination of the lowest responsible bidder based on the Total Base Bid plus all Additional Bid Items, the County shall determine whether to include any of the Additional Bid Items to the Total Base Bid. If the County elects to include any of the Additional Bid Items, then the final contract award shall be the Total Base Bid plus the selected Additional Bid Items; if the County elects not to include any of the Additional Bid Items, then the final contract award shall be the Total Base Bid. The prices bid include all State, Federal, and other taxes applicable to the project.

* Contingent Bid Item

The Bidder shall list the name and address of each subcontractor to whom the Bidder proposes to subcontract portions of the work, as required by the provisions in Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications and Section 2-1.01, "General," of the special provisions.

LIST OF SUBCONTRACTORS

Name and Address	Description of Work to be Subcontracted

(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THOSE CERTIFICATIONS WHICH ARE A PART OF THIS PROPOSAL)

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

The bidder_____,
proposed subcontractor _____, hereby certifies that he has_____, has not___, participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, he has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filling requirements.

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts, which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

PUBLIC CONTRACT CODE

Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has ___ , has not ____been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Public Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes _____ No _____

If the answer is yes, explain the circumstances in the following space.

Public Contract Code 10232 Statement

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement and Questionnaire.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Noncollusion Affidavit

(Title 23 United States Code Section 112 and
Public Contract Code Section 7106)

To the COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that 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, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that 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, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

DEBARMENT AND SUSPENSION CERTIFICATION

TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

The bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, and manager:

- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
- Has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;
- Does not have a proposed debarment pending; and
- Has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions.
The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(l) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such subrecipients shall certify and disclose accordingly.

Accompanying this proposal is _____

(NOTICE: INSERT THE WORDS "CASH($ _____)," "CASHIER'S CHECK," "CERTIFIED CHECK," OR "BIDDER'S BOND," AS THE CASE MAY BE.)

in amount equal to at least ten percent of the total of the bid.

The names of all persons interested in the foregoing proposal as principals are as follows:

IMPORTANT NOTICE

If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a copartnership, state true name of firm, also names of all individual copartners composing firm; if bidder or other interested person is an individual, state first and last names in full.

_____

_____

_____

_____

Licensed in conformance with an act providing for the registration of Contractors,

License No. _____ Classification(s) _____

ADDENDA - This Proposal is submitted with respect to the changes to the contract included in addenda number/s _____

(Fill in addenda numbers if addenda have been received and insert, in this Proposal, any Engineer's Estimate sheets that were received as part of the addenda.)

By my signature on this proposal I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code Sections 10162, 10232 and 10285.1 are true and correct and that the bidder has complied with the requirements of Section 8103 of the Fair Employment and Housing Commission Regulations (Chapter 5, Title 2 of the California Administrative Code). By my signature on this proposal I further certify, under penalty of perjury under the laws of the State of California and the United States of America, that the Noncollusion Affidavit required by Title 23 United States Code, Section 112 and Public Contract Code Section 7106; and the Title 49 Code of Federal Regulations, Part 29 Debarment and Suspension Certification are true and correct.

Date: _____

Sign Here

_____

_____

_____

Signature and Title of Bidder

Business Address _____

Place of Business _____

Place of Residence _____

(NOTE: Bidders Must Use This Form - Not a Surety Company Form)

BID BOND

KNOW ALL PERSONS BY THESE PRESENTS;

That the undersigned, _____, as PRINCIPAL, and

_____

a corporation organized and existing under and by virtue of the laws of the State of _____ and authorized to do business in the State of California, as SURETY, are hereby held and firmly bound unto the COUNTY OF ALAMEDA in an amount equal to ten percent (10%) of the total amount bid

_____

_____ Dollars (_____)

lawful money of the United State of America, for the payment of which sum well and truly to be made as agreed and liquidated damages, we and each of us, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT whereas the PRINCIPAL has submitted to COUNTY OF ALAMEDA, a certain bid for work required for the project described below:

_____

_____

which work is specifically described in the accompanying bid.

NOW, THEREFORE, if said bid shall be rejected, or in the alternate, if said bid shall be accepted and the PRINCIPAL, within the time and in the manner described under the specifications, enters into a written contract in accordance with the bid and files the two bonds, one guaranteeing faithful performance of the work to be done and the other guaranteeing payment for labor and materials, as required by law, then the obligation shall be null and void; otherwise, the same shall remain in full force and effect.

The SURETY, for value received, hereby stipulates and agrees that the obligation of said SURETY and its bond shall be in no way impaired or affected by an extension of the time within which the COUNTY may accept such bid; and said SURETY does hereby waive notice of any such extension.

In the event suit is brought upon this bond by the COUNTY OF ALAMEDA and judgment is recovered, the SURETY shall pay all costs incurred by said COUNTY in bringing such suit, including a reasonable attorney's fee to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this day _____ of _____, 2008.

_____	_____
SURETY	PRINCIPAL
By _____	By _____

Local Agency Bidder-DBE (Construction Contracts)-Information

The successful bidder must execute and return the LOCAL AGENCY BIDDER – DBE INFORMATION form, even if no DBE participation will be reported.

AGENCY:_____ LOCATION:_____
PROJECT DESCRIPTION: _____
CONTRACT NUMBER:_____
FEDERAL-AID PROJECT NUMBER: _____
TOTAL CONTRACT AMOUNT: $_____
FEDERAL SHARE (For local agency to complete) : $_____
BID DATE:_____
BIDDER'S NAME:_____
ADVERTISED DBE CONTRACT AVAILABILITY ADVISORY Percentage:_____

CONTRACT ITEM NO.	ITEM OF WORK AND DESCRIPTION OR SERVICES TO BE SUBCONTRACTED OR MATERIALS TO BE PROVIDED [2]	DBE Cert. No. AND EXPIRATION DATE	NAME OF DBEs [1] (Must be certified on the date bids are opened - include DBE address and phone number)	DOLLAR AMOUNT DBE [3]

IMPORTANT: Identify all DBE firms being participating in the project, regardless of tier. Names of the First Tier DBE Subcontractors and their respective item(s) of work listed above should be consistent, where applicable, with the names and items of work in the "List of Subcontractors" submitted with your bid. Provide copies of the DBEs' quotes, and if applicable, a copy of joint venture agreements. pursuant to the Subcontractors Listing Law and the Special Provisions.

Total Claimed Participation	$_____ _____%

1. Enter DBE prime and subcontractors certification number. Prime contractors shall indicate all work to be performed by DBEs including work performed by its own forces.
2. If 100% of item is not to be performed or furnished by DBE, describe exact portion of item to be performed or furnished by DBE.
3. See Section "Disadvantaged Business Enterprise (DBE)," of the Special Provisions (construction contracts); to determine how to count the participation of DBE firms.

_____
Signature of Bidder

_____
Date (Area Code) Tel. No.

_____
Person to Contact (Please Type or Print)

Local Agency Bidder - DBE Information (Rev 5/01/06)

Distribution: (1) Copy - Fax immediately to the Caltrans District Local Assistance Engineer (DLAE) upon award.
(2) Copy - Include in award package to Caltrans District Local Assistance
(3) Original – Local agency files

DISCLOSURE OF LOBBYING ACTIVITIES

COMPLETE THIS FORM TO DISCLOSE LOBBYING ACTIVITIES PURSUANT TO 31 U.S.C. 1352

1. Type of Federal Action:

☐
- a. contract
- b. grant
- c. cooperative agreement
- d. loan
- e. loan guarantee
- f. loan insurance

2. Status of Federal Action:

☐
- a. bid/offer/application
- b. initial award
- c. post-award

3. Report Type:

☐
- a. initial
- b. material change

For Material Change Only:
year ____ quarter _____
date of last report _____

4. Name and Address of Reporting Entity

☐ Prime ☐ Subawardee
Tier _____, if known

Congressional District, if known

5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:

Congressional District, if known

6. Federal Department/Agency:

7. Federal Program Name/Description:

CFDA Number, if applicable _____

8. Federal Action Number, if known:

9. Award Amount, if known:

10. a. Name and Address of Lobby Entity
(If individual, last name, first name, MI)

b. Individuals Performing Services (including address if different from No. 10a)
(last name, first name, MI)

(attach Continuation Sheet(s) if necessary)

11. Amount of Payment (check all that apply)

$_____ ☐ actual ☐ planned

12. Form of Payment (check all that apply):

☐ a. cash
☐ b. in-kind; specify: nature _____
value _____

13. Type of Payment (check all that apply)

☐
- a. retainer
- b. one-time fee
- c. commission
- d. contingent fee
- e deferred
- f. other, specify _____

14. Brief Description of Services Performed or to be performed and Date(s) of Service, including officer(s), employee(s), or member(s) contacted, for Payment Indicated in Item 11:

(attach Continuation Sheet(s) if necessary)

15. Continuation Sheet(s) attached: **Yes** ☐ **No** ☐

16. Information requested through this form is authorized by Title 31 U.S.C. Section 1352. This disclosure of lobbying reliance was placed by the tier above when his transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semiannually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature: _____

Print Name: _____

Title: _____

Telephone No.: _____ Date: _____

Federal Use Only:

Authorized for Local Reproduction
Standard Form - LLL

Standard Form LLL Rev. 09-12-97

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime federal recipient, at the initiation or receipt of covered Federal action or a material change to previous filing pursuant to title 31 U.S.C. Section 1352. The filing of a form is required for such payment or agreement to make payment to lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress an officer or employee of Congress or an employee of a Member of Congress in connection with a covered federal action. Attach a continuation sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered federal action for which lobbying activity is and/or has been secured to influence, the outcome of a covered federal action.
2. Identify the status of the covered federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last, previously submitted report by this reporting entity for this covered federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in Item 4 checks "Subawardee" then enter the full name, address, city, State and zip code of the prime federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organization level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate federal identifying number available for the federal action identification in item 1 (e.g., Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract grant. or loan award number, the application/proposal control number assigned by the federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered federal action where there has been an award or loan commitment by the federal agency, enter the federal amount of the award/loan commitments for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influenced the covered federal action.
    (b) Enter the full names of the individual(s) performing services and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.

12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed or will be expected to perform and the date(s) of any services rendered. Include all preparatory and related activity not just time spent in actual contact with federal officials. Identify the federal officer(s) or employee(s) contacted or the officer(s) employee(s) or Member(s) of Congress that were contacted.
15. Check whether or not a continuation sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name title and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

SF-LLL-Instructions Rev. 06-04-00

FEDERAL MINIMUM WAGE RATES

The Federal Minimum Wage Rates are enclosed in the Special Provisions.

See the Caltrans HomePage on the internet for the current rates at http://www.dot.ca.gov or contact your District Local Assistance Engineer for a hard copy.

COUNTY OF ALAMEDA, PUBLIC WORKS AGENCY

CONTRACT NO. _____

THIS AGREEMENT, made and concluded, in quadruplicate, this _____ day of _____, 2008, between the County of Alameda, a political subdivision of the State of California, hereinafter designated as the party of the first part, and _____, Contractor, party of the second part.

ARTICLE I. - WITNESSETH, That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the said party of the first part, and under the conditions expressed in the 2 bonds, bearing even date with these presents, and hereunto annexed, the said party of the second part agrees with the said party of the first part, at his own proper cost and expense, to do all the work and furnish all the materials, except such as are mentioned in the specifications to be furnished by said party of the first part, necessary to construct and complete in a good, workmanlike and substantial manner and to the satisfaction of the County Engineer of Alameda County, the work described in the special provisions and the project plans described below, including any addenda thereto, and also in accordance with the California Department of Transportation Standard Plans, dated July, 1997, the Standard Specifications, dated July, 1995, and the Labor Surcharge And Equipment Rental Rates in effect on the date the work is accomplished, which said special provisions, project plans, Standard Plans, Standard Specifications, and Labor Surcharge And Equipment Rental Rates are hereby specially referred to and by such reference made a part hereof. The project specifications, special provisions and plans, and the contractor's bid proposal, as accepted by the adoption of Resolution No. _____ for the project, are now on file in the Alameda County Public Works Agency Construction Department.

FOR INFORMATION ONLY
NOT TO BE COMPLETED
WITH BID PROPOSAL

The project plans and special provisions for the work to be done are entitled:

PROJECT TITLE

ARTICLE II. - The said party of the first part hereby promises and agrees with the said Contractor to employ, and does hereby employ, the said Contractor to provide the materials and to do the work according to the terms and conditions herein contained and referred to, for the prices hereinafter set forth, and hereby contracts to pay the same at the time, in the manner and upon the conditions herein set forth; and the said parties for themselves, their heirs, executors, administrators, successors and assigns, do hereby agree to the full performance of the covenants herein contained.

ARTICLE III. - The State general prevailing wage rates determined by the Director of Industrial Relations are hereby made a part of this contract. It is further expressly agreed by and between the parties hereto that should there be any conflict between the terms of this instrument and the bid or proposal of said Contractor, then this instrument shall control and nothing herein shall be considered as an acceptance of the said terms of said proposal conflicting herewith.

ARTICLE IV. - By my signature hereunder, as Contractor, I certify that I am aware of the provisions of Section 3700 of the Labor Code which require 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 I will comply with such provisions before commencing the performance of the work of this contract.

ARTICLE V. - And the said Contractor agrees to receive and accept the following prices as full compensation for furnishing all materials and for doing all the work contemplated and embraced in this agreement; also for all loss or damage, arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by the COUNTY OF ALAMEDA, and for all risks of every description connected with the work; also for all expenses incurred by or in consequence of the suspension or discontinuance of work and for well and faithfully completing the work, and the whole thereof, in the manner and according to the plans and specifications, and the requirements of the Engineer under them, to wit:

BID ITEMS

Item No.	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price (In Figures)	Item Total (In Figures)

FOR INFORMATION ONLY

(Items in CONTRACT will be the same as those bid in PROPOSAL)

NOT TO BE COMPLETED WITH BID PROPOSAL

IN WITNESS WHEREOF, the parties to these presents have here-unto set their hands the year and date first above written

CONTRACTOR

By:_____

Address:

Phone:

License No. _____

Fed. Employer Identification No. _____

COUNTY OF ALAMEDA

By:_____
President, Board of Supervisors, County of Alameda, State of California

Approved as to Form
RICHARD E. WINNIE, County Counsel

By: _____
Deputy

Approved Effective _____

I hereby certify under penalty of perjury that the President of the board of Supervisors was duly authorized to execute this document on behalf of the County of Alameda by a majority vote of the Board on _____; and that a copy has been delivered to the President as provided by government Code Section 25103.

Date: _____

ATTEST:

_____
Clerk of the Board of Supervisors, County of Alameda, State of California

By: _____
Deputy

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned _____, as Principal, and

_____,

a corporation duly authorized to do business in the State of California, as Surety, are hereby held and firmly bound unto the County of Alameda in the sum of _____ ( ) in lawful money of the United States of America, for the payment of which sum well and truly to be made to the said County of Alameda, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal entered into a contract with the said County of Alameda, which contract is hereunto annexed and made a part hereof, for accomplishment of the project described as follows:

FOR INFORMATION ONLY

(PROJECT TITLE)

NOT TO BE COMPLETED WITH BID PROPOSAL

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform all the undertakings, covenants, terms, conditions, and agreements of the aforesaid contract, and if the Principal shall satisfy all claims and demands incurred under the said contract, and shall fully indemnify and save harmless the County of Alameda from all costs and damages which said County may suffer by reason of failure to do so, and shall reimburse and repay the County of Alameda all outlay and expense which the said County may incur in making good any default, then this obligation shall become null and void; otherwise, this obligation shall remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to work to be performed thereunder or the specifications accompanying the same shall in any wise affect this obligation on this bond, and said Surety does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this _____ day of _____, 2008.

_____	_____
SURETY	PRINCIPAL
By: _____	By: _____
Surety Address:	The foregoing bond was accepted and approved this _____ day of _____, 2008.
Phone:	_____ President of the Board of Supervisors, County of Alameda, State of California

I hereby certify under penalty of perjury that the President of the Board of Supervisors was duly authorized to execute this document on behalf of the County of Alameda by a majority vote of the Board on _____; and that a copy has been delivered to the President as provided by Government Code Section 25103.

ATTEST:

_____

Clerk of the Board of Supervisors, County of Alameda, State of California

Dated: _____

BY: _____

Deputy

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned _____, as Principal, and _____, a corporation duly authorized to do business in the State of California, as Surety, are hereby held and firmly bound unto the County of Alameda in the sum of _____ (_____) in lawful money of the United States of America, for the payment of which sum well and truly to be made to the said County of Alameda, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal entered into a contract with the said County of Alameda, which contract is hereunto annexed and made a part hereof, for accomplishment of the project described as follows:

PROJECT TITLE

FOR INFORMATION ONLY

NOT TO BE COMPLETED WITH BID PROPOSAL

NOW, THEREFORE, if the Principal shall promptly make payment to all person, firms, subcontractors, corporation and/or others furnishing materials for or performing labor in the prosecution of the work provided for in the aforesaid contract, and any authorized extension or modification thereof, including all amounts due for materials, equipment, mechanical repairs, transportation, tools and services consumed or used in connection with the performance of such work, all amounts that may become due under the Unemployment Insurance Act of California or to the Franchise Tax Board , and for all labor performed in connection with such work whether by subcontractor or otherwise, and all other requirements provided in Civil Code Section 3248 or the requirements imposed by law, then this obligation shall become null and void; otherwise this obligation shall remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligation on this bond, and said Surety does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this _____ day of _____, 2008.

_____	_____
SURETY	PRINCIPAL
BY: _____	BY: _____
Surety Address:	The foregoing bond was accepted and approved this _____ day of _____, 2008.
Phone:	_____ President of the Board of Supervisors, County of Alameda, State of California

I hereby certify under penalty of perjury that the President of the Board of Supervisors was duly authorized to execute this document on behalf of the County of Alameda by a majority vote of the Board on _____; and that a copy has been delivered to the President as provided by Government Code Section 25103.

ATTEST:

_____
Clerk of the Board of Supervisors, County of Alameda, State of California

DATED: _____

By: _____
Deputy

AFFIRMATIVE ACTION PROGRAM

I. AFFIRMATIVE ACTION PROGRAM FOR ALL CONTRACTS

A. APPLICATION: The provisions outlined shall apply to all work performed under the contract.

B. DISADVANTAGED BUSINESS PARTICIPATION:

1. PURPOSE: It is the express purpose of this Affirmative Action Program to encourage the participation of socially and economically Disadvantaged Business Enterprises (DBE's) in the County of Alameda Public Works capital projects to ensure that all contracting firms receive an equal opportunity to bid and receive work on County construction projects, and specifically to maximize opportunities for DBE's to participate in Alameda County's construction program. This program shall include subcontractors, suppliers, and truckers.

2. DEFINITIONS - DISADVANTAGED BUSINESS ENTERPRISE (DBE): For the purpose of this program, "socially and economically disadvantaged business concern" means a business that meets all of the following criteria:

a) A business that is at least 51 percent owned by one or more socially or economically disadvantaged persons, DBE persons, or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more of those persons.

b) A business that is a small business concern as defined by the U.S. Small Business Act, that is, controlled by the same socially and economically disadvantaged individuals(s) which have average annual gross receipts over the preceding 3 fiscal years not to exceed $21,300,000.

c) A business whose management and daily business operations are controlled by one or more socially and economically disadvantaged persons.

"Socially and economically disadvantaged persons" include Women, African Americans, Hispanic Americans, Native Americans (including American Indians, Eskimos, Aleuts, and Native Hawaiians), Asian-Pacific Americans (including persons whose origins are from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the United States Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia, and Taiwan), and other minorities or any other group of natural persons determined by the State Department of Transportation to be so disadvantaged.

3. DBE PARTICIPATION: It is the intent of the County of Alameda that only firms which are truly Disadvantaged Business Enterprises (DBE) should have the maximum opportunities to participate in County construction projects. To that end, **only DBE firms which are certified as such by or recognized as such by or whose certification is accepted by the State of California Unified Certification Program** to have effective certification programs should be counted towards achieving the DBE participation specified below.

   a) **The County shall award construction contracts to the lowest responsible bidder as required by law.**

4. BID EVALUATION PROCEDURES: Bid Evaluation will initiate with the submission of DBE Bid Information Sheet AAP Form 101-101A, which is to be submitted with bid proposal at the time of the bid opening, in accordance with Notice to Bidders. A sample form is provided at the end of this section.

   The overall bid process shall guarantee contractors the freedom to choose subcontractors and suppliers regardless of their bid amounts.

   a) **All bidders must submit the DBE Bid Information Sheet with their bid proposal at the time of bid opening. The information supplied by the bidders shall be certified by a principal of the firm. Dollar amounts will be treated as proprietary and will be solely for the use of County staff. Along with the DBE Bid Information Sheet, bidders must submit copies of DBE certifications, which are to be submitted to Public Works Agency, Room 100, 951 Turner Court, Hayward, California 94545, at the time of the bid opening**

      The principal of the firm shall certify the information supplied by the bidders. A sample form is provided at the end of this section

   b) After the bids are opened, the DBE subcontractors, suppliers and/or trucking firms who bid to the two apparent low bidders may be required to provide the amounts of their bids to the County for the purposes of verification. This information shall be certified by a principal of the firm. The information, if required, will be treated as proprietary, and will be solely for the use of County staff.

C. JOINT VENTURES: Whenever a joint venture occurs involving either a prime or non-prime (i.e., subcontractors and suppliers) DBE firm at any level of contracting, trucking, or supplying, the Prime Contractor shall provide the County with a full account of the nature of ownership interests, the basis for creation of the joint venture, and the particular financial participation and administrative responsibilities of the interested parties. In evaluating the Prime Contractor's effort, the DBE percentage which is to be attributed to a joint venture shall be determined by multiplying the percentage of the total contract amount which is to be performed by the joint venture times the percentage of actual financial participation in the joint venture which the DBE business represents.

II. NONDISCRIMINATION

A. PURPOSE: The Contractor shall comply with the Americans with Disabilities Act and Title VII of the Civil Rights Act of 1964 and shall not, in regard to any position for which an employee or applicant for employment is qualified, discriminate against any employee or applicant for employment because of race, creed, color, disability, sex, sexual orientation or national origin, age, religion, Vietnam Era Veteran's status, political affiliation, or by any other non-merit factors be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, disability, sex, sexual orientation or national origin, age, religion, Vietnam Era Veteran's status, political affiliation, or any other non-merit factors. Such action shall include but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other terms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the County setting forth the provisions of this nondiscrimination clause.

Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment with out regard to race, creed, color, disability, sex, sexual orientation or national origin, age, religion, Vietnam Era Veteran's status, political Contractor shall, in all solicitations or advertisements for employees affiliation, or any other non-merit factors.

The Contractor or Subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of FHWA-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this

contract, which may result in the termination of this contract or such other remedy as the local agency recipient deems appropriate.

The prime Contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 10 days from the receipt of each payment the prime Contractor received from PWA. The prime Contractor agrees further to return retainer payments to each subcontractor within 30 days after the Subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the PWA. This clause applies to both DBE and non-DBE subcontractors.

III. LABOR COMPLIANCE REQUIREMENTS

A. APPLICATION: The following provisions shall apply to all contracts for construction projects for buildings, roadways, and flood control facilities.

B. MEETINGS: After awarding of the contract and prior to beginning work, the Public Works Agency may hold a pre-construction conference at which a representative of the Contractor and of each Subcontractor must attend. As it becomes necessary during the course of the contract, the Public Works Agency may call meetings of the Contractor and pertinent Subcontractors.

C. INFORMATION AND RECORDS: For the purposes of determining compliance with this program, the Contractor shall provide the county with access to all records and documents that related to DBE participation, and to all records of employment advertisements, application forms, tests and other selection techniques used to hire, transfer, promote, train or retain personnel, and other pertinent records and data pertaining to the project under consideration. Proprietary information will be safeguarded.

The Contractor/Subcontractor must submit the following information on Alameda County approved forms. All subcontractor submittals must be through the prime Contractor.

1. DBE Bid Information: AAP Form 101-101A at the time of BID submission along with copies of DBE certifications.

2. Certified weekly payrolls (AAP Form 103-103A) showing the wages paid to each employee, the employee's job classification and group number where applicable, sex and ethnic code. Payrolls will be submitted by the Contractor and each Subcontractor via the Contractor. This provision applies to all classifications, including truckers. A Fringe Benefit Statement must be submitted by each Contractor/Subcontractor with the first certified payroll.

3. Equal Employment Policy (AAP Form 107). To be completed by both Contractor and Subcontractor.

4. Subcontractor Information (AAP Form 102)

5. DBE Utilization when required (AAP Form 106-106A).

6. Prevailing Wage Information Sheet (AAP Form 104) for prevailing wage rates for both Contractor and Subcontractors.

D. NON-DISCRIMINATION POLICY FORM: The Contractor must post a Nondiscrimination Policy in a conspicuous place at each construction site. A sample is provided.

E. SUBSTITUTION OF DBE FIRMS: Substitution of other firms (subcontractors at any level, suppliers and/or truckers) for those listed in

the PROPOSAL on the sheet entitled DBE BID INFORMATION shall not be made without prior approval of the County, and shall be in accordance with State or Federal law where applicable.

F. PROMPT PAYMENT: The prime Contractor or Subcontractor shall pay to any subcontractor, not later than 10 days of receipt of each progress payment, unless otherwise agreed to in writing, the respective amounts allowed the Contractor on account of the work performed by the Subcontractors, to the extent of each Subcontractor's interest therein.

IV. NON-COMPLIANCE WITH AFFIRMATIVE ACTION PROGRAM

The following provisions shall apply to all contracts subject to the provisions of Section I through Section III.

A. DETERMINATION OF NON-COMPLIANCE:

1. If the Public Works Agency finds that the Contractor has not met the Affirmative Action requirements in the contract including submission of certified payroll documents, the Director of Public Works (or designee) shall hold a meeting with the Contractor for the purpose of determining whether the Contractor is out of compliance. If after the meeting the Contractor is found to be still out of compliance, the Contractor will be notified of a public hearing. The public hearing will be held before the Board of Supervisors with a minimum five calendar-days notice to the Contractor. If the Board of Supervisors finds that there has been a violation, the County will notify the Contractor in writing of the sanctions to be imposed.

2. In addition, the County shall deem a finding by the Fair Employment Practice Commission that there was willful violation of the California Fair Employment Act also to be a violation by the Contractor of the Affirmative Action requirements of the contract, and such violation shall be subject to the sanctions provided herein.

B. SANCTIONS: A finding at the public hearing that there has been violation of the Affirmative Action requirements of the contract shall be cause for the Board of Supervisors to impose any or all of the following sanctions:

1. Withhold an additional ten percent (10%) of all further contract progress payments until the Contractor provides evidence satisfactory to the Board of Supervisors that the condition of non-compliance has been corrected.

2. Suspend the contract until such time as the Contractor provides evidence satisfactory to the Board of Supervisors that the condition of non-compliance has been corrected.

3. Terminate the contract and collect appropriate damages from the Contractor.

4. Declare that the Contractor is a non-responsible bidder, and is ineligible to make bids on future County contracts for a stated period of time or until the Contractor can demonstrate to the satisfaction of the Board of Supervisors that the violation has been corrected.

V. SOURCES FOR DBE CONTRACTORS

The following sources may be contacted for assistance in soliciting DBE participation.

The County contracts with Luster for assistance:

L. Luster& Associates
(on-site office at PWA)
951 Turner Court, Room #100
Hayward, CA 94545
510/670-6407
510/670-5269 FAX
Contact: Sheldon Jefferson

In addition, these firms may also be able to help you:

Triaxial Management Services, Inc.
1545 Willow Street, 1st Floor
Oakland, California 94607
510/286-1313
510/286-6792 FAX
Contact: Nathan Essando

United Asian Contractors Association
C/O Asian, Inc.
1670 Pine Street
San Francisco, CA 94109
415/928-5910
415/921-0182 FAX

VSCE
827 Broadway, Suite 340
Oakland, CA 94607
510/835-5001
510/899-0799 FAX
Contact: Jesus Vargas

BIDDER'S LIST OF SUBCONTRACTORS (DBE and NON-DBE)- PART 1

The bidder shall list all subcontractors (both DBE and non-DBE) in accordance with Section 2-1.054 of the Standard Specifications and per Title 49, Section 26.11 of the Code of Federal Regulations. This listing is required in addition to listing DBE Subcontractors elsewhere in the proposal. **Photocopy this form for additional firms.**

Firm Name/ Address/ City, State, ZIP	Phone/ Fax	Certified by Caltrans as a DBE?	Annual Gross Receipts	Description of Portion of Work to be Performed
Name	*Phone*	☐YES ☐NO	☐ < $1 million	
			☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	
Name	*Phone*	☐YES ☐NO	☐ < $1 million	
			☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	
Name	*Phone*	☐YES ☐NO	☐ < $1 million	
			☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	
Name	*Phone*	☐YES ☐NO	☐ < $1 million	
			☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	

BIDDER'S LIST OF SUBCONTRACTORS (DBE and NON-DBE)- PART II

The bidder shall list all subcontractors (both DBE and non-DBE) who provided a quote or bid but were not selected to participate as a subcontractor on this project. This is required for compliance with Title 49, Section 26 of the Code of Federal Regulations. **Photocopy this form for additional firms.**

Firm Name/ Address/ City, State, ZIP	Phone/ Fax	Certified by Caltrans as a DBE?	Annual Gross Receipts	Description of Portion of Work to be Performed
Name	*Phone*	☐YES	☐ < $1 million	
		☐NO	☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	
Name	*Phone*	☐YES	☐ < $1 million	
		☐NO	☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	
Name	*Phone*	☐YES	☐ < $1 million	
		☐NO	☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	
Name	*Phone*	☐YES	☐ < $1 million	
		☐NO	☐ < $5 million	
Address		*If YES list DBE #:*	☐ < $10 million	
	Fax		☐ < $15 million	
City State ZIP		Age of Firm (Yrs.)	☐ > $15 million	

Distribution: Local Agency File (Original)

PROJECT NO. _____

PROJECT NAME _____

PRIME CONTRACTOR _____

SUBCONTRACTOR INFORMATION

NAME OF SUBCONTRACTOR	ADDRESS	LICENSE #	FED TAX ID NO.	PHONE	FAX

PLEASE BRING THIS COMPLETED FORM TO THE PRE-CONSTRUCTION CONFERENCE

DBE CERTIFICATION STATUS CHANGE

STATE OF CALIFORNIA · DEPARTMENT OF TRANSPORTATION
DISADVANTAGED BUSINESS ENTERPRISES (DBE) CERTIFICATION STATUS CHANGE
CP-CEM-2403(F) (New. 10/99)

CONTRACT NUMBER	COUNTY	ROUTE	POST MILES/POST KILOMETERS	ADMINISTERING AGENCY	CONTRACT COMPLETION DATE
PRIME CONTRACTOR		BUSINESS ADDRESS			ESTIMATED CONTRACT AMOUNT

Prime Contractor: List all DBEs with change in certification status (certified/decertified) while in your employ, whether or not firms were originally listed for goal credit. Attach DBE certification/decertification letter in accordance with the Special Provisions.

CONTRACT ITEM NO	SUBCONTRACTOR NAME AND BUSINESS ADDRESS	BUSINESS PHONE	CERTIFICATION NUMBER	AMOUNT PAID WHILE CERTIFIED	CERTIFICATION DATE ☐ DECERTIFICATION LETTER ATTACHED
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐
				$	☐

COMMENTS:

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT

CONTRACTOR REPRESENTATIVE SIGNATURE	TITLE	BUSINESS PHONE NUMBER	DATE

TO THE BEST OF MY KNOWLEDGE, THE ABOVE INFORMATION IS COMPLETE AND CORRECT

RESIDENT ENGINEER SIGNATURE	BUSINESS PHONE NUMBER	DATE

DISTRIBUTION Original-Construction Program Copy to: 1) Business Enterprise Program 2) Prime Contractor 3) District Construction 4) Resident Engineer

STATEMENT OF COMPLIANCE
(CERTIFICATION UNDER PENALTY OF PERJURY)

Date _____ at _____

I, _____ do certify under penalty of perjury:
(Name of signatory party) Title

(1) That all of the information in this report is true and correct.

(2) That I pay or supervise the payment of the persons employed by _____ on
(Contractor or subcontractor)

the _____, that during the payroll period commencing on the _____ day of _____
(Building or work)

19 ____ and ending the _____ day of _____, 20 _____, all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said _____ from the full weekly wages earned by any person and that no deductions have been made either
(Contractor or subcontractor)
directly or indirectly from the full wages earned by any person, other than permissible deductions, as described below:

_____

_____

_____

(3) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete, that the wage rate for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract, that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(4) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency.

(5) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

[ ] In addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in Section 5 (c) below:

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

[ ] Each Laborer or mechanic listed in the above referenced payroll has been paid as indicated on the payroll,
an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in Section 5(c) below:

(c) EXCEPTIONS

EXCEPTION (Craft)	EXPLANATION
Remarks:	
Name and Title	Signature

Information in this report is submitted pursuant to Sections 1770 thru 1780 of the California Labor Code.

On federally-funded projects, permissible deductions are defined in Regulations, Part 3 (29 CFR Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948 63 Stat. 108, 72 Stat. 967, 76 Sat. 357, 40 U.S.C. 276c).

Also, the willful falsification of any of the above statements may subject the contractor or subcontractor to civil or criminal prosecution (see Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code).

CERTIFIEL AYROLL

COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY
CERTIFIED PAYROLL

NAME OF CONTRACTOR ☐
OR SUBCONTRACTOR ☐

ADDRESS

PAYROLL NO. | FOR WEEK ENDING | PROJECT AND LOCATION | CONTRACT NO.

(1) NAME, ADDRESS, ETHNIC CODE, AND SOCIAL SECURITY NUMBER OF EMPLOYEE	(2) NO. OF WITH-HOLDING EXEMPTIONS	(3) WORK CLASSIFICATION AND GROUP #	OT OH ST	HOURS WORKED EACH DAY							(5) TOTAL HOURS	(6) RATE OF PAY *	(7) TOTAL HOURS ALL PROJECTS	(8) GROSS AMOUNT EARNED THIS PROJECT	ALL PROJECTS	(9) DEDUCTIONS (BASED ON GROSS AMOUNT EARNED - ALL PROJECTS FED TAX	FICA (S.SEC.)	STATE TAX	SDI	VAC	OTHER	TOTAL DED-UCTIONS	(10) NET WAGES PAID FOR WEEK	CHECK NO.	CHECK NO.
			O																						
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*RATE OF PAY = HOURLY PREVAILING WAGE RATE, INCLUDING APPLICABLE FRINGE BENEFITS
FOR ASSISTANCE, CALL CONTRACT COMPLIANCE AT (510) 670-5243.

FED AAP FORM 103
Rev. 12/97

LABOR COMMISSIONER, STATE OF CALIFORNIA Department of Industrial Relations DIVISION OF LABOR STANDARDS ENFORCEMENT Bureau of field Enforcement 2424 Arden Way, Suite 340 Sacramento, California 95825	
Contractor: ⌜ ⌝ ⌞ ⌟	

PUBLIC WORKS FRINGE BENEFIT STATEMENT

PROJECT NAME/CONTRACT NUMBER			
ADDRESS/LOCATION			
HEALTH AND WELFARE	**NAME OF PLAN**		**CONTRIBUTIONS MADE:** ☐ WEEKLY ☐ MONTHLY ☐ QUARTERLY ☐ ANNUALLY
	ADDRESS		
	NAME OF ADMINISTRATOR		
	ADDRESS		
	CLASSIFICATION(S) OF WORKERS	**AMOUNT OF CONTRIBUTION PER CLASSIFICATION PER HR**	
PENSION	**NAME OF PLAN**		**CONTRIBUTIONS MADE:** ☐ WEEKLY ☐ MONTHLY ☐ QUARTERLY ☐ ANNUALLY
	ADDRESS		
	NAME OF ADMINISTRATOR		
	ADDRESS		
	CLASSIFICATION(S) OF WORKERS	**AMOUNT OF CONTRIBUTION PER CLASSIFICATION PER HR**	

PLEASE COMPLETE THE REVERSE SIDE
PUBLIC WORKS FRINGE BENEFIT STATEMENT

VACATION/ HOLIDAY	NAME OF PLAN		CONTRIBUTIONS MADE: ☐ WEEKLY ☐ MONTHLY ☐ QUARTERLY ☐ ANNUALLY
	ADDRESS		
	NAME OF ADMINISTRATOR		
	ADDRESS		
	CLASSIFICATION(S) OF WORKERS	AMOUNT OF CONTRIBUTION PER CLASSIFICATION PER HR	
TRAINING	NAME OF PLAN		CONTRIBUTIONS MADE: ☐ WEEKLY ☐ MONTHLY ☐ QUARTERLY ☐ ANNUALLY
	ADDRESS		
	NAME OF ADMINISTRATOR		
	ADDRESS		
	CLASSIFICATION(S) OF WORKERS	AMOUNT OF CONTRIBUTION PER CLASSIFICATION PER HR	
DUES	NAME OF PLAN		CONTRIBUTIONS MADE: ☐ WEEKLY ☐ MONTHLY ☐ QUARTERLY ☐ ANNUALLY
	ADDRESS		
	NAME OF ADMINISTRATOR		
	ADDRESS		
	CLASSIFICATION(S) OF WORKERS	AMOUNT OF CONTRIBUTION PER CLASSIFICATION PER HR	
OTHER	NAME OF PLAN		CONTRIBUTIONS MADE: ☐ WEEKLY ☐ MONTHLY ☐ QUARTERLY ☐ ANNUALLY
	ADDRESS		
	NAME OF ADMINISTRATOR		
	ADDRESS		
	CLASSIFICATION(S) OF WORKERS	AMOUNT OF CONTRIBUTION PER CLASSIFICATION PER HR	

To be completed by each subcontractor and prime contractor.

PREVAILING WAGE INFORMATION SHEET FOR EACH CLASSIFICATION FOR THIS PROJECT

County Project No. and Name: _____

Prime or Subcontractor Name: _____

Contractor License No.: _____

Wage Determination No.: _____

Labor Classification (including group #): _____

Base rate: _____ Per Hour Overtime rate: _____ Per Hour

Check one:

☐ This is a federal construction project - overtime is payable at 1 ½ times the base rate for all hours worked over 40 in a work week.

☐ This is a state/local construction project; a premium is payable for daily overtime, weekly overtime, Saturday, Sunday & holiday work.

Fringe Benefit Cash Payment: _____ Per Hour

Total Fringe Benefit Plan Contributions: _____ Per Hour

Fringe Benefit contributions are made to:

1. (CAC, JATC, or other Approved Training Program) _____ Per Hour
2. _____
3. _____
4. _____
5. _____

_____

Signature Title Date

Telephone No.	Fax No.

Return this form with the first certified payroll for the project to
Contract Compliance Office
951 Turner Court, Room 100, Hayward. California 94545

CONFIDENTIAL	CONTRACT NO.
This document contains personal information and pursuant to Civil Code Section 1798.21 it shall be kept in order to protect against unauthorized disclosure.	FED. NO.

1. TO BE FILLED IN BY INTERVIEWER (Data may be obtained from payroll records or during source document review.)

EMPLOYEE NAME		LABOR CLASSIFICATION
MINIMUM BASE WAGE PER CONTRACT	BASE RATE	FRINGE BENEFITS
MINIMUM BASE WAGE PER PAYROLL (if available)	BASE RATE	FRINGE BENEFITS
EMPLOYER		PRIME CONTRACTOR ON THE PROJECT (If same, so state)
WORK BEING PERFORMED AT TIME OF INTERVIEW		

2. QUESTIONS TO BE ASKED OF EMPLOYEE

A. HOW LONG HAVE YOU WORKED FOR YOUR PRESENT EMPLOYER?		HOW LONG ON THIS PROJECT?
B. DESCRIBE THE TYPE OF WORK YOU HAVE BEEN DOING THIS PAST WEEK		
C. WHAT IS YOUR WAGE (Include Base Rate and Fringe Benefits (Compare to payroll)		**DO YOU KEEP A RECORD OF THE HOURS YOU WORK?** ☐ **YES** ☐ **NO**
D. DO YOU WORK OVERTIME: ☐ FREQUENTLY ☐ SELDOM ☐ NONE	**ARE YOU PAID TIME AND A HALF FOR OVERTIME** ☐ **YES** ☐ **NO**	**IF NO , EXPLAIN**
E. HAS YOUR EMPLOYER DIRECTED YOUR ATTENTION TO THE REQUIRED WAGE RATE POSTERS ON THE PROJECT? ☐ YES ☐ NO		HAVE YOU SEEN THOSE POSTERS? IF NO, EXPLAIN ☐ YES ☐NO
F. ARE YOU AWARE OF THE CONTRACTORS EEO POLICIES? ☐ YES ☐ NO		DOES THE CONTRACTOR HOLD REGULAR EEO MEETINGS? ☐ YES ☐ NO HOW OFTEN?
WHO CONDUCTS THE MEETINGS? WHO IS THE EEO OFFICER FOR THIS PROJECT?		WHO IS THE EEO OFFICER FOR YOUR EMPLOYER?
G. ARE YOU INTERESTED IN, OR HAS YOUR EMPLOYER INFORMED YOU OF UPGRADING AND TRAINING POSSIBILITIES? ☐ YES ☐ NO IF YES,, PLEASE EXPLAIN		

3. ADDITIONAL QUESTIONS FOR OWNER OPERATORS

A. EQUIPMENT DESCRIPTION	TRUCK LICENSE NO.	TRUCK (CAL-T-NO.)
HOURLY RATE (fully operated and maintained?)	BASE EQUIPMENT RATE	ON WHAT DO YOU BASE YOUR EQUIPMENT RENTAL RATE? ☐ hr'ly ☐ wk'ly ☐ mo'ly
B. DO YOU OWN THE EQUIPMENT? ☐ YES ☐ NO	MAY I SEE YOUR CERTIFICATE OF OWNERSHIP? (Interviewer note response)	☐ **YES** ☐ **NO**
LEGAL OWNER	REGISTERED OWNER	

4. EMPLOYEE COMMENTS	**5. INTERVIEWERS COMMENTS**
DO YOU HAVE ANY COMMENTS OR COMPLAINTS ABOUT WAGES OR EEO POLICIES? BE SPECIFIC	
INTERVIEWER'S SIGNATURE DATE	RESIDENT ENGINEER'S SIGNATURE DATE

EMPLOYEE INTERVIEW: LABOR COMPLIANCE / EEO
HC-0031 (BACK)

Fill in Section 1 from payroll records, if available, after interview.
Fill in Section 2 completely. (does not apply to owner operators)
Fill in Section 3 completely.
Employee comments optional in Section 4.
Interviewer comments on findings recommends further actions to be taken.
Attach additional sheets if necessary.

EMPLOYEE INTERVIEW: LABOR COMPLIANCE / EEO
HC-0031 (Back)

DIRECTIONS TO INTERVIEWER

4. Fill in Section 1 from payroll records, if available, after interview.
5. Fill in Section 2 completely. (does not apply to owner operators)
6. Fill in Section 3 completely
7. Employee comments optional in Section 4.
8. Interviewer comments on findings recommends further actions to be taken.
9. Attach additional sheets if necessary

PRIME CONTRACTOR

PROGRESS REPORT
UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISE

PROJECT NO.: _____ PRIME CONTRACTOR: _____

PROJECT NAME: _____ ADDRESS: _____

CONTRACT COMPLETION DATE: _____ ORIGIAL CONTRACT AMOUNT: _____

ORIGINAL DBE %: _____

CONTRACT ITEM NO.	DESCRIPTION OF WORK PERFORMED AND/OR MATERIALS PROVIDED	NAME OF DBE	CONTRACT PAYMENTS		COMMENTS *
			PAID TO DATE	PAYMENT DUE	

*If actual DBE utilization (or item or work) was different than that approved at time of award, explain why (i.e., change order, quantities different, etc.). Use reverse side if additional space is required.

TOTAL $_____ Estimate total payment to date to Contractor

% _____ $_____

I certify that the above information is complete and correct.

_____ _____

Signature-Inspector/Project Manager *Date Forwarded to CCO*

_____ _____

Contractor Representative *Title*

_____ _____

Phone Number *Date*

EACH DBE SUBCONTRACTOR

PROGRESS REPORT
UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISE (DBE)

PROJECT NO.: _____ PRIME CONTRACTOR: _____

PROJECT NAME: _____ YOUR COMPANY NAME: _____

COMPLETION DATE OF YOUR PORTION: _____ ADDRESS: _____

ORIGINAL SUBCONTRACT AMOUNT: $ _____

CONTRACT ITEM NO.	DESCRIPTION OF WORK PERFORMED AND/OR MATERIALS PROVIDED	NAME OF DBE	CONTRACT PAYMENTS		COMMENTS *
			PAID TO DATE	PAYMENT DUE	

*If actual DBE utilization (or item or work) was different than that approved at time of award, explain why (i.e., change order, quantities different, etc.). Use reverse side if additional space is required.

TOTAL $ _____ Estimate total payment to date to you as Subcontractor

% _____ $ _____

To the best of my information and belief, the above information is complete and correct.

I certify that the above information is complete and correct.

-

_____ _____

Contractor Representative *Title*

_____ _____ _____ _____

Signature-Inspector/Project Manager *Date Forwarded to CCO* *Phone Number* *Date*

PRIME CONTRACTOR

SUBCONTRACTOR

ALAMEDA COUNTY PROJECT NO.

COUNTY OF ALAMEDA
EQUAL EMPLOYMENT POLICY
THIS COMPANY IS AN EQUAL OPPORTUNITY EMPLOYER

We participate in the Affirmative Action Program of the County of Alameda and accept the following operating policy:

"It is the policy of this Company to assure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, national origin, disability, veteran status, physical or mental handicap; such action shall include, but not be limited to the following; employment, upgrading, demotion, or transfer; recruitment or of preapprenticeship training and on-the-job training."

This Company subscribes to the Affirmative Action Program of the County of Alameda, particulars of which are in the Affirmative Action Program Section of the Project Specifications.

DATE: _____

CONTRACTOR NAME: _____

TITLE: _____

SIGNATURE: _____

GOVERNMENT CODE SECTION 12950(a) REQUIRES ALL EMPLOYERS TO POST THIS DOCUMENT

STATE OF CALIFORNIA

DEPARTMENT OF FAIR EMPLOYMENT AND HOUSING

HARASSMENT OR DISCRIMINATION IN EMPLOYMENT

Because Of

Sex Race Color Ancestry Religious Creed
National Origin Disability (Including HIV and Aids)
Medical Condition (Cancer) Age
Marital Status Denial of Family and Medical Care Leave
Denial of Pregnancy Disability Leave

IS PROHIBITED BY LAW

The California Fair Employment and Housing Act

(Part 2.8 (commencing with Section 12900) of Div. 3 of Title 2 of the Government Code)

- prohibits harassment of employees or applicants and requires employers to take all reasonable steps to prevent harassment. The prohibition against sex harassment includes a prohibition against sexual harassment, gender harassment, and harassment based on pregnancy, childbirth, or related medical conditions.
- requires that all employers provide information to each of their employees on the nature, illegality and legal remedies which apply to sexual harassment. Employers may either develop their own publication, which must meet standards as set forth in California Government Code Section 12950, or use a brochure which may be obtained from the Department of Fair Employment and Housing.
- requires employers to reasonably accommodate disabled employees or job applicants in order to enable them to perform the essential functions of a job.
- permits job applicants and employees to file complaints with the Department of Fair Employment and Housing (DFEH) against an employer, employment agency, or labor union which fails to grant equal employment as required by law.
- requires employers not to discriminate against any job applicant or worker in hiring, promotions, assignments, or discharge. On-the-job segregation is also prohibited, and employers may file complaints against workers who refuse to cooperate in compliance.
- requires employers, employment agencies, and unions to preserve applications, personnel and employment referral records for a minimum of two yeas.
- requires employers to provide leaves of up to four months to employees disabled because of pregnancy, maternity, or childbirth.
- requires employers of 50 or more persons to allow employees to take up to 12 weeks leave in any 12 month period for the birth of a child, the placement of a child for adoption or foster care, for an employee's own serious health condition, or to care for a parent, spouse or child with a serious health condition.
- requires employment agencies to serve all applicants equally; to refuse discriminatory job orders; to refrain from prohibited pre-hiring inquires or help-wanted advertising.
- requires unions not to discriminate in member admission or dispatching to jobs.
- forbids any person to interfere with efforts to comply with the act. Authorizes the DFEH to work affirmatively with cooperating employers to review hiring and recruiting practices in order to expand equal opportunity.

REMEDIES FOR INDIVIDUALS, OR PENALTIES FOR VIOLATION MAY INCLUDE:
hiring, back pay, promotion, reinstatement, damages for emotional distress, cease-and-desist order, or a fine of up to $50,000.

JOB APPLICANTS AND EMPLOYEES: If you believe you have experienced discrimination, DFEH will investigate without cost to you.

For information contact the Department of Fair Employment and Housing:
Toll Free 1-800-884-1684
TDD Numbers: Los Angeles (213) 897-2840, Sacramento (916) 324-1678

This notice must be conspicuously posted in hiring offices, on employee bulletin boards, in employment agency waiting rooms, union halls, etc. For a copy, contact the nearest DFEH office.

EXHIBIT 17-F FINAL REPORT UTILIZATION OF DISADVANTAGED BUSINESSES

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
LOCAL ASSISTANCE - FEDERAL - FINAL REPORT - UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISES (DBE), FIRST-TIER SUBCONTRACTORS
Revised 8/04

CONTRACT NUMBER	COUNTY	LOCATION	PROJECT DESCRIPTION	FEDERAL AID PROJECT NO.	ADMINISTERING AGENCY	CONTRACT COMPLETION DATE
PRIME CONTRACTOR/CONSULTANT			BUSINESS ADDRESS		FEDERAL SHARE (For local agency to complete) $	FINAL CONTRACT AMOUNT $

CONTRACT ITEM No.	DESCRIPTION OF WORK PERFORMED AND MATERIAL PROVIDED	SUBCONTRACTOR NAME AND BUSINESS ADDRESS	DBE CERT. NUMBER & EXP. DATE	CONTRACT PAYMENTS					FEDERAL SHARE $	
				NON-DBE	DBE	DBE (MINORITY)	DBE (NON-MINORITY WOMEN)	DBE (MINORITY WOMEN)	DATE WORK COMPLETE	DATE OF FINAL PAYMENT
			TOTAL PAYMENTS	$	$	$	$	$		

$ _____ ORIGINAL DBE COMMITMENT _____ Original DBE %

DBE GOAL ATTAINMENT _____

List all First Tier Subcontractors and all Disadvantaged Business Enterprises (DBEs) regardless of tier, whether or not the firms were originally listed for goal credit. If actual DBE utilization (or item of work) was different than that approved at time of award, provide comments on the back of the form. List actual amount paid to each of the DBE even if different than originally listed for goal credit.

CONTRACTOR/CONSULTANT REPRESENTATIVE'S SIGNATURE	BUSINESS PHONE NUMBER	DATE
RESIDENT PROJECT ENGINEERS SIGNATURE	BUSINESS PHONE NUMBER	DATE
AGENCY		

Distribution: (1) Original plus one copy included in the Report of Expenditures - DLAE
(2) Copy - Local Agency files

CONSTRUCTION AND DEMOLITION DEBRIS MANAGEMENT ORDINANCE FOR ALL PROJECTS WITH ENGINEER'S ESTIMATE OF $100,000 OR GREATER

I. DIVERSION REQUIREMENTS:

Projects with a total estimated construction cost of One Hundred Thousand Dollars ($100,000.00) or greater, as determined by the Engineer, are required to meet the following diversion requirements:

1. At least seventy-five (75) percent of the asphalt, concrete, and earth debris generated by the project shall be diverted from landfills via Reuse or Recycling.

2. At least fifty (50) percent of the total of all other debris generated by the project shall be diverted from landfills via Reuse or Recycling.

3. Debris consisting of hazardous waste, contaminated earth or soil, or materials without any use or market value even after re-manufacturing shall be exempted from the foregoing diversion requirements.

II. CONSTRUCTION AND DEMOLITION DEBRIS MANAGEMENT PLAN AND RECYCLING SUMMARY REPORT

A. The Contractor shall prepare and submit, at the pre-construction meeting or no later than ten (10) days following the award of the project, whichever is earlier, a Construction and Demolition Debris Management Plan for approval by the Engineer.

B. Said plan shall include an estimate of all waste that will be removed from the project site, whether the waste will be recycled, salvaged or landfilled, and the names and locations of the facilities that will receive each of the materials.

C. Weight tickets, receipts, or invoices that specifically identify the project generating the material shall be submitted to the Engineer upon disposal of materials. Said documents must be from recyclers and/or disposal site operators that can legally accept and process the materials. Receipts must indicate that the materials will be recycled. If materials are taken to an inert backfill site and weight tickets, receipts, or invoices are not available, the Contractor shall provide documentation on its letterhead identifying the address to which materials were taken, name of owner/operator, type of materials, and amount of material disposed, specifically identifying the project generating the materials.

D. Upon completion of the project, the Contractor shall prepare and submit a Construction & Demolition Debris Management Recycling Summary Report to the Engineer for verification of compliance. The Contractor shall certify that information presented in the report is supported by all weight tickets previously submitted to the Engineer.

E. Information regarding recyclable materials and available facilities can be obtained by calling the Alameda County recycling hotline at (877) 786-7927 or from the Alameda County Waste Management Authority internet address: www.stopwaste.org

III. DEFINITIONS

A. CONTAMINATED EARTH OR SOIL: For the purposes of calculating the quantity of material to be exempted from the base quantity of material to be diverted from landfills, contaminated earth or soil is defined as material restricted by State or Federal regulations such that it must be disposed of at a landfill or hazardous material storage facility. Contractors shall make a determination of what materials are considered contaminated for approval by the County.

B. ASPHALT: The term "asphalt" shall mean asphalt concrete as defined in Section 39, "Asphalt Concrete" of the Standard Specifications. Asphalt concrete may include pavement reinforcing fabric.

C. CONCRETE: The term "concrete" shall mean portland cement concrete as defined in Section 40, "Portland Cement Concrete Pavement" and in Section 90, "Portland Cement Concrete" of the Standard Specifications.

D. EARTH DEBRIS: The term "earth debris" shall mean natural clean material indigenous to the surrounding area.

E. DIVERTED FROM LANDFILLS: For purposes of this specification, materials delivered to a landfill site may nevertheless be considered diverted from landfill if the material is accepted by the landfill operator for reuse or recycling, including for use as Alternative Daily Cover or Beneficial Use as defined by Title 27, California Code of Regulations, Division 2, Subdivision 1 or as amended. Said operator shall provide written certification to the Engineer for such uses.

IV. NON-COMPLIANCE WITH CONSTRUCTION AND DEMOLITION DEBRIS MANAGEMENT ORDINANCE

A. If the Public Works Agency finds that the Contractor has not met the Construction and Demolition Debris Management Ordinance requirements set forth herein, including submission of the Recycling Summary Report that demonstrates compliance, the Contractor shall forfeit one percent (1%) of the contract amount to the County. This amount will be subtracted from the contract retention at final payment.

B. If, within a five-year period following a determination by the Public Works Agency that the Contractor has not met the Construction and Demolition Debris Management Ordinance requirements, the Agency determines that there has been another violation of Ordinance requirements by the same Contractor, or his or her or its successor, in a separate contract, that Contractor or the successor shall forfeit one percent (1%) of the contract amount from the contract retention. In addition, the Contractor or the successor shall be declared by the Board of Supervisors to be a non-responsible bidder and will be ineligible to bid on future County Contracts for a period of two (2) years following the Board's determination.

Alameda County Public Works Agency
Construction & Demolition Debris Management Plan and Recycling Summary Report

Instructions:

Management Plan:
(The Notice to Proceed will not be issued unless the Management Plan section is submitted to and approved by the Engineer.)

Estimate quantities for each type of material to be diverted or landfilled in the tables provided. For each material, list the diversion method and the vendor or facility receiving the materials. A list of conversion factors is attached for your use in estimating quantities. Use additional sheets if necessary. Submit all weight tickets documenting tons recycled or landfilled to the Engineer. Keep copies of this form and the weight tickets for submission upon completion of project. Information regarding recyclable materials and available facilities can be obtained by calling the Alameda County Recycling Hotline at (877) 786-7927 or by visiting the Alameda County Waste Management Authority website at www.stopwaste.org

Recycling Summary Report:
(The project will not be accepted by the County Engineer unless the Recycling Summary Report section is submitted to and approved by the Engineer.)

The form must show diversion of all waste listed on the Construction & Demolition Debris Management Plan of the project. List **actual** quantities of waste for each material type in each column, specifying the method of diversion used. If no materials were targeted for recycling, reuse or salvage, please state why on the reverse side of this form. Weight tickets for all quantities recycled, salvaged, and landfilled are required. A list of conversion factors is attached for your use.

CONVERSION RATES

For Common Construction Materials

MATERIAL	POUNDS/CUBIC YARD	TONS/CUBIC YARD	TONNES/CUBIC METER
Asphalt	1350 lbs/cy	0.7 tons/cy	0.8 tonnes/m^3
Concrete	2600 lbs/cy (sources range from 1000 to 4000)	1.3 tons/cy	1.6 tonnes/m^3
Scrap Metal	906 lbs/cy	0.45 tons/cy	0.53 tonnes/m^3
Wood (chipped)	300 – 650 lbs/cy	0.15 – 0.3 tons/cy	0.18 – 0.36 tonnes/ m^3
Mixed C&D Debris	900 lbs/cy	0.45 tons/cy	0.54 tonnes/ m^3
Mixed Waste/Trash	100-350 lbs/cy	0.05 – 0.175 tons/cy	0.06 – 0.21 tonnes/ m^3

Alameda County Public Works Agency
Construction & Demolition Debris Management Plan
and Recycling Summary Report

PROJECT NAME:	**SPEC. NO:**
SITE ADDRESS:	
CONTRACTOR'S NAME:	**DATE SUBMITTED:**
PREPARED BY:	**APPROVED BY:**

Table 1:

Requirement: *At least seventy-five (75) percent of the asphalt, concrete, and earth Debris generated by the project shall be diverted from landfills via Reuse or Recycling.*

MATERIAL GENERATED	MANAGEMENT PLAN ESTIMATED AMOUNT (TONS/TONNES)				RECYCLING SUMMARY REPORT ACTUAL AMOUNT[2] (TONS/TONNES)			VENDOR OR FACILITY TO BE USED (INCLUDE ADDRESS)
	TOTAL TO BE GENERATED	TO BE DIVERTED	PROPOSED METHOD[1]	TO BE LANDFILLED	TOTAL GENERATED	ACTUAL DIVERTED	ACTUAL LANDFILLED	
Asphalt								
Concrete								
Earth Debris								
COLUMN TOTALS	(4)	(3)			(6)	(5)		**NOTE**: If actual facility used differs from proposed facility, please state on the back of this form

Fill in the blanks below to determine if requirement will be met:

_____ ÷ _____ X 100 = _____%

TOTAL TO BE DIVERTED (3) **TOTAL DEBRIS TO BE GENERATED (4)**

Upon completion of project: fill in the blanks below to determine if requirements were met:

_____ ÷ _____ X 100 = _____%

TOTAL DIVERTED (5) **TOTAL DEBRIS GENERATED (6)**

[1]Diversion Methods: 1=Reuse on site; 2=Salvage; 3=Source separation of materials and separately hauling to recyclers; 4=Hauling mixed recyclables to a mixed debris recycling facility; 5=Other (please specify) **Note**: If actual method differs from proposed, state actual method used on the back of this form.

[2] To be completed upon completion of project.

Table 2:

Requirement: *At least fifty (50) percent of the total of all other debris generated by the project shall be diverted from landfills via Reuse or Recycling. Contractor's attention is directed to Section 13.16 of Volume 2 of the Specifications for other debris to be generated by the project.*

MATERIAL GENERATED	MANAGEMENT PLAN				RECYCLING SUMMARY REPORT			VENDOR OR FACILITY TO BE USED (INCLUDE ADDRESS)
	ESTIMATED AMOUNT (TONS/TONNES)				ACTUAL AMOUNT[2] (TONS/TONNES)			
	TOTAL TO BE GENERATED	TO BE DIVERTED	PROPOSED METHOD[1]	TO BE LANDFILLED	TOTAL GENERATED	ACTUAL DIVERTED	ACTUAL LANDFILLED	
COLUMN TOTALS	(4)		(3)		(6)	(5)		NOTE: If actual facility used differs from proposed facility, please state on the back of this form

Fill in the blanks below to determine if requirement [illegible]

_____ ÷ ÷ _____ X 100 = _____%

TOTAL TO BE DIVERTED (3) **TOTAL DEBRIS TO BE GENERATED (4)**

Upon completion of project: fill in the blanks below to determine if requirements were met:

_____ ÷ ÷ _____ X 100 = _____%

TOTAL DIVERTED (5) **TOTAL DEBRIS GENERATED (6)**

[1]Diversion Methods: 1=Reuse on site; 2=Salvage; 3=Source separation of materials and separately hauling to recyclers; 4=Hauling mixed recyclables to a mixed debris recycling facility; 5=Other (please specify) **Note**: If actual method differs from proposed, state actual method on the back of this form.

[2] To be completed upon completion of project.

COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY

SPECIAL PROVISIONS

THE RELOCATION OF VASCO ROAD
FROM THE VICINITY OF
MILEPOSTS 3.0 TO 4.3
IN MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA
FEDERAL AID PROJECT NO. RPSTPL 5933 (074)

SECTION 1. SPECIFICATIONS AND PLANS

1-1.01 GENERAL

The work embraced herein shall conform to the provisions in the Standard Specifications dated July 1999, and the Standard Plans dated July 2004, of the Department of Transportation insofar as the same may apply, and these special provisions.

In case of conflict between the Standard Specifications and these special provisions, the special provisions shall take precedence over and shall be used in lieu of the conflicting portions.

Amendments to the Standard Specifications set forth in these special provisions shall be considered as part of the Standard Specifications for the purposes set forth in Section 5-1.04, "Coordination and Interpretation of Plans, Standard Specifications and Special Provisions," of the Standard Specifications. Whenever either the term "Standard Specifications is amended" or the term "Standard Specifications are amended" is used in the special provisions, the indented text or table following the term shall be considered an amendment to the Standard Specifications. In case of conflict between such amendments and the Standard Specifications, the amendments shall take precedence over and be used in lieu of the conflicting portions.

1-1.02 DEFINITIONS AND TERMS

As used herein, unless the context otherwise requires, the following terms have the following meanings:

Department: The Public Works Agency, County of Alameda, State of California.

Department of Transportation: The Public Works Agency, County of Alameda, State of California.

Engineer: The County Engineer of the County of Alameda, State of California, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Laboratory: The Materials Laboratory of the Public Works Agency, County of Alameda, State of California, or laboratories authorized by the Engineer to test materials and work involved in the contract.

State: The County of Alameda, State of California.

Transportation Building – Sacramento: Alameda County Public Works Agency, 399 Elmhurst Street, Hayward, CA 94544.

State Highway Engineer: The County Engineer of the County of Alameda, State of California.

Standard Specifications: The July 1999 edition of the Standard Specifications of the State of California, Department of Transportation and its amendments. Any reference therein to the State of California or a State agency, office, or officer shall be interpreted to refer to the County or its corresponding agency, office, or officer acting under this contract.

SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS

2-1.01 GENERAL

The bidder's attention is directed to the provisions in Section 2, "Proposal Requirements and Conditions," of the Standard Specifications and these special provisions for the requirements and conditions which the bidder must observe in the preparation of the proposal form and the submission of the bid.

Prospective bidders shall complete and submit all forms in the (bid) Proposal and Contract.

In addition to the required bid proposal forms, prospective bidders shall complete and submit with the bid proposal, *The Local Agency Bidder-DBE (Construction Contracts)-Information* form and the *Bidder's List of Subcontractors (DBE and Non-DBE)-Parts 1 and 2.*

The Bidder's Bond form mentioned in the last paragraph in Section 2-1.07, "Proposal Guaranty," of the Standard Specifications will be found following the signature page of the Proposal.

In conformance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the Proposal. Signing the Proposal shall also constitute signature of the Noncollusion Affidavit.

In addition to the subcontractors required to be listed in conformance with Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications, each proposal shall have listed therein the portion of work that will be done by each subcontractor listed. A sheet for listing the subcontractors is included in the Proposal.

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of Title 49 CFR (Code of Federal Regulations) part 26 in the award and administration of US DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate. Each subcontract signed by the bidder must include this assurance.

Failure of the bidder to fulfill the requirements of the Special Provisions for submittals required to be furnished after bid opening, including but not limited to escrowed bid documents, where applicable, may subject the bidder to a determination of the bidder's responsibility in the event it is the apparent low bidder on a future public works contracts.

2-1.02 FEDERAL LOBBYING RESTRICTIONS

Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier sub recipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the Proposal. Standard Form - LLL, "Disclosure of Lobbying Activities," with instructions for completion of the Standard Form is also included in the Proposal. Signing the Proposal shall constitute signature of the Certification.

The above referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding $100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

(1) A cumulative increase if $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(3) A change in the officer(s), employees(s), or Member(s) contacted to influence or attempt to influence a covered Federal Action.

2-1.03 DISADVANTAGED BUSINESS ENTERPRISE (DBE)

This project is subject to Title 49, Code of Federal Regulations part 26 (49 CFR 26) entitled "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs." In order to ensure Caltrans achieves its federally mandated statewide overall DBE goal, the Agency encourages the participation of Disadvantaged Business Enterprises (DBEs), as defined in 49 CFR 26 in the performance of contracts financed in whole or in part with Federal Funds. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of subcontracts.

Bidders shall be fully informed in respect to the requirements of the DBE Regulations. The DBE Regulations in their entirety are incorporated herein by this reference. Attention is directed to the following matters:

A. A DBE must be a small business concern as defined pursuant to Section 3 of U.S. Small Business Act and relevant regulations promulgated pursuant thereto;
B. A DBE may participate as a prime contractor, subcontractor, joint venture partner with a prime or subcontractor, vendor of material or supplies, or as a trucking company;
C. A DBE joint venture partner must be responsible for specific contract items of work, or clearly defined portions thereof. Responsibility means actually performing, managing and supervising the work with its own forces. The DBE joint venture partner must share in the capital contribution, control, management, risks and profits of the joint venture commensurate with its ownership interest. ;
D. A DBE must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work;
E. DBEs must be certified by the California Unified Certification Program (CUCP). Listings of DBEs certified by the CUCP are available from the following sources:

    1. The Caltran's "Civil Rights" web site at http://www.dot.ca.gov/hq/bep.
    2. The Caltran's DBE Directory. This Directory may be obtained from the Department of Transportation, Materiel Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520;

F. When reporting DBE participation, bidders may count the cost of materials or supplies purchased from DBEs as follows:

    1. If the materials or supplies are obtained from a DBE manufacturer, 100 percent of the cost of the materials or supplies will count toward DBE participation. A DBE manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.
    2. If the materials or supplies are purchased from a DBE regular dealer, count 60 percent of the cost of the materials or supplies. A DBE regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a DBE regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a DBE regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in this paragraph F.2. if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. Packagers, brokers,

manufacturers' representatives, or other persons who arrange or expedite transactions are not DBE regular dealers within the meaning of this paragraph F.2.

3. If the DBE is neither a manufacturer nor a regular dealer, count only the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, provided the fees are reasonable and not excessive as compared with fees charged for similar services.

G. When reporting DBE participation, bidders may count the participation of DBE trucking companies as follows:
   1. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract.
   2. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract;
   3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks its owns, insures, and operates using drivers it employs;
   4. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract;
   5. The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE;
   6. For the purposes of this paragraph G, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

H. Bidders are encouraged to use services offered by financial institutions owned and controlled by DBEs.

2-1.04 DBE AVAILABILITY ADVISORY

As required by federal law, Caltrans has established a statewide overall DBE goal. In order to ascertain whether that statewide overall DBE goal is being achieved, Caltrans is tracking DBE participation on all Federal-aid contracts administered by cities/counties and other local agencies.

2-1.05 ADDITIONAL BID ITEMS

The following establishes a procedure by which the County may select bidding alternatives which, in the County's judgment, offer the best overall combination of cost and value. The County reserves broad discretion in evaluating bid alternatives, and neither the judgment applied during the evaluation of alternatives nor the final decision reached, is subject to appeal by the bidder.

The Total Base Bid includes all work and materials shown and specified in these Contract Documents except work and materials identified as Additional Bid Item(s) to the Total Base Bid. In the event any Additional Bid Item(s) are accepted, the work will be increased in scope by that identified as Additional Bid Item(s).

If the Bid Proposal specifies Additional Bid Item(s), and the Bidder fails to furnish a price(s) for the Additional Bid Item(s), the bid shall be rejected as non-responsive. An Additional Bid of one dollar ($1.00) shall be considered responsive.

The Bidder should understand that the ranking of the "Actual Lowest Bid" received shall be established based on the lowest Total Base Bid plus all Additional Bid Items, which shall be the basis for award of contract per Public Contact Code. Upon determination of the lowest responsible bidder based on the Total Base Bid plus all Additional Bid Items, the County shall determine whether to include any of the Additional Bid Item(s) to the Total Base Bid. If the County elects to include any of the Additional Bid Item(s), then the final contract award shall be the Total Base Bid plus the selected Additional Bid Item(s); if the County elects not to include any of the Additional Bid Item(s), then the final contract award shall be the Total Base Bid.

The following item(s) are Additional Bid Item(s) on this project:

ADDITIONAL BID ITEM NO. A1:	**CONSTRUCTION STAKING**
ADDITIONAL BID ITEM NO. A2:	**ASPHALT CONCRETE, TYPE A**
ADDITIONAL BID ITEM NO. A3:	**ASPHALT CONCRETE, TYPE A**
ADDITIONAL BID ITEM NO. A4:	**TREE: AESCULUS CALIFORNICA (CALIFORNIA BUCKEYE)**
ADDITIONAL BID ITEM NO. A5:	**TREE: POPULUS NIGRA (LOMBARDI POPLAR)**
ADDITIONAL BID ITEM NO. A6:	**TREE: QUERCUS AGRIFOLIA (COAST LIVE OAK)**
ADDITIONAL BID ITEM NO. A7:	**TREE: QUERCUS LOBATA (VALLEY OAK)**
ADDITIONAL BID ITEM NO. A8:	**TREE: SEQUOIA SEMPERVIRENS (COAST REDWOOD)**
ADDITIONAL BID ITEM NO. A9:	**TREE: SEQUOIADENDRON GIGANTEUM (GIANT REDWOOD)**
ADDITIONAL BID ITEM NO. A10:	**PLANT ESTABLISHMENT PERIOD (3 YEARS)**

SECTION 3. AWARD AND EXECUTION OF CONTRACT

The bidder's attention is directed to the provisions in Section 3, "Award and Execution of Contract," of the Standard Specifications and these special provisions for the requirements and conditions concerning award and execution of contract.

Bid protests are to be delivered to the following address:

Director of Public Works
399 Elmhurst Street
Hayward, CA 94544

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed.

The contract shall be executed by the successful bidder and shall be returned, together with the contract bonds, to the Agency so that it is received within 10 days, not including Saturdays, Sundays and legal holidays, after the bidder has received the contract for execution. Failure to do so shall be just cause for forfeiture of the proposal guaranty. The executed contract documents shall be delivered to the following address:

Public Works Agency
951 Turner Court, Room 100
Hayward, CA 94545

A "LOCAL AGENCY BIDDER - DBE INFORMATION" form will be included in the contract documents to be executed by the successful bidder. The purpose of the form is to collect data required under 49 CFR 26. Even if no DBE participation will be reported, the successful bidder must execute and return the form.

The successful bidder's "LOCAL AGENCY BIDDER - DBE INFORMATION" form should include the names, addresses and phone numbers of DBE firms that will participate, with a complete description of work or supplies to be provided by each, and the dollar value of each DBE transaction. When 100 percent of a contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of that work to be performed or furnished by that DBE should be included in the DBE information, including the planned location of that work. A successful bidder certified as a DBE should describe the work it has committed to performing with its own forces as well as any other work that it has committed to be performed by DBE subcontractors, suppliers and trucking companies.

The successful bidder is encouraged to provide written confirmation from each DBE that the DBE is participating in the contract. A copy of a DBE's quote will serve as written confirmation that the DBE is participating in the contract. If a DBE is participating as a joint venture partner, the successful bidder is encouraged to submit a copy of the joint venture agreement.

The "LOCAL AGENCY'S BIDDER - DBE INFORMATION" form shall be submitted with the bid proposal.

A "Payee Data Record" form will be included in the contract documents to be executed by the successful bidder. The purpose of the form is to facilitate the collection of taxpayer identification data. The form shall be completed and returned to the Agency by the successful bidder with the executed contract and contract bonds. For the purposes of the form, payee shall be deemed to mean the successful bidder. The form is not to be completed for subcontractors or suppliers. Failure to complete and return the "Payee Data Record" form to the Agency as provided herein will result in the retention of 31 percent of payments due the contractor and penalties of up to $20,000. This retention of payments for failure to complete the "Payee Data Record" form is in addition to any other retention of payments due the Contractor.

SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES

4-1.01 GENERAL

Attention is directed to the provisions in Section 8-1.03, "Beginning of Work;" in Section 8-1.06 "Time of Completion;" and in Section 8-1.07, "Liquidated Damages;" of the Standard Specifications and these special provisions.

The Contractor shall begin work within ten (10) calendar days after the date of receipt of the NOTICE TO PROCEED letter from the County. The Contractor shall notify the Engineer no less than ten (10) days but no more than thirty (30) days prior to starting any construction work. The Engineer shall then request a pre-construction biological monitoring survey in accordance with Section 5-1.45, "Biological Monitoring/Compliance with Endangered Species Regulations," of these special provisions.

This work shall be diligently prosecuted to completion before the expiration of

450 CALENDAR DAYS TOTAL

The Contractor shall pay to the County of Alameda the sum of $1,400 per day, for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed above.

The working hours for this project are Monday through Saturday, 7 a.m. to 7 p.m. except for work requiring lane closures, work specified in these special provisions to be performed at other times, or work of an emergency nature. Work between 7 p.m. to 7 a.m. and work on Sundays and legal holidays shall be subject to advance written approval of the Engineer.

4-1.02 PRE-CONSTRUCTION CONFERENCE

Prior to the issuance of the Notice of Proceed, a pre-construction conference will be held at the office of the Alameda County Public Works Agency, 951 Turner Court, Room 230, Hayward, CA 94545, for the purpose of discussing with the Contractor the scope of work, contract drawings, specifications, appropriate documents, existing conditions, materials to be ordered, equipment to be used, and all essential matters pertaining to the prosecution of and the satisfactory completion of the project as required. The Contractor's representative at this conference shall include all major superintendents for the work and may include subcontractors.

4-1.03 SCHEDULE OF WORK

The Contractor shall prepare a schedule of work in accordance with these special provisions. The schedule shall show every contract item of work. The critical path for the project work shall be clearly identified.

The schedule shall be provided to the Engineer within ten (10) calendar days of award of the contract by the Alameda County Board of Supervisors. The Engineer may request that the schedule be updated as necessary to adequately reflect the status of the project. The Contractor shall provide an updated schedule to the Engineer within five (5) calendar days after the Engineer's request.

Even without the Engineer's request, the Contractor shall submit an updated schedule by the 25th of each month. No progress payment will be made without the updated schedule.

PAYMENT

Compensation for conformance with the work schedule as described in this section, including premium pay for work beyond regular work hours, shall be deemed included in the prices paid for the various bid items in the contract. No claims by the Contractor for adjustment of bid prices or additional compensation will be allowed therefor.

4-1.04 CONTRACT AND LABOR COMPLIANCE MANAGEMENT SYSTEM

As part of the Alameda County Public Works Agency's commitment to assist contractors to conveniently comply with legal and contractual requirements, the County has established a Contract and Labor Compliance Management System for this project. The system was designed to help reduce contractors' administrative costs and to provide various work-flow automation features that improve the project reporting process.

Procedural differences between the previous conventional reporting and the new web-based system include:

> Monthly progress payment status reports, fringe benefits statements, weekly certified payroll reports or non-performance reports will be submitted via the web-based system. Paper copies will no longer be required.

Contractor and subcontractors will be required to enter data for payment date and receipt of payments date onto the web-based system.

Prime and subcontractors shall have free use of the web-based application in reporting weekly certified payrolls and monthly progress payments to reduce paperwork and streamline the reporting process.

The minimum computer hardware and software requirements are as follows:

1. Operating Systems: Microsoft Windows 2000 or later version.
2. Internet Browser: Microsoft Internet Explorer 6.0 or later version (free from Microsoft).
3. Processor: Pentium II 350 MHz or equivalent. Memory: 128 MB, Disk: 5GB.
4. Internet connectivity.

Upon award of the construction contract, the prime contractor and all subcontractors shall use the system for their monthly progress payment status reports, fringe benefits statements, weekly certified payroll reports and non-performance reports. The County will provide free training to contractors. Contractors' payroll staff will be required to attend an hour-long training at a County designated location. It is mandatory that contractors' and subcontractors' payroll coordinators or payroll administrators attend the training session.

PAYMENT

Full compensation for complying with the requirements of this section, using the Contract and Labor Compliance Management Web System and attending training sessions will be included in the bid prices for the various items of work, and no additional compensation will be allowed thereof.

SECTION 5. GENERAL

SECTION 5-1. MISCELLANEOUS

5-1.01 LABOR NONDISCRIMINATION

Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM (GOV. CODE, SECTION 12990)

Your attention is called to the "Nondiscrimination Clause", set forth in Section 7-1.01A(4), "Labor Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt state contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The Specifications are applicable to all nonexempt state construction contracts and subcontracts of $5,000 or more.

5-1.02 PREVAILING WAGE

Attention is directed to Section 7-1.01A(2), "Prevailing Wage," of the Standard Specifications.

The general prevailing wage rates determined by the Director of Industrial Relations, for the county or counties in which the work is to be done, are available at the County of Alameda address. These wage rates are not included in the Proposal and Contract for the project. Changes, if any, to the general prevailing wage rates will be available at the same location.

5-1.03 PUBLIC SAFETY

The Contractor shall provide for the safety of traffic and the public in conformance with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications and these special provisions.

The Contractor shall be responsible for securing the entire project site from the public and animals through the use of a temporary security fencing at all times throughout the duration of the project. This temporary security fencing shall be adequate to prevent the public and animals from entering the project site.

The Contractor shall conduct his work so as to ensure the least possible obstruction to traffic and inconvenience to the general public and residents in the vicinity of the work, and to ensure the protection of persons and property at no extra cost to the County. The contractor shall have under construction no greater length or quantity of work than he can prosecute properly with due regard to the rights of the public.

PAYMENT

Full compensation for conforming to the provisions in this section, "Public Safety," including furnishing, installing, removing, and maintaining temporary security fencing shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

5-1.04 BUY AMERICA REQUIREMENTS

Attention is directed to the "Buy America" requirements of the Surface Transportation Assistance Act of 1982 (Section 165) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Sections 1041(a) and 1048(a), and the regulations adopted pursuant thereto. In conformance with the law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the work on this project shall occur in the United States; with the exception that pig iron and processed, pelletized and reduced iron ore manufactured outside of the United States may be used in the domestic manufacturing process for such steel and iron materials. The application of coatings, such as epoxy coating, galvanizing, painting, and other coating that protects or enhances the value of steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements.

A Certificate of Compliance, conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications, shall be furnished for steel and iron materials. The certificates, in addition to certifying that the materials comply with the specifications, shall specifically certify that all manufacturing processes for the materials occurred in the United States, except for the above exceptions.

The requirements imposed by the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total combined cost of the materials used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. The Contractor shall furnish the Engineer acceptable documentation of the quantity and value of the foreign steel and iron prior to incorporating the materials into the work.

5-1.05 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES

When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos or a hazardous substance as defined in Section 25914.1 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor shall immediately cease work in the affected area and report the condition to the Engineer in writing. The Contractor may continue work in unaffected areas reasonably believed to be safe.

In conformance with Section 25914.1 of the Health and Safety Code, removal of asbestos or hazardous substances including exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

5-1.06 SUBCONTRACTOR AND DBE RECORDS

The Contractor shall maintain records showing the name and business address of each first-tier subcontractor. The records shall also show the name and business address of every DBE subcontractor, DBE vendor of materials and DBE trucking company, regardless of tier. The records shall show the date of payment and the total dollar figure paid to all of these firms. DBE prime contractors shall also show the date of work performed by their own forces along with the corresponding dollar value of the work.

Upon completion of the contract, a summary of these records shall be prepared on "Final Report-Utilization of Disadvantaged Business Enterprises (DBE), First Tier Subcontractors" Form CEM-2402(F) and certified correct by the Contractor or the Contractor's authorized representative, and shall be furnished to the Engineer. The form shall be furnished to the Engineer within 90 days from the date of contract acceptance. The amount of $10,000 will be withheld from payment until a satisfactory form is submitted.

Prior to the fifteenth of each month, the Contractor shall submit documentation to the Engineer showing the amount paid to DBE trucking companies. The Contractor shall also obtain and submit documentation to the Engineer showing the amount paid by DBE trucking companies to all firms, including owner-operators, for the leasing of trucks. If the DBE leases trucks from a non-DBE, the Contractor may count only the fee or commission the DBE receives as a result of the lease arrangement.

The Contractor shall also obtain and submit documentation to the Engineer showing the truck number, owner's name, California Highway Patrol CA number, and if applicable, the DBE certification number of the owner of the truck for all trucks used during that month. This

documentation shall be submitted on "Monthly DBE Trucking Verification" Form CEM-2404(F).

5-1.07 DBE CERTIFICATION STATUS

If a DBE subcontractor is decertified during the life of the project, the decertified subcontractor shall notify the Contractor in writing with the date of decertification. If a subcontractor becomes a certified DBE during the life of the project, the subcontractor shall notify the Contractor in writing with the date of certification. The Contractor shall furnish the written documentation to the Engineer.

Upon completion of the contract, "Disadvantaged Business Enterprises (DBE) Certification Status Change" Form CEM-2403(F) indicating the DBEs' existing certification status shall be signed and certified correct by the Contractor. The certified form shall be furnished to the Engineer within 90 days from the date of contract acceptance.

5-1.08 PERFORMANCE OF SUBCONTRACTORS

The subcontractors listed by the Contractor in conformance with Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications, shall perform the work and supply the materials for which they are listed, unless the Contractor has received prior written authorization to perform the work with other forces or to obtain the materials from other sources. The Contractor should notify the Engineer in writing of any changes to its anticipated DBE participation. This notice should be provided prior to the commencement of that portion of the work.

5-1.09 SUBCONTRACTING

Attention is directed to the provisions in Section 8-1.01, "Subcontracting," and these special provisions.

The provisions in the third paragraph of Section 8-1.01, "Subcontracting," of the Standard Specifications, that the Contractor shall perform with the Contractor's own organization contract work amounting to not less than 50 percent of the original contract price, ***is not*** changed by the Federal Aid requirement specified under "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of these special provisions that the Contractor perform not less than 30 percent of the original contract work with the Contractor's own organization.

Each subcontract and any lower tier subcontract that may in turn be made shall include the "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of these special provisions. Noncompliance shall be corrected. Payment for subcontracted work involved will be withheld from progress payments due, or to become due, until correction is made. Failure to comply may result in termination of the contract.

Pursuant to the provisions in Section 1777.1 of the Labor Code, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the Department of Industrial Relations web site at:

http://www.dir.ca.gov/DLSE/Debar.html.

5-1.10 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS

A prime contractor or subcontractor shall pay any subcontractor not later than 10 days of receipt of each progress payment in accordance with the provision in Section 7108.5 of the California Business and Professions Code concerning prompt payment to subcontractors. The 10 days is applicable unless a longer period is agreed to in writing. Any delay or postponement of payment over 30 days may take place only for good cause and with the agency's prior written approval. Any violation of Section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanction and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE subcontractors.

5-1.11 PROMPT PAYMENT OF FUNDS WITHHELD TO SUBCONTRACTORS

The agency shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the agency, of the contract work, and pay retainage to the prime contractor based on these acceptances. The prime contractor, or subcontractor, shall return all monies withheld in retention from a subcontractor within 30 days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the agency. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the agency's prior written approval. Any violation of this provision shall subject the violating prime contractor or subcontractor to the penalties, sanctions and other remedies specified in Section 7108.5 of the Business and Professions Code. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE prime contractors and subcontractors.

5-1.12 PAYMENTS

Attention is directed to Section 9-1.06, "Partial Payments," and 9-1.07, "Payment After Acceptance," of the Standard Specifications and these special provisions.

No partial payment will be made for any materials on hand which are furnished but not incorporated in the work.

5-1.13 CONTRACT BONDS

Attention is directed to Section 3-1.02, "Contract Bonds," of the Standard Specifications and these special provisions.

The payment bond shall be in a sum not less than one hundred percent of the total amount payable by the terms of the contract.

5-1.14 GUARANTEE

The Contractor shall guarantee the work is in accordance with contract requirements and remains free from substantial defects in materials and workmanship for a period of one year after contract acceptance unless otherwise specified in these special provisions. For certain portions of the work where the Director relieves the Contractor of responsibility in accordance with Section 7-1.15, "Relief from Maintenance and Responsibility," of the Standard Specifications, the guarantee period starts on the relief date and ends one year therefrom.

Substantial defects in materials and workmanship means defective work objectively manifested by damaged, displaced, or missing parts or components and workmanship resulting in improper function of materials, components, equipment, or systems, as installed or manufactured by the Contractor, subcontractor, supplier, or manufacturer.

During the guarantee period, the Contractor shall repair or replace contract work and associated work which is not in accordance with contract requirements or has substantial defects in materials and workmanship. The Contractor shall perform the corrective work with no expense to the Department other than State-provided field inspection services.

The guarantee of work excludes damage or displacement that is outside the control of the Contractor and caused by normal wear and tear, improper operation, insufficient maintenance, abuse, unauthorized modification, or natural disaster as described in Section 7-1.165, "Damage by Storm, Flood, Tsunami or Earthquake," of the Standard Specifications.

The Contractor shall have the same insurance coverage during corrective work operations as prior to contract acceptance, in accordance with Section 7-1.12, "Indemnification and Insurance," of the Standard Specifications.

The contract bonds furnished in accordance with Section 3-1.02, "Contract Bonds," of the Standard Specifications must remain in full force and effect during the guarantee period and until all corrective work is complete.

In the case of conflict between this guarantee provision and any warranty provision included in the contract, the warranty provision shall govern for the specific construction product or feature covered.

5-1.15 CORRECTIVE WORK

During the guarantee period, the Department will monitor performance of the highway facilities completed by the Contractor and will perform a thorough review of the contract work at least 60 days before the expiration of the one-year guarantee.

If the Engineer discovers contract work not in compliance with contract requirements or that has substantial defects in materials and workmanship, at any time during the guarantee period, a list of items that require corrective work will be developed and forwarded to the Contractor. Within 15 days of receipt of a list, the Contractor shall submit to the Engineer a detailed plan for performing corrective work. The work plan shall include a start to finish schedule. It shall include a list of labor, equipment, materials, and any special services intended to be used. It shall clearly show related work including traffic control, temporary delineation, and permanent delineation.

The Contractor shall start the corrective and related work within 15 days of receiving notice from the Engineer that the Contractor's work plan is approved. The corrective work shall be diligently prosecuted and completed within the time allotted in the approved work plan.

If the Engineer determines that corrective work, covered by the guarantee, is urgently needed to prevent injury or property damage, the Engineer will give the Contractor a request to start emergency repair work and a list of items that require repair work. The Contractor shall mobilize within 24 hours and diligently perform emergency repair work on the damaged highway facilities. The Contractor shall submit a work plan within 5 days of starting emergency repair work.

If the Contractor fails to commence and execute, with due diligence, corrective work and related work required under the guarantee in the time allotted, the Engineer may proceed to have the work performed by State forces or other forces at the Contractor's expense. Upon demand, the Contractor shall pay all costs incurred by the Department for work performed by State forces or other forces including labor, equipment, material, and special services.

PAYMENT

Full compensation for performing corrective work; and related work such as traffic control, temporary delineation, and permanent delineation, and to maintain insurance coverage and

bonds, shall be considered as included in the contract prices paid for the various contract items of work and no separate payment will be made therefor.

5-1.16 COST REDUCTION INCENTIVE

Attention is directed to Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

Prior to preparing a written cost reduction proposal, the Contractor shall request a meeting with the Engineer to discuss the proposal in concept. Items of discussion will also include permit issues, impact on other projects, impact on the project schedule, peer reviews, overall merit of the proposal, and review times required by the Department and other agencies.

If a cost reduction proposal submitted by the Contractor, and subsequently approved by the Engineer, provides for a reduction in contract time, 50 percent of that contract time reduction shall be credited to the State by reducing the contract working days, not including plant establishment. Attention is directed to "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions regarding the working days.

If a cost reduction proposal submitted by the Contractor, and subsequently approved by the Engineer, provides for a reduction in traffic congestion or avoids traffic congestion during construction, 60 percent of the estimated net savings in construction costs attributable to the cost reduction proposal will be paid to the Contractor. In addition to the requirements in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications, the Contractor shall provide detailed comparisons of the traffic handling between the existing contract and the proposed change, and estimates of the traffic volumes and congestion.

5-1.17 INTEREST ON PAYMENTS

Interest shall be payable on progress payments, payments after acceptance, final payments, extra work payments, and claim payments as follows:

A. Unpaid progress payments, payment after acceptance, and final payments shall begin to accrue interest 30 days after the Engineer prepares the payment estimate.
B. Unpaid extra work bills shall begin to accrue interest 30 days after preparation of the first pay estimate following receipt of a properly submitted and undisputed extra work bill. To be properly submitted, the bill must be submitted within 7 days of the performance of the extra work and in conformance with the provisions in Section 9-1.03C, "Records," and Section 9-1.06, "Partial Payments," of the Standard Specifications. An undisputed extra work bill not submitted within 7 days of performance of the extra work will begin to accrue interest 30 days after the preparation of the second pay estimate following submittal of the bill.
C. The rate of interest payable for unpaid progress payments, payments after acceptance, final payments, and extra work payments shall be 10 percent per annum.

D. The rate of interest payable on a claim, protest or dispute ultimately allowed under this contract shall be 6 percent per annum. Interest shall begin to accrue 61 days after the Contractor submits to the Engineer information in sufficient detail to enable the Engineer to ascertain the basis and amount of said claim, protest or dispute.

The rate of interest payable on any award in arbitration shall be 6 percent per annum if allowed under the provisions of Civil Code Section 3289.

5-1.18 FINAL PAYMENT AND CLAIMS

Attention is directed to Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications.

If the Contractor files a timely written statement of claims in response to the proposed final estimate, the County that administers the contract will submit a claim position letter to the Contractor by hand delivery or deposit in the U.S. mail within 135 days of acceptance of the contract. The claim position letter will delineate the County's position on the Contractor's claims. If the Contractor disagrees with the claim position letter, the Contractor shall submit a written notification of its disagreement to be received by the County not later than 15 days after the Contractor's receipt of the claim position letter. The written notification of disagreement shall set forth the basis for the Contractor's disagreement and be submitted to the office designated in the claim position letter. The Contractor's failure to provide a timely, written notification of disagreement shall constitute the Contractor's acceptance and agreement with the determinations provided in the claim position letter and with final payment pursuant to the claim position letter.

If the Contractor files a timely notification of disagreement with the County claim position letter, the board of review designated by the County Director to review claims that remain in dispute will meet with the Contractor within 45 days after receipt by the County of the notification of disagreement. Attendance by the Contractor at the board of review meeting shall be mandatory.

If the County fails to submit a claim position letter to the Contractor within 135 days after the acceptance of the contract and the Contractor has claims that remain in dispute, the Contractor may request a meeting with the board of review designated by the County Director to review claims that remain in dispute. The Contractor's request for a meeting shall identify the claims that remain in dispute. If the Contractor files a request for a meeting, the board of review will meet with the Contractor within 45 days after the County receives the request for the meeting. Attendance by the Contractor at the County Director's board of review meeting shall be mandatory.

Failure of the Contractor to file a timely written statement of claims in response to the proposed final estimate, or to file a timely notification of disagreement with the County claim position letter, or to attend the County Director's board of review meeting shall constitute a failure to pursue diligently and exhaust the administrative procedures in the contract and shall be

a bar to arbitration in conformance with the requirements in Section 10240.2 of the California Public Contract Code.

5-1.19 INSURANCE

The Contractor shall carry Public Liability and Property Damage Liability Insurance at all times when work is being performed. Before beginning work, the Contractor shall provide the Engineer the name, address, and telephone number of the nearest claims adjusting office of the company which has issued his liability insurance.

The Contractor will be required to furnish evidence of insurance coverage as specified below, such evidence to be provided with and as part of the executed contract documents submitted by the Contractor following award of the contract.

5-1.19A Workers' Compensation Insurance

Statutory coverage as required to cover the full liability of the Contractor in accordance with the provisions of Division IV of the Labor Code of the State of California.

Employer's liability insurance with a limit of not less than $100,000 per occurrence to cover any claims arising from employment not covered by workers' compensation laws.

5-1.19B Comprehensive General Liability Insurance

Minimum limits of liability shall be no less than $1,000,000 per occurrence combined single limit bodily injury and property damage coverage.

Coverage shall include bodily injury, property damage, blanket contractural, products/completed operations, owner's and Contractor's protective coverage, and the so-called "x" "c" "u" coverage. Coverage for bodily injury and property damage shall include loss of use arising out of the Contractor's or any subcontractor's negligence whether or not occasioned by physical injury to persons or property.

Any deductible provision shall not exceed $1,000 per claim, and each and every policy must contain a cross liability or severability of interests clause.

5-1.19C Comprehensive Automobile Liability

Minimum limits of liability shall be no less than $1,000,000 per occurrence combined single limit bodily injury and property damage coverage.

Coverage shall include owned, non-owned, and hired vehicles. Each and every policy must contain a cross-liability or severability of interests clause.

5-1.19D Other Requirements

All insurance policies must be issued by a company or companies duly and legally licensed to transact business in the State of California, must be issued at the Contractor's own cost and expense, must be maintained by the Contractor in full force and effect during the entire life of the contract, and must have an "A.M. Best" rating of B+, V, or better.

All certificates of insurance shall name the County of Alameda, it's officers, boards, commission, agents, and employees as additional insureds, and shall contain a provision that a written notice of cancellation, non-renewal, or reduction in coverage of said policies shall be delivered to the County thirty (30) days in advance of the effective date thereof; if such insurance is provided by a policy or policies which also cover the Contractor, or any other person or entity other than those named above, then such policy or policies must contain the standard cross-liability endorsement

Each and every insurance policy obtained by the Contractor must state that such insurance is primary to any other insurance available to the County with respect to any claim arising out of the project contract.

The Contractor will be held responsible for the payment of any and all insurance deductibles.

The Contractor shall require all subcontractors to take out and maintain policies of insurance and to comply with all of the foregoing provisions specified, herein, during the entire life of the contract.

5-1.20 SOUND CONTROL REQUIREMENTS

Sound control shall conform to the provisions in Section 7-1.01I, "Sound Control Requirements," of the Standard Specifications and these special provisions.

The contractor shall comply with all local ordinances regulating noise level.

The noise level from the Contractor's operations, between the hours of 7:00 p.m. and 7:00 a.m., shall not exceed 86 dBa at a distance of 15 m. This requirement shall not relieve the Contractor from responsibility for complying with local ordinances regulating noise level.

The noise level requirement shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

PAYMENT

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

5-1.21 LAYING OUT WORK

Unless herein otherwise provided, all working stakes, other than the stakes deemed necessary by the Engineer for his own control of the work, shall be established by the Contractor who shall be held responsible for the correctness of such working stakes.

5-1.22 LINES AND GRADES

The work shall be constructed using the metric system of measurement to the lines and grades shown on the drawings and specified herein. When dimensions are shown on the drawings or specified in these special provisions in the United States Standard Measures, these dimensions shall govern. When equivalent United States Standard Measures are shown with metric dimensions, the metric dimensions shall govern.

5-1.23 SURVEY STAKES

Lines and grades necessary for the control of the work, in the opinion of the Engineer, will be established initially by the Engineer, and the Contractor shall provide the Engineer with such assistance and materials therefor as may be required. No payment will be made for the cost to the Contractor for any work or delay occasioned by providing lines and grades, by making other necessary measurements, or by inspection.

The Engineer places stakes and marks under the provisions set forth in Section 5-1.07, "Line and Grades," of the Standard Specifications, Chapter 12, "Construction Surveys," of the CALTRANS Surveys Manual, and these Special Provisions.

In case of conflict between the provisions set forth in Section 5-1.07, "Lines and Grades," and/or Chapter 12, "Construction Surveys," and the following Special Provisions, the following SPECIAL PROVISIONS shall take precedence over and be used in lieu of the conflicting portions of the Standard Specifications and the CALTRANS Surveys Manual

SPECIAL PROVISIONS:

1) Construction Survey Request Forms

When the Contractor requires stakes or marks, the Contractor shall submit all requests for County furnished construction stakes to the Engineer, in writing, on the County's

"Construction Survey Request" form. Electronic versions of the Survey Request Form are available from the Survey Department – Attention Greg Hollfelder, RLS; (510) 670-6540; gregh@acpwa.org. Questions regarding this form shall also be directed to Greg Hollfelder.

2) Minimum Six (6) Working Days after Receipt by the Survey Department

Contractor requests for construction staking shall be submitted to the Engineer sufficiently far enough in advance of starting operations so as to allow the "Request" to be reviewed and approved by the Engineer, and received by the Survey Department a minimum of six (6) working days in advance of starting operations that require stakes.

3) Modification to Six (6) Working Days

In the event that a staking operation is estimated by the Survey Department to take more than one (1) day to complete, an additional 24 hours is to be added to the six (6) day minimum advance notice, for each estimated additional day of staking.

4) Lines and Grades

Lines and grades necessary for the control of the work, in the opinion of the Engineer, will be established initially by the Engineer, and the Contractor shall provide the Engineer with such assistance and materials therefor as may be required. No payment will be made for the cost to the Contractor for any work delay occasioned by providing lines and grades, by making other necessary measurements, or by inspection.

5) Restaking

In case such stakes are destroyed or damaged, the Contractor shall restore said stakes at his own expense to the Engineer's satisfaction, or if replaced by the Engineer, the Contractor will be charged for the cost of replacing the stakes. This charge will be deducted from any monies due or to become due the Contractor.

6) Project Control Points

The Contractor shall preserve all benchmarks, survey control points, reference points and other permanent points. Any of the aforementioned controls that are damaged will be replaced by the Engineer. No payment will be made for the cost to the Contractor for any work delay occasioned by the need to replace any of the aforementioned control. This charge will be deducted from any monies due or to become due the Contractor.

5-1.24 CONSTRUCTION STAKING (ADDITIONAL BID ITEM NO. A1)

This is An Additional Bid Item. If this additional bid item is not accepted, then this section shall not apply. The exclusion of this item shall not constitute a basis for claim by the Contractor for extra payment or damages.

Section 5-1.23, "CONSTRUCTION STAKING," of these special provisions is modified as follows:

Delete Section 5-1.23, "SURVEY STAKES," Add the following section:

The approved plans provide sufficient information for a qualified surveyor to lay out the project. All working stakes shall be established by a licensed Land Surveyor or a registered Civil Engineer authorized to practice land surveying pursuant to Section 8725 of the Business and Professions Code of California. The Contractor shall be held responsible for the correctness of such working stakes. The Contractor shall furnish the County Engineer legible notes ten (10) calendar days prior to the Contractor starting work in the area staked. The notes shall show the location of the working stakes in relation to the construction center line or reference line, and all calculations used to reach the results of information written on the working stake marker. The location of the working stakes shall conform to the latest edition of the Caltrans Surveys Manual as shown in Chapter 12.

The Contractor shall provide a qualified "Grade Setter" to check horizontal and vertical alignment of all improvements in progress so that improvements will be built to conform to the lines, widths, and grades on the approved plans or any change order issued by the County Engineer. The Contractor shall make available the "Grade Setter" to work with the County's Inspector on checking or verifying all grade stakes, blue tops, form work, etc., when requested by the Inspector. The "Grade Setter" shall provide all necessary equipment and tools to perform this work.

Regardless of any opportunity to review the survey work by the County, the Contractor shall assume absolute responsibility and liability for the accuracy and completeness of all aspects of the improvement project and the construction layout.

Since this is a Lump Sum Bid Item, the Contractor is responsible for any and all restaking expenses. The only exception is if there is found to be an error in the approved plans. All additional cost considerations will be included as part of any Change Order.

The Contractor shall preserve all existing benchmarks, survey control points, reference points, and other permanent points within the project limits. Any of the aforementioned controls that are damaged will be replaced by the Contractor's licensed Land Surveyor at no cost to the County.

Section 10-1.87, "ADJUSTMENT OF EXISTING SURVEY MONUMENTS," of these special provisions is modified as follows:

The Contractor shall also provide for the surveying services to be done within this section.

No separate measurement or payment will be made for this item. Full compensation for providing surveying work will be considered as included in the contract lump sum

price paid for Construction Staking, and no additional compensation will be allowed therefor.

Upon completion of the work, the Contractor shall furnish the County Surveyor with a letter written by the Contractor's licensed Land Surveyor stating that the surveying work complied with applicable sections of the Land Surveyor's Act.

The Contractor shall not be required to comply with Section 8771(b) of the Business and Professions Code of California. The County Surveyor shall file the corner records or record of surveys as required by Section 8771(b).

PAYMENT

The lump sum price bid for CONSTRUCTION STAKING shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for providing all survey work as necessary to construct the project, as specified herein and as directed by the Engineer.

5-1.25 EXAMINATION OF PLANS, SPECIFICATIONS, CONTRACT, AND SITE OF WORK

Attention is directed to "Differing Site Conditions" of these special provisions regarding physical conditions at the site which may differ from those indicated in "Materials Information," log of test borings or other geotechnical information obtained by the Department's investigation of site conditions.

5-1.26 DIFFERING SITE CONDITIONS

Attention is directed to Section 5-1.116, "Differing Site Conditions," of the Standard Specifications.

During the progress of the work, if subsurface or latent conditions are encountered at the site differing materially from those indicated in the "Materials Information," log of test borings, other geotechnical data obtained by the Department's investigation of subsurface conditions, or an examination of the conditions above ground at the site, the party discovering those conditions shall promptly notify the other party in writing of the specific differing conditions before they are disturbed and before the affected work is performed.

The Contractor will be allowed 15 days from the notification of the Engineer's determination of whether or not an adjustment of the contract is warranted, in which to file a notice of potential claim in conformance with the provisions of Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications and as specified herein; otherwise the decision of the Engineer shall be deemed to have been accepted by the Contractor as correct. The notice of potential claim shall set forth in what respects the Contractor's position differs from the Engineer's determination and provide any additional information obtained by the Contractor, including but not limited to additional geotechnical data. The notice of potential claim shall be accompanied by the

Contractor's certification that the following were made in preparation of the bid: a review of the contract, a review of the "Materials Information," a review of the log of test borings and other records of geotechnical data to the extent they were made available to bidders prior to the opening of bids, and an examination of the conditions above ground at the site. Supplementary information, obtained by the Contractor subsequent to the filing of the notice of potential claim, shall be submitted to the Engineer in an expeditious manner.

5-1.27 TRENCH SAFETY

Attention is directed to Section 7-1.01, "Trench Safety," and Section 5-1.02A, "Trench Excavation Safety Plans"of the Standard Specifications and these special provisions.

The Contractor shall obtain a permit from the Division of Industrial Safety for the construction of trenches or excavations which are 1.5 meters or deeper and into which a person is required to descend.

Prior to initiation of any actual work or operations under a permit issued by the Division of Industrial Safety, a safety conference shall be conducted by the Contractor. Such safety conference shall include representatives of the Engineer, the Contractor, the Employer and Employees. The safety conference shall include a discussion of the Employer's Safety Program and such means, methods, devices, processes, practices, conditions or operations he intends to use in providing safe employment and a safe place of employment.

Prior to the excavation of any trench or trenches 1.5 meters or more in depth, the Contractor shall submit to the Engineer a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during excavation of such trench or trenches. Said detailed plan is to be submitted to the Engineer a minimum of two weeks prior to the proposed commencement of trenching operations, and said detailed plan is to be approved by the Engineer prior to commencement of trenching operations. If such plan varies from the shoring system standards established by the Construction Safety Orders, the plan shall be prepared wet-stamped by a Civil or Structural Engineer licensed in the State of California.

The cost of providing adequate sheeting, shoring and bracing, or equivalent method, for the protection of life or limb, which shall conform to the applicable safety orders for the construction of trenches or open excavations which are 1.5 meters or deeper, shall be included in this item.

Nothing in this requirement shall be deemed to allow the use of shoring, sloping or protective system less effective than that required by the Construction Safety Orders. Nothing in this requirement shall be construed to impose liability on the County of Alameda or any of its employees.

PAYMENT

Payment for trench safety will be made as a lump sum price bid for TRENCH SAFETY.

The lump sum price bid for TRENCH SAFETY shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in trench safety as shown on the plans, as specified herein, and as directed by the Engineer.

5-1.28 AREAS FOR CONTRACTOR'S USE

Attention is directed to the provisions in Section 7-1.19, "Rights in Land and Improvements," of the Standard Specifications and these special provisions.

The highway right of way shall be used only for purposes that are necessary to perform the required work. The Contractor shall not occupy the right of way, or allow others to occupy the right of way, for purposes which are not necessary to perform the required work.

Temporary construction staging areas for equipment storage and construction trailers are identified in the plans.

The Contractor shall secure, at the Contractor's own expense, areas required for plant sites, storage of equipment or materials or for other purposes, if sufficient area is not available to the Contractor within the contract limits, or at the sites designated on the plans outside the contract limits.

Use of the temporary construction staging areas, Contractor's work areas and other County-owned property shall be at the Contractor's own risk, and the County shall not be held liable for damage to or loss of materials or equipment located within such areas.

The Contractor shall remove equipment, materials, and rubbish from the work areas and other County-owned property which the Contractor occupies. The Contractor shall leave the areas in a presentable condition in conformance with the provisions in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

5-1.29 MATERIAL SITES

Local material sites used by the Contractor shall be graded so that, at the time of final inspection of the contract, the sites will drain and will blend in with the surrounding terrain.

5-1.30 TESTS OF MATERIALS

All testing and inspection of materials shall conform to the County's Quality Assurance Program. All testing and inspection of materials shall be performed by the County or at the discretion of the County, by a laboratory approved by the County.

The County may engage in a testing program by the County's testing laboratory or by a contract with a Materials Testing Engineer who will make tests of materials. The County will pay for the testing. If any material does not pass the test, the Contractor shall pay for any subsequent re-testing of the material until the material passes the test. The cost of the subsequent testing will be deducted from any moneys due the Contractor.

Only products that have been "tagged" will be accepted and used on the project.

On-Site Available Materials

A. There are nine (9) 2.4 meter (8-foot) sections of 1.5 meter (60") reinforced concrete pipe on-site from the PG&E project that the Contractor shall use for the project. These will be "tagged". Contractor shall coordinate with the Engineer to confirm location and availability of reinforced concrete pipe on-site.

5-1.31 WATER CONSERVATION

Attention is directed to the various sections of the Standard Specifications and these special provisions which require the use of water for the construction of this project. Attention is directed to Section 7, "Legal Relations and Responsibility," of the Standard Specifications with regards to the Contractor's responsibilities for public convenience, public safety, preservation of property, indemnification, and insurance.

Attention is directed to "Watering" of these special provisions regarding the use of nonpotable water.

Nothing in this section "Water Conservation" shall relieve the Contractor from furnishing an adequate supply of water required for the proper construction of this project in conformance with the provisions in the Standard Specifications or these special provisions or relieve the Contractor from the legal responsibilities defined in Section 7.

The Contractor shall, whenever possible and not in conflict with the above requirements, minimize the use of water during construction of the project. Watering equipment shall be kept in good working order; water leaks shall be repaired promptly; and washing of equipment, except when necessary for safety or for the protection of equipment, shall be discouraged.

Concrete slope protection, concreted-rock slope protection, minor structures, and miscellaneous concrete construction shall not be cured by using water.

Attention is directed to "Dust Palliative" of these special provisions regarding the use of a dust palliative for the prevention of dust nuisance.

When ordered by the Engineer, a dust palliative conforming to the provisions in Section 18, "Dust Palliative," of the Standard Specifications shall be used to control dust on this project. Dust palliative ordered by the Engineer will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Attention is directed to section "Earthwork" of these special provisions regarding the requirements for compacting embankments which require a relative compaction of not less than 90 percent, without adding water.

Attention is directed to Section 17-1.025, "Chemical Additives," of the Standard Specifications. When ordered by the Engineer, a chemical additive shall be added to water used for compaction. The additive shall be approved by the Engineer and shall be used in conformance with instructions issued by the Engineer. Chemical additive ordered by the Engineer will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

5-1.32 HIGHWAY CONSTRUCTION EQUIPMENT

The first paragraph of Section 7-1.01D, "Vehicle Code," of the Standard Specifications shall not apply.

Pursuant to the authority contained in Section 591 of the Vehicle Code, the Department has determined that, within such areas as are within the limits of the project and are open to public traffic, the following requirements of the Vehicle Code will apply: the lighting requirements in Section 25803; the brake requirements in Chapter 3, Division 12; the splash apron requirements in Section 27600; and, when operated on completed or existing treated base, surfacing, pavement or structures, except as otherwise provided in Section 7-1.02, "Load Limitations," of the Standard Specifications, the weight limitation requirements contained in Division 15.

5-1.33 PROJECT APPEARANCE

The Contractor shall maintain a neat appearance to the work.

In areas visible to the public, the following shall apply:

A. When practicable, broken concrete and debris developed during clearing and grubbing shall be disposed of concurrently with its removal. If stockpiling is necessary, the material shall be removed or disposed of weekly.

B. Trash bins shall be furnished for debris from structure construction. Debris shall be placed in trash bins daily. Forms or falsework that are to be re-used shall be stacked

neatly concurrently with their removal. Forms and falsework that are not to be re-used shall be disposed of concurrently with their removal.

C. Attention is directed to section 5-1.37 PERMITS of this special provision. All materials including debris shall be placed in a manner to minimize wildlife use and to prevent injury to wildlife.

PAYMENT

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

5-1.34 WHEEL LOAD LIMITATIONS/REQUIREMENTS FOR PROTECTION OF THE EXISTING PG&E UNDERGROUND GAS TRANSMISSION LINES

The contractor shall implement measures to protect existing utilities to ensure no damage is caused during operations in proximity of these utilities. The contractor shall install matting or other means to protect existing Pacific Gas & Electric gas lines and shall comply with the following wheel loading requirements:

915 mm (36") Line-303:

Depth of Cover (ft)	Maximum Wheel Load half axle* (lbs)	full axle (lbs)
2	54,635	109,270
3	86,968	173,936
4	130,013	260,026
5	182,443	364,886
6	245,736	491,472
7	318,124	636,248
8	394,503	789,006

610 mm (24") Line-114:

Depth of Cover (ft)	Maximum Wheel Load half axle* (lbs)	full axle (lbs)
2	37,098	74,196
3	73,208	146,416
4	112,787	225,574
5	161,081	322,162
6	219,403	438,806
7	286,030	572,060
8	358,029	716,058

(* Half axle weight is the gross weight upon any one wheel, or wheels, supporting one end of an axle.)

These limitations are for wheeled equipment. Tracked equipment will have to be evaluated on a case by case basis.

To verify the depth of cover at the crossing locations, the Contractor shall call USA and then pothole the lines with PG&E stand-by personnel present.

The following is the wheel load limitations for the (500 mm) gas pipeline that crosses Vasco Road at (approximate) Station 1+712:

Depth of Cover (ft)	Maximum Wheel Load half axle* (lbs)	full axle (lbs)
2	23,425	46,850
3	46,879	93,758
4	72,709	145,418
5	104,471	208,942
6	143,088	286,176
7	188,295	376,590
8	237,334	474,668

(* Half axle weight is the gross weight upon any one wheel, or wheels, supporting one end of an axle.)

These limitations are for wheeled equipment. Tracked equipment would have to be evaluated on a case by case basis.

To verify the depth of cover at the crossing locations, the Contractor shall call USA and then pothole the lines with PG&E stand-by personnel present.

PAYMENT

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

5-1.35 CONTINGENT ITEMS OF WORK

When bid items are designated as being contingent items of work on the BID PROPOSAL, the quantities or pre-bid amounts of these bid items set forth on the BID PROPOSAL represent no actual estimate and are nominal only. These quantities or amounts may be greatly increased or decreased or reduced to zero. The increase or reduction of these quantities or amount as compared with those set forth on the BID PROPOSAL shall not constitute a basis for claim by the Contractor for extra payment or damages. Payment for the actual work performed base upon the prices bid or work done for the items of work involved will be considered full compensation to the Contractor for the work.

5-1.36 FIRE PLAN

The Contractor shall cooperate with local fire prevention authorities in eliminating hazardous fire conditions and shall implement the following fire plan under the direction of the Engineer:

A. The Contractor shall be responsible for:

1. obtaining the phone number of the nearest fire suppression agency and providing this phone number to the Engineer as a first order of work,
2. immediately reporting to the nearest fire suppression agency fires occurring within the limits of the project,
3. preventing project personnel from setting open fires not part of the work, unless the Fire Index is at "Low," or the determination of the Fire Index is suspended or, if in an area not covered by the Fire Index rating system, the Engineer determines that the fire hazard is negligible,
4. preventing the escape of fires caused directly or indirectly as a result of project operations and extinguishing these fires.

B. Except for motor trucks, truck tractors, buses and passenger vehicles, the Contractor shall equip all hydro-carbon fueled engines, both stationary and mobile, including motorcycles, with spark arresters that meet United States Forest Service Standards as specified in the Forest Service Spark Arrester Guide and shall maintain the spark arresters in good operating condition. Spark arresters are not required by the State Department of Forestry or the United States Forest Service on equipment powered by properly maintained exhaust-driven turbo-charged engines or when equipped with scrubbers with properly maintained water levels. The Forest Service Spark Arrester Guide is available at the District Offices of the Department of Transportation.

C. Toilets shall have a metal receptacle, at least 150 mm in diameter by 200 mm deep, half-filled with sand for ashes and discarded smokes, and within easy reach of anyone utilizing the facility.

D. Equipment service areas, parking areas and gas and oil storage areas shall be located so that there is no flammable material within a radius of at least 15 m of these areas. Small mobile or stationary engine sites shall be cleared of flammable material for a radius of at least 4.6 m from the engine.

E. The areas to be cleared and grubbed shall be cleared, and kept clear of, flammable material such as dry grass, weeds, brush, downed trees, oily rags and waste, paper, cartons, and plastic waste. The first order of work shall be to clear a fire break at the outer limits of the areas to be cleared and grubbed. Other fire breaks may be ordered by the Engineer and will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

F. The Contractor shall furnish each piece of equipment with the following:

1. one shovel and one fully charged fire extinguisher UL rated at 4 B:C or more on each truck, personnel vehicle tractor, grader or other heavy equipment,
2. one shovel and one back-pack 20-L water-filled tank with pump for each welder,

3. one shovel or one chemical pressurized fire extinguisher, fully charged, for each gasoline-powered tool, including but not limited to chain saws, soil augers, rock drills, etc. The required fire tools shall, at no time, be farther than 8 m from the point of operation of the power tool. Fire extinguishers shall be of the type and size required by the California Public Resource Code, Section 4431, and the California Administrative Code, Title 14, Section 1234,
4. shovels shall be size "O" or larger and shall be not less than 1.2 m in length.

G. The Contractor shall furnish a pickup truck and driver for the sole purpose of fire control during working hours and as specified herein.

1. The truck shall be equipped with 10 shovels, 5 axes, 2 back-pack 20-L water-filled tanks with pumps, or other fire tools substituted on a one to one basis at the option of the Contractor and approved by the Engineer.
2. The truck shall be equipped with a 380-L tank of water with a gasoline motor powered pump and 30 m of 19-mm hose on a reel.
3. In addition to being available at the site of the work, the truck and operator shall patrol the area of construction for not less than one-half hour after the shutdown of the work.
4. In addition to being available at the site of the work, the truck and operator shall patrol the area of construction from noon until one-half hour after shutdown of the work. If the Fire Index is "Very High" or "Extreme," truck and operator shall patrol the area of construction while work is being done and for at least one-half hour after shutdown of work.

H. The Contractor shall be aware of the Fire Index and conform to the following:

1. The Wild Land Fire Danger Rating System established by the United States Forest Service and the State of California Department of Forestry is designed to estimate the relative effect of weather on the several aspects of fire behavior, such as spread, intensity, and ignition.
2. The combination of these effects makes up the Fire Index, the severity of which is as follows:

LOW
MEDIUM
HIGH
VERY HIGH
EXTREME

3. Arrangements have been made with the United States Forest Service and the Department of Forestry to notify the Department of Transportation when the Fire Index is "Very High" or "Extreme" within numbered Fire Danger areas as shown on maps furnished by the Department of Transportation. This information will be furnished to the Engineer, who will notify the Contractor for dissemination and action in the area affected.

4. When the Fire Index reaches "Very High," the following conditions will prevail:

Falling of dead trees or snags shall be discontinued.
No open burning will be permitted; fires shall be extinguished.
Welding shall be discontinued except in an enclosed building or within an area cleared of flammable material for a radius of 4.6 m.
Blasting shall be discontinued.
Smoking will be permitted only in automobiles and cabs of trucks equipped with an ashtray or in cleared areas immediately surrounded by a fire break, unless prohibited by other authority.
Vehicular travel will be restricted to cleared areas except in case of emergency.

5. When the Fire Index reaches "Extreme," the following precautions shall be taken in addition to the conditions specified above:

Work of a nature which could start a fire shall require that properly equipped fire guard(s) be assigned to such an operation for the duration of the work.
Smoking will be permitted only in automobiles and truck cabs equipped with an ashtray, unless prohibited by other authority.

If the project is shut down or partially shut down on account of hazardous fire conditions, working days during such period will be determined in the same manner as provided in Section 8-1.06, "Time of Completion," of the Standard Specifications for shutdowns due to weather.

If field and weather conditions become such that the determination of the Fire Index is suspended, the provisions under items "G" and "H" of this section will not be enforced for the period of the suspension of the determination of the Fire Index. The Engineer will notify the Contractor of the dates of the suspension and resumption of the determination of the Fire Index.

PAYMENT

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

5-1.37 ENVIRONMENTALLY SENSITIVE AREA

An environmentally sensitive area (ESA) shall consist of an area within and near the limits of construction where access is prohibited or limited for the preservation of archeological site or existing vegetation, or protection of biological habitat as shown on the plans. The Engineer will determine the exact location of the boundaries of the ESA. No work shall be conducted within the ESA.

Attention is directed to Section 7—1.01 "Laws to be Observed," and Section 7—1.04 "Permits and Licenses," of the Standard Specifications regarding State and Federal regulations, permits, or agreements which pertain to an ESA.

Prior to beginning work, the boundaries of the ESA shall be clearly delineated by the placement of a Temporary Perimeter fence with a high visibility ESA fence fabric. Entry into the ESA is prohibited at all times unless authorized by the Engineer.

Prior to beginning work, a Temporary Perimeter fence shall be clearly delineated and installed along the entire perimeter of the project site as shown on the plans and as directed by the Engineer.

Vehicle access, storage or transport of materials or equipment, or other project related activities are prohibited within the boundaries of ESA.

The Contractor shall mitigate damage or impacts to the ESA caused by the Contractor's operations, at the Contractor's expense. If the Engineer determines mitigation work will be performed by others, or if mitigation fees are assessed the Department, deductions from moneys due or to become due the Contractor will be made for the mitigation costs.

PAYMENT

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

5-1.38 PERMITS

The Contractor shall comply with the conditions of all permits required to complete this contract.

The following permits have been issued and are required for this project:

- Department of the Army Nationwide Permits 14 – Linear Transportation Projects (67 Fed. Reg 2020, January 15, 2002), issued by the U.S. Army Corps of Engineers.
- Notification of Lake or Streambed Alteration, Notification No. 1600-2006-0606-3, Unnamed Tributaries to Altamont Creek, issued by the California Department of Fish and Game.
- State Water Quality Certification issued by the California Regional Water Quality Control Board (File #2198-11, Site 02-01-C0823).

- California's General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Storm Water Runoff Associated with Construction Activity issued by the California Regional Water Quality Control Board.

Copies of these permits have been included as part of these special provisions for the Contractor's reference.

PAYMENT

Full compensation for complying with the requirements of the permits shall be considered as included in the contract prices paid for various items of work, and no additional compensation will be allowed therefor.

5-1.39 PRESERVATION OF PROPERTY

Attention is directed to Section 7-1.11, "Preservation of Property," of the Standard Specifications and these special provisions.

Existing trees, shrubs and other plants, that are not to be removed as shown on the plans or specified in these special provisions, and are injured or damaged by reason of the Contractor's operations, shall be replaced by the Contractor at no cost to the County. The minimum size of tree replacement shall be 600 mm box and the minimum size of shrub replacement shall be No. 15 container. Replacement ground cover plants shall be from flats and shall be planted 300 mm on center. Replacement of Carpobrotus ground cover plants shall be from cuttings and shall be planted 300 mm on center. Replacement planting shall conform to the requirements in Section 20-4.07, "Replacement," of the Standard Specifications. The Contractor shall water replacement plants in conformance with the provisions in Section 20-4.06, "Watering," of the Standard Specifications.

Damaged or injured plants shall be removed and disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications. At the option of the Contractor, removed trees and shrubs may be reduced to chips. The chipped material shall be spread within the highway right of way at locations designated by the Engineer.

Replacement planting of injured or damaged trees, shrubs and other plants shall be at a ratio of 5:1 (replacement to injured or damaged tree/plants) and completed not less than 20 working days prior to acceptance of the contract. Replacement trees/plants shall be watered as necessary to maintain the trees/plants in a healthy condition.

5-1.40 FENCES

Fences shall conform to Section 15-2.05, "Reconstruction," and Section 80, "Fences," of the Standard Specifications and these special provisions.

Fences that are not designated on the plans to be removed, but are removed by the Contractor during construction for his convenience, or if required to be removed in order to construct the project, the Contractor shall carefully remove and stockpile them on the adjacent property, and shall reconstruct this fence when contractor's operations have been completed.

If the removed fences are said rotten or deteriorated as determined by the Engineer, these fences shall be replaced by the Contractor in kind, or better.

The Contractor shall be responsible for stockpiling existing fence for reuse on the project at no extra expense to the County.

Fences, walls, and any other structures which are not designated to be removed shall be left in place. Any damage to these shall be repaired by the Contractor entirely at his expense to the lines and grades designated by the Engineer.

MEASUREMENT AND PAYMENT

Full compensation for complying with the provisions as specified herein, including removing, stockpiling and reconstructing fences, shall be considered included in the prices paid for the various other items of work and no additional compensation will be made therefore.

5-1.41 CONSTRUCTION AND DEMOLITION DEBRIS ORDINANCE

The Contractor is hereby notified that the County of Alameda Construction and Demolition Debris Management Ordinance diversion requirements apply to this project. Refer to the CND Section for details.

The NOTICE TO PROCEED will not be issued unless the Management Plan (see CND Form 1A and 1B) is submitted to and approved by the Engineer.

The Contractor shall submit all weight tickets documenting materials recycled or landfilled to the Engineer. The contractor shall keep copies of the Management Plan and all weight tickets for submittal upon completion of the project.

The project will not be accepted by the County Engineer unless the Recycling Summary Report (see CND Form 1A and 1B) is submitted to and approved by the Engineer.

The following construction debris will be generated on this project:

1. **Asphalt**: as defined in Section 39, "Asphalt Concrete," of the Standard Specifications. Asphalt concrete may include pavement reinforcing fabric.
2. **Concrete**: portland cement concrete as defined in Section 40, "Portland Cement Concrete Pavement," and in Section 90, "Portland Cement Concrete," of the Standard Specifications.

3. **Earth Debris**: dirt or clean fill defined as natural clean material indigenous to surrounding area.
4. **Plant & Tree Trimmings:** plants, shrubs, bushes, tree trimmings such as branches, twigs, etc.
5. **Rock/Gravel:** clean rock/gravel.
6. **Scrap Metal:** metal posts, corrugated metal pipes, inlet grates, chain link fences, etc.
7. **Trees:** large de-limbed trees, whole logs only
8. **Wood:** includes both treated and untreated wood

All grindings and asphalt concrete that will be reused shall be stored in the temporary construction staging areas, as shown on the plans.

Information regarding recyclable materials and available facilities can be obtained by calling the Alameda County recycling hotline at (877) 786-7927 or from the Alameda County Waste Management Authority internet address: www.stopwaste.org

PAYMENT

Full compensation for complying with the provisions set forth herein shall be considered as included in the various items of work and no separate payment will be made therefor.

Failure to comply with the provisions set forth herein will result in the following sanctions:

1. If the Public Works Agency finds that the Contractor has not met the Construction and Demolition Debris Management Ordinance requirements set forth herein, including submission of the Recycling Summary Report that demonstrates compliance, the Contractor shall forfeit one percent (1%) of the contract amount to the County. This amount will be subtracted from the contract retention at final payment.

2. If, within a five-year period following a determination by the Public Works Agency that the Contractor has not met the Construction and Demolition Debris Management Ordinance requirements, the Agency determines that there has been another violation of Ordinance requirements by the same Contractor, or his or her or its successor, in a separate contract, that Contractor or the successor shall forfeit one percent (1%) of the contract amount from the contract retention. In addition, the Contractor or the successor shall be declared by the Board of Supervisors to be a non-responsible bidder and will be ineligible to bid on future County Contracts for a period of two (2) years following the Board's determination.

5-1.42 SUSTAINABLE DESIGN PROGRAM (GREEN BUILDING ORDINANCE)

Alameda County has a Green Building Practices Ordinance. Pursuant to Section 4.38.050 of Title 4 of the Administrative Code of the County of Alameda relating to Sustainable Design, the Contractor shall complete, sign and date the Sustainable Design Guide Project checklist. A copy of the checklist is on Page M-1 of these specifications.

The Contractor shall achieve Sustainable Design Goals for this project by implementing the following strategies to the maximum extent feasible:

- Conserve water by minimizing use of potable water and using recycled water for dust control and irrigation operations.

- Conserve energy by using: energy-efficient materials and equipment (such as pumps, LEDs, etc.), recycled papers, and recycled motor oil where applicable.

- Use of materials:

    a. Use recycled-content products and materials such as AC, AB, dirt, rocks, plastics, traffic control signs, sign parts, etc.
    b. Use locally manufactured materials by using materials manufactured in the United States and materials sold by vendors located in Alameda County.
    c. Recycle/salvage demolition and construction waste generated by this project by reusing or recycling 75% of asphalt concrete, concrete, and earth debris; 50% of total of all other debris; and packaging materials brought to the job site.

The project will not be accepted by the County Engineer unless the Contractor completes, signs, and dates the Sustainable Design Guide Project Checklist.

PAYMENT

Full compensation for complying with the provisions set forth herein shall be considered as included in the various items of work and no separate payment will be made therefor.

5-1.43 VIDEOTAPING OF PROJECT SITE

Prior to start of work at the beginning of the project or at each phase of a staged project, the Contractor, at his/her sole expense, shall make arrangements and shall produce a video (digital format) documenting existing conditions of adjacent areas (curbs, gutters, sidewalks, driveways, private improvements immediately adjacent to the project site, roadway pavement, landscaping, etc.) that might be affected by construction operations.

The video recording may be used as a documentation record of pre-existing conditions, should the need arise in the future.

PAYMENT

Full compensation for furnishing all labor, materials, equipment, and incidentals for doing all the work involved and in conjunction with producing and reproducing the video shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

5-1.44 RECORD DRAWINGS

Prior to acceptance of the contract, the Contractor shall prepare and submit to the Engineer for approval, a complete set of "Record Drawings" that reflects all changes made during construction. Changes are to be delineated with red pen and scaled properly as the original plan. Upon approval by the Engineer, the drawings shall be signed by the Contractor and accepted by the Engineer as the official Record Drawings. The County will not accept the contract until the Engineer approves the Record Drawings.

PAYMENT

Full compensation for furnishing all labor, materials, equipment, and incidentals for doing all the work involved and in conjunction with completing a set of "Record Drawing" shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

5-1.45 ARCHAEOLOGICAL AND PALEONTOLOGICAL DISCOVERIES

Contractor is hereby forewarned of the possibility of encountering an archaeological site during the construction process.

If archaeological materials, including but not limited to human skeletal material and disarticulated human bone, are discovered at the job site, protect and leave undisturbed and in place archaeological materials in accordance with the following codes and these special provisions:

1. California Public Resources Code, Division 5, Chapter 1.7 § 5097.5
2. California Public Resources Code, Division 5, Chapter 1.75 § 5097.98 and § 5097.99
3. California Administrative Code, Title 14 § 4308
4. California Penal Code, Part 1, Title 14 § 622-1/2
5. California Health and Safety Code, Division 7, Part 1, Chapter 2, § 7050.5

Archaeological materials are the physical remains of past human activity and include historic-period archaeological materials and prehistoric Native American archaeological materials. Nonhuman fossils are not considered to be archaeological except when showing direct evidence of human use or alteration or when found in direct physical association with archaeological materials as described in these special provisions.

Historic-period archaeological materials include cultural remains beginning with initial European contact in California, but at least 50 years old. Historical archaeological materials include:

1. Trash deposits or clearly defined disposal pits containing tin cans, bottles, ceramic dishes, or other refuse indicating previous occupation or use of the site
2. Structural remains of stone, brick, concrete, wood, or other building material found above or below ground or
3. Human skeletal remains from the historic period, with or without coffins or caskets, including any associated grave goods

Prehistoric Native American archaeological materials include:

1. Human skeletal remains or associated burial goods such as beads or ornaments
2. Evidence of tool making or hunting such as arrowheads and associated chipping debris of fine-grained materials such as obsidian, chert, or basalt
3. Evidence of plant processing such as pestles, grinding slabs, or stone bowls
4. Evidence of habitation such as cooking pits, stone hearths, packed or burnt earth floors or
5. Remains from food processing such as concentrations of discarded or burnt animal bone, shellfish remains, or burnt rocks used in cooking

Paleontological materials include:

1. Fossilized remains of prehistoric organisms (plants and animals).

Immediately upon discovery of archaeological and paleontological materials, contractor shall stop all operations within a 18.5 meter radius of the archaeological/paleontological materials and shall immediately notify the Engineer. Archaeological/paleontological materials found during construction are the property of the County. Do not resume work within the 18.5 meter radius of the find until the Engineer gives you written approval. The Contractor shall hold its operation at the find in abeyance until notified otherwise by the Engineer. The Contractor shall continue its operation elsewhere on the project diligently to complete all remaining construction in the specified time. If, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of an archeological find or investigation or recovery of archeological materials, an extension of time will be granted in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

County will hire an archaeologist or a paleontologist to investigate any discovered find to determine its potential significance or lack of it, and to advise the County Engineer, in writing, of the results of his/her investigation within 30 days of the site discovery. When ordered by the Engineer, furnish labor, material, tools and equipment to secure the location of the find, and assist in the investigation or recovery of archaeological materials and the cost will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

PAYMENT

Full compensation for complying with the requirements as specified herein, including immediately notifying the Engineer upon discovery of archaeological/paleontological materials and leaving undisturbed and in place archaeological/paleontological materials discovered on the job site shall be considered as included in the contract price paid for various items of work involved and no additional compensation will be allowed therefor.

5-1.46 UNSATISFACTORY PROGRESS

If the number of working days charged to the contract exceeds 75 percent of the working days in the current time of completion and the percent working days elapsed exceeds the percent work completed by more than 15 percentage points, the Department will withhold 10 percent of the amount due on the current monthly estimate.

The percent working days elapsed will be determined from the number of working days charged to the contract divided by the number of contract working days in the current time of completion, expressed as a percentage. The number of contract working days in the current time of completion shall consist of the original contract working days increased or decreased by time adjustment s approved by the Engineer.

The percent work completed will be determined by the Engineer from the sum of payments made to date plus the amount due on the current monthly estimate, divided by the current total estimated value of the work, expressed as a percentage.

When the percent of working days elapsed minus the percent of work completed is less than or equal to 15 percentage points, the funds withheld shall be returned to the Contractor with the next monthly progress payment.

Funds kept or withheld from payment, due to the failure of the Contractor to comply with the provisions of the contract, will not be subject to the requirements of Public Contract Code 7107 or to the payment of interest pursuant to Public Contract Code Section 10261.5.

5-1.47 BIOLOGICAL MONITORING/COMPLIANCE WITH ENDANGERED SPECIES REGULATIONS

It is anticipated that certain endangered species, which are listed species under the California and Federal Endangered Species Acts, may live within the project limits. Measures are included within the project to avoid "take" as defined by those laws. These measures may affect all work operations accordingly.

The Contractor shall be fully informed of rules, regulations, conditions, and guidance as described in these special provisions and applicable sections of the California Endangered Species Act and the Federal Endangered Species Act (16 U.S.C. 1531-1543).

The County will provide Biological Monitor(s) on this project that is required to monitor for the presence of the California Red Legged Frog (CRLF), the San Joaquin Kit Fox (SJKF), the Western Burrowing Owl (WBO), and the California Tiger Salamander (CTS).

All Contractor employees working on the project, including subcontractors, shall attend a one-hour pre-construction employee education program presented by the Biological Monitor. Contractor field workers will not be permitted to start fieldwork on the project until they have attended a pre-construction employee education program. The Contractor shall notify the Engineer five (5) days in advance of when Contractor employees are ready to attend the program. The employee education program will include descriptions of the California red-legged frog, the San Joaquin kit fox, the Western Burrowing Owl, as well as include information regarding the duties of the Biological Monitor and compliance with California Department of Fish and Game and U.S. Fish and Wildlife Service requirements, and non-compliance penalties. All Contractor employees will be required to sign an attendance roster. The education program shall be repeated for all new employees before they can be permitted access to the project site.

The Contractor shall notify the Engineer no less than fourteen (14) days but no more than thirty (30) days prior to starting any construction work. The Engineer shall then request a pre-construction biological monitoring survey. The Biological Monitor shall make a visual survey of the project site to check for the presence of California red-legged frog, the San Joaquin kit fox, the Western Burrowing Owl, the California Tiger Salamander burrows, general wildlife, and bird nests. The Contractor shall receive the Engineer's approval before beginning any work disturbing the ground or vegetation.

The Contractor shall provide the Engineer with a weekly and daily work schedule plan which explains the type of construction activities that will be taking place and where on the project site they will be taking place, so that the Engineer will be able to schedule the appropriate number of Biological Monitors in response to the construction work plan schedule. The work schedule plan shall also list 1) the number and type of construction vehicles that are planned to be utilized, and 2) the location of each vehicle utilization. The Contractor shall notify the Engineer of the scheduled work shifts a day before so that the Biological Monitor(s) may start their surveys one hour prior to the start of the work shift, and no construction work shall commence until after the Biological Monitor(s) has cleared each area for work.

Biological Monitors shall conduct monitoring prior to each construction work shift, during construction, and at the end of each work shift. The Contractor shall allow the Biological Monitor one hour prior to the initiation of each construction work shift to conduct monitoring to ensure that work areas are clear of listed species, general wildlife and bird nests. The monitoring will consist of a survey of the project site, including at a minimum the following activities: visual surveys of the entire area focusing on the immediate area where work is proposed for that shift; inspecting under rocks, wood, or other debris; inspecting under and in any construction equipment and stored materials; and "shaking" of any vegetation to flush wildlife.

The Biological Monitor shall be on-site during the installation and removal of temporary perimeter fences. The Monitor will inspect the temporary perimeter fences prior to the start and

end of each work shift to ensure the integrity of the fence lines so that wildlife will not be able to enter the construction area between work shifts. If any fence is found not to be in good condition, the Contractor shall take immediate corrective action.

The Contractor shall take measures to prevent the entrapment of wildlife in all excavated, steep-walled holes or trenches more than 0.6 m deep, and stockpiled wood and materials. Such measures may include covering excavations with plywood or installing a silt fence around the perimeter of the excavated area. The bottom 150 mm of the silt fence shall be folded over (facing away from trench) and weighed down with rebar, rocks, earth fill, or other suitable materials to prevent amphibians from crawling under. Wooden ramps shall be placed in the trench or pit no greater than 61 m apart to allow for unaided escape. The trench or pit shall be surveyed in the morning and late afternoon hours to ascertain whether or not wildlife have fallen in. If at anytime, a trapped animal is discovered, the Contractor shall notify the Engineer immediately.

CALIFORNIA RED-LEGGED FROG

Should the Contractor encounter a California red-legged frog, construction activities shall be immediately halted and the Contractor shall immediately notify the Engineer. The Engineer will notify the U.S. Fish and Wildlife Service, and upon approval, ***the Biological Monitor*** shall move the individual California red-legged frog(s) out of all construction zones. The Contractor shall not resume work without the written approval of the Engineer.

The Contractor is made aware that if the Biological Monitor is unable to capture the red-legged frog(s), the Monitor will monitor construction activities to determine the fate of the animals, and will take appropriate action in accordance with U.S. Fish and Wildlife Service protocol.

SAN JOAQUIN KIT FOX PROTECTION

Prior to the start of construction, the Biological Monitor will excavate potential burrows which are determined to be unoccupied. If the Biological Monitor encounters any occupied natal dens within the construction area or on accessible land within 305 meters of the construction area, the Biological Monitor will notify the U.S. Fish and Wildlife Service and no work shall be done without the approval of the Engineer.

In addition to the above, the Contractor shall adhere to and perform the following (unless specified otherwise by the Engineer):

- The Contractor shall immediately notify the Engineer if a dead, injured or entrapped kit fox is found Work in the immediate area may be temporarily halted while the Biological Monitor at the direction of the Engineer consults with the California Department of Fish and Game and the US Fish and Wildlife Service. Any entrapped kit fox shall be permitted to escape. The disposition of any carcasses or recovering animals shall be coordinated through the engineer.

- Kit Fox observed in or immediately adjacent to work area shall be allowed to escape on its own will.
- If a potential or occupied kit fox den is discovered within a 61 m radius of construction activity, all construction activity within a minimum 30 m radius of the den shall be halted and the Contractor shall immediately notify the Engineer. An Environmentally Sensitive Area (ESA) shall be established around the den and entry into the area shall be restricted. The boundaries of the ESA shall be delineated in conformance with the section, "Environmentally Sensitive Area," of these specifications. Fence posts for the Temporary Perimeter Fence (with high visibility ESA fence fabric) for kit fox shall be steel.
- Pipes and culverts w/a diameter greater than 100 mm shall be searched for kit fox prior to being moved or sealed to ensure that kit fox has not been trapped.

The Contractor is made aware that if, at any time, the Biological Monitor encounters occupied dens within the construction area, such dens will be flagged and removed ***by the Monitor*** in accordance with the following U.S. Fish and Wildlife Service protocol:

- Den destruction will only occur after the kit fox have vacated the den, and only after approved by the U.S. Fish and Wildlife Service.
- Prior to the destruction of any den, the den will be monitored for at least three (3) consecutive days to determine its current status.

    ⇒ If no activity is observed during this period, the den will be destroyed.
    ⇒ If activity is observed during this period, the den will be monitored for at least five (5) consecutive days. To discourage use of the den, the Biological Monitor may choose to partially plug the entrance(s) of the den with soil in such a manner that any resident animal can escape easily. Destruction of the den may begin, when, in the Biological Monitor's opinion, the animal has moved to a different den. If the animal is still present after five (5) or more consecutive days of plugging and monitoring, the den may be excavated when, in the Monitor's opinion, it is temporarily vacant.

- If, at any point during den excavation, a kit fox is discovered inside the den, excavation activity will cease immediately and monitoring of the den will resume.
- Natal dens will be excavated only between August 15th and November 1st of each year.

BURROWING OWLS

If an active nest is located during the breeding season (February 1 to August 31), the area shall be flagged and designated as an ESA and no work shall occur within 75 meters around the active burrow. If an active nest is located during the non-breeding season (September 1 to January 31), the area shall be flagged and designated as an ESA and no work shall occur within 50 meters around the active burrow. The boundaries of the ESA shall be delineated in conformance with section, "Environmentally Sensitive Area," of these specifications. No activities, including grading or other construction shall proceed in the ESA. Fences shall conform to Section, "Temporary Perimeter Fence," of these specifications.

The Biological Monitor will conduct weekly surveys to determine the status of the burrow. If a burrow becomes inactive, the buffer zone may be removed following consultation with the Engineer and the California Department of Fish and Game, and after written permission is obtained from the Engineer.

If avoidance of a burrow is infeasible, Contractor shall submit written documentation that avoidance is not possible and submit a request for owl eviction to the Engineer ten (10) days prior to any planned activity within 50 meters of the occupied burrow. Burrowing owls may be evicted by the Biological Monitor following consultation with the California Department of Fish and Game. No activity may proceed in the 50 meter buffer zone until the owl(s) are evicted and the Engineer provides Contractor with written notice thereof.

CALIFORNIA TIGER SALAMANDER

Should the Contractor encounter a California Tiger Salamander, the Engineer shall be immediately notified. In addition to the above, the Contractor shall adhere to and perform the following (unless specified otherwise by the Engineer):

- A temporary barrier shall be installed as an exclusion measure for California Tiger Salamander. The barrier shall be composed of hard board panels 2.4 m long by 400 mm wide. The panels shall be buried a minimum of 100 mm below grade and supported by wooden stakes. Location and length of the barrier shall be as determined by the Biological Monitor in the field.
- 5-gallon bucket traps shall be installed at 30 m intervals along the side of the temporary barrier, away from the construction zone. Traps shall be buried so that the rims are at grade. The bucket openings shall be fitted with a steep, downward-facing, smooth walled funnel, which will allow the Tiger Salamander to enter the bucket but preclude exit. Moist humus shall be placed in the trap bottom along with a wooden float. Traps shall be checked every two (2) to three (3) days. If Tiger Salamander are captured, the Engineer shall be immediately notified.
- California Tiger Salamander burrows shall be numbered, mapped, and flagged in the field with pin flags marked with the burrow number. Burrows shall be avoided to the maximum extent possible. If avoidance of a burrow is infeasible, Contractor shall submit written documentation that avoidance is not possible and a request for burrow excavation to the Engineer five (5) days prior to any planned activity within 50 meters of the burrow. Burrows may be excavated by the Biological Monitor. Each burrow will be inspected using a fiber-optic probe prior to excavation. No activity may proceed in the 50 meter buffer zone until the burrows are excavated and the Engineer provides Contractor with written notice thereof.

GENERAL MIGRATORY BIRD PROTECTION

The Contractor shall protect migratory birds, their occupied nests, and their eggs as specified in these special provisions. The Biological Monitor will verify the presence or absence of migratory birds.

Tree removal work shall be completed in conformance with the provisions in Section 10-1.43, "Clearing and Grubbing," and Section 10-1.44, "Tree Removal," of these specifications. The Contractor shall inspect all project areas that may be impacted by construction, including all vegetation, grounds, every two (2) days to identify any new and partially built nests before the nests are halfway completed. No trees will be removed in any way without prior written approval from the Engineer.

The Contractor shall be responsible for the removal of any new and partially built nests. Nests may be removed with a long pole, may be hosed off with water, or another method may be used as approved by the Engineer. These methods must be directed only at partially-built nests and not at birds. No birds, nests with eggs, or nests with hatchlings will be disturbed. The Contractor shall maintain and submit a log weekly documenting the time, date, condition of nests and any nest prevention actions taken during inspections.

If during the nesting season (February to August) evidence of bird nesting is discovered within 110 meters of the construction areas, or in adjacent areas considered by the Biological Monitor to be disturbed by construction, the Contractor shall not disturb the nesting birds or nests, and shall immediately stop work and notify the Engineer. The nesting area shall be designated as an ESA and no work shall occur within 110 meters until the Contractor coordinates with the Engineer, California Department of Fish and Game (CDFG), and a CDFG-approved ornithologist to develop alternatives to avoid take of the nest. Once consultation is complete, work may begin/resume when written permission is obtained from the Engineer to remove the ESA.

The boundaries of the ESA for migratory birds shall be delineated in conformance with Section 5-1.36, "Environmentally Sensitive Area," of these specifications. Once the nesting season is over, the areas will no longer be considered an ESA.

When directed by the Engineer, the Contractor shall install and maintain nesting exclusion devices under the direction of the Biological Monitor throughout the breeding season or until work in the area makes the devices unnecessary. Contractor shall be responsible for the maintenance, repair, or replacement of exclusion devices until all of the work is complete. Contractor shall remove all exclusion devices when work in the area is complete.

PAYMENT

Full compensation for conforming to the requirements of this section, including attendance at the educational meeting shall be considered as included in the lump sum price bid for COMPLIANCE WITH ENDANGERED SPECIES REGULATIONS.

The lump sum price bid for COMPLIANCE WITH ENDANGERED SPECIES REGULATIONS shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work as specified herein, as shown on the plans, and as directed by the Engineer, and no additional compensation will be allowed therefor.

5-1.48 RELATIONS WITH U.S. ARMY CORPS OF ENGINEERS

Attention is directed to Section 7-1.11, "Preservation of Property," and Section 7-1.12, "Indemnification and Insurance," of the Standard Specifications.

A portion of this project is located within the jurisdiction of the U. S. Army Corps of Engineers. The U.S. Army Corps of Engineers Nationwide Permit No. 12 – Utility Line Activities and Nationwide Permit No. 14 – Linear Transportation Projects (File #28053S), have been issued covering work to be performed under this contract. The Contractor shall be fully informed of rules, regulations, and conditions that may govern the Contractor's operations in the areas and shall conduct the work accordingly.

A copy of the permit has been included in these special provisions.

Changes in the conditions listed in the aforementioned permit proposed by the Contractor shall be submitted to the Engineer for transmittal to the U. S. Army Corps of Engineers for their approval. Changes shall not be implemented until approved in writing by the Engineer.

Attention is directed to Section 8-1.06, "Time of Completion," of the Standard Specifications. Days during which the Contractor's operations are restricted in the floodway by the requirements of this sections shall be considered to be nonworking days if these restrictions cause a delay in the current controlling operation or operations.

5-1.49 RELATIONS WITH CALIFORNIA DEPARTMENT OF FISH AND GAME

A portion of this project is located within the jurisdiction of the California Department of Fish and Game. An agreement (1602 Lake and Streambed Alteration Agreement - Notification Number 1600-2006-0606-3) regarding a stream or lake has been entered into by the County and the Department of Fish and Game. The Contractor shall be fully informed of the requirements of this agreement as well as rules, regulations, and conditions that may govern the Contractor's operations in these areas and shall conduct the work accordingly.

A copy of the permit has been included in these special provisions.

It is unlawful for any person to divert, obstruct or change the natural flow of the bed, channel or bank of a stream, river or lake without first notifying the Department of Fish and Game, unless the project or activity is noticed and constructed in conformance with conditions imposed under Fish and Game Code Section 1602.

Attention is directed to Sections 7-1.01, "Laws to be Observed," 7-1.01G, "Water Pollution," and 7-1.12, "Indemnification and Insurance," of the Standard Specifications.

Modifications to the agreement between the County and the Department of Fish and Game which are proposed by the Contractor shall be submitted in writing to the Engineer for transmittal to the Department of Fish and Game for their consideration.

When the Contractor is notified by the Engineer that a modification to the agreement is under consideration, no work shall be performed which is inconsistent with the original agreement or proposed modification until the Departments take action on the proposed modifications. Compensation for delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.

Modifications to any agreement between the County and the Department of Fish and Game will be fully binding on the Contractor. The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.

5-1.50 RELATIONS WITH CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD (401 WATER QUALITY CERTIFICATION)

Attention is directed to Section 7-1.11, "Preservation of Property," and Section 7-1.12, "Indemnification and Insurance," of the Standard Specifications.

The location of the project is within an area controlled by the San Francisco Bay Regional Water Quality Control Board. State Water Quality Control Board Water Quality Certification has been issued covering work to be performed under this contract. The Contractor shall be fully informed of rules, regulations, and conditions that may govern the Contractor's operations in the areas and shall conduct the work accordingly.

A copy of the certification has been included in these special provisions.

Changes in the above listed conditions proposed by the Contractor shall be submitted to the Engineer for transmittal to the San Francisco Bay Regional Water Quality Control Board for their approval. Changes shall not be implemented until approved in writing by the San Francisco Bay Regional Water Quality Control Board.

Attention is directed to Section 8-1.06, "Time of Completion," of the Standard Specifications. Days during which the Contractor's operations are restricted in the floodway by the requirements of this section shall be considered to be nonworking days if these restrictions cause a delay in the current controlling operation or operations.

5-1.51 RELATIONS WITH STATE WATER RESOURCES CONTROL BOARD

The location of the project is within an area controlled by the State Water Resources Control Board. The State Water Resources Control Board has received and processed the County's Notice of Intent (NOI) and an NOI has been issued covering work to be performed under this

contract. The Contractor shall be fully informed of rules, regulations, and conditions that may govern the Contractor's operations in the areas and shall conduct the work accordingly.

A copy of the NOI receipt has been included in these special provisions.

5-1.52 CONTINGENCY COORDINATION FOR ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES

DESCRIPTION

The Contractor is hereby forewarned of the possibility of encountering an archaeological and/or paleontological site during the construction process.

Once a site is encountered, the Contractor shall cease and discontinue all operations within 15 m (50 feet) of the discovered site and notify the Engineer immediately. The Engineer shall notify the County's Environmental Services at 670-5480 of the find. The Contractor shall hold his/her operation at the find in abeyance until notified otherwise by the Engineer. The Contractor shall continue his operation elsewhere on the project diligently to complete all remaining construction in the specified time allowance.

The County will hire an archaeologist/paleontologist to investigate any discovered find to determine its potential significance or lack of it, and to advise the Engineer in writing of his investigation within 30 days of the site discovery.

Under the contingent bid item CONTINGENCY COORDINATION FOR ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES, the Contractor shall hold his work force, equipment and material in standby in the immediate vicinity 15 m (50 feet) of the archaeological site for whatever length of time necessary for the resolution of the problem of handling the find. The bid item shall cover such things as standby time and its associated cost, and overhead costs only for labor and equipment that cannot be used elsewhere at the job site. All other work that is not within 15 m (50 feet) of the site shall continue. The Contractor agrees that no claims will be sought due to any extended time required to complete the project. The Contractor also agrees that any time extension in connection with the archaeological site will be applicable only to that site, and the remainder of the project area shall be completed in the allowed time as determine by the Engineer.

MEASUREMENT

The bid item shall be a daily cost rate, which is payable from the day of notification to the Engineer of the discovery, to the day of notification to proceed with the work from the Engineer. Days will be measured to the neared 1/4 day.

PAYMENT

CONTINGENCY COORDINATION FOR ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES will be paid for at the unit price as set forth in the Bidding Sheet.

The contract price paid per day for CONTINGENCY COORDINATION FOR ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES shall include full compensation for overhead costs and equipment rentals resulting from delays due to an archaeological find. Payment will only be made if such a find prohibits the Contractor from performing any work at the entire project site.

Payment shall not be made for materials delivered to the project site that cannot be used due to a find.

CONTINGENCY COORDINATION FOR ARCHAEOLOGICAL AND PALEONTOLOGICAL SITES is designated as being contingent item of work on the BID PROPOSAL The quantity or pre-bid amount of this bid item set forth on the BID PROPOSAL represents no actual estimate and is nominal only. This quantity or amount may be greatly increased or decreased or reduced to zero. The increase or reduction of this quantity or amount as compared with those set forth on the BID PROPOSAL shall not constitute a basis for claim by the Contractor for extra payment or damages. Payment for the actual work performed base upon the prices bid or work done for the item of work involved will be considered full compensation to the Contractor for the work.

SECTION 6. (BLANK)

SECTION 7. (BLANK)

SECTION 8. MATERIALS

SECTION 8-1. MISCELLANEOUS

8-1.01 SUBSTITUTION OF NON-METRIC MATERIALS AND PRODUCTS

Only materials and products conforming to the requirements of the specifications shall be incorporated in the work. When metric materials and products are not available, and when approved by the Engineer, and at no cost to the State, materials and products in the United States Standard Measures which are of equal quality and of the required properties and characteristics for the purpose intended, may be substituted for the equivalent metric materials and products, subject to the following provisions:

A. Materials and products shown on the plans or in the special provisions as being equivalent may be substituted for the metric materials and products specified or detailed on the plans.

B. Before other non-metric materials and products will be considered for use, the Contractor shall furnish, at the Contractor's expense, evidence satisfactory to the Engineer that the materials and products proposed for use are equal to or better than the materials and products specified or detailed on the plans. The burden of proof as to the quality and suitability of substitutions shall be upon the Contractor and the Contractor shall furnish necessary information as required by the Engineer. The Engineer will be the sole judge as to the quality and suitability of the substituted materials and products and the Engineer's decision will be final.

C. When the Contractor elects to substitute non-metric materials and products, including materials and products shown on the plans or in the special provisions as being equivalent, the list of sources of material specified in Section 6-1.01, "Source of Supply and Quality of Materials," of the Standard Specification shall include a list of substitutions to be made and contract items involved. In addition, for a change in design or details, the Contractor shall submit plans and working drawings in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The plans and working drawings shall be submitted at least 7 days before the Contractor intends to begin the work involved.

Unless otherwise specified, the following substitutions of materials and products will be allowed:

SUBSTITUTION TABLE FOR PLAIN WIRE REINFORCEMENT
ASTM Designation: A 82

METRIC SIZE SHOWN ON THE PLANS mm^2	SIZE TO BE SUBSTITUTED $inch^2 \times 100$
MW9	W1.4
MW10	W1.6
MW13	W2.0
MW15	W2.3
MW19	W2.9
MW20	W3.1
MW22	W3.5
MW25	W3.9, except W3.5 in piles only
MW26	W4.0
MW30	W4.7
MW32	W5.0
MW35	W5.4
MW40	W6.2
MW45	W6.5
MW50	W7.8
MW55	W8.5, except W8.0 in piles only
MW60	W9.3
MW70	W10.9, except W11.0 in piles only
MW80	W12.4
MW90	W14.0
MW100	W15.5

SUBSTITUTION TABLE FOR BAR REINFORCEMENT

METRIC BAR DESIGNATION NUMBER[1] SHOWN ON THE PLANS	BAR DESIGNATION NUMBER[2] TO BE SUBSTITUTED
10	3
13	4
16	5
19	6
22	7
25	8
29	9
32	10
36	11
43	14
57	18

[1]Bar designation numbers approximate the number of millimeters of the nominal diameter of the bars.

[2]Bar numbers are based on the number of eighths of an inch included in the nominal diameter of the bars.

No adjustment will be required in spacing or total number of reinforcing bars due to a difference in minimum yield strength between metric and non-metric bars.

SUBSTITUTION TABLE FOR SIZES OF:

(1) STEEL FASTENERS FOR GENERAL APPLICATIONS (ASTM Designation: A 307 or AASHTO Designation: M 314, Grade 36 or 55), and

(2) HIGH STRENGTH STEEL FASTENERS (ASTM Designation: A 325 or A 449)

METRIC SIZE SHOWN ON THE PLANS mm	SIZE TO BE SUBSTITUTED inch
6 or 6.35	1/4
8 or 7.94	5/16
10 or 9.52	3/8
11 or 11.11	7/16
13, 12.70, or M12	1/2
14 or 14.29	9/16
16, 15.88, or M16	5/8
19, 19.05, or M20	3/4
22, 22.22, or M22	7/8
24, 25, 25.40, or M24	1
29, 28.58, or M27	1-1/8
32, 31.75, or M30	1-1/4
35 or 34.93	1-3/8
38, 38.10, or M36	1-1/2
44 or 44.45	1-3/4
51 or 50.80	2
57 or 57.15	2-1/4
64 or 63.50	2-1/2
70 or 69.85	2-3/4
76 or 76.20	3
83 or 82.55	3-1/4
89 or 88.90	3-1/2
95 or 95.25	3-3/4
102 or 101.60	4

SUBSTITUTION TABLE FOR NOMINAL THICKNESS OF SHEET METAL

UNCOATED HOT AND COLD ROLLED SHEETS		HOT-DIPPED ZINC COATED SHEETS (GALVANIZED)	
METRIC THICKNESS SHOWN ON THE PLANS mm	GAGE TO BE SUBSTITUTED inch	METRIC THICKNESS SHOWN ON THE PLANS mm	GAGE TO BE SUBSTITUTED inch
7.94	0.3125	4.270	0.1681
6.07	0.2391	3.891	0.1532
5.69	0.2242	3.510	0.1382
5.31	0.2092	3.132	0.1233
4.94	0.1943	2.753	0.1084
4.55	0.1793	2.372	0.0934
4.18	0.1644	1.994	0.0785
3.80	0.1495	1.803	0.0710
3.42	0.1345	1.613	0.0635
3.04	0.1196	1.461	0.0575
2.66	0.1046	1.311	0.0516
2.28	0.0897	1.158	0.0456
1.90	0.0747	1.006 or 1.016	0.0396
1.71	0.0673	0.930	0.0366
1.52	0.0598	0.853	0.0336
1.37	0.0538	0.777	0.0306
1.21	0.0478	0.701	0.0276
1.06	0.0418	0.627	0.0247
0.91	0.0359	0.551	0.0217
0.84	0.0329	0.513	0.0202
0.76	0.0299	0.475	0.0187
0.68	0.0269	--------	--------
0.61	0.0239	--------	--------
0.53	0.0209	--------	--------
0.45	0.0179	--------	--------
0.42	0.0164	--------	--------
0.38	0.0149	--------	--------

SUBSTITUTION TABLE FOR WIRE

METRIC THICKNESS SHOWN ON THE PLANS mm	WIRE THICKNESS TO BE SUBSTITUTED inch	GAGE NO.
6.20	0.244	3
5.72	0.225	4
5.26	0.207	5
4.88	0.192	6
4.50	0.177	7
4.11	0.162	8
3.76	0.148	9
3.43	0.135	10
3.05	0.120	11
2.69	0.106	12
2.34	0.092	13
2.03	0.080	14
1.83	0.072	15
1.57	0.062	16
1.37	0.054	17
1.22	0.048	18
1.04	0.041	19
0.89	0.035	20

SUBSTITUTION TABLE FOR PIPE PILES

METRIC SIZE SHOWN ON THE PLANS mm x mm	SIZE TO BE SUBSTITUTED inch x inch
PP 360 x 4.55	NPS 14 x 0.179
PP 360 x 6.35	NPS 14 x 0.250
PP 360 x 9.53	NPS 14 x 0.375
PP 360 x 11.12	NPS 14 x 0.438
PP 406 x 12.70	NPS 16 x 0.500
PP 460 x T	NPS 18 x T"
PP 508 x T	NPS 20 x T"
PP 559 x T	NPS 22 x T"
PP 610 x T	NPS 24 x T"
PP 660 x T	NPS 26 x T"
PP 711 x T	NPS 28 x T"
PP 762 x T	NPS 30 x T"
PP 813 x T	NPS 32 x T"
PP 864 x T	NPS 34 x T"
PP 914 x T	NPS 36 x T"
PP 965 x T	NPS 38 x T"
PP 1016 x T	NPS 40 x T"
PP 1067 x T	NPS 42 x T"
PP 1118 x T	NPS 44 x T"
PP 1219 x T	NPS 48 x T"
PP 1524 x T	NPS 60 x T"

The thickness in millimeters (T) represents an exact conversion of the thickness in inches (T").

SUBSTITUTION TABLE FOR CIDH CONCRETE PILING

METRIC SIZE SHOWN ON THE PLANS	ACTUAL AUGER SIZE TO BE SUBSTITUTED inches
350 mm	14
400 mm	16
450 mm	18
600 mm	24
750 mm	30
900 mm	36
1.0 m	42
1.2 m	48
1.5 m	60
1.8 m	72
2.1 m	84
2.4 m	96
2.7 m	108
3.0 m	120
3.3 m	132
3.6 m	144
4.0 m	156

SUBSTITUTION TABLE FOR STRUCTURAL TIMBER AND LUMBER

METRIC MINIMUM DRESSED DRY, SHOWN ON THE PLANS mm x mm	METRIC MINIMUM DRESSED GREEN, SHOWN ON THE PLANS mm x mm	NOMINAL SIZE TO BE SUBSTITUTED inch x inch
19x89	20x90	1x4
38x89	40x90	2x4
64x89	65x90	3x4
89x89	90x90	4x4
140x140	143x143	6x6
140x184	143x190	6x8
184x184	190x190	8x8
235x235	241x241	10x10
286x286	292x292	12x12

SUBSTITUTION TABLE FOR NAILS AND SPIKES

METRIC COMMON NAIL, SHOWN ON THE PLANS Length, mm Diameter, mm	METRIC BOX NAIL, SHOWN ON THE PLANS Length, mm Diameter, mm	METRIC SPIKE, SHOWN ON THE PLANS Length, mm Diameter, mm	SIZE TO BE SUBSTITUTED Penny-weight
50.80 2.87	50.80 2.51	———	6d
63.50 3.33	63.50 2.87	———	8d
76.20 3.76	76.20 3.25	76.20 4.88	10d
82.55 3.76	82.55 3.25	82.55 4.88	12d
88.90 4.11	88.90 3.43	88.90 5.26	16d
101.60 4.88	101.60 3.76	101.60 5.72	20d
114.30 5.26	114.30 3.76	114.30 6.20	30d
127.00 5.72	127.00 4.11	127.00 6.68	40d
———	———	139.70 7.19	50d
———	———	152.40 7.19	60d

SUBSTITUTION TABLE FOR IRRIGATION COMPONENTS

METRIC WATER METERS, TRUCK LOADING STANDPIPES, VALVES, BACKFLOW PREVENTERS, FLOW SENSORS, WYE STRAINERS, FILTER ASSEMBLY UNITS, PIPE SUPPLY LINES, AND PIPE IRRIGATION SUPPLY LINES SHOWN ON THE PLANS DIAMETER NOMINAL (DN) mm	NOMINAL SIZE TO BE SUBSTITUTED inch
15	1/2
20	3/4
25	1
32	1-1/4
40	1-1/2
50	2
65	2-1/2
75	3
100	4
150	6
200	8
250	10
300	12
350	14
400	16

Unless otherwise specified, substitutions of United States Standard Measures standard structural shapes corresponding to the metric designations shown on the plans and in conformance with the requirements in ASTM Designation: A 6/A 6M, Annex 2, will be allowed.

8-1.02 PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS

The Department maintains the following list of Prequalified and Tested Signing and Delineation Materials. The Engineer shall not be precluded from sampling and testing products on the list of Prequalified and Tested Signing and Delineation Materials.

The manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials shall furnish the Engineer a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each type of traffic product supplied.

For those categories of materials included on the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the listing may be used in the work. Other categories of products, not included on the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the Standard Specifications.

Materials and products may be added to the list of Prequalified and Tested Signing and Delineation Materials if the manufacturer submits a New Product Information Form to the New Product Coordinator at the Transportation Laboratory. Upon a Departmental request for samples, sufficient samples shall be submitted to permit performance of required tests. Approval of materials or products will depend upon compliance with the specifications and tests the Department may elect to perform.

PAVEMENT MARKERS, PERMANENT TYPE

Retroreflective With Abrasion Resistant Surface (ARS)

1. Apex, Model 921AR (100 mm x 100 mm)
2. Ennis Paint, Models C88 (100 mm x 100 mm), 911 (100 mm x 100 mm) and 953 (70 mm x 114 mm)
3. Ray-O-Lite, Model "AA" ARS (100 mm x 100 mm)
4. 3M Series 290 (89 mm x 100 mm)
5. 3M Series 290 PSA, with pressure sensitive adhesive pad (89 mm x 100 mm)

Retroreflective With Abrasion Resistant Surface (ARS)
(for recessed applications only)

1. Ennis Paint, Model 948 (58 mm x 119 mm)
2. Ennis Paint, Model 944SB (51 mm x 100 mm)*
3. Ray-O-Lite, Model 2002 (51 mm x 117 mm)
4. Ray-O-Lite, Model 2004 ARS (51 mm x 100 mm)*

*For use only in 114 mm wide (older) recessed slots

Non-Reflective, 100-mm Round

1. Apex Universal (Ceramic)
2. Apex Universal, Models 929 (ABS) and 929PP (Polypropylene)
3. Glowlite, Inc. (Ceramic)

4. Hi-Way Safety, Inc., Models P20-2000W and 2001Y (ABS)
5. Interstate Sales, "Diamond Back" (Polypropylene)
6. Novabrite Models Cdot (White) Cdot-y (Yellow), Ceramic
7. Novabrite Models Pdot-w (White) Pdot-y (Yellow), Polypropylene
8. Three D Traffic Works TD10000 (ABS), TD10500 (Polypropylene)

PAVEMENT MARKERS, TEMPORARY TYPE

Temporary Markers For Long Term Day/Night Use (6 months or less)

1. Vega Molded Products "Temporary Road Marker" (75 mm x 100 mm)

Temporary Markers For Short Term Day/Night Use (14 days or less)
(For seal coat or chip seal applications, clear protective covers are required)

1. Apex Universal, Model 932
2. Filtrona Extrusion, Models T.O.M., T.R.P.M., and "HH" (High Heat)
3. Hi-Way Safety, Inc., Model 1280/1281
4. Glowlite, Inc., Model 932

STRIPING AND PAVEMENT MARKING MATERIAL

Permanent Traffic Striping and Pavement Marking Tape

1. Advanced Traffic Marking, Series 300 and 400
2. Brite-Line, Series 1000
3. Brite-Line, "DeltaLine XRP"
4. Swarco Industries, "Director 35" (For transverse application only)
5. Swarco Industries, "Director 60"
6. 3M, "Stamark" Series 380 and 5730
7. 3M, "Stamark" Series 420 (For transverse application only)

Temporary (Removable) Striping and Pavement Marking Tape (6 months or less)

1. Advanced Traffic Marking, Series 200
2. Brite-Line, Series 100
3. Garlock Rubber Technologies, Series 2000
4. P.B. Laminations, Aztec, Grade 102
5. Swarco Industries, "Director-2"
6. Trelleborg Industries, R140 Series
7. 3M Series 620 "CR", and Series A750
8. 3M Series A145, Removable Black Line Mask
   (Black Tape: for use only on Asphalt Concrete Surfaces)
9. Advanced Traffic Marking Black "Hide-A-Line"
   (Black Tape: for use only on Asphalt Concrete Surfaces)
10. Brite-Line "BTR" Black Removable Tape
    (Black Tape: for use only on Asphalt Concrete Surfaces)
11. Trelleborg Industries, RB-140
    (Black Tape: for use only on Asphalt Concrete Surfaces)

Preformed Thermoplastic (Heated in place)

1. Flint Trading Inc., "Hot Tape"
2. Flint Trading Inc., "Premark," "Premark 20/20 Flex," and "Premark 20/20 Flex Plus"
3. Ennis Paint Inc., "Flametape"

Ceramic Surfacing Laminate, 150 mm x 150 mm

1. Highway Ceramics, Inc.

CLASS 1 DELINEATORS

One Piece Driveable Flexible Type, 1700-mm

1. Filtrona Extrusion, "Flexi-Guide Models 400 and 566"
2. Carsonite, Curve-Flex CFRM-400
3. Carsonite, Roadmarker CRM-375
4. FlexStake, Model 654 TM
5. GreenLine Models HWD1-66 and CGD1-66

Special Use Type, 1700-mm

1. Filtrona Extrusion, Model FG 560 (with 450-mm U-Channel base)
2. Carsonite, "Survivor" (with 450-mm U-Channel base)
3. Carsonite, Roadmarker CRM-375 (with 450-mm U-Channel base)
4. FlexStake, Model 604
5. GreenLine Models HWDU and CGD (with 450-mm U-Channel base)
6. Impact Recovery Model D36, with #105 Driveable Base
7. Safe-Hit with 200-mm pavement anchor (SH248-GP1)
8. Safe-Hit with 380-mm soil anchor (SH248-GP2) and with 450-mm soil anchor (SH248-GP3)

Surface Mount Type, 1200-mm

1. Bent Manufacturing Company, Masterflex Model MF-180EX-48
2. Carsonite, "Super Duck II"
3. FlexStake, Surface Mount, Models 704 and 754 TM
4. Impact Recovery Model D48, with #101 Fixed (Surface-Mount) Base
5. Three D Traffic Works "Channelflex" ID No. 522248W

CHANNELIZERS

Surface Mount Type, 900-mm

1. Bent Manufacturing Company, Masterflex Models MF-360-36 (Round) and MF-180-36 (Flat)
2. Filtrona Extrusion, Flexi-Guide Models FG300PE and FG300UR
3. Carsonite, "Super Duck" (Flat SDF-436, Round SDR-336)
4. Carsonite, "Super Duck II" Model SDCF203601MB "The Channelizer"
5. FlexStake, Surface Mount, Models 703 and 753 TM
6. GreenLine, Model SMD-36
7. Hi-way Safety, Inc. "Channel Guide Channelizer" Model CGC36
8. Impact Recovery Model D36, with #101 Fixed (Surface-Mount) Base
9. Safe-Hit, Guide Post, Model SH236SMA

10. Three D Traffic Works "Channelflex" ID No. 522053W

Lane Separation System

1. Filtrona Extrusion, "Flexi-Guide (FG) 300 Curb System"
2. Qwick Kurb, ' Klemmfix Guide System"
3. Recycled Technology, Inc. "Safe-Lane System"
4. Dura-Curb System

CONICAL DELINEATORS, 1070-mm

(For 700-mm Traffic Cones, see Standard Specifications)

1. Bent Manufacturing Company "T-Top"
2. Plastic Safety Systems "Navigator-42"
3. Radiator Specialty Company "Enforcer"
4. Roadmaker Company "Stacker"
5. TrafFix Devices "Grabber"
6. Three D Traffic Works "Ringtop" TD7000, ID No. 742143

OBJECT MARKERS

Type "K", 450-mm

1. Filtrona Extrusion, Model FG318PE
2. Carsonite, Model SMD 615
3. FlexStake, Model 701 KM
4. Safe-Hit, Model SH718SMA

Type "K-4" / "Q" Object Markers, 600-mm

1. Bent Manufacturing "Masterflex" Model MF-360-24
2. Filtrona Extrusion, Model FG324PE
3. Carsonite, Super Duck II
4. FlexStake, Model 701KM
5. Safe-Hit, Models SH824SMA_WA and SH824GP3_WA
6. The Line Connection, Model DP21-4Q
7. Three D Traffic Works ID No. 531702W and TD 5200
8. Three D Traffic Works ID No. 520896W

CONCRETE BARRIER MARKERS AND TEMPORARY RAILING (TYPE K) REFLECTORS

Impactable Type

1. ARTUK, "FB"
2. Filtrona Extrusion, Models PCBM-12 and PCBM-T12
3. Duraflex Corp., "Flexx 2020" and "Electriflexx"
4. Hi-Way Safety, Inc., Model GMKRM100
5. Plastic Safety Systems "BAM" Models OM-BARR and OM-BWAR
6. Three D Traffic Works "Roadguide" Model TD 9304

Non-Impactable Type

1. ARTUK, JD Series
2. Plastic Safety Systems "BAM" Models OM-BITARW and OM-BITARA
3. Vega Molded Products, Models GBM and JD
4. Plastic Vacuum Forming, "Cap-It C400"

METAL BEAM GUARD RAIL POST MARKERS

(For use to the left of traffic)

1. Filtrona Extrusion, "Mini" (75 mm x 254 mm)
2. Creative Building Products, "Dura-Bull, Model 11201"
3. Duraflex Corp., "Railrider"
4. Plastic Vacuum Forming, "Cap-It C300"

CONCRETE BARRIER DELINEATORS, 400-mm

(For use to the right of traffic)

1. Filtrona Extrusion, Model PCBM T-16
2. Safe-Hit, Model SH216RBM

CONCRETE BARRIER-MOUNTED MINI-DRUM (260 mm x 360 mm x 570 mm)

1. Stinson Equipment Company "SaddleMarker"

SOUND WALL DELINEATOR

(Applied vertically. Place top of 75 mm x 300 mm reflective element at 1200 mm above roadway)

1. Filtrona Extrusion, PCBM S-36

GUARD RAILING DELINEATOR

(Place top of reflective element at 1200 mm above plane of roadway)

Wood Post Type, 686-mm

1. Filtrona Extrusion, FG 427 and FG 527
2. Carsonite, Model 427
3. FlexStake, Model 102 GR
4. GreenLine GRD 27
5. Safe-Hit, Model SH227GRD
6. Three D Traffic Works "Guardflex" TD9100

Steel Post Type

1. Carsonite, Model CFGR-327 with CFGRBK300 Mounting Bracket

RETROREFLECTIVE SHEETING

Channelizers, Barrier Markers, and Delineators

1. Avery Dennison T-6500 Series (For rigid substrate devices only)
2. Avery Dennison WR-7100 Series
3. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
4. Reflexite, PC-1000 Metalized Polycarbonate

5. Reflexite, AC-1000 Acrylic
6. Reflexite, AP-1000 Metalized Polyester
7. Reflexite, Conformalight, AR-1000 Abrasion Resistant Coating
8. 3M, High Intensity

Traffic Cones, 330-mm Sleeves

1. Reflexite SB (Polyester), Vinyl or "TR" (Semi-transparent)

Traffic Cones, 100-mm and 150-mm Sleeves

1. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
2. Reflexite, Vinyl, "TR" (Semi-transparent) or "Conformalight"
3. 3M Series 3840
4. Avery Dennison S-9000C

Barrels and Drums

1. Avery Dennison WR-6100
2. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
3. Reflexite, "Conformalight", "Super High Intensity" or "High Impact Drum Sheeting"
4. 3M Series 3810

Barricades: Type I, Medium-Intensity (Typically Enclosed Lens, Glass-Bead Element)

1. Nippon Carbide Industries, CN8117
2. Avery Dennison, W 1100 series
3. 3M Series CW 44

Barricades: Type II, Medium-High-Intensity (Typically Enclosed Lens, Glass-Bead Element)

1. Avery Dennison, W-2100 Series

Signs: Type II, Medium-High-Intensity (Typically Enclosed Lens, Glass-Bead Element)

1. Avery Dennison, T-2500 Series
2. Nippon Carbide Industries, Nikkalite 18000

Signs: Type III, High-Intensity (Typically Encapsulated Glass-Bead Element)

1. Avery Dennison, T-5500 and T-5500A, and T-6500 Series
2. Nippon Carbide Industries, Nikkalite Brand Ultralite Grade II
3. 3M 3870 and 3930 Series

Signs: Type IV, High-Intensity (Typically Unmetallized Microprismatic Element)

1. Avery Dennison, T-6500 Series
2. Nippon Carbide Industries, Crystal Grade, 94000 Series
3. Nippon Carbide Industries, Model No. 94847 Fluorescent Orange
4. Nippon Carbide Industries, Model No. 94844 Fluorescent Yellow Green
5. 3M Series 3930

6. 3M Series 3924S, Fluorescent Orange

Signs: Type VI, Elastomeric (Roll-Up) High-Intensity, without Adhesive

1. Avery Dennison, WU-6014
2. Novabrite LLC, "Econobrite"
3. Reflexite "Vinyl"
4. Reflexite "SuperBright"
5. Reflexite "Marathon"
6. 3M Series RS20

Signs: Type VII, Super-High-Intensity (Typically Unmetallized Microprismatic Element)

1. 3M Series 3924S, Fluorescent Orange
2. 3M LDP Series 3970

Signs: Type VIII, Super-High-Intensity (Typically Unmetallized Microprismatic Element)

1. Avery Dennison, T-7500 Series
2. Avery Dennison, T-7511 Fluorescent Yellow
3. Avery Dennison, T-7513 Fluorescent Yellow Green
4. Avery Dennison, W-7514 Fluorescent Orange
5. Nippon Carbide Industries, Nikkalite Crystal Grade Series 92800
6. Nippon Carbide Industries, Nikkalite Crystal Grade Model 92844 Fluorescent Yellow/Green
7. Nippon Carbide Industries, Nikkalite Crystal Grade Model 92847 Fluorescent Orange

Signs: Type IX, Very-High-Intensity (Typically Unmetallized Microprismatic Element)

1. 3M VIP Series 3981 Diamond Grade Fluorescent Yellow
2. 3M VIP Series 3983 Diamond Grade Fluorescent Yellow/Green
3. 3M VIP Series 3990 Diamond Grade

SPECIALTY SIGNS

1. Hallmark Technologies, Inc., All Sign STOP Sign (All Plastic), 750 mm
2. Reflexite "Endurance" Work Zone Sign (with Semi-Rigid Plastic Substrate)

SIGN SUBSTRATE

Fiberglass Reinforced Plastic (FRP)

1. Fiber-Brite
2. Sequentia, "Polyplate"
3. Inteplast Group "InteCel" (13 mm for Post-Mounted CZ Signs, 1200 mm or less)

Aluminum Composite

1. Alcan Composites "Dibond Material, 2 mm" (for temporary construction signs only)
2. Mitsubishi Chemical America, Alpolic 350 (for temporary construction signs only)

8-1.03 STATE-FURNISHED MATERIALS

Attention is directed to Section 6-1.02, "State-Furnished Materials," of the Standard Specifications and these special provisions.

The following materials will be furnished or available to the Contractor to be used on this project:

1. Nine (9) sections of 2.4 meter (8 foot) 1.5 meter (60") RCP, Class V
2. Existing Shoring Material to be salvaged by Contractor

8-1.04 ENGINEERING FABRICS

Engineering fabrics shall conform to the provisions in Section 88, "Engineering Fabrics," of the Standard Specifications and these special provisions.

Filter fabric for this project shall be ultraviolet (UV) ray protected.

8-1.05 STANDARDS OF MATERIALS

For materials, products, items or services specified in the Contract Documents by a specific brand or trade name, the Contractor shall utilize such materials, products, items or services specified in said Contract Documents and no substitution(s) will be allowed therefor.

SECTION 8-2 CONCRETE

8-2.01 PORTLAND CEMENT CONCRETE

Portland cement concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions.

Portland cement concrete shall be acid and sulfate resistant that will withstand the following soil conditions:

pH range	3.05 to 7.05
minimum resistivity:	909 to 4880 ohm-cm
sulfate concentrations:	<1 to 1,860 ppm

The Department maintains a list of sources of fine and coarse aggregate that have been approved for use with a reduced amount of supplementary cementitious material in the total amount of cementitious material to be used. A source of aggregate will be considered for addition to the approved list if the producer of the aggregate submits to the Transportation Laboratory certified test results from a qualified testing laboratory that verify the aggregate complies with the requirements. Before the testing starts, the aggregate test shall be registered with the Department. A registration number can be obtained by calling (916) 227-7228. The registration number shall be used as the identification for the aggregate sample in correspondence with the Department. Upon request, a split of the tested sample shall be provided to the Department. Approval of aggregate will depend upon compliance with the specifications, based on the certified test results submitted, together with any replicate testing the Department may elect to perform. Approval will expire 3 years from the date the most recent registered and evaluated sample was collected from the aggregate source.

Qualified testing laboratories shall conform to the following requirements:

1. Laboratories performing ASTM Designation: C 1293 shall participate in the Cement and Concrete Reference Laboratory (CCRL) Concrete Proficiency Sample Program and shall have received a score of 3 or better on each test of the previous 2 sets of concrete samples.
2. Laboratories performing ASTM Designation: C 1260 shall participate in the Cement and Concrete Reference Laboratory (CCRL) Pozzolan Proficiency Sample Program and shall have received a score of 3 or better on the shrinkage and soundness tests of the previous 2 sets of pozzolan samples.

Aggregates on the list shall conform to one of the following requirements:

1. When the aggregate is tested in conformance with the requirements in California Test 554 and ASTM Designation: C 1293, the average expansion at one year shall be less than or equal to 0.040 percent; or

2. When the aggregate is tested in conformance with the requirements in California Test 554 and ASTM Designation: C 1260, the average of the expansion at 16 days shall be less than or equal to 0.15 percent.

If the aggregates used in the concrete are on the Department's list, the minimum amount of supplementary cementitious material shall conform to the following:

1. If fly ash or natural pozzolan conforming to the provisions in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications is used, the minimum amount of supplementary cementitious material shall be 15 percent by mass of the total cementitious material; or
2. If silica fume conforming to the provisions in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications is used, the minimum amount of supplementary cementitious material shall be 7 percent by mass of the total cementitious material.

The limitation on tricalcium silicate (C_3S) content in Type II cement specified in Section 90-2.01A, "Cement," of the Standard Specifications shall not apply.

SECTION 9. DESCRIPTION OF WORK

The work to be done consists, in general, of providing a traffic control system; providing construction area signs; furnishing and implementing water pollution control plans; installing temporary and permanent erosion control; furnishing and applying water; removal of existing base and surfacing; notifying and coordinating with local residents, businesses, and authorities; installing temporary and permanent striping, pavement markings, and fencing; repairing asphalt concrete base failures; furnishing and installing new drainage systems, including rock slope protection and flared end sections; removal and modification of existing drainage pipes and inlets; construction of a hydromodification basin and storm water treatment system; excavating, importing and grading for a roadway realignment; excavating, removing, and disposing unsuitable subgrade material; furnishing and placing pavement reinforcing fabric; furnishing, placing, and compacting Type A asphalt concrete; furnishing, placing, and compacting aggregate base and asphalt treated permeable base; constructing reinforced embankment and retaining walls; installing metal beam guardrail; constructing concrete barrier; placing asphalt concrete dike; installing retroreflective and non-reflective pavement markers; installing thermoplastic traffic striping and pavement markings; installing roadside signs; adjusting existing utility manholes and risers to grade; installing standard concrete monuments; adjusting existing monuments to grade; removal and disposal of excess and waste material; planting trees; furnishing and installing street lighting; coordinating with various utility companies for relocation and adjustment of various utility facilities to grade; the cleaning of the site at the end of the project; and the furnishing of all labor, materials, tools, equipment, mechanical workmanship, transportation, and services necessary to be done in order to perform a complete job in all respects as indicated on the plans, and by reference made a part hereof, as specified herein, and as directed by the Engineer on

THE RELOCATION OF VASCO ROAD
FROM THE VICINITY OF MILEPOSTS 3.0 TO 4.3
IN MURRAY TOWNSHIP, ALAMEDA COUNTY, CALIFORNIA
FEDERAL AID PROJECT NO. RPSTPL 5933 (074)

SECTION 10. CONSTRUCTION DETAILS

SECTION 10-1. GENERAL

10-1.00 PROJECT FUNDING IDENTIFICATION SIGNS

Before any major physical construction work readily visible to highway users is started on this contract, the Contractor shall furnish and erect 2 Project Funding Identification signs at the locations designated by the Engineer.

The signs and overlays shall be of a type and material consistent with the estimated time of completion of the project and shall conform to the details shown on the plans.

The sign letters, border and the Department's construction logos shall conform to the colors (non-reflective) and details shown on the plans, and shall be on a white background (non-reflective). The colors blue and orange shall conform to PR Color Number 3 and Number 6, respectively, as specified in the Federal Highway Administration's Color Tolerance Chart.

The sign message to be used for fund types shall consist of the following, in the order shown:

ALAMEDA COUNTY
STATE OF CALIFORNIA
CONTRA COSTA COUNTY
FEDERAL HIGHWAY ADMINISTRATION
ALAMEDA COUNTY MEASURE B SALES TAX

The sign message to be used for the project shall consist of the following:

VASCO ROAD SAFETY PROJECT

The sign shall conform to the design and content as shown on the plans.

The letter sizes to be used shall be as shown on the plans. The information shown on the signs shall be limited to that shown on the plans.

The sign post shall be "Unistrut Telespar 2" x 2" post with yielding breakaway base" or equivalent.

The signs shall be kept clean and in good repair by the Contractor.

Upon completion of the work, the signs shall be removed and disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

PAYMENT

The contract lump sum price paid for CONSTRUCTION AREA SIGNS shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, erecting, maintaining, replacing and removing and disposing of the Project Funding Identification signs, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer and no additional compensation will be allowed therefor.

10-1.01 ORDER OF WORK

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and these special provisions.

Prior to the start of construction, the Contractor shall provide the Engineer the name and local 24-hour telephone contact number for the Contractor's Construction Superintendent.

Attention is directed to "FIRE PLAN" of these special provisions regarding cooperating with local fire prevention authorities and implementing the fire plan established for this project.

Temporary railing (Type K) and temporary crash cushions shall be secured in place prior to commencing work for which the temporary railing and crash cushions are required.

Attention is directed to "Environmentally Sensitive Area" and "Temporary Perimeter Fence" of these special provisions. Prior to beginning work, the boundaries of the Environmentally Sensitive Areas (ESA) shall be clearly delineated in the field. The boundaries shall be delineated by the installation of Temporary Perimeter fence with a high visability ESA fence fabric.

Attention is directed to "Water Pollution Control" of these special provisions regarding the submittal and approval of the Storm Water Pollution Prevention Plan prior to performing work having potential to cause water pollution.

Attention is directed to "Maintaining Traffic" and "Temporary Pavement Delineation" of these special provisions and to the stage construction sheets of the plans.

Attention is directed to "Progress Schedule (Critical Path Method)" of these special provisions regarding the submittal of a general time-scaled logic diagram within 10 days after approval of the contract. The diagram shall be submitted prior to performing any work that may be affected by any proposed deviations to the construction staging of the project.

The work shall be performed in conformance with the stages of construction shown on the plans. Nonconflicting work in subsequent stages may proceed concurrently with work in preceding stages, provided satisfactory progress is maintained in the preceding stages of construction. Work in all stages of construction shall be scheduled in a manner such that any travel way with temporary railing (Type K) shall be open to the public for the shortest duration possible.

In each stage, after completion of the preceding stage, the first order of work shall be the removal of existing pavement delineation as directed by the Engineer. Pavement delineation removal shall be coordinated with new delineation so that lane lines are provided at all times on traveled ways open to public traffic.

Before obliterating any pavement delineation (traffic stripes, pavement markings, and pavement markers) that is to be replaced on the same alignment and location, as determined by the Engineer, the pavement delineation shall be referenced by the Contractor, with a sufficient number of control points to reestablish the alignment and location of the new pavement delineation. The references shall include the limits or changes in striping pattern, including one- and 2-way barrier lines, limit lines, crosswalks and other pavement markings. Full compensation for referencing existing pavement delineation shall be considered as included in the contract prices paid for new pavement delineation and no additional compensation will be allowed therefor.

Prior to applying asphalt concrete, the Contractor shall cover all manholes, valve and monument covers, grates, or other exposed facilities located within the area of application, using a plastic or oil resistant construction paper secured to the facility being covered by tape or adhesive. The covered facilities shall be referenced by the Contractor, with a sufficient number of control points to relocate the facilities after the asphalt concrete has been placed. After completion of the asphalt concrete operation, all covers shall be removed and disposed of in a manner satisfactory to the Engineer.

Full compensation for covering manholes, valve and monument covers, grates, or other exposed facilities, referencing, and removing temporary cover shall be considered as included in the contract price paid per tonne for ASPHALT CONCRETE, and no additional compensation will be allowed therefor.

10-1.02 WATER POLLUTION CONTROL

GENERAL

Water pollution control work shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications, these special provisions entitled "Relations With California Regional Water Quality Control Board," and these special provisions.

This project lies within the boundaries of the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The current Statewide General Permit issued by the SWRCB entitled: "ORDER NO. 99-08–DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit NO. CAS000002, Waste Discharge Requirements (WDRS) for Discharges of Storm Water Associated with Construction Activity," which regulates discharges of storm water and non-storm water from construction activities disturbing one acre or more of soil in a common plan of development, shall apply to this project. Sampling and analysis requirements as specified in SWRCB Resolution No. 2001-46 are added to the Statewide General Permit. Copies of the Statewide General Permit and modifications thereto are available for review from the SWRCB, Storm Water Permit Unit, 1001 "I" Street, P.O. Box 1977, Sacramento, California 95812-1977, Telephone: (916) 341-5254 and may also be obtained from the State Water Resources Control Board Internet website at:

http://www.swrcb.ca.gov/stormwtr/construction.html.

The Contractor shall maintain copies of the Permit at the project site and shall make the Permit available during construction.

The Contractor may obtain other National Pollutant Discharge Elimination System (NPDES) permits that apply to activities and mobile operations within or outside of the project limits including asphalt batch plants, material borrow areas, concrete plants, staging areas, storage yards, or access roads.

The Contractor shall perform water pollution control work in conformance with the requirements in the "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual" and addenda in effect on the day the Notice to Contractors is dated. This manual is referred to as the "Preparation Manual." Copies of the Preparation Manual may be obtained from:

State of California
Department of Transportation
Publication Distribution Unit
1900 Royal Oaks Drive
Sacramento, California 95815
Telephone: (916) 445-3520

The Preparation Manual and other references for performing water pollution control work are available from the Department's Construction Storm Water and Water Pollution Control web site at:

http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

The Contractor shall designate in writing a Water Pollution Control Manager (WPCM). The Contractor shall submit a statement of qualifications describing the training, work history, and expertise of the proposed WPCM. The qualifications shall include either:

A. A minimum of 24 hours of Department approved storm water management training described at Department's Construction Storm Water and Water Pollution Control web site.
B. Certification as a Certified Professional in Erosion and Sediment Control (CPESC).

The Engineer will reject the Contractor's submission of a Water Pollution Control Manager if the submitted qualifications are deemed to be inadequate.

The WPCM shall be:

1. Responsible for water pollution control work.
2. The primary contact for water pollution control work.
3. Have authority to mobilize crews to make immediate repairs to water pollution control practices.

The Contractor may designate one manager to prepare the SWPPP and a different manager to implement the plan. The Water Pollution Control Manager shall also be responsible for the preparation of the SWPPP and required modifications or amendments, and shall be responsible for the implementation and adequate functioning of the various water pollution control practices employed. The Water Pollution Control Manager shall be responsible for ensuring full compliance with the Permit and implementation of the SWPPP.

STORM WATER POLLUTION PREVENTION PLAN

The Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) to the Engineer for approval. The SWPPP shall conform to the requirements in the Preparation Manual, the NPDES permit, and these special provisions. The SWPPP shall also conform to the requirements in the Blueprint for a Clean Bay Manual (Best Management Practices to Prevent Stormwater Pollution from Construction Related Actvities including, but not limited to addenda to the Permit and manual issued up to and including the date of the bid opening of the project), and the requirements of the Alameda Countywide Clean Water Program's C.3 Stormwater Technical Guidance handbook.

The SWPPP shall be submitted in place of the water pollution control program required by the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications.

The SWPPP shall include water pollution control practices:

A. For storm water and non-storm water from areas within and outside of the County right of way that are related to construction activities for this contract such as:

    1. Staging areas.
    2. Storage Yards.
    3. Material burrow areas.
    4. Storage yards.
    5. Access roads.

B. Appropriate for each season as described in "Implementation Requirements" of these special provisions.
C. For activities or mobile operations related to all NPDES permits.

The SWPPP shall include a schedule that:

A. Describes when work activities that could cause water pollution will be performed.
B. Identifies soil stabilization and sediment control practices for disturbed soil area.
C. Includes dates when these practices will be 25, 50, and 100 percent complete.
D. Shows 100 percent completion of these practices before the rainy season.

The SWPPP shall include the following temporary water pollution control practices and their associated contract items of work as shown on the plans or specified in these special provisions:

A. Temporary Soil Stabilization

B. Temporary Sediment Control

C. Tracking Control

D. Wind Erosion Control

E. Non-Storm Water Management

F. Waste Management and Materials Pollution Control

The SWPPP shall include, but not be limited to, the items described in the Blueprint for a Clean Bay Manual, the Permit and related information contained in the contract documents.

The Contractor shall develop a Water Pollution Control Schedule that describes the timing of grading or other work activities that could affect water pollution. The Water Pollution Control Schedule shall be updated by the Contractor to reflect changes in the Contractor's operations that would affect the necessary implementation of water pollution control practices.

The following minimum practices are required:

1. Minimize construction access points to local roads. This is to minimize the tracking of materials onto public roads and minimize potential cleanup efforts.
2. Practice source control of potential pollutants. Use "good housekeeping" techniques to prevent construction related contaminants from entering the storm drain system, such as:
   - Gather all construction debris on a regular basis (weekly at a minimum) and dispose properly.
   - Sweep and collect all debris for proper disposal. Do not use water to wash areas draining to storm drains.

- Store construction materials and debris in a covered area or under a tarp so it cannot be blown away, or contain it so it cannot be tracked or spread to a storm drain inlet.
- Designate areas for equipment maintenance and cleaning and concrete truck washout. Ensure these areas are contained and do not drain to a storm drain.

3. Control the use and prevent discharge to storm drains of all potential pollutants. For example: petroleum products, solid wastes, equipment cleaning effluent, concrete saw slurry, or street washing
4. All storm drain inlets within 15 meters of the project area shall be covered with a plastic tarp. The tarp shall be a minimum of 0.38 millimeters thick and shall be placed under the grate. Tarps shall be placed no more than three calendar days prior to start of work on the roadway. All debris shall be swept from the roadway before the tarp is removed. The tarp and debris shall be removed within seven days after work is finished on the roadway. The Contractor shall remove the tarp if rain is forecasted. The tarp shall be reinstalled prior to start of work.
5. For side opening field inlets (with no grates), sand bags shall be placed in front of inlet to filter the runoff.
6. All standard Best Management Practices shall be implemented to prevent the movement of sediment downstream. No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the waterways.

The SWPPP shall include the following contract items of work for permanent water pollution control as shown on the plans or as specified in these special provisions:

A. Hydroseed

Within 15 days after contract approval, the Contractor shall submit 3 copies of the SWPPP to the Engineer. The Contractor shall allow 10 days for the Engineer's review. If revisions are required, the Engineer will provide comments and specify the date that the review stopped. The Contractor shall revise and resubmit the SWPPP within 7 days of receipt of the Engineer's comments. The Engineer's review will resume when the complete SWPPP is resubmitted. When the Engineer approves the SWPPP, the Contractor shall submit 4 copies of the approved SWPPP to the Engineer. The Contractor may proceed with construction activities if the Engineer conditionally approves the SWPPP while minor revisions are being completed. If the Engineer fails to complete the review within the time allowed and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay, the Contractor will be compensated for resulting losses, and an extension of time will be granted, as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The SWPPP shall include a copy of the Fish & Game, US Army Corps of Engineers and Regional Water Quality Control Board permits.

The Contractor shall not perform work that may cause water pollution until the SWPPP has been approved by the Engineer. The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State and local laws, regulations, and requirements.

The Contractor shall amend the SWPPP annually and shall resubmit it to the Engineer 25 days before the defined rainy season.

If there is a change in construction schedule or activities which may affect the discharge of pollutants to surface waters, ground waters, municipal storm drain systems, or when the Contractor's activities or operations violate a condition of the Permit, or when directed by the Engineer, the Contractor shall prepare an amendment to the SWPPP to identify additional or revised water pollution control practices. The Contractor shall submit the amendment to the Engineer for review within a time agreed to by the Engineer not to exceed the number of days specified for the initial submittal of the SWPPP. The Engineer will review the amendment within the same time allotted for the review of the initial submittal of the SWPPP.

If directed by the Engineer or requested in writing by the Contractor and approved by the Engineer, changes to the water pollution control work specified in these special provisions will be allowed. Changes may include addition of new water pollution control practices. The Contractor shall incorporate these changes in the SWPPP. Additional water pollution control work will be paid for as extra work in accordance with Section 4-1.03, "Extra work," of the Standard Specifications.

The Contractor shall keep a copy of the approved SWPPP at the job site. The SWPPP shall be made available when requested by a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency, or the local storm water management agency. Requests from the public shall be directed to the Engineer.

SAMPLING AND ANALYSIS

The Contractor shall include a Sampling and Analysis Plan (SAP) in the SWPPP to monitor the effectiveness of the water pollution control practices. The Contractor shall prepare the SAP in conformance with the Preparation Manual.

The Contractor shall designate trained personnel to collect water quality samples. The personnel and training shall be documented in the SAP. Training shall consist of the following elements:

A. SAP review,
B. Health and safety review, and
C. Sampling simulations.

In the SAP the Contractor shall describe the following water quality sampling procedures:

A. Sampling preparation,
B. Collection,
C. Quality assurance and quality control,
D. Sample labeling,

E. Collection documentation,
F. Sample shipping,
G. Chain of custody,
H. Sample numbering, and
I. Precautions from the construction site health and safety plan.

The Contractor shall document sample collection during precipitation.

Samples to be analyzed in the field shall be taken by the Contractor's designated sampling personnel using collection and analysis methods, and equipment calibration specified by the manufacturer of the sampling equipment. Samples to be analyzed by a laboratory, shall be sampled, preserved, and analyzed by a State-certified laboratory in conformance with the requirements in 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants." The Contractor shall identify the State-certified laboratory, sample containers, preservation requirements, holding times, and analysis method in the SAP. A list of State-certified laboratories that are approved by the Department is available at:

http://www.dhs.ca.gov/ps/ls/ELPA/html/lablist.htm

Sediment and Turbidity

This project discharges directly into an unnamed tributary to Altamont Pass Creek and into the Los Vaqueros watershed. The Contractor shall describe in the SAP the schedule and strategy for monitoring the unnamed tributary creek to Altamont Pass Creek in the listed body of water in accordance with the provisions in this section.

The Contractor shall develop the SAP schedule so that water quality samples are taken within 2 hours of discharge from precipitation during daylight hours (sunrise to sunset), regardless of the time of year, day of the week, or condition of the construction site. If precipitation occurs again after at least 72 hours of dry weather the Contractor shall take new samples, however, sampling will not be required more than 4 times in 30 days.

In the SAP the Contractor shall identify the locations where runoff sources on the construction site discharge directly into the listed body of water, and the locations where water flows onto the project with the potential to combine with runoff that discharges directly into the listed body of water. These locations shall also be shown on the SWPPP Water Pollution Control Drawings.

The Contractor shall identify locations for collecting water quality samples and the reason for their selection. Sampling locations shall also be shown on the SWPPP Water Pollution Control Drawings. The sampling locations shall include:

A. Upstream from direct discharges from the construction site,
B. Immediately downstream from the last point of direct discharge from the construction site, and
C. Immediately downhill from the locations where water flows onto the right of way.

The Contractor shall specify in the SAP that for discharges into bodies of water listed as impaired due to sedimentation/siltation, samples will be analyzed for both settleable solids in accordance with the requirements of EPA Test Method 160.5, and total suspended solids in accordance with EPA Test Method 160.2; or for suspended sediment concentration in accordance with the requirements in ASTM Designation: D 3977.

For discharges to 303(d) bodies of water listed as impaired due to turbidity the Contractor shall specify in the SAP that samples will be analyzed for turbidity in accordance with the requirements in EPA Test Method 180.1.

Non-Visible Pollutants

This project has the potential to discharge non-visible pollutants in storm water from the construction site. The Contractor shall include in the SAP a description of the sampling and analysis strategy to be implemented on the project for monitoring non-visible pollutants.

In the SAP the Contractor shall identify potential non-visible pollutants that will be present on the construction site associated with the following:

A. Construction materials and wastes;
B. Existing contamination due to historical site usage; or
C. Application of soil amendments, including soil stabilization products, with the potential to alter pH or contribute toxic pollutants to storm water.

The Contractor shall show the locations planned for storage and use of the potential non-visible pollutants on the SWPPP Water Pollution Control Drawings.

The Contractor shall include in the SAP the following list of conditions that require sampling when observed during a storm water inspection:

A. Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions.
B. Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but:

    1. A breach, leakage, malfunction, or spill is observed;
    2. The leak or spill has not been cleaned up before precipitation; and
    3. There is the potential for discharge of non-visible pollutants to surface waters or drainage system.

C. Construction activities; such as application of fertilizer, pesticide, herbicide, methyl methacrylate concrete sealant, or non-pigmented curing compound; have occurred during precipitation or within 24 hours preceding precipitation, and have the potential to discharge pollutants to surface waters or drainage system.

D. Soil amendments, including soil stabilization products, with the potential to alter pH levels or contribute toxic pollutants to storm water runoff have been applied, and have the potential to discharge pollutants to surface waters or drainage system (unless independent test data are available that demonstrate acceptable concentrations of non-visible pollutants in the soil amendment).
E. Storm water runoff from an area contaminated by historical usage of the site has the potential to discharge pollutants to surface waters or drainage system.

The Contractor shall describe in the SAP the schedule for collecting a sample downhill from each non-visible pollutant source and an uncontaminated control sample, during the first 2 hours of discharge from precipitation during daylight hours that result in enough discharge for sample collection. If discharge flows to the non-visible pollutant source, a sample shall be collected immediately downhill from where the discharge enters the Department's right of way. If precipitation occurs again after at least 72 hours of dry weather the Contractor shall take new samples.

In the SAP the Contractor shall identify sampling locations for collecting downstream and control samples, and the reason for their selection. The control sampling location shall be selected so the sample does not come into contact with materials, wastes or areas associated with potential non-visible pollutants or disturbed soil areas. The Contractor shall show non-visible pollutant sampling locations on the SWPPP Water Pollution Control Drawings.

The Contractor shall identify in the SAP the analytical method to be used for downhill and control samples for potential non-visible pollutants on the project.

Analytical Results and Evaluation

The Contractor shall submit a hard copy and electronic copy of water quality analytical results, and quality assurance and quality control data to the Engineer within 5 days of sampling for field analyses, and within 30 days for laboratory analyses. The Contractor shall also provide an evaluation of whether the downhill samples show levels of the tested parameter higher than in the control sample. If downhill or downstream samples show increased levels, the Contractor will assess the water pollution control measures, site conditions, and surrounding influences to determine the probable cause for the increase. As determined by the assessment, the Contractor will repair or modify water pollution control measures to address increases and amend the SWPPP as necessary. Electronic results (in one of the following file formats: .xls, .txt, .csv, .dbs, or .mdb) shall have the following information:

A. Sample identification number.
B. Contract number.
C. Constituent.
D. Reported value.
E. Analytical method.
F. Method detection limit.
G. Reported limit.

The Contractor shall maintain the water quality sampling documentation and analytical results with the SWPPP on the project site until a Notice of Completion has been submitted and approved.

If construction activities or knowledge of site conditions change such that discharges or sampling locations change, the Contractor shall amend the SAP in conformance with this section, "Water Pollution Control."

IMPLEMENTATION REQUIREMENTS

The Contractor shall construct, inspect, maintain, remove, and dispose of the water pollution control practices.

The Contractor's responsibility for SWPPP implementation shall continue throughout any temporary suspension of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications.

If the Contractor or the Engineer identifies a deficiency in the implementation of the approved SWPPP, the deficiency shall be corrected immediately, unless an agreed date for correction is approved in writing by the Engineer. The deficiency shall be corrected before the onset of precipitation. If the Contractor fails to correct the deficiency by the agreed date or before the onset of precipitation, the Department may correct the deficiency and deduct the cost of correcting deficiencies from payments.

If the Contractor fails to conform to the provisions of this section, "Water Pollution Control," the Engineer may order the suspension of work until the project complies with the requirements of this section.

Year-Round

The Contractor shall monitor the National Weather Service weather forecast on a daily basis during the contract. The Contractor may use an alternative weather forecasting service if approved by the Engineer. Appropriate water pollution control practices shall be in place before precipitation.

The Contractor may discontinue earthwork operations for a disturbed area for up to 21 days and the disturbed soil area will still be considered active. When earthwork operations in the disturbed area have been completed, the Contractor shall implement appropriate water pollution control practices within 15 days, or before predicted precipitation, whichever occurs first.

Rainy Season

The Contractor shall provide soil stabilization and sediment control practices during the rainy seasons between October 1 and April 15.

The Contractor shall implement soil stabilization and sediment control practices a minimum of 10 days before the start of the rainy season.

During the defined rainy season, the active disturbed soil area of the project site shall be not more than __2__ hectares. The Engineer may approve expansions of the active disturbed soil area limit if requested in writing. The Contractor shall maintain soil stabilization and sediment control materials on site to protect disturbed soil areas.

INSPECTION AND MAINTENANCE

The WPCM shall inspect the water pollution control practices identified in the SWPPP as follows:

A. Before a forecasted storm,
B. After precipitation that causes site runoff,
C. At 24-hour intervals during extended precipitation,
D. On a predetermined schedule, a minimum of once every ____2 weeks____ outside of the defined rainy season, and
E. On a predetermined schedule, a minimum of ____once a week____ during the defined rainy season.

The WPCM shall oversee the maintenance of the water pollution control practices.

The WPCM shall use the Storm Water Quality Construction Site Inspection Checklist provided in the Preparation Manual or an alternative inspection checklist provided by the Engineer. A copy of the completed site inspection checklist shall be submitted to the Engineer within 24 hours of finishing the inspection.

At a minimum, an inspection checklist shall include:

A. Inspection date.
B. Weather information: best estimate of beginning of storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall (inches).
C. A description of any inadequate BMPs.
D. If it is possible to safely access during inclement weather, list observations of all BMPs installed. Otherwise, list result of visual inspection at relevant outfall, discharge point, or downstream location and projected required maintenance activities.
E. Corrective actions required, including any changes to SWPPP necessary and implementation dates.
F. Name, title and signature of person conducting inspection.

One copy of each site inspection record shall be submitted to the Engineer within 24 hours of completing the inspection.

REPORTING REQUIREMENTS

If the Contractor identifies discharges into surface waters or drainage systems causing or potentially causing pollution, or if the project receives a written notice or order from a regulatory agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within 7 days of the discharge, notice or order. The report shall include the following information:

A. The date, time, location, nature of the operation, type of discharge; and the cause of the notice or order.
B. The water pollution control practices used before the discharge, or before receiving the notice or order.
C. The date of placement and type of additional or altered water pollution control practices placed after the discharge, or after receiving the notice or order.
D. A maintenance schedule for affected water pollution control practices.

Annual Certifications

Report of First-Time Non-Storm Water Discharge

The Contractor shall notify the Engineer at least three (3) days in advance of first-time non-storm water discharge events, excluding exempted discharges. The Contractor shall notify the Engineer of the operations causing non-storm water discharges and shall obtain field approval for first-time non-storm water discharges. Non-storm water discharges shall be monitored at first-time occurrences and routinely thereafter.

By June 15 of each year, the Contractor shall complete and submit to the Engineer an Annual Certification of Compliance, as contained in the Preparation Manual.

PAYMENT

During each estimate period the Contractor fails to conform to the provisions in this section, "Water Pollution Control," or fails to implement the water pollution control practices shown on the plans or specified elsewhere in these special provisions as items of work, the Department will withhold 25 percent of the progress payment.

Withholds for failure to perform water pollution control work will be in addition to all other withholds provided for in the contract. The Department will return performance-failure withholds in the progress payment following the correction of noncompliance.

The contract lump sum price paid for PREPARE STORM WATER POLLUTION PREVENTION PLAN shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in developing, preparing, obtaining approval of, and revising and amending the SWPPP, as specified herein, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for PREPARE STORM WATER POLLUTION PREVENTION PLAN will be made as follows:

A. After the SWPPP has been approved by the Engineer, 50 percent of the contract item price for PREPARE STORM WATER POLLUTION PREVENTION PLAN will be included in the monthly progress estimate.
B. Forty percent of the contract item price for PREPARE STORM WATER POLLUTION PREVENTION PLAN will be paid over the life of the contract.
C. After acceptance of the contract in conformance with the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, payment for the remaining 10 percent of the contract item price for PREPARE STORM WATER POLLUTION PREVENTION PLAN will be made in conformance with the provisions in Section 9-1.07A, "Payment Prior to Proposed Final Estimate."

Storm water sampling and analysis will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications. No payment will be made for the preparation, collection, analysis, and reporting of storm water samples where appropriate water pollution control practices are not implemented before precipitation or if a failure of a water pollution control practice is not corrected before precipitation.

Implementation of water pollution control practices in areas outside the highway right of way not specifically provided for in the SWPPP or in these special provisions will not be paid for.

The contract lump sum price paid for WATER POLLUTION CONTROL shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing, constructing, removing, and disposing of water pollution control practices, including non-storm water management, and waste management and materials pollution water pollution control practices, except those for which there is a contract item of work as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Water pollution control practices for which there are separate contract items of work will be measured and paid for as those contract items of work.

10-1.03 CONSTRUCTION SITE MANAGEMENT

Construction site management shall consist of controlling potential sources of water pollution before they come in contact with storm water systems or watercourses. The Contractor shall control material pollution and manage waste and non-storm water existing at the construction site by implementing effective handling, storage, use, and disposal practices.

Attention is directed to "Water Pollution Control" of these special provisions regarding the Contractor's appointment of a water pollution control manager (WPCM) for the project.

The Contractor shall train all employees and subcontractors regarding:

A. Material pollution prevention and control;
B. Waste management;
C. Non-storm water management;
D. Identifying and handling hazardous substances; and
E. Potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances.

Training shall take place before starting work on this project. New employees shall receive the complete training before starting work on this project. The Contractor shall have regular meetings to discuss and reinforce spill prevention and control; material delivery, storage, use, and disposal; waste management; and non-storm water management procedures.

Instructions for material and waste handling, storage, and spill reporting and cleanup shall be posted at all times in an open, conspicuous, and accessible location at the construction site.

Nonhazardous construction site waste and excess material shall be recycled when practical or disposed of in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications, unless otherwise specified.

Vehicles and equipment at the construction site shall be inspected by the WPCM on a frequent, predetermined schedule, and by the operator each day of use. Leaks shall be repaired immediately, or the vehicle or equipment shall be removed from the construction site.

SPILL PREVENTION AND CONTROL

The Contractor shall implement spill and leak prevention procedures when chemicals or hazardous substances are stored. Spills of petroleum products; substances listed under CFR Title 40, Parts 110, 117, and 302; and sanitary and septic waste shall be contained and cleaned up as soon as is safe.

Minor spills involve small quantities of oil, gasoline, paint, or other material that can be controlled by the first responder upon discovery of the spill. Cleanup of minor spills includes:

A. Containing the spread of the spill,
B. Recovering the spilled material using absorption,
C. Cleaning the contaminated area, and
D. Disposing of contaminated material promptly and properly.

Semi-significant spills are those that can be controlled by the first responder with the help of other personnel. Cleanup of semi-significant spills shall be immediate. Cleanup of semi-significant spills includes:

A. Containing the spread of the spill;
B. Recovering the spilled material using absorption if the spill occurs on paved or an impermeable surface;

C. Containing the spill with an earthen dike and digging up contaminated soil for disposal if the spill occurs on dirt;
D. Covering the spill with plastic or other material to prevent contaminating runoff if the spill occurs during precipitation; and
E. Disposing of contaminated material promptly and properly.

Significant or hazardous spills are those that cannot be controlled by construction personnel. Notifications of these spills shall be immediate. The following steps shall be taken:

A. Construction personnel shall not attempt to cleanup the spill until qualified staff have arrived;
B. Notify the Engineer and follow up with a written report;
C. Obtain the services of a spills contractor or hazardous material team immediately;
D. Notify the local emergency response team by dialing 911 and county officials at the emergency phone numbers kept on the construction site;
E. Notify the Governor's Office of Emergency Services Warning Center at (805) 852-7550;
F. Notify the National Response Center at (800) 424-8802 regarding spills of Federal reportable quantities in conformance with CFR Title 40, Parts 110, 119, and 302;
G. Notify other agencies as appropriate, including:

1. Fire Department,
2. Public Works Department,
3. Coast Guard,
4. Highway Patrol,
5. City Police or County Sheriff Department,
6 Department of Toxic Substances,
7. California Division of Oil and Gas,
8. Cal OSHA, or
9. Regional Water Resources Control Board.

The WPCM shall oversee and enforce proper spill prevention and control measures. Minor, semi-significant, and significant spills shall be reported to the Contractor's WPCM who shall notify the Engineer immediately.

The Contractor shall prevent spills from entering storm water runoff before and during cleanup. Spills shall not be buried or washed with water.

The Contractor shall keep material or waste storage areas clean, well organized, and equipped with enough cleanup supplies for the material being stored. Plastic shall be placed under paving equipment when not in use to catch drips.

MATERIAL MANAGEMENT

Material shall be delivered, used, and stored for this contract in a manner that minimizes or eliminates discharge of material into the air, storm drain systems, or watercourses.

The Contractor shall implement the practices described in this section when taking delivery of, using, or storing the following materials:

A. Hazardous chemicals including:

1. Acids,
2. Lime,
3. Glues,
4. Adhesives,
5. Paints,
6. Solvents, and
7. Curing compounds;

B. Soil stabilizers and binders;
C. Fertilizers;
D. Detergents;
E. Plaster;
F. Petroleum products including:

1. Fuel,
2. Oil, and
3. Grease;

G. Asphalt components and concrete components; and
H. Pesticides and herbicides.

The Contractor shall supply the Material Safety Data Sheet to the Engineer for material used or stored. The Contractor shall keep an accurate inventory of material delivered and stored at the construction site.

Employees trained in emergency spill cleanup procedures shall be present when hazardous materials or chemicals are unloaded.

The Contractor shall use recycled or less hazardous products when practical.

Application of herbicides and pesticides shall be performed by a licensed applicator. The Contractor shall complete the Report of Chemical Spray forms when spraying herbicides or pesticides, and shall submit a copy to the Engineer before application.

Material Storage

The Contractor shall store liquids, petroleum products, and substances listed in CFR Title 40, Parts 110, 117, and 302 in containers or drums approved by the United States Environmental Protection Agency, and place them in secondary containment facilities.

Secondary containment facilities shall be impervious to the materials stored there for a minimum contact time of 72 hours.

Throughout the rainy season secondary containment facilities shall be covered during non-working days and when precipitation is predicted. Secondary containment facilities shall be adequately ventilated.

The Contractor shall keep the secondary containment facility free of accumulated rainwater or spills. After precipitation, or in the event of spills or leaks, accumulated liquid shall be collected and placed into drums within 24 hours. These liquids shall be handled as hazardous waste in accordance with the provisions in "Hazardous Waste" of these special provisions, unless testing determines them to be nonhazardous.

Incompatible materials, such as chlorine and ammonia, shall not be stored in the same secondary containment facility.

Materials shall be stored in the original containers with the original product labels maintained in legible condition. Damaged or illegible labels shall be replaced immediately.

The secondary containment facility shall have the capacity to contain precipitation from a 24-hour-long, 25-year storm; and 10 percent of the aggregate volume of all containers, or all of the volume of the largest container within the facility, whichever is greater.

The Contractor shall store bagged or boxed material on pallets. Throughout the rainy season, bagged or boxed material shall be protected from wind and rain during non-working days and when precipitation is predicted.

The Contractor shall provide sufficient separation between stored containers to allow for spill cleanup or emergency response access. Storage areas shall be kept clean, well organized, and equipped with cleanup supplies appropriate for the materials being stored.

The Contractor shall repair or replace perimeter controls, containment structures, covers, and liners as needed. Storage areas shall be inspected before and after precipitation, and at least weekly during other times.

Stockpile Management

The Contractor shall reduce or eliminate potential air and water pollution from stockpiled material including soil, paving material, or pressure treated wood. Stockpiles shall be located out of floodplains when possible, and at least 15 m from concentrated flows of storm water, drainage courses, or inlets unless written approval is obtained from the Engineer.

The Contractor may discontinue adding or removing material for up to 21 days and a stockpile will still be considered active.

The Contractor shall protect active stockpiles with plastic or geotextile cover, soil stabilization measures, or with linear sediment barrier when precipitation is predicted. Active stockpiles of cold mix asphalt concrete shall be placed on an impervious surface and covered with plastic when precipitation is predicted.

The Contractor shall protect inactive soil stockpiles with a plastic or geotextile cover, or with soil stabilization measures at all times during the rainy season. A linear sediment barrier around the perimeter of the stockpile shall also be used. During the non-rainy season soil stockpiles shall be covered and protected with a linear sediment barrier when precipitation is predicted. The Contractor shall control wind erosion during dry weather as provided in Section 10, "Dust Control," of the Standard Specifications.

Stockpiles of portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate subbase shall be covered with plastic or geotextile, or protected with a linear sediment barrier at all times during the rainy season, and when precipitation is predicted during the non-rainy season.

Stockpiles of cold mix asphalt concrete shall be placed on and covered with impermeable material at all times during the rainy season, and when precipitation is predicted during the non-rainy season.

Stockpiles of pressure treated wood shall be covered with impermeable material and placed on pallets at all times during the rainy season, and when precipitation is predicted during the non-rainy season.

The Contractor shall repair or replace linear sediment barriers and covers as needed or as directed by the Engineer to keep them functioning properly. Sediment shall be removed when it accumulates to 1/3 of the linear sediment barrier height.

WASTE MANAGEMENT

Solid Waste

The Contractor shall not allow litter or debris to accumulate anywhere on the construction site, including storm drain grates, trash racks, and ditch lines. The Contractor shall pick up and remove trash and debris from the construction site at least once a week. The WPCM shall monitor solid waste storage and disposal procedures on the construction site. The Contractor shall provide enough dumpsters of sufficient size to contain the solid waste generated by the project. Dumpsters shall be emptied when refuse reaches the fill line. Dumpsters shall be watertight. The Contractor shall not wash out dumpsters on the construction site. The Contractor shall provide additional containers and more frequent pickup during the demolition phase of construction

Solid waste includes:

A. Brick,
B. Mortar,
C. Timber,
D. Metal scraps,
E. Sawdust,
F. Pipe,
G. Electrical cuttings,
H. Non-hazardous equipment parts,
I. Styrofoam and other packaging materials,
J. Vegetative material and plant containers from highway planting, and
K. Litter and smoking material, including litter generated randomly by the public.

Trash receptacles shall be provided and used in the Contractor's yard, field trailers, and locations where workers gather for lunch and breaks.

Hazardous Waste

The Contractor shall implement hazardous waste management practices when waste is generated on the construction site from the following substances:

A. Petroleum products,
B. Asphalt products,
C. Concrete curing compound,
D. Pesticides,
E. Acids,
F. Paints,
G. Stains,
H. Solvents,
I. Wood preservatives,
J. Roofing tar, and
K. Materials classified as hazardous by California Code of Regulations, Title 22, Division 4.5; or listed in CFR Title 40, Parts 110, 117, 261, or 302.

Nothing in these special provisions shall relieve the Contractor of the responsibility for compliance with Federal, State, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.

The WPCM shall oversee and enforce hazardous waste management practices. Production of hazardous materials and hazardous waste on the construction site shall be kept to a minimum. Perimeter controls, containment structures, covers, and liners shall be repaired or replaced when damaged.

The Contractor shall have a laboratory certified by the Department of Health Services (DHS) sample and test waste when hazardous material levels are unknown to determine safe methods for storage and disposal.

The Contractor shall segregate potentially hazardous waste from nonhazardous waste at the construction site. Hazardous waste shall be handled, stored, and disposed of as required in California Code of Regulations, Title 22, Division 4.5, Section 66262.34; and in CFR Title 49, Parts 261, 262, and 263.

The Contractor shall store hazardous waste in sealed containers constructed and labeled with the contents and date accumulated as required in California Code of Regulations, Title 22, Division 4.5; and in CFR Title 49, Parts 172, 173, 178, and 179. Hazardous waste containers shall be kept in temporary containment facilities conforming to the provisions in "Material Storage" of these special provisions.

There shall be adequate storage volume and containers shall be conveniently located for hazardous waste collection. Containers of hazardous waste shall not be overfilled and hazardous wastes shall not be mixed. Containers of dry waste that are not watertight shall be stored on pallets. The Contractor shall not allow potentially hazardous waste to accumulate on the ground. Hazardous waste shall be stored away from storm drains, watercourses, moving vehicles, and equipment.

The Contractor shall clean water based or oil based paint from brushes or equipment within a contained area and shall not contaminate soil, watercourses, or storm drain systems. Paints, thinners, solvents, residues, and sludges that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.

The Contractor shall dispose of hazardous waste within 90 days of being generated. Hazardous waste shall be disposed of by a licensed hazardous waste transporter using uniform hazardous waste manifest forms and taken to a Class I Disposal Site. A copy of the manifest shall be provided to the Engineer.

Contaminated Soil

The Contractor shall identify contaminated soil from spills or leaks by noticing discoloration, odors, or differences in soil properties. Soil with evidence of contamination shall be sampled and tested by a laboratory certified by DHS. If levels of contamination are found to be hazardous, the soil shall be handled and disposed of as hazardous waste.

The Contractor shall prevent the flow of water, including ground water, from mixing with contaminated soil by using one or a combination of the following measures:

A. Berms,
B. Cofferdams,
C. Grout curtains,

D. Freeze walls, or
E. Concrete seal course.

If water mixes with contaminated soil and becomes contaminated, the water shall be sampled and tested by a laboratory certified by the DHS. If levels of contamination are found to be hazardous, the water shall be handled and disposed of as hazardous waste.

Concrete Waste

The Contractor shall implement practices to prevent the discharge of portland cement concrete or asphalt concrete waste into storm drain systems or watercourses.

Portland cement concrete or asphalt concrete waste shall be collected at the following locations and disposed of:

A. Where concrete material, including grout, is used;
B. Where concrete dust and debris result from demolition;
C. Where sawcutting, coring, grinding, grooving, or hydro-concrete demolition of portland cement concrete or asphalt concrete creates a residue or slurry; or
D. Where concrete trucks or other concrete-coated equipment is cleaned at the construction site.

Sanitary and Septic Waste

Wastewater from sanitary or septic systems shall not be discharged or buried within the Department right of way. The WPCM shall inspect sanitary or septic waste storage and monitor disposal procedures at least weekly. Sanitary facilities that discharge to the sanitary sewer system shall be properly connected and free from leaks.

The Contractor shall obtain written approval from the local health agency, city, county, and sewer district before discharging from a sanitary or septic system directly into a sanitary sewer system, and provide a copy to the Engineer. The Contractor shall comply with local health agency requirements when using an on-site disposal system.

Liquid Waste

The Contractor shall not allow construction site liquid waste, including the following, to enter storm drain systems or watercourses:

A. Drilling slurries or fluids,
B. Grease-free or oil-free wastewater or rinse water,
C. Dredgings,
D. Liquid waste running off a surface including wash or rinse water, or
E. Other non-storm water liquids not covered by separate permits.

The Contractor shall hold liquid waste in structurally sound, leak proof containers such as:

A. Sediment traps,
B. Roll-off bins, or
C. Portable tanks.

Liquid waste containers shall be of sufficient quantity and volume to prevent spills and leaks. The containers shall be stored at least 15 m from storm drains, watercourses, moving vehicles, and equipment.

The Contractor shall remove and dispose of deposited solids from sediment traps as provided in "Solid Waste" of these special provisions, unless determined infeasible by the Engineer.

Liquid waste may require testing to determine hazardous material content before disposal.

Drilling fluids and residue shall be disposed of outside the highway right of way. If the Engineer determines that an appropriate location is available, fluids and residue exempt under California Code of Regulations, Title 23, Section 2511(g) may be dried by infiltration and evaporation in a leak proof container. The remaining solid waste may be disposed of as provided in "Solid Waste" of these special provisions.

NON-STORM WATER MANAGEMENT

Water Control and Conservation

The Contractor shall prevent erosion or the discharge of pollutants into storm drain systems or watercourses by managing the water used for construction operations. The Contractor shall obtain the Engineer's approval before washing anything on the construction site with water that could discharge into a storm drain system or watercourse. Discharges shall be reported to the Engineer immediately.

The Contractor shall implement water conservation practices when water is used on the construction site. Irrigation areas shall be inspected and watering schedules shall be adjusted to prevent erosion, excess watering, or runoff. The Contractor shall shut off the water source to broken lines, sprinklers, or valves, and they shall be repaired as soon as possible. When possible, water from waterline flushing shall be reused for landscape irrigation. Paved areas shall be swept and vacuumed, not washed with water.

Construction water runoff, including water from water line repair, shall be directed to areas to infiltrate into the ground and shall not be allowed to enter storm drain systems or watercourses. Spilled water shall not be allowed to escape water truck filling areas. When possible, the Contractor shall direct water from off-site sources around the construction site, or shall minimize contact with the construction site.

Illegal Connection and Discharge Detection and Reporting

The Contractor shall inspect the construction site and the site perimeter before beginning work for evidence of illegal connections, discharges, or dumping. Subsequently, the construction site and perimeter shall be inspected on a frequent, predetermined schedule.

The Contractor shall immediately notify the Engineer when illegal connections, discharges, or dumping are discovered. The Contractor shall take no further action unless directed by the Engineer. Unlabeled or unidentifiable material shall be assumed to be hazardous.

The Contractor shall look for the following evidence of illegal connections, discharges, or dumping:

A. Debris or trash piles,
B. Staining or discoloration on pavement or soils,
C. Pungent odors coming from drainage systems,
D. Discoloration or oily sheen on water,
E. Stains or residue in ditches, channels or drain boxes,
F. Abnormal water flow during dry weather,
G. Excessive sediment deposits,
H. Nonstandard drainage junction structures, or
I. Broken concrete or other disturbances near junction structures.

Vehicle and Equipment Cleaning

The Contractor shall limit vehicle and equipment cleaning or washing on the construction site to that necessary to control vehicle tracking or hazardous waste. Vehicles and equipment shall not be cleaned on the construction site with soap, solvents, or steam until the Engineer has been notified. The resulting waste shall be contained and recycled, or disposed of as provided in "Liquid Waste" or "Hazardous Waste" of these special provisions, whichever is applicable. The Contractor shall not use diesel to clean vehicles or equipment, and shall minimize the use of solvents.

The Contractor shall clean or wash vehicles and equipment in a structure equipped with disposal facilities. If using a structure is not possible, vehicles and equipment shall be cleaned or washed in an outside area with the following characteristics:

A. Located at least 15 m from storm drainage systems or watercourses,
B. Paved with asphalt concrete or portland cement concrete,
C. Surrounded by a containment berm, and
D. Equipped with a sump to collect and dispose of wash water.

When washing vehicles or equipment with water, the Contractor shall use as little water as possible. Hoses shall be equipped with a positive shutoff valve.

Wash racks shall discharge to a recycle system or to another system approved by the Engineer. Sumps shall be inspected regularly, and liquids and sediments shall be removed as needed.

The Storm Water Pollution Prevention Plan shall include the use of temporary concrete washout facilities. Temporary concrete washout facilities shall be one of the water pollution control practices for waste management and materials pollution control. Temporary concrete washout facilities shall be constructed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

MATERIALS

Plastic Liner

Plastic liners shall be single ply, new polyethylene sheeting, a minimum of 0.25-mm thick and shall be free of holes, punctures, tears or other defects that compromise the impermeability of the material. Plastic liners shall not have seams or overlapping joints.

Gravel-filled Bags

Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:

Specification	Requirements
Mass per unit area, grams per square meter, min.ASTM Designation: D 526	270
Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632*	0.89
Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method	70

* or appropriate test method for specific polymer

Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width. Yarn used for binding gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color.

Gravel shall be between 10 mm and 20 mm in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials.

The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

Straw Bales

Straw for straw bales shall conform to the provisions in Section 20-2.06, "Straw," of the Standard Specifications. Straw bales shall be a minimum of 360 mm in width, 450 mm in height, 900 mm in length and shall have a minimum mass of 23 kg. The straw bale shall be composed entirely of vegetative matter, except for binding material.

Straw bales shall be bound by either wire, nylon or polypropylene string. Jute or cotton binding shall not be used.

Baling wire shall be a minimum 1.57 mm in diameter. Nylon or polypropylene string shall be approximately 2 mm in diameter with 360 N of breaking strength.

Stakes

Stakes shall be wood or metal. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots or other defects which would render them unfit for the purpose intended. Wood stakes shall be a minimum 50 mm x 50 mm in size. Metal stakes may be used as an alternative, and shall be a minimum 13 mm in diameter. Stakes shall be a minimum 1.2 m in length. The tops of the metal stakes shall be bent at a 90-degree angle or capped with an orange or red plastic safety cap that fits snugly to the metal stake. The Contractor shall submit a sample of the metal stake and plastic cap, if used, for the Engineer's approval prior to installation.

Staples

Staples shall be as shown on the plans. An alternative attachment device such as geotextile pins or plastic pegs may be used instead of staples. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval prior to installation.

Signs

Wood posts for signs shall conform to the provisions in Section 56-2.02B, "Wood Posts," of the Standard Specifications. Lag screws shall conform to the provisions in Section 56-2.02D, "Sign Panel Fastening Hardware," of the Standard Specifications.

Plywood shall be freshly painted for each installation with not less than 2 applications of flat white paint. Sign letters shown on the plans shall be stenciled with commercial quality exterior black paint. Testing of paint will not be required.

INSTALLATION

Temporary concrete washout facilities shall be as follows:

A. Temporary concrete washout facilities shall be installed prior to beginning placement of concrete and located a minimum of 15 m from storm drain inlets, open drainage facilities,

and water courses unless determined infeasible by the Engineer. Temporary concrete washout facilities shall be located away from construction traffic or access areas at a location determined by the Contractor and approved by the Engineer.

B. A sign shall be installed adjacent to each washout facility at a location determined by the Contractor and approved by the Engineer. Signs shall be installed in conformance with the provisions in Section 56-2.03, "Construction," and Section 56-2.04, "Sign Panel Installation," of the Standard Specifications.

C. The length and width of a temporary concrete washout facility may be increased from the minimum dimensions shown on the plans, at the Contractor's expense and upon approval of the Engineer.

D. Temporary concrete washout facilities shall be constructed in sufficient quantity and size to contain liquid and concrete waste generated by washout operations for concrete wastes. These facilities shall be constructed to contain liquid and concrete waste without seepage, spills, or overflow.

E. Berms for below grade temporary concrete washout facilities shall be constructed from compacted native material. Gravel may be used in conjunction with compacted native material.

F. A plastic liner shall be installed in below grade temporary concrete washout facilities.

Details for an alternative temporary concrete washout facility shall be submitted to the Engineer for approval at least 7 days prior to installation. When temporary concrete washout facilities are no longer required for the work, as determined by the Engineer, the hardened concrete and liquid residue shall be removed and disposed of in conformance with the provisions in Section 15-3.02, "Removal Methods," of the Standard Specifications. Temporary concrete washout facilities shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary concrete washout facilities shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

MAINTENANCE

Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 300 mm. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with the provisions in Section 15-3.02, "Removal Methods," of the Standard Specifications. Holes, rips, and voids in the plastic liner shall be patched and repaired by taping or the plastic liner shall be replaced. The plastic liner shall be replaced when patches or repairs compromise the impermeability of the material as determined by the Engineer. Gravel bags shall

be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.

Temporary concrete washout facilities shall be repaired or replaced on the same day the damage occurs. Damage to temporary concrete washout facilities resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

Vehicle and Equipment Fueling and Maintenance

The Contractor shall fuel or perform maintenance on vehicles and equipment off the construction site whenever practical. When fueling or maintenance must be done at the construction site, the Contractor shall designate a site, or sites, and obtain approval from the Engineer before using. The fueling or maintenance site shall be protected from storm water, shall be on level ground, and shall be located at least 15 m from drainage inlets or watercourses. The WPCM shall inspect the fueling or maintenance site regularly. Mobile fueling or maintenance shall be kept to a minimum.

The Contractor shall use containment berms or dikes around the fueling and maintenance area. Adequate amounts of absorbent spill cleanup material and spill kits shall be kept in the fueling and maintenance area and on fueling trucks. Spill cleanup material and kits shall be disposed of immediately after use. Drip pans or absorbent pads shall be used during fueling or maintenance unless performed over an impermeable surface.

Fueling or maintenance operations shall not be left unattended. Fueling nozzles shall be equipped with an automatic shutoff control. Vapor recovery fueling nozzles shall be used where required by the Air Quality Management District. Nozzles shall be secured upright when not in use. Fuel tanks shall not be topped-off.

The Contractor shall recycle or properly dispose of used batteries and tires.

Material and Equipment Used Over Water

Drip pans and absorbent pads shall be placed under vehicles or equipment used over water, and an adequate supply of spill cleanup material shall be kept with the vehicle or equipment. Drip pans or plastic sheeting shall be placed under vehicles or equipment on docks, barges, or other surfaces over water when the vehicle or equipment will be idle for more than one hour.

The Contractor shall provide watertight curbs or toe boards on barges, platforms, docks, or other surfaces over water to contain material, debris, and tools. Material shall be secured to prevent spills or discharge into water due to wind.

Structure Removal Over or Adjacent to Water

The Contractor shall not allow demolished material to enter storm water systems or watercourses. The Contractor shall use covers and platforms approved by the Engineer to collect debris. Attachments shall be used on equipment to catch debris on small demolition operations.

Debris catching devices shall be emptied regularly and debris shall be handled as provided in "Waste Management" of these special provisions.

The WPCM shall inspect demolition sites within 15 m of storm water systems or watercourses every day.

Paving, Sealing, Sawcutting, and Grinding Operations

The Contractor shall prevent the following material from entering storm drain systems or water courses:

A. Cementitious material,
B. Asphaltic material,
C. Aggregate or screenings,
D. Grinding or sawcutting residue,
E. Pavement chunks, or
F. Shoulder backing.

The Contractor shall cover drainage inlets and use linear sediment barriers to protect downhill watercourses until paving, sealing, sawcutting, or grinding operations are completed and excess material has been removed. Drainage inlets and manholes shall be covered during the application of seal coat, tack coat, slurry seal, or fog seal.

During the rainy season or when precipitation is predicted, paving, sawcutting, and grinding operations shall be limited to places where runoff can be captured. Seal coat, tack coat, slurry seal, or fog seal operations shall not begin if precipitation is predicted for the application or the curing period. The Contractor shall not excavate material from existing roadways during precipitation.

The Contractor shall vacuum up slurry from sawcutting operations immediately after the slurry is produced. Slurry shall not be allowed to run onto lanes open to public traffic or off the pavement.

The Contractor shall collect residue from portland cement concrete grinding operations with a vacuum attachment on the grinding machine. The residue shall not be left on the pavement or allowed to flow across the pavement.

Material excavated from existing roadways may be stockpiled as provided in "Stockpile Management" of these special provisions if approved by the Engineer. Asphalt concrete chunks used in embankment shall be placed above the water table and covered by at least 0.3-m of material.

Substances used to coat asphalt trucks and equipment shall not contain soap, foaming agents, or toxic chemicals.

Thermoplastic Striping and Pavement Markers

Thermoplastic striping and preheating equipment shutoff valves shall work properly at all times when on the construction site. The Contractor shall not preheat, transfer, or load thermoplastic within 15 m of drainage inlets or watercourses. The Contractor shall not fill the preheating container to more than 150 mm from the top. Truck beds shall be cleaned daily of scraps or melted thermoplastic.

The Contractor shall not unload, transfer, or load bituminous material for pavement markers within 15 m of drainage inlets or watercourses. All pressure shall be released from melting tanks before removing the lid to fill or service. Melting tanks shall not be filled to more than 150 mm from the top.

The Contractor shall collect bituminous material from the roadway after marker removal.

Pile Driving

The Contractor shall keep spill kits and cleanup material at pile driving locations. Pile driving equipment shall be parked over drip pans, absorbent pads, or plastic sheeting where possible. When not in use, pile driving equipment shall be stored at least 15 m from concentrated flows of storm water, drainage courses, or inlets. The Contractor shall protect pile driving equipment by parking it on plywood and covering it with plastic when precipitation is predicted. The WPCM shall inspect the pile driving area every day for leaks and spills.

The Contractor shall use vegetable oil instead of hydraulic fluid when practical.

Concrete Curing

The Contractor shall not overspray chemical curing compound. Drift shall be minimized by spraying as close to the concrete as possible. Drainage inlets shall be covered before applying curing compound.

The Contractor shall minimize the use and discharge of water by using wet blankets or similar methods to maintain moisture when curing concrete.

Concrete Finishing

The Contractor shall collect and dispose of water and solid waste from high-pressure water blasting. Drainage inlets within 15 m shall be covered before sandblasting. The nozzle shall be kept as close to the surface of the concrete as possible to minimize drift of dust and blast material. Blast residue may contain hazardous material.

Containment structures for concrete finishing operations shall be inspected for damage before each day of use and before predicted precipitation. Liquid and solid waste shall be removed from the containment structure after each work shift.

DEWATERING

Dewatering shall consist of discharging accumulated storm water, ground water, or surface water from excavations or temporary containment facilities. The Contractor shall discharge water within the limits of the project.

Dewatering discharge shall not cause erosion, scour, or sedimentary deposits that impact natural bedding materials.

The Contractor shall conduct dewatering activities in accordance with the Field Guide for Construction Dewatering available at:

http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm

Before dewatering the Contractor shall submit a Dewatering and Discharge Plan to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications and "Water Pollution Control," of these special provisions. At a minimum, the Dewatering and Discharge Plan shall include the following:

A. A title sheet and table of contents;
B. A description of the dewatering and discharge operations detailing the locations, quantity of water, equipment, and discharge point;
C. The estimated schedule for dewatering and discharge (begin and end dates, intermittent or continuous);
D. Discharge alternatives such as dust control or percolation; and
E. Visual monitoring procedures with inspection log.

The Contractor shall not discharge storm water or non-storm water that has an odor, discoloration other than sediment, an oily sheen, or foam on the surface and shall notify the Engineer immediately upon discovery.

If water cannot be discharged within the project limits due to site constraints it shall be disposed of in the same manner specified for material in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

PAYMENT

The contract lump sum price paid for CONSTRUCTION SITE MANAGEMENT shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in spill prevention and control, material management, waste management, non-storm water management (including constructing, maintaining, and removing structures with disposal facilities and temporary concrete washouts), and dewatering and identifying, sampling, testing, handling, and disposing of hazardous waste, as specified herein, in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.04 TEMPORARY PERIMETER/SILT FENCE

Temporary Perimeter Fence and Temporary Silt Fence shall be the same unless otherwise specified herein in or shown on the plans.

Temporary Perimeter Fence shall be furnished, installed, maintained, and later removed in conformance with the details shown on the plans, as specified in these special provisions and as directed by the Engineer.

Temporary silt fence shall be furnished, installed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary silt fence shall be one of the water pollution control practices for sediment control. The SWPPP shall include the use of temporary silt fence.

MATERIALS

Temporary Perimeter/silt fence shall either be prefabricated or constructed with silt fence fabric, high visibility ESA fence fabric, posts, and fasteners.

Used materials may be installed provided the used materials conform to these special provisions. Materials for Temporary Perimeter/Silt Fence shall conform to the following:

High Visibility ESA Fence Fabric (to be installed at specific locations as shown on the plans and as directed by the Engineer)

High visibility ESA fence fabric shall be machine produced, orange colored mesh manufactured from polypropylene or polyethylene. High visibility fabric may be made of recycled materials. Materials shall not contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. High visibility fabric shall be fully stabilized ultraviolet resistant, shall be a minimum of 1.22 m in width with a maximum mesh opening of 50 mm x 50 mm. High visibility fabric shall be furnished in one continuous width and shall not be spliced to conform to the specified width dimension.

Silt Fence Fabric

Silt fence fabric shall be geotextile manufactured from woven polypropylene or polymer material. Silt fence fabric may be virgin, recycled, or a combination of virgin and recycled polymer materials. No virgin or recycled polymer materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The Engineer may order tests to confirm the absence of biodegradable filler materials in conformance to the requirements in ASTM Designation: E 204 (Fourier Transformed Infrared Spectroscopy-FTIR).

Silt fence fabric shall conform to the following requirements:

Specification	Requirements
Width, mm, min.	900
Grab tensile strength (25-mm grip), kilonewtons, min. in each direction ASTM Designation: D 4632*	0.55
Elongation, percent minimum in each direction ASTM Designation: D 4632*	15
Permittivity, 1/sec., min. ASTM Designation: D 4491	0.05
Flow rate, liters per minute per square meter, min. ASTM Designation: D 4491	400
Ultraviolet stability, percent tensile strength retained after 500 hours, min. ASTM Designation: D 4355 (xenon-arc lamp and water spray weathering method)	70

* or appropriate test method for specific polymer

Posts

Posts for Temporary Perimeter Fence shall be of one of the following:

A. Wood posts shall be untreated fir or pine, shall have a minimum cross section of 50 mm x 50 mm, and a minimum length of 82.1 m. The end of the post to be embedded in the soil shall be pointed. Wood posts shall not be treated with wood preservative.
B. Steel posts shall have a "U", "T", "L" or other cross sectional shape that resists failure by lateral loads. Steel posts shall have a minimum mass per length of 1.1 kg/m and a minimum length of 1.8 m. One end of the steel post shall be pointed and the other end shall have a high visibility colored plastic safety cap which fits snugly to the steel post. The Contractor shall submit to the Engineer for approval a sample of the capped steel post before installation.

Fasteners

Fasteners for attaching high visibility ESA fence fabric to the posts shall be as follows:

A. The high visibility fabric shall be attached to wooden posts with commercial quality nails or staples, or as recommended by the manufacturer or supplier.
B. Tie wire or locking plastic fasteners shall be used for attaching the high visibility fabric to steel posts. Maximum spacing of tie wire or fasteners shall be 600 mm along the length of the steel post.

Fasteners for attaching silt fence fabric to posts shall be as follows:

1. When prefabricated silt fence is used, posts shall be inserted into sewn pockets.
2. Silt fence fabric shall be attached to wooden posts with nails or staples as shown on the plans or as recommended by the manufacturer or supplier. Tie wire or locking plastic fasteners shall be used to fasten the silt fence fabric to steel posts. Maximum spacing of fasteners shall be 200 mm along the length of the steel post.

INSTALLATION

Temporary Perimeter/Silt Fence shall be installed as follows:

A. All fence construction activities shall be conducted from outside the ESA as shown on the plans or as staked.
B. Posts shall be embedded in the soil a minimum of 610 mm. unless otherwise specified. Post spacing shall be 2.5 m maximum from center to center and shall at all times support the fence in a vertical position.
C. Temporary Perimeter/Silt Fence shall be constructed prior to clearing and grubbing work, shall enclose the foliage canopy (drip line) of protected plants, and shall not encroach upon visible roots of the plants.
D. Temporary Perimeter/Silt Fence with high visibility ESA fence fabric shall be located as shown on the plans and as directed by the Engineer.

The silt fence fabric shall be installed on the side of the posts facing the slope. The silt fence fabric shall be anchored in a trench as shown on the plans. The trench shall be backfilled and mechanically or hand tamped to secure the silt fence fabric in the bottom of the trench.

Mechanically pushing 300 mm of the silt fence fabric vertically through the soil may be allowed if the Contractor can demonstrate to the Engineer that the silt fence fabric will not be damaged and will not slip out of the soil resulting in sediment passing under the silt fence fabric.

The maximum post spacing may be increased to 3 m if the fence is reinforced by a wire or plastic material by prefabrication or by field installation. The field-assembled reinforced temporary silt fence shall be able to retain saturated sediment without collapsing.

Temporary silt fence shall be installed parallel with the slope contour in reaches not to exceed 150 m. A reach is considered a continuous run of temporary silt fence from end to end or from an end to an opening, including joined panels. Each reach shall be constructed so that the elevation at the base of the fence does not deviate from the contour more than 1/3 of the fence height.

Temporary silt fence shall be joined as shown on the plans. The tops of the posts shall be tied together by minimum of 2 wraps of tie wire of a minimum 1.5-mm diameter. The silt fence fabric shall be attached to the posts at the joint as specified in these special provisions.

When Temporary Perimeter/Silt Fence is no longer required, as determined by the Engineer, the temporary perimeter fence shall become the property of the Contractor and shall be removed

and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications, except when reused as provided in this section.

Holes caused by the installation or removal of Temporary Perimeter/Silt Fence shall be backfilled in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

MAINTENANCE

Temporary Perimeter/Silt Fence that is damaged during the progress of the work shall be repaired or replaced by the Contractor the same day the damage occurs. Damage to the temporary perimeter/silt fence resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

Temporary silt fence shall be maintained to provide a sediment holding capacity of approximately 1/3 the height of the silt fence fabric above ground. When sediment exceeds this height or when directed by the Engineer, sediment shall be removed. The removed sediment shall be deposited within the project limits so that the sediment is not subject to erosion by wind or by water.

MEASUREMENT AND PAYMENT

TEMPORARY PERIMETER/SILT FENCE shall be measured and paid for in the same manner specified for permanent fence as provided in Section 80, "Fences," of the Standard Specifications.

Full compensation for furnishing, installing, maintaining, removing, and disposing of TEMPORARY PERIMETER/SILT FENCE as specified herein shall be considered as included in the contract price paid per meter for TEMPORARY PERIMETER/SILT FENCE and no additional compensation will be allowed therefor.

The contract price paid per meter for TEMPORARY PERIMETER/SILT FENCE shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary perimeter/silt fence, complete in place, including trench excavation and backfill, maintenance, and removal and disposal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. TEMPORARY PERIMETER/SILT FENCE is designated as being contingent item of work on the BID PROPOSAL.

10-1.05 COOPERATION

Attention is directed to Section 7-1.14, "Cooperation," and Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications and these special provisions.

10-1.06 PROGRESS SCHEDULE (CRITICAL PATH METHOD)

The Contractor shall submit to the Engineer practicable critical path method (CPM) progress schedules in conformance with these special provisions. Whenever the term "schedule" is used in this section it shall mean CPM progress schedule.

Attention is directed to "Payments" of Section 5 of these special provisions.

The provisions in Section 8-1.04, "Progress Schedule," of the Standard Specifications shall not apply.

DEFINITIONS

The following definitions shall apply to this section:

A. ACTIVITY.—A task, event or other project element on a schedule that contributes to completing the project. Activities have a description, start date, finish date, duration and one or more logic ties.
B. BASELINE SCHEDULE.—The initial schedule representing the Contractor's work plan on the first working day of the project.
C. CONTRACT COMPLETION DATE.—The current extended date for completion of the contract shown on the weekly statement of working days furnished by the Engineer in conformance with the provisions in Section 8-1.06, "Time of Completion," of the Standard Specifications.
D. CRITICAL PATH.—The longest continuous chain of activities for the project that has the least amount of total float of all chains. In general, a delay on the critical path will extend the scheduled completion date.
E. CRITICAL PATH METHOD (CPM).—A network based planning technique using activity durations and the relationships between activities to mathematically calculate a schedule for the entire project.
F. DATA DATE.—The day after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "planned."
G. EARLY COMPLETION TIME.—The difference in time between an early scheduled completion date and the contract completion date.
H. FLOAT.—The difference between the earliest and latest allowable start or finish times for an activity.
I. MILESTONE.—An event activity that has zero duration and is typically used to represent the beginning or end of a certain stage of the project.

J. NARRATIVE REPORT.—A document submitted with each schedule that discusses topics related to project progress and scheduling.
K. NEAR CRITICAL PATH.—A chain of activities with total float exceeding that of the critical path but having no more than 10 working days of total float.
L. SCHEDULED COMPLETION DATE.—The planned project finish date shown on the current accepted schedule.
M. STATE OWNED FLOAT ACTIVITY.—The activity documenting time saved on the critical path by actions of the State. It is the last activity prior to the scheduled completion date.
N. TIME IMPACT ANALYSIS.—A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the current scheduled completion date.
O. TOTAL FLOAT.—The amount of time that an activity or chain of activities can be delayed before extending the scheduled completion date.
P. UPDATE SCHEDULE.—A current schedule developed from the baseline or subsequent schedule through regular monthly review to incorporate as-built progress and any planned changes.

GENERAL REQUIREMENTS

The Contractor shall submit to the Engineer baseline, monthly update and final update schedules, each consistent in all respects with the time and order of work requirements of the contract. The project work shall be executed in the sequence indicated on the current accepted schedule.

Schedules shall show the order in which the Contractor proposes to carry out the work with logical links between time-scaled work activities, and calculations made using the critical path method to determine the controlling operation or operations. The Contractor is responsible for assuring that all activity sequences are logical and that each schedule shows a coordinated plan for complete performance of the work.

The Contractor shall produce schedules using Microsoft Project Schedule 2003. The Contractor shall furnish network diagrams, narrative reports, tabular reports and schedule data as parts of each schedule submittal.

Schedules shall include, but not be limited to, activities that show the following that are applicable to the project:

A. Project characteristics, salient features, or interfaces, including those with outside entities, that could affect time of completion.
B. Project start date, scheduled completion date and other milestones.
C. Work performed by the Contractor, subcontractors and suppliers.
D. Submittal development, delivery, review and approval, including those from the Contractor, subcontractors and suppliers.
E. Procurement, delivery, installation and testing of materials, plants and equipment.
F. Testing and settlement periods.

G. Utility notification and relocation.
H. Erection and removal of falsework and shoring.
I. Major traffic stage switches.
J. Finishing roadway and final cleanup.
K. State-owned float as the predecessor activity to the scheduled completion date.

Schedules shall have not less than 50 and not more than 500 activities, unless otherwise authorized by the Engineer. The number of activities shall be sufficient to assure adequate planning of the project, to permit monitoring and evaluation of progress, and to do an analysis of time impacts.

Schedule activities shall include the following:

A. A clear and legible description.
B. Start and finish dates.
C. A duration of not less than one working day, except for event activities, and not more than 20 working days, unless otherwise authorized by the Engineer.
D. At least one predecessor and one successor activity, except for project start and finish milestones.
E. Required constraints.
F. Codes for responsibility, stage, work shifts, location and contract pay item numbers.

The Contractor may show early completion time on any schedule provided that the requirements of the contract are met. Early completion time shall be considered a resource for the exclusive use of the Contractor. The Contractor may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently or by completing activities earlier than planned. The Contractor may also submit for approval a cost reduction incentive proposal in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications that will reduce time of construction.

The Contractor may show a scheduled completion date that is later than the contract completion date on an update schedule, after the baseline schedule is accepted. The Contractor shall provide an explanation for a late scheduled completion date in the narrative report that is included with the schedule.

State-owned float shall be considered a resource for the exclusive use of the State. The Engineer may accrue State-owned float by the early completion of review of any type of required submittal when it saves time on the critical path. The Contractor shall prepare a time impact analysis, when requested by the Engineer, to determine the effect of the action in conformance with the provisions in "Time Impact Analysis" specified herein. The Engineer will document State-owned float by directing the Contractor to update the State-owned float activity on the next update schedule. The Contractor shall include a log of the action on the State-owned float activity and include a discussion of the action in the narrative report. The Engineer may use State-owned float to mitigate past, present or future State delays by offsetting potential time extensions for contract change orders.

The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date, in conformance with the provisions in Section 4-1.03, "Changes," of the Standard Specifications. The Contractor shall prepare a time impact analysis to determine the effect of the change in conformance with the provisions in "Time Impact Analysis" specified herein, and shall include the impacts acceptable to the Engineer in the next update schedule. Changes that do not affect the controlling operation on the critical path will not be considered as the basis for a time adjustment. Changes that do affect the controlling operation on the critical path will be considered by the Engineer in decreasing time or granting an extension of time for completion of the contract. Time extensions will only be granted if the total float is absorbed and the scheduled completion date is delayed one or more working days because of the ordered change.

The Engineer's review and acceptance of schedules shall not waive any contract requirements and shall not relieve the Contractor of any obligation thereunder or responsibility for submitting complete and accurate information. Schedules that are rejected shall be corrected by the Contractor and resubmitted to the Engineer within 5 working days of notification by the Engineer, at which time a new review period of one week will begin.

Errors or omissions on schedules shall not relieve the Contractor from finishing all work within the time limit specified for completion of the contract. If, after a schedule has been accepted by the Engineer, either the Contractor or the Engineer discover that any aspect of the schedule has an error or omission, it shall be corrected by the Contractor on the next update schedule.

COMPUTER SOFTWARE

The software shall be the 2003 version of Microsoft Project for Windows Vista and shall be compatible with the latest Windows Vista operating system. The Contractor shall submit to the Engineer for approval a description of proposed software before delivery.

The Contractor shall furnish schedule software and all original software instruction manuals to the Engineer with submittal of the baseline schedule. The furnished schedule software and manuals shall become the property of the State and will not be returned to the Contractor. The State will compensate the Contractor in conformance with the provisions in Section 4-1.03, "Extra Work," of the Standard Specifications for replacement of software which is damaged, lost or stolen after delivery to the Engineer.

The Contractor shall instruct the Engineer in the use of the software and provide software support until the contract is accepted. Within 20 working days of contract approval, the Contractor shall provide a commercial 8-hour training session for up to five (5) County employees in the use of the software at a location acceptable to the Engineer. It is recommended that the Contractor also send at least 2 employees to the same training session to facilitate development of similar knowledge and skills in the use of the software.

NETWORK DIAGRAMS, REPORTS AND DATA

The Contractor shall include the following for each schedule submittal:

A. Two sets of originally plotted, time-scaled network diagrams.
B. Two copies of a narrative report.
C. Two copies of each of 3 sorts of the CPM software-generated tabular reports.
D. One CD-R compact disc containing the schedule data.

The time-scaled network diagrams shall conform to the following:

A. Show a continuous flow of information from left to right.
B. Be based on early start and early finish dates of activities.
C. Clearly show the primary paths of criticality using graphical presentation.
D. Be prepared on E-size sheets, 860 mm x 1120 mm (34 inch x 44 inch).
E. Include a title block and a timeline on each page.

The narrative report shall be organized in the following sequence with all applicable documents included

A. Contractor's transmittal letter.
B. Work completed during the period.
C. Identification of unusual conditions or restrictions regarding labor, equipment or material; including multiple shifts, 6-day work weeks, specified overtime or work at times other than regular days or hours.
D. Description of the current critical path.
E. Changes to the critical path and scheduled completion date since the last schedule submittal.
F. Description of problem areas.
G. Current and anticipated delays:

    1. Cause of delay.
    2. Impact of delay on other activities, milestones and completion dates.
    3. Corrective action and schedule adjustments to correct the delay.

H. Pending items and status thereof:

    1. Permits
    2. Change orders
    3. Time adjustments
    4. Non-compliance notices

I. Reasons for an early or late scheduled completion date in comparison to the contract completion date.

Tabular reports shall be software-generated and provide information for each activity included in the project schedule. Three different reports shall be sorted by (1) activity number,

(2) early start and (3) total float. Tabular reports shall be 215 mm x 280 mm (8 1/2 inch x 11 inch) in size and shall include, as a minimum, the following applicable information:

A. Data date
B. Activity number and description
C. Predecessor and successor activity numbers and descriptions
D. Activity codes
E. Scheduled, or actual and remaining durations (work days) for each activity
F. Earliest start (calendar) date
G. Earliest finish (calendar) date
H. Actual start (calendar) date
I. Actual finish (calendar) date
J. Latest start (calendar) date
K. Latest finish (calendar) date
L. Free float (work days)
M. Total float (work days)
N. Percentage of activity complete and remaining duration for incomplete activities.
O. Lags
P. Required constraints

Schedule submittals will only be considered complete when all documents and data have been provided as described above.

PRE-CONSTRUCTION SCHEDULING CONFERENCE

The Contractor shall schedule and the Engineer will conduct a pre-construction scheduling conference with the Contractor's project manager and construction scheduler within 10 working days of the approval of the contract. At this meeting the Engineer will review the requirements of this section of the special provisions with the Contractor.

The Contractor shall submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations and shall be prepared to discuss the proposed work plan and schedule methodology that comply with the requirements of these special provisions. If the Contractor proposes deviations to the construction staging of the project, then the general time-scaled logic diagram shall also display the deviations and resulting time impacts. The Contractor shall be prepared to discuss the proposal.

At this meeting, the Contractor shall additionally submit the alphanumeric coding structure and the activity identification system for labeling the work activities. To easily identify relationships, each activity description shall indicate its associated scope or location of work by including such terms as quantity of material, type of work, bridge number, station to station location, side of highway (such as left, right, northbound, southbound), lane number, shoulder, ramp name, ramp line descriptor or mainline.

The Engineer will review the logic diagram, coding structure, and activity identification system, and provide any required baseline schedule changes to the Contractor for implementation.

BASELINE SCHEDULE

Beginning the week following the pre-construction scheduling conference, the Contractor shall meet with the Engineer weekly until the baseline schedule is accepted by the Engineer to discuss schedule development and resolve schedule issues.

The Contractor shall submit to the Engineer a baseline schedule within 20 working days of approval of the contract. The Contractor shall allow 3 weeks for the Engineer's review after the baseline schedule and all support data are submitted. In addition, the baseline schedule submittal will not be considered complete until the computer software is delivered and installed for use in review of the schedule.

The baseline schedule shall include the entire scope of work and how the Contractor plans to complete all work contemplated. The baseline schedule shall show the activities that define the critical path. Multiple critical paths and near-critical paths shall be kept to a minimum. A total of not more than 50 percent of the baseline schedule activities shall be critical or near critical, unless otherwise authorized by the Engineer.

The baseline schedule shall not extend beyond the number of working days specified in these special provisions. The baseline schedule shall have a data date of the first working day of the contract and not include any completed work to date. The baseline schedule shall not attribute negative float or negative lag to any activity.

If the Contractor submits an early completion baseline schedule that shows contract completion in less than 85 percent of the working days specified in these special provisions, the baseline schedule shall be supplemented with resource allocations for every task activity and include time-scaled resource histograms. The resource allocations shall be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for the Contractor and subcontractors. The Contractor shall use average composite crews to display the labor loading of on-site construction activities. The Contractor shall optimize and level labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not duplicated in concurrent activities. The time-scaled resource histograms shall show labor crafts and equipment classes to be utilized on the contract. The Engineer may review the baseline schedule activity resource allocations using Means Productivity Standards or equivalent to determine if the schedule is practicable.

UPDATE SCHEDULE

The Contractor shall submit an update schedule and meet with the Engineer to review contract progress, on or before the first day of each month, beginning one month after the baseline schedule is accepted. The Contractor shall allow 2 weeks for the Engineer's review after the update schedule and all support data are submitted, except that the review period shall not

start until the previous month's required schedule is accepted. Update schedules that are not accepted or rejected within the review period will be considered accepted by the Engineer.

The update schedule shall have a data date of the twenty-first day of the month or other date established by the Engineer. The update schedule shall show the status of work actually completed to date and the work yet to be performed as planned. Actual activity start dates, percent complete and finish dates shall be shown as applicable. Durations for work that has been completed shall be shown on the update schedule as the work actually occurred, including Engineer submittal review and Contractor resubmittal times.

The Contractor may include modifications such as adding or deleting activities or changing activity constraints, durations or logic that do not (1) alter the critical path(s) or near critical path(s) or (2) extend the scheduled completion date compared to that shown on the current accepted schedule. The Contractor shall state in writing the reasons for any changes to planned work. If any proposed changes in planned work will result in (1) or (2) above, then the Contractor shall submit a time impact analysis as described herein.

TIME IMPACT ANALYSIS

The Contractor shall submit a written time impact analysis (TIA) to the Engineer with each request for adjustment of contract time, or when the Contractor or Engineer consider that an approved or anticipated change may impact the critical path or contract progress.

The TIA shall illustrate the impacts of each change or delay on the current scheduled completion date or internal milestone, as appropriate. The analysis shall use the accepted schedule that has a data date closest to and prior to the event. If the Engineer determines that the accepted schedule used does not appropriately represent the conditions prior to the event, the accepted schedule shall be updated to the day before the event being analyzed. The TIA shall include an impact schedule developed from incorporating the event into the accepted schedule by adding or deleting activities, or by changing durations or logic of existing activities. If the impact schedule shows that incorporating the event modifies the critical path and scheduled completion date of the accepted schedule, the difference between scheduled completion dates of the two schedules shall be equal to the adjustment of contract time. The Engineer may construct and utilize an appropriate project schedule or other recognized method to determine adjustments in contract time until the Contractor provides the TIA.

The Contractor shall submit a TIA in duplicate within 15 working days of receiving a written request for a TIA from the Engineer. The Contractor shall allow the Engineer 2 weeks after receipt to approve or reject the submitted TIA. All approved TIA schedule changes shall be shown on the next update schedule.

If a TIA submitted by the Contractor is rejected by the Engineer, the Contractor shall meet with the Engineer to discuss and resolve issues related to the TIA. If agreement is not reached, the Contractor will be allowed 15 days from the meeting with the Engineer to give notice in conformance with the provisions in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications. The Contractor shall only show actual as-built work, not unapproved changes

related to the TIA, in subsequent update schedules. If agreement is reached at a later date, approved TIA schedule changes shall be shown on the next update schedule. The Engineer will withhold remaining payment on the schedule contract item if a TIA is requested by the Engineer and not submitted by the Contractor within 15 working days. The schedule item payment will resume on the next estimate after the requested TIA is submitted. No other contract payment will be retained regarding TIA submittals.

FINAL UPDATE SCHEDULE

The Contractor shall submit a final update, as-built schedule with actual start and finish dates for the activities, within 30 days after completion of contract work. The Contractor shall provide a written certificate with this submittal signed by the Contractor's project manager and an officer of the company stating, "To my knowledge and belief, the enclosed final update schedule reflects the actual start and finish dates of the actual activities for the project contained herein." An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager.

RETENTION

The Department will retain an amount equal to 25 percent of the estimated value of the work performed during each estimate period in which the Contractor fails to submit an acceptable schedule conforming to the requirements of these special provisions as determined by the Engineer. Schedule retentions will be released for payment on the next monthly estimate for partial payment following the date that acceptable schedules are submitted to the Engineer or as otherwise specified herein. Upon completion of all contract work and submittal of the final update schedule and certification, any remaining retained funds associated with this section, "Progress Schedule (Critical Path Method)", will be released for payment. Retentions held in conformance with this section shall be in addition to other retentions provided for in the contract. No interest will be due the Contractor on retention amounts.

PAYMENT

PROGRESS SCHEDULE (CRITICAL PATH METHOD) will be paid for at a lump sum price. The contract lump sum price paid for PROGRESS SCHEDULE (CRITICAL PATH METHOD) shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, including computer software, and for doing all the work involved in preparing, furnishing, and updating schedules, and instructing/training and assisting the Engineer in the use of computer software, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for the PROGRESS SCHEDULE (CRITICAL PATH METHOD) contract item will be made progressively as follows:

A. A total of 25 percent of the item amount or a total of 25 percent of the amount listed for PROGRESS SCHEDULE (CRITICAL PATH METHOD) in "Payments" of Section 5 of

these special provisions, whichever is less, will be paid upon achieving all of the following:

1. Completion of 5 percent of all contract item work.
2. Acceptance of all schedules and TIAs required to the time when 5 percent of all contract item work is complete.
3. Delivery of schedule software to the Engineer.
4. Completion of required schedule software training.

B. A total of 50 percent of the item amount or a total of 50 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of 25 percent of all contract item work and acceptance of all schedules and TIAs required to the time when 25 percent of all contract item work is complete.

C. A total of 75 percent of the item amount or a total of 75 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of 50 percent of all contract item work and acceptance of all schedules and TIAs required to the time when 50 percent of all contract item work is complete.

D. A total of 100 percent of the item amount or a total of 100 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of all contract item work, acceptance of all schedules and TIAs required to the time when all contract item work is complete, and submittal of the certified final update schedule.

If the Contractor fails to complete any of the work or provide any of the schedules required by this section, the Engineer shall make an adjustment in compensation in conformance with the provisions in Section 4-1.03C, "Changes in Character of Work," of the Standard Specifications for the work not performed. Adjustments in compensation for schedules will not be made for any increased or decreased work ordered by the Engineer in furnishing schedules.

10-1.07 FIRE SAFETY

Fire prevention measures shall be taken to prevent the start or spreading of wild fires which may result from project activities. Fire breaks or guards shall be constructed and maintained as appropriate. Firefighting equipment shall be conspicuously located in the project site and periodically inspected and maintained.

PAYMENT

Full compensation for complying with the provisions set forth herein shall be considered as included in the various items of work and no separate payment will be made therefor.

10-1.08 TREE STUMP REMOVAL

Existing tree stumps, where shown on the plans or as directed by the Engineer to be removed, shall be removed and disposed of.

Trees stumps shall be removed in the same manner specified for clearing and grubbing in Section 16, "Clearing and Grubbing," of the Standard Specifications.

The Contractor shall avoid damage to existing facilities such as fences, irrigation systems, and existing trees and vegetation to remain.

These special provisions will not relieve the Contractor from the responsibility to provide additional devices and equipment or take measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

The Contractor shall comply with the following:

- Before any tree stumps are removed, the Contractor shall confirm the locations of such tree stumps with the Engineer. No tree stumps will be removed without prior written approval from the Engineer.
- The disturbance of existing vegetation or other work necessary to create access to tree stumps shall be approved on a case by case basis by the Engineer, and all such areas shall be restored to the previous condition immediately after the work as any such location is complete. Any such required restoration work of disturbed areas shall be completed by the Contractor at no additional cost to the County.
- Where information contained on the plans pertaining to the location of tree stumps to be removed is found to conflict with field conditions, the work described for that tree stump shall be applied to the tree stump at its correct location and no additional compensation will be allowed.
- At the option of the Contractor, removed tree stumps may be removed from the County right of way and become the property of the Contractor.
- Existing tree stumps identified by the Engineer for removal but not shown as such on the plans shall be removed.
- Holes resulting from the removal of tree stumps, outside of the slope lines, shall be backfilled the same day the trees are removed. Soil from the surrounding area may be used to backfill these holes. The backfill shall be graded to conform with the adjacent existing grade.
- Equipment not normally intended to be manually transported by two or fewer individuals shall not be operated or driven on slopes of greater than 1:4 except when approved by the Engineer.

Where required by the Engineer, removal of existing tree stumps shall include removing their stumps and roots 50 mm and larger in diameter to a minimum depth of 0.3 meters below finished grade.

A final inspection shall be performed in conformance with the provisions in Section 5-1.13, "Final Inspection," of the Standard Specifications and shall be completed a minimum of 20 working days before the estimated completion of the contract.

PAYMENT

Full compensation for tree stump removal and conforming to the requirements in this section shall be considered included in the price bid for CLEARING AND GRUBBING, and no additional compensation will be allowed therefor.

10-1.09 WATERING

Watering shall conform to Section 10, "Dust Control," and Section 17, "Watering," of the Standard Specifications and these special provisions.

In addition to the general requirements of Sections 10 and 17, the Contractor shall give particular attention to maintaining the project in as dust-free condition as possible while performing the various items of work, and during non-working periods, including weekends. Excavation areas shall be watered prior to excavating and/or during material loading, as necessary; dusty imported aggregates shall be watered prior to or immediately after placement; and temporary access roads and excavated/filled areas shall be watered frequently, as directed by the Engineer.

The second paragraph of Section 10-1.04, "Payment," of the Standard Specifications is deleted. No separate payment will be made for the purpose of controlling dust caused by public traffic.

PAYMENT

Full compensation for development of the water supply and furnishing and applying water and conforming to the requirements in this section shall be considered included in the lump sum price bid for the DEVELOP WATER SUPPLY, and no additional compensation will be allowed therefor.

10-1.10 TEMPORARY EROSION CONTROL BLANKET

Temporary erosion control blanket shall be furnished, installed, maintained, and later removed in ditches or swales, on embankment slopes, and excavation slopes at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with

"Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary erosion control blanket shall be one of the water pollution control practices for soil stabilization. The SWPPP shall include the use of temporary erosion control blanket.

MATERIALS

Materials for the temporary erosion control blanket shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and these special provisions. Temporary erosion control blanket shall be a rolled erosion control product (RECP) and shall be classified either as temporary and degradable or long-term and nondegradable.

Temporary and Degradable

Temporary and degradable RECP shall be as follows:

1. Machine produced mats consisting of curled wood excelsior with 80 percent of the fiber 150 mm or longer. The excelsior blanket shall be of consistent thickness with wood fiber evenly distributed over the entire area of the blanket. The top surface of the blanket shall be covered with an extruded photodegradable plastic netting or lightweight nonsynthetic netting. The blanket shall be smolder resistant without the use of chemical additives, nontoxic, and noninjurious to plant and animal life. Excelsior blanket shall be furnished in rolled strips with a minimum mass per unit area of 0.40-kg/m^2.
2. Machine produced mats consisting of 70 percent straw and 30 percent coconut fiber with an extruded photodegradable plastic netting or lightweight nonsynthetic netting on the top and bottom surfaces of the blanket. The straw and coconut shall adhere to the netting using thread or glue strip. The straw and coconut blanket shall be of consistent thickness, with straw and coconut fiber evenly distributed over the entire area of the blanket. Straw and coconut fiber blanket shall be furnished in rolled strips with a minimum mass per unit area of 0.27-kg/m^2.
3. Machine produced mats consisting of 100 percent coir consisting of coconut fiber with an extruded photodegradable plastic netting or lightweight nonsynthetic netting on the top and bottom surfaces of the blanket. The coconut fiber shall adhere to the netting using thread or glue strip. The coconut blanket shall be of consistent thickness, with coconut fiber evenly distributed over the entire area of the blanket. Coconut fiber blanket shall be furnished in rolled strips with a minimum mass per unit area of 0.27-kg/m^2.
4. Machine woven netting consisting of 100 percent spun coir consisting of coconut fiber with an average open area of 63 percent to 70 percent. Coconut coir netting shall be furnished in rolled strips with a minimum mass per unit area of 0.40-kg/m^2.

Long-Term and Nondegradable Erosion Control Blanket

The long-term and nondegradable erosion control blanket shall be a geotextile blanket conforming to the provisions in Section 88-1.04, "Rock Slope Protection Fabric," of the Standard Specifications for rock slope protection fabric (Type A).

Staples

An alternative attachment device such as geotextile pins or plastic pegs may be used instead of staples. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval before installation.

INSTALLATION

Temporary erosion control blanket shall be installed as follows:

1. Temporary erosion control blanket strips shall be placed loosely along the ditch or swale with the longitudinal edges and joints parallel to the centerline of the ditch or swale. Longitudinal joints of blankets shall be overlapped and stapled. The blanket on the upper portion of the slope shall overlap the blanket on the lower portion of the slope. Transverse joints of blankets shall be secured in intermediate joint trenches. Ends of the blankets shall be secured in place in key trenches.
2. Temporary erosion control blanket strips shall be placed loosely on the embankment or excavation slope with the longitudinal joints perpendicular to the slope contour lines. Longitudinal and transverse joints of blankets shall be overlapped and stapled. For transverse joints, the blanket on the upper portion of the slope shall overlap the blanket on the lower portion of the slope. For longitudinal joints, the blanket on the side of the prevailing wind shall overlap the blanket on the downwind side of the slope. Ends of the blankets shall be secured in place in key trenches.
3. Temporary erosion control blanket strips shall be secured in place with wire staples. Staples shall be driven perpendicular to the slopes.

When no longer required, as determined by the Engineer, temporary erosion control blanket fabric shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbances, including holes and depressions caused by the installation and removal of the temporary erosion control blanket shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

MAINTENANCE

Sediment in excess of 50 mm above the surface of the blanket, or when directed by the Engineer, shall be removed. Removed sediment shall be deposited within the project limits and shall not be subject to erosion by wind or water.

Temporary erosion control blanket shall be repaired or replaced on the same day the damage occurs. When washouts occur between joints or beneath the temporary erosion control blanket, the blanket shall be repaired. Temporary erosion control blanket shall be repaired or replaced when the area treated with temporary erosion control blanket becomes exposed or exhibits visible erosion. Temporary erosion control blanket damaged during the progress of work or

resulting from the Contractor's vehicles, equipment, or operations shall be repaired or replaced at the expense of the Contractor.

MEASUREMENT AND PAYMENT

The quantity of TEMPORARY EROSION CONTROL BLANKET to be paid for will be measured by the square meter of the actual area covered excluding overlaps.

The contract price paid per square meter for TEMPORARY EROSION CONTROL BLANKET shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary erosion control blanket, complete in place, including trench excavation and backfill, maintenance, and removal of temporary erosion control blanket, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

TEMPORARY EROSION CONTROL BLANKET is designated as being contingent item of work on the BID PROPOSAL.

10-1.11 TEMPORARY COVER

Temporary cover shall be furnished, installed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary cover shall be one of the water pollution control practices for soil stabilization. The SWPPP shall include the use of temporary cover.

MATERIALS

Temporary Cover Fabric

Temporary cover fabric shall be either a geotextile (engineering fabric) or a geomembrane (plastic sheeting) conforming to the following requirements:

1. Geotextile shall be a woven, slit film fabric which is also known as woven tape. The fabric shall be nonbiodegradable, resistant to deterioration by sunlight, and inert to most soil chemicals. Edges of the film fabric shall be selvage or serge to prevent unraveling. The film fabric shall also conform to the following requirements:

Specification	Requirements
Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632*	0.89
Elongation at break, percent min. ASTM Designation: D4632*	15
Toughness, kilonewtons, min. (percent elongation x grab tensile strength)	13.3
Permittivity, 1/sec, max. (liters per minute per square meter) ASTM Designation: D 4491	0.08 (244)
Ultraviolet light stability, percent tensile strength retained after 500 hours, min. ASTM Designation: D 4355 (xenon arc lamp method)	70

* or appropriate test method for specific polymer

2. The geomembrane shall consist of 0.25-mm thick, single-ply material in conformance with the requirements in ASTM Designation: D 5199.

Temporary cover fabric shall be manufactured from polyethylene, polypropylene, or comparable polymers. The polymer materials may be virgin, recycled, or a combination of virgin and recycled materials. The polymer materials shall not contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The Engineer may order tests to confirm the absence of biodegradable filler materials in conformance with the requirements in ASTM Designation: E 204 (Fourier Transformed Infrared Spectroscopy-FTIR).

Restrainers

Restrainers for securing the temporary cover fabric on slopes and stockpiles shall consist of one or a combination of the following:

1. Gravel-filled bags used as restrainers shall be knotted, roped, and placed at a maximum of 2 m apart on the temporary cover fabric as shown on the plans. Gravel-filled bags shall be between 13 kg and 22 kg in mass, between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width. Gravel bag fabric shall be nonwoven polypropylene geotextile with a minimum unit weight of 270 g/m^2. The fabric shall have a minimum grab tensile strength (25-mm grip) of 0.89-kN in conformance with the requirements in ASTM Designation: D 4632, and an ultraviolet (UV) stability of 70 percent tensile strength retained after 500 hours in conformance with the requirements in ASTM Designation: D 4355, xenon arc lamp method. Gravel shall consist of noncohesive material between 10 mm and 20 mm in diameter, free of clay balls, organic matter, and other deleterious material. The openings of gravel-filled bags shall be secured to prevent escape of gravel.
2. Restrainers consisting of a steel anchor with a wooden lath shall be fabricated and placed as shown on the plans. Wooden lath shall conform to the provisions in Section 20-2.12, "Lumber," of the Standard Specifications and shall be fir or pine, 38 mm x 89 mm in size, and 2.4 m in length. The wooden lath shall be secured to the temporary cover with steel anchors placed 1.2 m apart along the lath.

The Contractor may use an alternative restrainer if approved by the Engineer in writing. The Contractor shall submit details for an alternative restrainer to the Engineer before installation. The alternative restrainer shall be installed and maintained in conformance with these special provisions.

INSTALLATION

Temporary cover shall be installed as follows:

1. Temporary cover fabric shall be placed and anchored as shown on the plans.
2. Abutting edges of the temporary cover fabric shall overlap a minimum of 600 mm. Nonabutting edges shall be embedded in the soil a minimum of 150 mm.
3. Restrainers shall be placed at the overlap area and along the toe of the slope. Restrainers outside the overlap areas shall be placed at a maximum spacing of 2.4 m.
4. Steel anchors shall be installed to allow the leg of the steel anchor to pierce through the temporary cover fabric into the slope with the crown section securing the wooden lath firmly against the slope.
5. Earthen berm, a linear sediment barrier, shall be constructed adjacent to the toe of the slope with a minimum height of 200 mm and a minimum width of 940 mm. The earthen berm shall be hand or mechanically compacted. Alternative linear sediment barrier may be used if approved by the Engineer in writing.

If the Contractor removes the temporary cover in order to facilitate other work, the temporary cover shall be replaced and secured.

When no longer required as determined by the Engineer, temporary cover shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbances, including holes and depressions, caused by the installation and removal of the temporary cover shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

MAINTENANCE

The Contractor shall maintain the temporary cover throughout the contract to prevent displacement or migration of the material on the slope or stockpiled.

Temporary cover shall be maintained to minimize exposure of the protected area. Restrainers shall be relocated and secured as needed to restrain the temporary cover fabric in place. Temporary cover that breaks free shall be immediately secured. Holes, tears, and voids in the temporary cover fabric shall be patched, repaired, or replaced. When patches or repairs are unacceptable as determined by the Engineer, the temporary cover shall be replaced.

Temporary cover shall be repaired or replaced on the same day when the damage occurs. Damage to the temporary cover resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

MEASUREMENT AND PAYMENT

The quantity of TEMPORARY COVER to be paid for will be measured by the square meter for the actual area covered.

The contract price paid per square meter for TEMPORARY COVER shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary cover, complete in place, including trench excavation and backfill, maintenance, and removal of temporary cover, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. TEMPORARY COVER is designated as being contingent item of work on the BID PROPOSAL.

10-1.12 TEMPORARY CHECK DAM

Temporary check dams shall be constructed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary check dams shall be one of the water pollution control practices for sediment control. The SWPPP shall include the use of temporary check dams.

Temporary check dams shall be either Type 1 (fiber roll) or Type 2 (gravel bag).

MATERIALS

Fiber Roll

Fiber rolls shall be one of the following:

1. Constructed with a premanufactured blanket consisting of one material or a combination of materials consisting of wood excelsior, rice or wheat straw, or coconut fibers. The blanket shall be between 2.0 m and 2.4 m in width and between 20 m and 29 m in length. Wood excelsior shall be individual fibers, of which 80 percent shall be 150 mm or longer in length. The blanket shall have a photodegradable plastic netting or biodegradable jute, sisal, or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 2 m apart along the full length of the roll and placed 150 mm from the ends of each roll. The finished roll shall be between 200 mm and 250 mm in diameter, between 3 m and 6 m in length and shall weigh at least 0.81-kg/m. More than one blanket may be required to achieve the finished roll diameter. When more

than one blanket is required, blankets shall be jointed longitudinally with an overlap of 150 mm along the length of the blanket.

2. A premanufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a photodegradable plastic or biodegradable jute, sisal, or coir fiber netting. Rolls shall be between 200 mm and 250 mm in diameter, between 3 m and 6 m in length and shall weigh at least 1.6 kg/m. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the rolls.

Stakes

Wood stakes shall be a minimum of 19 mm x 38 mm x 450 mm. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots or other defects which would render them unfit for the purpose intended. Metal stakes may be used as an alternative. The Contractor shall submit a sample of the metal stake for the Engineer's approval before installation. The tops of the metal stakes shall be bent at a 90-degree angle.

Rope

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 6.35 mm.

Gravel-filled Bag

Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:

Specification	Requirements
Mass per unit area, grams per square meter, min. ASTM Designation: D 5261	270
Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632*	0.89
Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method	70

* or appropriate test method for specific polymer

Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.

Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color.

Gravel shall be between 10 mm and 20 mm in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

INSTALLATION

Temporary check dams shall be installed as follows:

1. Temporary check dam (Type 1): Rope and notched stakes shall be used to restrain the fiber rolls against the surface of the unlined ditch or swale. Stakes shall be driven into the slope until the notch is even with the top of the fiber roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope so that the rope will hold the fiber roll tightly to the slope. Furrows will not be required. If metal stakes are used, the rope may be laced and knotted on the bend at the top of the metal stakes.
2. Temporary check dam (Type 2): A single layer of gravel bags shall be placed in lined or unlined ditches with ends abutted tightly and not overlapped.
3. The bedding area for the temporary check dam shall be cleared of obstructions including, rocks, clods, and debris greater than 25 mm in diameter before installation.
4. The temporary check dam shall be installed across and approximately perpendicular to the centerline of a ditch or drainage line.
5. The temporary check dam shall be installed with sufficient spillway depth to prevent flanking of concentrated flow around the ends of the check dam.
6. The temporary check dam shall be installed in an unlined ditch or swale before the application of other temporary erosion control or soil stabilization material in the same unlined ditch or swale.
7. The temporary check dam shall be installed upon completion of temporary erosion control blanket in earthen ditches or swales.

Details for an alternative temporary check dam shall be submitted to the Engineer for approval at least 7 days before installation.

When the temporary check dam is no longer required, as determined by the Engineer, it shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbances including holes and depressions caused by the installation and removal of the temporary check dam shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

MAINTENANCE

Temporary check dams shall be maintained to provide sediment holding capacity and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping fiber rolls shall be repaired with additional stakes or replaced. Gravel bags shall be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out. Locations where rills and other evidence of concentrated runoff have occurred beneath the check dams shall be corrected.

When sediment exceeds 1/3 of the height of the check dam above ground, or when directed by the Engineer, sediment shall be removed. The removed sediment shall be deposited within the project limits so that the sediment is not subject to erosion by wind or by water.

Temporary check dams shall be repaired or replaced the same day damage occurs. Washouts or scour beneath the temporary check dam shall be repaired. Temporary check dams damaged during the progress of work or resulting from the Contractor's vehicles, equipment, or operations shall be repaired or replaced at the Contractor's expense.

MEASUREMENT AND PAYMENT

Quantities of temporary check dams regardless of type to be paid for will be determined by the meter measured along the centerline of the installed check dam, and shall be based on a ditch or swale width of three (3) meters and spacing between check dams of three (3) meters.

The contract price paid per meter for TEMPORARY CHECK DAM shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary check dams, complete in place, including maintenance, and removal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. TEMPORARY CHECK DAM is designated as being contingent item of work on the BID PROPOSAL.

10-1.13 TEMPORARY FIBER ROLL

Temporary fiber roll shall be furnished, installed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary fiber roll shall be installed on excavation and embankment slopes and other disturbed soil areas, active or nonactive.

Temporary fiber roll shall be one of the water pollution control practices for sediment control. The SWPPP shall include the use of temporary fiber roll.

Temporary fiber roll shall be either Type 1 or Type 2.

MATERIALS

Fiber Roll

Fiber roll shall be either:

1. Constructed with a premanufactured blanket consisting of either wood excelsior, rice or wheat straw, or coconut fibers or a combination of these materials. The blanket shall be

between 2.0 m and 2.4 m in width and between 20 m and 29 m in length. Wood excelsior shall be individual fibers, of which 80 percent shall be 150 mm or longer in length. The blanket shall have a biodegradable jute, sisal, or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 2 m apart along the full length of the roll and placed 150 mm from the ends of each roll. The finished roll shall be between 200 mm and 250 mm in diameter, a minimum of 6 m in length, and shall weigh a minimum 0.81-kg/m. More than one blanket may be required to achieve the finished roll diameter. When more than one blanket is required, blankets shall be jointed longitudinally with an overlap of 150 mm along the length of the blanket.

2. A premanufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a biodegradable jute, sisal, or coir fiber netting. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the roll. Rolls shall be between 200 mm and 300 mm in diameter. Rolls between 200 mm and 250 mm in diameter shall have a minimum weight of 1.6 kg/m and a minimum length of 6 m. Rolls between 250 mm and 300 mm in diameter shall have a minimum weight of 4.5 kg/m and a minimum length of 3 m.

Stakes

Wood stakes shall be a minimum of 19 mm x 19 mm x 450 mm in size for Type 1 installation, or a minimum of 19 mm x 38 mm x 450 mm in size for Type 2 installation. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes shall not be used.

Rope

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 6.35 mm.

INSTALLATION

Temporary fiber roll shall be installed as follows:

1. Temporary fiber roll (Type 1): Furrows shall be constructed to a depth between 50 mm and 100 mm, and to a sufficient width to hold the fiber roll. Stakes shall be installed 600 mm apart along the length of the fiber rolls and stopped at 300 mm from each end of the rolls. Stakes shall be driven to a maximum of 50 mm above, or flush with the top of the roll.
2. Temporary fiber roll (Type 2): Rope and notched stakes shall be used to restrain the fiber rolls against the slope. Stakes shall be driven into the slope until the notch is even with the top of the fiber roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope such that the rope will hold the fiber roll tightly to the slope. Furrows will not be required.
3. Temporary fiber rolls shall be placed 3 m apart along the slope for slope inclination (vertical:horizontal) of 1:2 and steeper, 4.5 m apart along the slope for slope inclination between 1:2 and 1:4, 6 m apart along the slope for slope inclination between 1:4 and

1:10, and a maximum of 15 m apart along the slope for slope inclination of 1:10 and flatter.

4. The bedding area for the fiber roll shall be cleared of obstructions including rocks, clods, and debris greater than 25 mm in diameter before installation.
5. Temporary fiber rolls shall be installed approximately parallel to the slope contour.
6. Temporary fiber rolls shall be installed before the application of other temporary erosion control or soil stabilization materials in the same area.

When no longer required, as determined by the Engineer, temporary fiber rolls shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Temporary fiber rolls may be abandoned in place when approved in writing by the Engineer.

Ground disturbances including holes and depressions caused by the installation and removal of the temporary fiber roll shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

MAINTENANCE

Temporary fiber rolls shall be maintained to disperse concentrated water runoff and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping fiber rolls shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected. Temporary fiber rolls shall be repaired or replaced within 24 hours of identifying the deficiency.

MEASUREMENT AND PAYMENT

Quantities of temporary fiber rolls regardless of type to be paid for will be determined by the meter measured along the centerline of the installed roll. Where temporary fiber rolls are joined and overlapped, the overlap will be measured as a single installed roll.

The contract price paid per meter for TEMPORARY FIBER ROLL shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary fiber rolls, complete in place, including furrow excavation and backfill, maintenance, and removal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Damage to temporary fiber rolls resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

TEMPORARY FIBER ROLL is designated as being contingent item of work on the BID PROPOSAL.

10-1.14 TEMPORARY CONSTRUCTION STAGING AREA

The Contractor's attention is directed to Section 7-1.09, "Public Safety," of the Standard Specifications and these special provisions.

No material or equipment shall be stored within private or road right-of-way, and at the end of each day's work and at other times when construction operations are suspended for any reason, the Contractor shall remove all equipment and other obstructions from private and the road right-of-way. Material or equipment stored within private or road right-of-way will be removed by the County. The cost for removing material or equipment will be deducted from any monies due to the Contractor.

The Contractor may store such equipment, materials, and other obstructions in the temporary construction staging areas designated on the plans and as directed by the Engineer. The Contractor shall develop and submit plans (including a grading plan designed and wet-stamped by a California licensed professional engineer) and specifications for the temporary construction staging areas to the County for approval. The Contractor shall not commence the grading of these areas until written approval from the Engineer has been obtained.

The Contractor shall erect temporary (security) fencing or barricades around the perimeter of the temporary construction staging areas and shall be responsible for maintaining such fencing and security of the contents within these areas. The Contractor shall make arrangements to ensure public safety within and around these areas. The Contractor shall be held liable for any damage to or loss of materials or equipment located within these areas.

When the temporary construction staging areas are no longer in use, the Contractor shall remove all equipment, materials (including fencing and barricades) and rubbish from the work areas that the Contractor occupied; and shall restore the areas to its original condition, in accordance with the provisions in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

PAYMENT

Full compensation for conforming to the requirements in this section, including developing plans and specifications for development of the temporary construction staging areas, furnishing all labor, materials (including fill material), tools, equipment and incidentals in constructing and maintaining the temporary construction staging areas, furnishing, installing, maintaining, and removing temporary fencing around temporary construction staging areas, and cleaning and restoring these areas to its original condition, shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.16 TEMPORARY ACCESS ROAD

The Contractor may use areas designated on the plans for temporary access road(s). The Contractor may recommend and upon approval from the Engineer, other areas/routes for use as temporary access road(s). The Contractor shall develop and submit plans (including a grading plan designed and wet-stamped by a California licensed professional engineer) and specifications for the temporary access roads to the County for approval. The Contractor shall not commence the grading of these areas until written approval from the Engineer has been obtained.

Temporary Access Roads shall conform to the grading requirements of this special provision.

The Engineer may approve grading for a vehicular way where a cut slope is steeper than three horizontal to one vertical if all of the following are met:

A. The daylight line of a plane sloping at three horizontal to one vertical is more than six (6) meters from any adjoining property line, building and structure.
B. It is necessary to avoid excessive grading. However, the steeper slope shall not be allowed where the proposed vehicular way can be realigned so as to reduce excessive grading.
C. The Contractor shall hold harmless the County from any liability for this exception. Temporary Access Roads shall be graded and drained in such a manner that will not allow erosion or endanger the stability of any adjacent slope. Surface discharge onto adjoining property shall be controlled in such a manner that it does not cause erosion.

MEASUREMENT AND PAYMENT

Full compensation for conforming to the requirements in this section, furnishing all labor, materials, tools, equipment and incidentals in developing plans, constructing and maintaining the temporary access roads, and cleaning and restoring these areas to its original condition, as shown on the plans, as specified in these special provisions, and as directed by the Engineer, shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.17 TEMPORARY CONSTRUCTION ENTRANCE

Temporary construction entrances shall be constructed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary construction entrances shall be one of the water pollution control practices for tracking control. The SWPPP shall include the use of temporary construction entrances.

Temporary construction entrances shall be Type 2.

The Contractor shall erect temporary (security) entrance gates and fencing around the perimeter of the temporary construction entrance areas. The Contractor shall make arrangements to ensure public safety within and around these entrances at all times.

MATERIALS

Temporary Entrance Fabric

Temporary entrance fabric shall be manufactured from polyester, nylon, or polypropylene material, or any combination thereof. Temporary entrance fabric shall be a nonwoven, needle-punched fabric, free of needles which may have broken off during the manufacturing process. Temporary entrance fabric shall be permeable and shall not act as a wicking agent.

Temporary entrance fabric shall be manufactured from virgin, recycled, or a combination of virgin and recycled polymer materials. No virgin or recycled materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The Engineer may order tests to confirm the absence of biodegradable filler materials in conformance to the requirements in ASTM Designation: E 204 (Fourier Transformed Infrared Spectroscopy-FTIR).

Temporary entrance fabric shall conform to the following requirements:

Specification	Requirements
Mass per unit area, grams per square meter, min. ASTM Designation: D 5261	235
Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632*	0.89
Elongation at break, percent min. ASTM Designation: D4632*	50
Toughness, kilonewtons, min. (percent elongation x grab tensile strength)	53

* or appropriate test method for specific polymer

Rocks

Rocks shall conform to the material quality requirements in Section 72-2.02, "Materials," of the Standard Specifications for shape and for apparent specific gravity, absorption, and durability index. Rocks used for the temporary entrance shall conform to the following sizes:

Square Screen Size (mm)	Percentage Passing	Percentage Retained
150	100	0
75	0	100

Corrugated Steel Panels

Corrugated steel panels shall be prefabricated and shall be pressed or shop welded, with a slot or hooked section to facilitate coupling at the ends of the panels.

INSTALLATION

Temporary construction entrances shall be installed as follows:

1. Before placing the temporary entrance fabric, the areas shall be cleared of all trash and debris. Vegetation shall be removed to the ground level. Trash, debris, and removed vegetation shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.
2. A sump shall be constructed within 6 m of each temporary construction entrance as shown on the plans.
3. Before placing the temporary entrance fabric, the ground shall be graded to a uniform plane. The relative compaction of the top 0.5-m shall be not less than 90 percent. The ground surface shall be free of sharp objects that may damage the temporary entrance fabric, and shall be graded to drain to the sump as shown on the plans.
4. Temporary entrance fabric shall be positioned longitudinally along the alignment of the entrance, as directed by the Engineer.
5. The adjacent ends of the fabric shall be overlapped a minimum length of 300 mm.
6. Rocks to be placed directly over the fabric shall be spread in the direction of traffic, longitudinally and along the alignment of the temporary construction entrance.
7. During spreading of the rocks, vehicles or equipment shall not be driven directly on the fabric. A layer of rocks a minimum 150 mm thick shall be placed between the fabric and the spreading equipment to prevent damage to the fabric.
8. For Type 2 temporary construction entrances, a minimum of 6 coupled panel sections shall be installed for each temporary construction entrance. Before installing the panels, the ground surface shall be cleared of all debris to ensure uniform contact with the ground surface.

Fabric damaged during rock placement shall be repaired by placing a new piece of fabric over the damaged area. The piece of fabric shall be large enough to cover the damaged area and provide a minimum 450-mm overlap on all edges.

Details for a proposed alternative temporary construction entrance or alternative sump shall be submitted to the Engineer for approval at least 7 days before installation. The Contractor may eliminate the sump if approved in writing by the Engineer.

When no longer required as determined by the Engineer, temporary construction entrances shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary construction entrance, including the sumps, shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

While the temporary construction entrance is in use, pavement shall be cleaned and sediment removed at least once a day, and as often as necessary when directed by the Engineer. Soil and sediment or other extraneous material tracked onto existing pavement shall not be allowed to enter drainage facilities.

MAINTENANCE

The Contractor shall maintain temporary construction entrances throughout the contract or until removed. The Contractor shall prevent displacement or migration of the rock surfacing or corrugated steel panels. Significant depressions resulting from settlement or heavy equipment shall be repaired by the Contractor, as directed by the Engineer.

Temporary construction entrances shall be maintained to minimize tracking of soil and sediment onto existing public roads.

If buildup of soil and sediment deter the function of the temporary construction entrance, the Contractor shall immediately remove and dispose of the soil and sediment, and install additional corrugated steel panels and spread additional rocks to increase the capacity of the temporary construction entrance.

Temporary construction entrances shall be maintained in a condition that will prevent tracking or flowing of sediment onto private and public rights of way. All sediment spilled, dropped, washed or tracked onto private and public rights of ways shall be removed immediately. When necessary, wheels shall be cleaned to remove sediment prior to entrance onto private and public rights of way. All sediment shall be prevented from entering any storm drain, ditch, or watercourse.

Temporary construction entrances shall be repaired or replaced on the same day the damage occurs. Damage to the temporary construction entrance resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

When the temporary access roads and construction entrances are no longer in use, the Contractor shall remove all equipment, materials (including fencing, gates and barricades) and rubbish from these areas and shall restore these areas to its original condition, in accordance with the provisions in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

MEASUREMENT AND PAYMENT

Quantities of temporary construction entrances regardless of type will be determined from actual count in place.

The contract unit price paid for TEMPORARY CONSTRUCTION ENTRANCE shall include full compensation for furnishing all labor, materials (including fill material, fencing, gates), tools, equipment, and incidentals, and for doing all the work involved in constructing temporary construction entrance, complete in place, including excavation and backfill, maintenance, and removal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. TEMPORARY CONSTRUCTION ENTRANCE is designated as being contingent item of work on the BID PROPOSAL.

10-1.18 TEMPORARY DRAINAGE INLET PROTECTION

Temporary drainage inlet protection shall be constructed, maintained, and removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in accordance with "Water Pollution Control" of these special provisions, and in accordance with the details shown on the plans and these special provisions.

Temporary drainage inlet protection shall be one of the water pollution control practices for sediment control. The SWPPP shall include the use of temporary drainage inlet protection.

The Contractor shall select the appropriate drainage inlet protection in accordance with the details to meet the conditions around the drainage inlet. Throughout the duration of the contract, the Contractor shall provide protection to meet the changing conditions around the drainage inlet.

Temporary drainage inlet protection shall be Type of the types specified in the SWPPP.

MATERIALS

Erosion Control Blanket

The erosion control blanket shall be a rolled erosion control product (RECP) and shall be classified either as temporary and degradable or long-term and nondegradable, and shall conform to one of the following:

A. Temporary and degradable:

1. Machine produced mats consisting of curled wood excelsior with 80 percent of the fiber 150 mm or longer. The excelsior blanket shall be of consistent thickness with wood fiber evenly distributed over the entire area of the blanket. The top surface of the blanket shall be covered with an extruded photodegradable plastic netting or lightweight nonsynthetic netting. The blanket shall be smolder resistant without the use of chemical additives and shall be nontoxic and noninjurious to plant and animal life. The excelsior blanket shall be furnished in rolled strips with a minimum mass per unit area of 0.40-kg/m^2.
2. Machine produced mats consisting of 70 percent straw and 30 percent coconut fiber with an extruded photodegradable plastic netting or lightweight nonsynthetic netting on the top and bottom surfaces of the blanket. The straw and coconut shall adhere to

the netting using thread or glue strip. The straw and coconut blanket shall be of consistent thickness, and straw and coconut fiber shall be evenly distributed over the entire area of the blanket. The straw and coconut fiber blanket shall be furnished in rolled strips with a minimum mass per unit area of 0.27-kg/m^2.

3. Machine produced mats that are 100 percent coir consisting of coconut fiber with an extruded photodegradable plastic netting or lightweight nonsynthetic netting on the top and bottom surfaces of the blanket. The coconut fiber shall adhere to the netting using thread or glue strip. The coconut blanket shall be of consistent thickness, with coconut fiber evenly distributed over the entire area of the blanket. The coconut fiber blanket shall be furnished in rolled strips with a minimum mass per unit area of 0.27-kg/m^2.
4. Machine woven netting that is 100 percent spun coir consisting of coconut fiber with an average open area of 63 percent to 70 percent. Coconut coir netting shall be furnished in rolled strips with a minimum mass per unit area of 0.40-kg/m^2.

B. Long-term and nondegradable:

1. Geotextile blanket shall conform to the provisions for rock slope protection fabric (Type A) in Section 88-1.04, "Rock Slope Protection Fabric," of the Standard Specifications.

Staples

Staples shall be as shown on the plans. An alternative attachment device such as geotextile pins or plastic pegs may be used instead of staples. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval before installation.

Rocks

Rocks shall conform to the requirements in Section 72-2.02, "Materials," of the Standard Specifications except that grading shall conform to the following sizes:

Square Screen Size (mm)	Percentage Passing	Percentage Retained
150	100	0
75	0	100

Fiber Roll

A fiber roll shall be one of the following:

A. Constructed with a premanufactured blanket made of one material or a combination of materials consisting of wood excelsior, rice or wheat straw, or coconut fibers. The blanket shall be between 2.0 m and 2.4 m in width and between 20 m and 29 m in length. Wood excelsior shall be individual fibers, of which 80 percent shall be 150 mm or longer in length. The blanket shall have a photodegradable plastic netting or biodegradable jute,

sisal, or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 2 m apart along the full length of the roll and placed 150 mm from the ends of each roll. The finished roll shall be between 200 mm and 250 mm in diameter, between 3 m and 6 m in length, and shall weigh at least 0.81-kg/m. More than one blanket may be required to achieve the finished roll diameter. When more than one blanket is required, blankets shall be jointed longitudinally with an overlap of 150 mm along the length of the blanket.

B. A premanufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a photodegradable plastic or biodegradable jute, sisal, or coir fiber netting. The rolls shall be between 200 mm and 250 mm in diameter, between 3 m and 6 m in length, and shall weigh at least 1.6 kg/m. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the roll.

Wood Stakes

Wood stakes shall be a minimum of 19 mm x 19 mm x 450 mm in size for Type 1 installation, or shall be a minimum of 19 mm x 38 mm x 450 mm in size for Type 2 installation. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended.

Rope

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 6.35 mm.

Gravel-filled Bags

Gravel-filled bag fabric shall be nonwoven polypropylene geotextile or polymer material and shall conform to the following requirements:

Specification	Requirements
Mass per unit area, grams per square meter, minimum. ASTM Designation: D 5261	270
Grab tensile strength (25-mm grip), kilonewtons, minimum. ASTM Designation: D4632*	0.89
Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method	70

* or appropriate test method for specific polymer

Gravel-filled bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.

Yarn used for binding gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color.

Gravel shall be between 10 mm and 20 mm in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

Silt Fence

At the Contractor's option, temporary silt fence shall be prefabricated or constructed with silt fence fabric, posts, and fasteners.

Silt fence fabric shall conform to the following requirements:

Specification	Requirements
Width, mm, min.	900
Grab tensile strength (25-mm grip), kilonewtons, minimum. in each direction ASTM Designation: D 4632 or appropriate test method for specific polymer	0.55
Elongation, percent minimum in each direction ASTM Designation: D 4632 or appropriate test method for specific polymer	15
Permittivity, 1/sec., minimum. ASTM Designation: D 4491	1.5
Flow rate, liters per minute per square meter, minimum. ASTM Designation: D 4491	400
Ultraviolet stability, percent tensile strength retained after 500 hours, minimum. ASTM Designation: D 4355 (xenon-arc lamp and water spray weathering method)	70

Silt fence fabric shall be geotextile manufactured from woven polypropylene or polymer material. Silt fence fabric may be made of recycled materials. No materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The Engineer may order tests to confirm the absence of biodegradable filler materials in conformance to the requirements in ASTM Designation: E 204.

Posts for temporary silt fences shall be one of the following:

A. Posts shall be untreated fir, redwood, cedar, or pine, shall be cut from sound timber, and shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Wood post shall be a minimum of 34 mm x 40 mm

in size, and 4 feet in length. The end of the post to be embedded in the soil shall be pointed.

B. Posts shall be steel and have a "U," "T," "L," or other cross sectional shape that can resist failure from lateral loads. The steel posts shall have a minimum mass per length of 1.1 kg/m and a minimum length of 1.2 m. One end of the steel posts shall be pointed and the other end shall be capped with an orange or red plastic safety cap which fits snugly to the steel post. The Contractor shall submit to the Engineer for approval a sample of the capped steel post before installation.

Fasteners for attaching silt fence fabric to posts shall be as follows:

A. When prefabricated silt fence is used, posts shall be inserted into sewn pockets.
B. Silt fence fabric shall be attached to wooden posts with nails or staples as shown on the plans or as recommended by the manufacturer or supplier. Tie wire or locking plastic fasteners shall be used to fasten the silt fence fabric to steel posts. Maximum spacing of fasteners shall be 200 mm along the length of the steel post.

Foam Barriers

The foam barrier fabric cover and skirt shall be a woven polypropylene fabric with a minimum tensile strength of 0.44-kN, conforming to ASTM Designation: D 4632. The prefabricated fabric shall be high visibility orange in color that is integral to the fabric; painting shall not be allowed. The fabric shall have an ultraviolet stability exceeding 70 percent.

The foam core shall be urethane foam and shall be shaped and dimensioned as shown on the plans.

Adhesive for foam barriers shall be a solvent-free rubber modified asphalt emulsion. The color of the emulsion shall be brown when wet and shall have a drying period of not more than 3 hours.

Anchoring nails or spikes for foam barriers shall be a minimum of 25 mm in length and capable of penetrating concrete or asphalt surfaces.

Sediment Filter Bag

Sediment filter bag fabric shall be geotextile manufactured from woven polypropylene or polymer material. Sediment filter bag fabric may be made from recycled polymer materials. Polymer materials shall not contain biodegradable filler materials and shall conform to the requirements in ASTM Designation: E 204.

Sediment filter bag fabric shall conform to the following requirements:

Specification	Requirements
Grab tensile strength (25-mm grip), kilonewtons, minimum. in each direction ASTM Designation: D 4632 or appropriate test method for specific polymer	1.35
Elongation, percent minimum in each direction ASTM Designation: D 4632 or appropriate test method for specific polymer	15
Permittivity, 1/sec., minimum. ASTM Designation: D 4491	1.5
Flow rate, liters per minute per square meter, minimum. ASTM Designation: D 4491	8140
Ultraviolet stability, percent tensile strength retained after 500 hours, minimum. ASTM Designation: D 4355 (xenon-arc lamp and water spray weathering method)	80

The sediment filter bag shall be sized to fit the catch basin or drainage inlet and shall be complete with lifting loops and dump straps attached at the bottom to facilitate emptying of the sediment filter bag. The sediment filter bags shall have a restraint cord approximately halfway up the bag to keep the sides away from the catch basin walls.

INSTALLATION

Temporary drainage inlet protection shall be installed at drainage inlets in paved and unpaved areas as follows:

A. Temporary drainage inlet protection shall be installed such that ponded runoff does not encroach on the traveled way or overtop the curb or dike. Gravel-filled bags shall be placed to control ponding and prevent runoff from overtopping the curb or dike.
B. The bedding area for the temporary drainage inlet protection shall be cleared of obstructions including rocks, clods, and debris greater than 25 mm in diameter before installation.
C. A temporary linear sediment barrier shall be installed up-slope of the existing drainage inlet and parallel with the curb, dike, or flow line to prevent sediment from entering the drainage inlet.

Erosion Control Blanket and Geotextile Fabric

The erosion control blanket and geotextile fabric shall be secured to the surface of the excavated sediment trap with staples and embedded in a trench adjacent to the drainage inlet. The perimeter edge of the erosion control blanket and geotextile fabric shall be anchored in a trench.

Silt Fence

Silt fence shall be installed along the perimeter of the erosion control blanket or geotextile fabric, with the posts facing the drainage inlet. The trench shall be backfilled and tamped to secure the silt fence fabric in the bottom of the trench.

Gravel-filled Bags

Gravel-filled bags shall be stacked to form a gravel bag barrier. The gravel-filled bags shall be placed so that the bags are tightly abutted and overlap the joints in adjacent rows. A spillway shall be created by removing one or more gravel-filled bags from the upper layer of the gravel bag barrier.

Gravel-filled bags shall only be use within shoulder areas when placed behind temporary railing (Type K).

Fiber Rolls

Fiber rolls shall be placed over the erosion control blanket or geotextile fabric with the ends of the fiber roll abutted tightly together. Fiber rolls shall be secured with stakes installed along the length of the fiber rolls. Stakes shall not be installed within 300 mm of the end of the rolls.

Foam Barriers

Foam barriers shall be installed in individual sections adjacent to existing drainage inlets. Foam barriers shall be securely attached to the pavement according to the angle and spacing shown on the plans. Foam barriers shall be installed flush against the sides of concrete or asphalt concrete curbs, dikes, and pavement with the inner material and fabric cover cut smoothly and evenly to provide a tight flush joint.

Sediment Filter Bags

Sediment filter bags shall be installed by removing the drainage inlet grate, placing the sediment bag in the opening, and replacing the grate to secure the sediment filter bag in place.

MAINTENANCE

Temporary drainage inlet protection shall be maintained to provide sediment holding capacity and to reduce runoff velocities. Temporary drainage inlet protection shall be repaired or replaced immediately after the damage occurs.

Sediment deposits, trash, and debris shall be removed from temporary drainage inlet protection as needed or when directed by the Engineer. Removed sediment shall be deposited within the project limits so that the sediment is not subject to erosion by wind or by water. Trash and debris shall be removed and disposed of in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

At locations where rills and other evidence of concentrated runoff have occurred beneath the drainage inlet protection, the protection shall be adjusted to prevent another occurrence.

Temporary silt fence shall be repaired or replaced when silt fence fabric becomes split, torn, or unraveled. Sagging or slumping silt fence shall be repaired with additional stakes or replaced. Broken or split stakes shall be replaced. Temporary silt fence shall be maintained to provide a sediment holding capacity of approximately 1/3 the height of the silt fence fabric above ground.

Sediment in excess of 50 mm above the surface of the erosion control blanket or geotextile fabric shall be removed.

Sediment shall be removed from the sediment trap when the volume has been reduced by approximately one-half.

Sediment deposits shall be removed when the deposit is 1/3 the height of the gravel bag barrier or one half the height of the spillway; whichever is less.

Gravel-filled bags shall be replaced when the bag material ruptures or when the binding fails.

Split, torn, unraveling, sagging, or slumping fiber rolls shall be replaced or repaired.

Foam barriers shall be repaired or replaced when the geotextile fabric cover becomes split, torn, or unraveled. Foam barriers that become detached or dislodged shall be reattached to the pavement. Sediment deposits shall be removed when the deposit reaches 1/3 of the foam barrier height.

Sediment filter bags shall be emptied when the restraint cords are no longer visible. Sediment filter bags shall be emptied by placing 25 mm steel reinforcing bars through the lifting loops. The bag shall be emptied of its contents and rinsed before replacement in the drainage inlet.

REMOVAL

When the temporary drainage inlet protection is no longer required the protection materials shall be removed and disposed of in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Holes, depressions, or other ground disturbance caused by the removal of the temporary drainage inlet protection shall be backfilled and repaired in accordance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

MEASUREMENT

Quantities of temporary drainage inlet protection regardless of type will be determined from actual count in place. The protection will be measured one time only and no additional measurement will be recognized.

PAYMENT

The contract unit price paid for TEMPORARY DRAINAGE INLET PROTECTION shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary drainage inlet protection, complete in place, including maintenance, removal of materials, including cleanup and disposal of retained sediment and debris, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

No additional compensation will be made if the temporary drainage inlet protection changes during the course of construction.

10-1.19 OBSTRUCTIONS

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities," and Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

The Contractor shall, prior to start of construction, excavate, probe, and determine the exact locations, both horizontally and vertically, of all utilities within the project limits. Any utilities that are in conflict with the proposed work shall be relocated by the respective utility companies unless otherwise specified herein.

The Contractor shall take all the necessary precaution measures to prevent damage to existing utilities. Any damage to existing utilities caused by the Contractor's operations shall be repaired by the Contractor at his own expense to the satisfaction of the Engineer.

Attention is directed to the existence of certain underground facilities that may require special precautions to be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 150 mm in diameter or pipelines operating at pressures greater than 415 kPa (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

If these facilities are not located on the plans in both alignment and elevation, no work shall be performed in the vicinity of the facilities, except as provided herein for conduit to be placed under pavement, until the owner, the owner's representative or at the direction and approval of

the owner, the Contractor has located the facility by potholing, probing or other means that will locate and identify the facility. Conduit to be installed under pavement in the vicinity of these facilities shall be placed by the trenching method in conformance with the provisions in "Conduit" of these special provisions. If, in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being located by the owner or the owner's representative, the State will compensate the Contractor for the delays to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	1-800-642-2444 1-800-227-2600

If any utilities are in conflict with the proposed work, the Contractor shall notify the Engineer in writing of the location and elevation of the utility line that is in conflict.

The following utility facilities/non-highway facilities will be relocated prior to or during the progress of the contract either by the owner of the facility or by the Contractor. The Contractor shall coordinate all work with the utility companies under the direction of the Engineer.

Utility/Non-Highway Facility	Location
Sprint Fiber Optics	various locations
Pacific Gas & Electric	various locations
AT&T	various locations
Monuments	various locations

The Contractor shall notify the Engineer in writing at least 30 days in advance of the date or dates that the interfering utility facilities are to be rearranged. The Engineer will, in turn, notify the owners of the utility facilities. Thereafter, the Contractor shall allow each of the utility companies eight (8) weeks to relocate and/or adjust their respective facilities.

In the event that the utility facilities mentioned above are not removed or relocated by the specified time and, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being removed or relocated by the date specified, the County will extend the number of working days equal to the number of days that the utility relocations exceed the specified time above. No compensation will be allowed for idle time of equipment during the utility relocation.

Prior to paving operations, the Contractor shall make physical reference by offsets from face of curb or edge of pavement, the locations of all manholes and utility covers.

The utility facilities listed in the following table, and other utility facilities that possibly exist at locations which might interfere with the pile driving or drilling operations or substructure construction, will not be rearranged in advance of or during construction operations. Should the Contractor desire to have any of the utility facilities rearranged or temporarily deactivated for his convenience, the Contractor shall make the necessary arrangements as provided in Section 8-1.10:

Utility Facility	Location
PG&E (Gas)	V Line Sta 0+000to 2+440
PG&E (Electric)	V Line Sta 0+350 to 1+570

It will be necessary for Contractor to protect the existing PG&E operating gas lines by installation of matting or other means. Contractor shall comply with the wheel loading requirements as specified in Section 5-1.33 of these special provisions.

PAYMENT

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

10-1.20 DUST CONTROL

Dust control shall conform to the provisions in Section 10, "Dust Control," of the Standard Specifications and these special provisions.

The second paragraph of Section 10-1.04 of the Standard Specifications is deleted. Full compensation for controlling dust caused by public traffic shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

10-1.21 MOBILIZATION

Mobilization shall conform to the provisions in Section 11, "MOBILIZATION," of the Standard Specifications.

ON-SITE OFFICE TRAILER AND STORAGE CONTAINIER

The contractor shall apply for and secure all necessary permits for transporting the following structures on and off site.

The contractor shall provide and maintain an undamaged office trailer at least 60 feet in length and 12 feet wide (interior dimensions) for the exclusive County use by County staff as an inspection/resident engineer office. The trailer shall be weather tight and habitable and have at the minimum:

1. An enclosed separate 12' x 12' office with lockable door
2. An in-trailer restroom with a holding tank suitable for the purpose intended or a sewer connection. The restroom shall be equipped with flush-type toilets, a lavatory sink with water, a mirror, toilet paper and hand towel dispensers, coat hooks and waste receptacles. The contractor shall service the holding tank as required throughout the duration of the contract.
3. The contractor shall provide and maintain a water supply to the restroom. Water supply shall be from an existing water system or if non-available, water shall be furnished from a water supply tank with a minimum 500 gallon capacity. The contractor shall fill this tank daily and maintain the water supply tank throughout the contract.
4. two entrance/exit doors
5. windows
6. electricity (minimum 205-ampere capacity)
7. air conditioning and heating (capable of maintaining the interior temperature at 70 degrees F at all times),
8. fluorescent ceiling lighting (sufficient to maintain a 100-foot candle level at desk light),
9. three multi-line telephones (with a 12-foot cord each),
10. two telephone lines,
11. one DSL line,
12. wireless modem,
13. copier/scanner/fax machine,
14. a sufficient number of 110-volt electrical (grounded) outlets,
15. drinking water and dispenser with hot & cold faucets, and paper cups,
16. 8' x 4' conference table and chairs for 10,
17. 3 desks (30" x 60" with lockable drawers; two sets of keys each) and 3 swivel chairs,
18. One hanging plan holder with 12 holders (minimum)
19. Two 5-drawer legal size file cabinets with locks
20. One full size refrigerator, approximately 6' x 3'x 3'
21. Waste receptacles
22. One large first aid kit. This kit shall be restocked by the Contractor as needed.
23. Four sets of keys for the office; If locks are different, each set shall include keys that fit all locks

Telephone and DSL installation will be at the contractor's own expense. Windows and doors shall be equipped with locks capable of securing the space from access from the outside and from other rooms within the office.

In addition, the Contractor shall provide and maintain an undamaged storage container at least 20 feet in length and 10 feet wide for the exclusive County use by County staff as a storage

and material testing office. The storage container shall be wind and water tight (prepped and primed) and shall have at the minimum electricity (at least 100 amp service, 2 banks florescent lights, 2 sets of electrical outlets, 1 light switch), one 5 foot table with two chairs, two desks with drawers, and a security lock box.

The equipment furnished shall be of standard quality and new, or like new, in appearance and function. The Contractor shall provide maintenance and service for all equipment furnished. All necessary repairs shall be completed within 24 hours of notification or (equivalent or better) loaner equipment shall be provided at the Contractor's expense.

Maintenance shall include at the minimum janitorial services, resupplying water and supplies, sewer, electrical, telephone/DSL. The Contractor shall be responsible for repair of any damage and replacement of the office trailer or storage container during the project.

These structures shall be constructed with all-metal frames and metal exterior, sides, and roof. The walls, floor, and roof shall be insulated. Windows shall be fitted with blinds, insect screens, and security screens and shall be provided with emergency escape capability.

Prior to the beginning operations at the site, the Contactor shall submit to the Engineer, for approval, the floor plan and dimensions and, if applicable, the manufacturer's model numbers of these structures. The County shall inspect and approve of the office trailer and storage container prior to delivery to the job site. The field office area and access thereto shall be graded to drain and surfaced with a minimum 76 mm thickness of Aggregate base and shall include thirteen 8-foot wide parking spaces.

The Engineer will designate the location to which Contractor shall deliver and situate the office trailer and storage container. These structures should be located near the contractor's field office. The contractor shall plan and provide for all relocations of the field offices that may be necessitated by construction operations.

LAPTOP COMPUTER

The contractor shall provide to the County for use, a laptop personal computer with the following accessories and specifications:

- Intel® Core™ 2 Duo T7800 (2.60GHz 4M L2 Cache, 800MHz) Dual Core
- 4.0GB, DDR2-667 SDRAM, 2 DIMMS
- 200GB Hard Drive, 9.5MM, 7200RPM (Free Fall Sensor)
- Intel® 4965 802.11a/b/g/n Dual-Band Mini Card
- NVIDIA® Quadro FX 1600M 512MB TurboCache (256MB discrete)
- Genuine Windows Vista™ Ultimate, with Media
- Internal English Keyboard
- 17 inch Wide Screen WXGA+ LCD Panel
- 8X DVD+/-RW w/Roxio Creator™ and Cyberlink PDVD™
- Standard Touchpad
- 9 Cell Primary Battery

- 130W A/C Adapter
- USB Wireless Laser Mouse
- Combination Portable Notebook Security Lock
- Internet Security Suite Program
- Laptop Backpack
- Resource DVD - Contains Diagnostics and Drivers
- 3 Year Limited Hardware Warranty with Next Business Day On-Site Service

The office trailer and storage container shall be provided and maintained until such a time as all work has been completed and accepted under this contract.

PAYMENT

Full compensation for conforming to the requirements of this section, including providing continuous electrical, phone, DSL, copier/scanner/fax service, janitorial service, sewer & water service, drinking water and supplies, shall be considered as included in the lump sum price paid for MOBILIZATION and no additional compensation will be allowed therefor.

The contract lump sum price paid for MOBILIZATION shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in mobilization, including furnishing and maintaining the office trailer and storage container, its equipment and maintenance, and the laptop personal computer with the accessories and software, as specified herein, in the Standard Specifications and these special provisions, and as directed by the Engineer.

At the end of the project, at the County's discretion, the storage container and/or the office trailer and stairs and/or laptop personal computer, accessories and programs shall become the property of the County and will not be returned to the Contractor. The Contractor shall deliver the storage container and/or the office trailer and stairs to the County's Corporation yard. Full compensation for providing and delivering the storage container and/or office trailer and/or laptop personal computer with accessories and programs shall be considered included in the prices paid for each DELIVER STORAGE CONTAINER, DELIVER OFFICE TRAILER, DELIVER LAPTOP COMPUTER, respectively, and no additional compensation will be allowed therefor.

DELIVER STORAGE CONTAINER, DELIVER OFFICE TRAILER, and DELIVER LAPTOP COMPUTER are designated as being contingent items of work on the BID PROPOSAL. The quantity or pre-bid amount of this bid item set forth on the BID PROPSAL represents no actual estimate and is nominal only. This quantity or amount may be increased or decreased or reduced to zero. The increase or reduction of this quantity or amount as compared with those set forth on the BID Proposal shall not constitute a basis for claim by the Contractor for extra payment or damages Payment for the actual work performed base upon the prices bid or work done for the item of work involved will be considered full compensation to the Contractor for the work.

10-1.22 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES

Flagging, signs, and temporary traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Category 1 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices. These devices shall be certified as crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 temporary traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

If requested by the Engineer, the Contractor shall provide written self-certification for crashworthiness of Category 1 temporary traffic control devices at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use. Self-certification shall be provided by the manufacturer or Contractor and shall include the following:

A. Date,
B. Federal Aid number (if applicable),
C. Contract number, district, county, route and kilometer post of project limits,
D. Company name of certifying vendor, street address, city, state and zip code,
E. Printed name, signature and title of certifying person; and
F. Category 1 temporary traffic control devices that will be used on the project.

The Contractor may obtain a standard form for self-certification from the Engineer.

Category 2 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices that are not expected to produce significant vehicular velocity change, but may cause potential harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.

Category 2 temporary traffic control devices shall be on the Federal Highway Administration's (FHWA) list of Acceptable Crashworthy Category 2 Hardware for Work Zones. This list is maintained by FHWA and can be located at:

http://safety.fhwa.dot.gov/roadway_dept/road_hardware/listing.cfm?code=workzone

The Department also maintains this list at:

http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdf/Category2.pdf

Category 2 temporary traffic control devices that have not received FHWA acceptance shall not be used. Category 2 temporary traffic control devices in use that have received FHWA acceptance shall be labeled with the FHWA acceptance letter number and the name of the manufacturer. The label shall be readable and permanently affixed by the manufacturer. Category 2 temporary traffic control devices without a label shall not be used.

If requested by the Engineer, the Contractor shall provide a written list of Category 2 temporary traffic control devices to be used on the project at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use.

Category 3 temporary traffic control devices consist of temporary traffic-handling equipment and devices that weigh 45 kg or more and are expected to produce significant vehicular velocity change to impacting vehicles. Temporary traffic-handling equipment and devices include crash cushions, truck-mounted attenuators, temporary railing, temporary barrier, and end treatments for temporary railing and barrier.

Type III barricades may be used as sign supports if the barricades have been successfully crash tested, meeting the NCHRP Report 350 criteria, as one unit with a construction area sign attached.

Category 3 temporary traffic control devices shall be shown on the plans or on the Department's Highway Safety Features list. This list is maintained by the Division of Engineering Services and can be found at:

http://www.dot.ca.gov/hq/esc/approved_products_list/HighwaySafe.htm

Category 3 temporary traffic control devices that are not shown on the plans or not listed on the Department's Highway Safety Features list shall not be used.

Full compensation for providing self-certification for crashworthiness of Category 1 temporary traffic control devices and for providing a list of Category 2 temporary traffic control devices used on the project shall be considered as included in the prices paid for the various items of work.

10-1.23 CONSTRUCTION AREA SIGNS

Construction area signs for temporary traffic control shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to "Furnish Sign" of these special provisions.

Attention is directed to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. Type II retroreflective sheeting shall not be used on construction area sign panels. Type III, IV, VII, VIII, or IX retroreflective sheeting shall be used for stationary mounted construction area sign panels.

Attention is directed to "Construction Project Information Signs" of these special provisions regarding the number and type of construction project information signs to be furnished, erected, maintained, and removed and disposed of.

Unless otherwise shown on the plans or specified in these special provisions, the color of construction area warning and guide signs shall have black legend and border on orange background, except W10-1 or W47(CA) (Highway-Rail Grade Crossing Advance Warning) sign shall have black legend and border on yellow background.

Orange background on construction area signs shall be fluorescent orange.

Repair to construction area sign panels will not be allowed, except when approved by the Engineer. At nighttime under vehicular headlight illumination, sign panels that exhibit irregular luminance, shadowing or dark blotches shall be immediately replaced at the Contractor's expense.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	(800) 642-2444 (800) 227-2600
Underground Service Alert-Southern California (USA)	(800) 422-4133

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes. The post hole diameter, if backfilled with portland cement concrete, shall be at least 100 mm greater than the longer dimension of the post cross-section.

Construction area signs placed within 4.6 m from the edge of the travel way shall be mounted on stationary mounted sign supports as specified in "Construction Area Traffic Control Devices" of these special provisions.

The Contractor shall maintain accurate information on construction area signs. Signs that are no longer required shall be immediately covered or removed. Signs that convey inaccurate information shall be immediately replaced or the information shall be corrected. Covers shall be replaced when they no longer cover the signs properly. The Contractor shall immediately restore to the original position and location any sign that is displaced or overturned, from any cause, during the progress of work.

PAYMENT

The contract lump sum price paid for CONSTRUCTION AREA SIGNS shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work complete in place as specified herein, including furnishing, erecting, maintaining, replacing, and removing and disposing all construction area signs [including W20-1, W21-5b, and C24(CA)], as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.24 MAINTAINING TRAFFIC

Maintaining traffic shall conform to the provisions in Sections 7-1.08, "Public Convenience," Section 7-1.09, "Public Safety," and Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, "Public Safety" of these special provisions and these special provisions.

No work (e.g. hauling or deliveries) that interferes with public traffic shall begin before 9 a.m. nor after 3 p.m. except work required under said Sections 7-1.08 and 7-1.09.

All construction traffic shall be restricted to established roads, access roads, construction areas, staging areas, storage areas, and parking areas, and shall observe a 32 km/h (20 mph) speed limit in all project areas. No equipment shall operate in any live streams. Off-road vehicle traffic outside of designated project areas shall be prohibited, unless authorized by the Engineer.

Closure is defined as the closure of a traffic lane or lanes, including shoulder, ramp or connector lanes, within a single traffic control system.

Closures shall conform to the provisions in "Traffic Control System for Lane Closure" of these special provisions.

Unless approved by the Engineer, no work that would require a closure shall be performed.

Work that interferes with public traffic shall be limited to the hours when lane closures are allowed, except for work required under Sections 7-1.08, "Public Convenience," and Section 7-1.09, "Public Safety."

Unless approved by the Engineer, the maximum length of a single stationary lane closure shall be 0.5 km.

Unless approved by the Engineer, not more than one separate stationary lane closures will be allowed at one time. Concurrent stationary closures shall not be permitted unless approved by the Engineer.

On days that lane closures are not allowed, one lane may be closed to maintain the seal coat surface as required in Section 37-1.07, "Finishing," of the Standard Specifications. Lane closures to maintain the seal coat surface shall be restricted to daylight hours when public traffic will be least inconvenienced and delayed, as determined by the Engineer.

Local authorities shall be notified at least 5 business days before work begins. The Contractor shall cooperate with local authorities to handle traffic through the work area and shall make arrangements to keep the work area clear of parked vehicles.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders including sections closed to public traffic.

Personal vehicles of the Contractor's employees shall not be parked within the right of way except at the temporary staging areas shown on the plans.

When work vehicles or equipment are parked on the shoulder within 1.8 m of a traffic lane, the shoulder area shall be closed with fluorescent orange traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 7.5-m intervals to a point not less than 7.5 m past the last vehicle or piece of equipment. A minimum of 9 traffic cones or portable delineators shall be used for the taper. A W20-1 (ROAD WORK AHEAD) or W21-5b (RIGHT/LEFT SHOULDER CLOSED AHEAD) or C24(CA) (SHOULDER WORK AHEAD) sign shall be mounted on a crashworthy portable sign support with flags. The sign shall be placed where designated by the Engineer. The sign shall be a minimum of 1200 mm x 1200 mm in size. The Contractor shall immediately restore to the original position and location a traffic cone or delineator that is displaced or overturned, during the progress of work.

A minimum of one paved traffic lane, not less than 3.3 m wide, shall be open for use by public traffic in each direction of travel.

Designated legal holidays are: January 1st, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11th falls on a Saturday, the preceding Friday shall be a designated legal holiday.

PAYMENT

Full compensation for complying to all the requirements as specified herein, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer shall be considered included in the prices paid for the various items of work, and no additional compensation will be allowed therefor.

10-1.25 CLOSURE REQUIREMENTS AND CONDITIONS

Closures shall conform to the provisions in "Maintaining Traffic" of these special provisions and these special provisions.

CLOSURE SCHEDULE

By noon Monday of each workweek, the Contractor shall submit a written schedule of planned closures for the following week period, defined as Sunday noon through the following Sunday noon. Closures involving work (temporary barrier placement and paving operations) that will reduce horizontal clearances, traveled way inclusive of shoulders, to 2 lanes or less shall be submitted not less than 25 days and not more than 125 days before the anticipated start of operation. Closures involving work (pavement overlay, falsework that will reduce the vertical clearances available to the public, shall be submitted not less than 25 days and not more than 125 days before the anticipated start of operation.

The Closure Schedule shall show the locations and times of the proposed closures. The Closure Schedule request forms furnished by the Engineer shall be used. Closure Schedules submitted to the Engineer with incomplete or inaccurate information will be rejected and returned for correction and resubmittal. The Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

Closure Schedule amendments, including adding additional closures, shall be submitted by noon to the Engineer, in writing, at least 3 business days in advance of a planned closure. Approval of Closure Schedule amendments will be at the discretion of the Engineer.

The Engineer shall be notified of cancelled closures 2 business days before the date of closure.

Closures that are cancelled due to unsuitable weather may be rescheduled at the discretion of the Engineer.

CONTINGENCY PLAN

A detailed contingency plan shall be prepared for reopening closures to public traffic. If required by "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions, the contingency plan shall be submitted to the Engineer before work at the job site begins. Otherwise, the contingency plan shall be submitted to the Engineer within one business day of the Engineer's request.

LATE REOPENING OF CLOSURES

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. No further closures are to be made until the Engineer has accepted a work plan, submitted by the Contractor, that will insure that future closures will be reopened to

public traffic at the specified time. The Engineer will have 2 business days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to compensation for the suspension of work resulting from the late reopening of closures.

COMPENSATION

The Engineer shall be notified of delays in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay and will be compensated in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications:

1. The Contractor's proposed Closure Schedule is denied and his planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these special provisions, except that the Contractor will not be entitled to compensation for amendments to the Closure Schedule that are not approved.
2. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure before the time designated in the approved Closure Schedule, delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

10-1.26 TRAFFIC CONTROL SYSTEM

A traffic control system shall consist of closing traffic lanes in conformance with the details shown on the plans, the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" of these special provisions, and these special provisions.

The provisions in this section will not relieve the Contractor from the responsibility to provide additional devices or take measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

During traffic stripe operations and pavement marker placement operations using bituminous adhesive, traffic shall be controlled, at the option of the Contractor, with either stationary or moving lane closures. During other operations, traffic shall be controlled with stationary lane closures. Attention is directed to the provisions in Section 84-1.04, "Protection From Damage," and Section 85-1.06, "Placement," of the Standard Specifications.

The Traffic Control Details shown on the Staging Plans are for the contractor's convenience. Deviations from the Staging plans or for all other miscellaneous work performed by the

Contractor, the Contractor shall prepare and submit a traffic control plan(s) showing the proposed construction stages or for such other work. The traffic plan shall show all traffic control devices including temporary traffic signal system layout, proposed to be used, the limits of work area including concrete median islands and turn pocket areas, which lanes are to be affected on each work day, and the proposed construction hours. All traffic control measures shall conform to the requirements set forth in the most current CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD, 2006), issued by the California Department of Transportation.

This plan shall be submitted to the Engineer for review and approval a minimum of ten (10) calendar days prior to commencing work. The traffic control plans shall be wet stamped and signed by either a Civil Engineer or a Traffic Engineer licensed in the State of California. The plan shall be revised as deemed necessary to meet the minimum requirements and shall be at no additional cost to the County.

If components in the traffic control system are displaced or cease to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the components to the original condition or replace the components and shall restore the components to the original location.

If the Engineer determines, at any time during the project, the traffic control system is inadequate or not meeting the minimum standards specified in the current California MUTCD, the Engineer will notify the Contractor of the deficient areas that will require corrective actions by the Contractor. The Contractor shall take immediate corrective action to install additional measures necessary to maintain public safety to the satisfaction of the Engineer. If the Contractor fails to implement corrective measures within the time frame given by the Engineer or within forty-eight (48) hours after having been so directed by the Engineer, whichever is less, the County will have the right to do the corrective work in the interest of maintaining public safety. The Contractor shall be responsible for maintaining corrective measures installed by County forces. The costs associated with the County's corrective work will be deducted from any monies due or to become due the Contractor. The Contractor will have no rights to claim for the monies deducted from the contract for such cause and for the County's taking over of the necessary work to maintain public safety.

The Contractor shall be fully responsible for accidents to the public and/or damages to public and private property on the site of the work, and at fences, barriers and other traffic control devices installed by him.

The Contractor shall maintain private entrances and shall construct such detours as may be necessary to properly conduct the work and to provide entrances to private property at all times. The Contractor shall coordinate with all affected property owners (including the local school) on ingress and egress to their property. The Contractor shall provide a minimum of ten (10) calendar days of written advance notice to all affected property owners or tenants. A copy of this written notice shall be provided to the Engineer.

The Contractor shall make all arrangements with property owners for the use of private land for detours and for any other purpose, and shall save the County free from any liability incurred through the use or nonuse of such private property.

STATIONARY LANE CLOSURE

When lane closures are made for work periods only, at the end of each work period, all components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations designated by the Engineer within the limits of the highway right of way.

Utilizing a pilot car will be at the option of the Contractor. If the Contractor elects to use a pilot car, the cones shown along the centerline on the plan need not be placed. The pilot car shall have radio contact with personnel in the work area. The maximum speed of the pilot car through the traffic control zone shall be 40 kilometers per hour.

MOVING LANE CLOSURE

Flashing arrow signs used in moving lane closures shall be truck-mounted. Flashing arrow signs shall be in the caution display mode when used on 2-lane highways. Changeable message signs used in moving lane closure operations shall conform to the provisions in Section 12-3.12, "Portable Changeable Message Signs," of the Standard Specifications, except the signs shall be truck-mounted. The full operation height of the bottom of the sign may be less than 2.1 m above the ground, but should be as high as practicable.

Truck-mounted attenuators (TMA) for use in moving lane closures shall be any of the following approved models, or equal:

1. Hexfoam TMA Series 3000, Alpha 1000 TMA Series 1000, and Alpha 2001 TMA Series 2001, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:

    1.1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734
    1.2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501

2. Cal T–001 Model 2 or Model 3, manufacturer and distributor: Hexcel Corporation, 11711 Dublin Boulevard, P.O. Box 2312, Dublin, CA 94568, telephone (925) 551–4900
3. Renco Rengard Model Nos. CAM 8–815 and RAM 8–815, manufacturer and distributor: Renco Inc., 1582 Pflugerville Loop Road, P.O. Box 730, Pflugerville, TX 78660–0730, telephone (800) 654–8182

Each TMA shall be individually identified with the manufacturer's name, address, TMA model number, and a specific serial number. The names and numbers shall each be a minimum

13 mm high and located on the left (street) side at the lower front corner. The TMA shall have a message next to the name and model number in 13 mm high letters which states, "The bottom of this TMA shall be the specified distance as determined by the Engineer above the ground at all points for proper impact performance." A TMA which is damaged or appears to be in poor condition shall not be used unless recertified by the manufacturer. The Engineer shall be the sole judge whether used TMAs supplied under this contract need recertification. Each unit shall be certified by the manufacturer to meet the requirements for TMAs in conformance with the standards established by the Transportation Laboratory.

Approvals for new TMA designs proposed as equal to the above approved models shall be in conformance with the procedures (including crash testing) established by the Transportation Laboratory. For information regarding submittal of new designs for evaluation contact: Transportation Laboratory, 5900 Folsom Boulevard, Sacramento, CA 95819.

New TMAs proposed as equal to approved TMAs or approved TMAs determined by the Engineer to need recertification shall not be used until approved or recertified by the Transportation Laboratory.

PAYMENT

The contract lump sum price paid for TRAFFIC CONTROL SYSTEM shall include full compensation for furnishing all labor (including developing sign and wet stamped traffic control plans, flagging costs), materials (including traffic cones, temporary reflectors, and portable delineators), tools, equipment, and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of the traffic control system (except for those traffic control system components for which there are separate contract items of work will be measured and paid for as those contract items of work), and for furnishing and operating the pilot car (including driver, radios, other equipment, and labor required), as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications shall not apply to the item of TRAFFIC CONTROL SYSTEM. Adjustments in compensation for TRAFFIC CONTROL SYSTEM will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment," of the Standard Specifications for increased work, and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

10-1.27 TEMPORARY PAVEMENT DELINEATION

Temporary pavement delineation shall be furnished, placed, maintained, and removed in conformance with the provisions in Section 12-3.01, "General," of the Standard Specifications and these special provisions. Nothing in these special provisions shall be construed as reducing the minimum standards specified in the California MUTCD or as relieving the Contractor from the responsibilities specified in Section 7-1.09, "Public Safety," of the Standard Specifications.

GENERAL

When the work causes obliteration of pavement delineation, temporary or permanent pavement delineation shall be in place before opening the traveled way to public traffic. Laneline or centerline pavement delineation shall be provided for traveled ways open to public traffic. On multilane roadways edgeline delineation shall be provided for traveled ways open to public traffic.

The Contractor shall perform the work necessary to establish the alignment of temporary pavement delineation, including required lines or markers. Surfaces to receive application of paint or removable traffic tape temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation, or as determined by the Engineer.

Temporary pavement markers, including underlying adhesive, and removable traffic tape that are applied to the final layer of surfacing or existing pavement to remain in place or that conflicts with a subsequent or new traffic pattern for the area shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

TEMPORARY LANELINE AND CENTERLINE DELINEATION

When lanelines or centerlines are obliterated and temporary pavement delineation to replace the lines is not shown on the plans, the minimum laneline and centerline delineation to be provided for that area shall be temporary pavement markers placed at longitudinal intervals of not more than 7.3 m. The temporary pavement markers shall be the same color as the laneline or centerline the pavement markers replace. Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers listed for short term day/night use (14 days or less) or long term day/night use (6 months or less) in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. The temporary pavement markers shall be placed in conformance with the manufacturer's instructions. Temporary pavement markers for long term day/night use (6 months or less) shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place the temporary pavement markers in areas where removal of the temporary pavement markers will be required.

Temporary laneline or centerline delineation consisting entirely of temporary pavement markers listed for short term day/night use (14 days or less), shall be placed on longitudinal intervals of not more than 7.3 m and shall be used for a maximum of 14 days on lanes opened to public traffic. Before the end of the 14 days the permanent pavement delineation shall be placed. If the permanent pavement delineation is not placed within the 14 days, the Contractor shall replace the temporary pavement markers and provide additional temporary pavement delineation and shall bear the cost thereof. The additional temporary pavement delineation to be provided shall be equivalent to the pattern specified for the permanent pavement delineation for the area, as determined by the Engineer.

Where "no passing" centerline pavement delineation is obliterated, the following "no passing" zone signing shall be installed before opening the lanes to public traffic. W20-1 (ROAD WORK AHEAD) signs shall be installed from 300 m to 600 m in advance of "no passing" zones. R4-1 (DO NOT PASS) signs shall be installed at the beginning and at every 600-m interval within "no passing" zones. For continuous zones longer than 3 km, W7-3a or W71(CA) (NEXT _____ MILES) signs shall be installed beneath the W20-1 signs installed in advance of "no passing" zones. R4-2 (PASS WITH CARE) signs shall be installed at the end of "no passing" zones. The exact location of "no passing" zone signing will be as determined by the Engineer and shall be maintained in place until permanent "no passing" centerline pavement delineation has been applied. The signing for "no passing" zones, shall be removed when no longer required for the direction of public traffic. The signing for "no passing" zones shall conform to the provisions in "Construction Area Signs" of these special provisions, except for payment.

TEMPORARY EDGELINE DELINEATION

On multilane roadways, when edgelines are obliterated and temporary pavement delineation to replace those edgelines is not shown on the plans, the edgeline delineation to be provided for those areas adjacent to lanes open to public traffic shall be as follows:

1. Temporary pavement delineation for right edgelines shall, at the option of the Contractor, consist of either a solid 100-mm wide traffic stripe tape of the same color as the stripe it replaces, traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m.
2. Temporary pavement delineation for left edgelines shall, at the option of the Contractor, consist of either solid 100-mm wide traffic stripe tape of the same color as the stripe it replaces, traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m or temporary pavement markers placed at longitudinal intervals of not more than 1.8 m.

The lateral offset for traffic cones, portable delineators or channelizers used for temporary edgeline delineation shall be as determined by the Engineer. If traffic cones or portable delineators are used as temporary pavement delineation for edgelines, the Contractor shall provide personnel to remain at the project site to maintain the cones or delineators during the hours of the day that the portable delineators are in use.

Channelizers used for temporary edgeline delineation shall be the surface mounted type and shall be orange in color. Channelizer bases shall be cemented to the pavement in the same manner provided for cementing pavement markers to pavement in "Pavement Markers" of these special provisions, except epoxy adhesive shall not be used to place channelizers on the top layer of pavement. Channelizers shall be, at the Contractor's option, one of the surface mount types (900 mm) listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary edgeline delineation shall be removed when no longer required for the direction of public traffic as determined by the Engineer.

The allowable alternatives for Temporary Traffic Stripe shall consist of one of the following:

1. Temporary Traffic Stripe (Tape)
2. Temporary Traffic Stripe Paint

TEMPORARY TRAFFIC STRIPE (TAPE)

The temporary traffic stripe tape shall be complete in place at the location shown before opening the traveled way to public traffic.

Removable traffic stripe tape shall be the temporary removable traffic stripe tape as listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Removable traffic stripe tape shall be applied in conformance with the manufacturer's installation instructions and shall be rolled slowly with a rubber tired vehicle or roller to ensure complete contact with the pavement surface. Traffic stripe tape shall be applied straight on tangent alignment and on a true arc on curved alignment. Traffic stripe tape shall not be applied when the air or pavement temperature is less than 10°C, unless the installation procedures to be used are approved by the Engineer, before beginning installation of the tape.

The allowable alternatives for Temporary Traffic Pavement markings shall consist of one of the following:

1. Temporary Traffic Pavement Marking (Tape)
2. Temporary Traffic Pavement Marking Paint

TEMPORARY PAVEMENT MARKING (TAPE)

Temporary pavement marking consisting of removable pavement marking tape shall be applied at the locations shown on the plans. The temporary pavement marking tape shall be complete in place at the location shown, before opening the traveled way to public traffic.

Removable pavement marking tape shall be the temporary removable type pavement marking tape listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions and shall be applied and removed in conformance with the provisions specified for applying and removing the temporary traffic stripe tape.

TEMPORARY TRAFFIC STRIPE (PAINT) AND TEMPORARY TRAFFIC PAVEMENT MARKING (PAINT)

Painted temporary traffic stripes (traffic lines) and temporary pavement marking shall be applied in conformance with the provisions in Section 84, "Traffic Stripes Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

Temporary traffic stripe and pavement marking paint shall conform to the requirements in State Specification No. PTWB-01.

The color of the painted traffic stripes and pavement markings shall conform to the requirements in ASTM Designation: D 6628-01.

Retroreflectivity of the paint traffic stripes and pavement markings shall conform to the requirements in ASTM Designation: D 6359-99. White painted traffic stripes and pavement markings shall have a minimum initial retroreflectivity of 250 $mcd*m^{-2}$-$1x^{-1}$. Yellow painted traffic stripes and pavement markings shall have a minimum inititial retroreflectivity of 150 $mcd*m^{-2}$-$1x^{-1}$.

TEMPORARY PAVEMENT MARKERS

Temporary pavement markers shall be applied complete in place before opening the traveled way to public traffic.

Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers for long term day/night use (6 months or less) listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary pavement markers shall be placed in conformance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used in areas where removal of the pavement markers will be required.

Retroreflective pavement markers conforming to the provisions in "Pavement Markers" of these special provisions may be used in place of temporary pavement markers for long term day/night use (6 months or less) except to simulate patterns of broken traffic stripe. Placement of the retroreflective pavement markers used for temporary pavement markers shall conform to the provisions in "Pavement Markers" of these special provisions except the waiting period provisions before placing the pavement markers on new asphalt concrete surfacing as specified in Section 85-1.06, "Placement," of the Standard Specifications shall not apply and epoxy adhesive shall not be used to place pavement markers in areas where removal of the pavement markers will be required.

MEASUREMENT AND PAYMENT

TEMPORARY TRAFFIC STRIPE and TEMPORARY TRAFFIC PAVEMENT MARKING, regardless of type (Paint or tape), will be measured and paid for in the same manner specified for paint traffic stripe and paint pavement marking in Section 84-3.06, "Measurement," and Section 84-3.07, "Payment," of the Standard Specifications.

TEMPORARY PAVEMENT MARKERS shown on the plans will be measured and paid for by the unit in the same manner specified for retroreflective pavement markers in Section 85-1.08, "Measurement," and Section 85-1.09, "Payment," of the Standard Specifications.

TEMPORARY TRAFFIC STRIPE , TEMPORARY TRAFFIC PAVEMENT MARKING, and TEMPORARY PAVEMENT MARKER are designated as being contingent items of work on the BID PROPOSAL.

Full compensation for furnishing, placing, maintaining, and removing the temporary pavement markers and portable delineators and channelizers (including underlying adhesive, layout (dribble) lines to establish alignment of temporary pavement markers or used for temporary laneline and centerline delineation and signing specified for "no passing" zones) for those areas where temporary laneline and centerline delineation is not shown on the plans and for providing equivalent patterns of permanent traffic lines for those areas when required, shall be considered as included in the contract prices paid for the items of work that obliterated the laneline and centerline pavement delineation and no separate payment will be made therefor.

Full compensation for furnishing, placing, maintaining, and removing temporary edgeline delineation not shown on the plans shall be considered as included in the contract prices paid for the items of work that obliterated the edgeline pavement delineation and no separate payment will be made therefor.

10-1.28 PORTABLE FLASHING BEACON

Portable flashing beacons conforming to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications shall be furnished, placed and maintained at the locations shown on the plans or where designated by the Engineer.

If flashing beacons are displaced or are not in an upright position from any cause, during the progress of the work, the Contractor shall immediately repair and repaint or replace the flashing beacons in their original locations.

At the end of each night's work, portable flashing beacon units shall be removed from the traveled way. If the Contractor so elects, the flashing beacon units may be stored at selected central locations designated by the Engineer within the limits of the highway right of way. Full compensation for placing, removing and storing flashing beacon units daily as the work progresses shall be considered as included in the contract unit price paid for flashing beacon (portable) and no additional compensation will be allowed therefor.

The quantity of flashing beacon (portable) to be paid for will be measured by the unit as determined from actual count in place at the locations shown on the plans or at other locations designated by the Engineer. Each flashing beacon will be counted once at each location shown on the plans or at other locations determined by the Engineer. Repaired or replacement portable flashing beacons placed at the locations will not be considered as additional units for payment purposes. Portable flashing beacons shown on the plans as part of a traffic control system shall be considered as part of that traffic control system and will be paid for in conformance with the provisions in "Traffic Control System for Lane Closures" of these special provisions.

PAYMENT

The contract unit price paid for FLASHING BEACON (PORTABLE) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, operating, maintaining, repairing, replacing, and removing portable flashing beacons, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.29 BARRICADE

Barricades shall be furnished, placed and maintained at the locations shown on the plans, specified in the Standard Specifications or in these special provisions or where designated by the Engineer. Barricades shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to "Prequalified and Tested Signing and Delineation Materials" of these special provisions regarding retroreflective sheeting for barricades.

Construction area sign and marker panels conforming to the provisions in Section 12-3.06, "Construction Area Signs," of the Standard Specifications shall be installed on barricades in a manner determined by the Engineer at the locations shown on the plans.

Sign panels for construction area signs and marker panels installed on barricades shall conform to the provisions in Section 12-3.06A, "Stationary Mounted Signs," of the Standard Specifications.

PAYMENT

Full compensation for furnishing, installing, maintaining, and removing construction area signs and marker panels on barricades shall be considered as included in the contract unit price paid for the various other items of work and no separate payment will be made therefor.

Barricades shown on the plans as part of a traffic control system will be paid for as provided in "Traffic Control System for Lane Closure" of these special provisions and will not be included in the count for payment of barricades.

10-1.30 PORTABLE CHANGEABLE MESSAGE SIGN

Portable changeable message signs shall be furnished, placed, operated, and maintained at locations shown on the plans or where designated by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions. Messages displayed on the portable changeable message signs shall be as specified on the plans and shall conform to Section 12-3.12 "Portable Changeable Message Signs," of the Standard Specifications and "Maintaining Traffic" of these special provisions."

A portable changeable message sign shall be placed in advance of the first warning sign for each stationary lane closure.

A portable changeable message sign shall be placed during speed zone reductions. When used in conjunction with a lane closure, use one portable changeable message sign, with both the speed zone reduction and the lane closure messages.

The quantity of Portable Changeable Message Sign to be paid for will be measured by the unit as determined from actual count used, in place. Each Portable Changeable Message Sign will be counted once, regardless of location used, as shown on the plans or at other locations determined by the Engineer. Repaired or replacement Portable changeable message signs placed at the locations will not be considered as additional units for payment purposes. Portable changeable message signs shown on the plans as part of a traffic control system shall be considered as part of that traffic control system and will be paid for in conformance with the provisions in "Traffic Control System for Lane Closures" of these special provisions.

PAYMENT

The contract unit price paid for PORTABLE CHANGEABLE MESSAGE SIGN shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, operating, maintaining, repairing, replacing, transporting from location to location and removing Portable changeable message signs, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

At the end of the project, at the County's discretion, the Portable changeable message signs shall become the property of the County and will not be returned to the Contractor. The Contractor shall deliver the Portable changeable message signs to the County's Corporation yard. Full compensation for providing and delivering the Portable changeable message signs shall be considered included in the price for DELIVER PORTABLE CHANGEABLE MESSAGE SIGN and no additional compensation will be allowed therefor.

DELIVER PORTABLE CHANGEABLE MESSAGE SIGN is designated as being a contingent item of work on the BID PROPOSAL. The quantity or pre-bid amount of this bid

item set forth on the BID PROPSAL represents no actual estimate and is nominal only. This quantity or amount may be greatly increased or decreased or reduced to zero. The increase or reduction of this quantity or amount as compared with those set forth on the BID Proposal shall not constitute a basis for claim by the Contractor for extra payment or damages Payment for the actual work performed base upon the prices bid or work done for the item of work involved will be considered full compensation to the Contractor for the work.

10-1.31 LIGHTING (TEMPORARY)

Temporary flood lights shall be furnished, placed, operated, and maintained at locations shown on the plans or where designated by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions, and as directed by the Engineer.

Attention is directed to Section 7-1.08, "Public Convenience", and Section 7-1.09, "Public Safety", of the Standard Specifications.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing Temporary Flood Lights, and for erecting or placing, providing the necessary power for, maintaining and, when no longer required, removing temporary flood lights at the locations shown on the plans, as specified herein, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer shall be considered included in the prices paid for the various items of work, and no additional compensation will be allowed therefor.

10-1.32 TEMPORARY RAILING

Temporary railing (Type K) shall be placed as shown on the plans, as specified in the Standard Specifications or these special provisions or where ordered by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Reflectors on temporary railing (Type K) shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Attention is directed to "Public Safety" and "Order of Work" of these special provisions.

The Contractor shall install temporary railing (Type K) between a lane open to public traffic and an excavation, obstacle or storage area when the following conditions exist:

A. Excavations.—The near edge of the excavation is 3.6 m or less from the edge of the lane, except:

1. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
2. Excavations less than 0.3-m deep.
3. Trenches less than 0.3-m wide for irrigation pipe or electrical conduit, or excavations less than 0.3-m in diameter.
4. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
5. Excavations in side slopes, where the slope is steeper than 1:4 (vertical: horizontal).
6. Excavations protected by existing barrier or railing.

B. Temporarily Unprotected Permanent Obstacles.—The work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and the Contractor elects to install the obstacle prior to installing the protective system; or the Contractor, for the Contractor's convenience and with permission of the Engineer, removes a portion of an existing protective railing at an obstacle and does not replace such railing complete in place during the same day.

C. Storage Areas.—Material or equipment is stored within 3.6 m of the lane and the storage is not otherwise prohibited by the provisions of the Standard Specifications and these special provisions.

The approach end of temporary railing (Type K), installed in conformance with the provisions in this section "Public Safety" and in Section 7-1.09, "Public Safety," of the Standard Specifications, shall be offset a minimum of 4.6 m feet from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than 0.3-m transversely to 3.0 m longitudinally with respect to the edge of the traffic lane. If the 4.6 m minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Temporary railing (Type K) shall conform to the provisions in Section 12-3.08, "Temporary Railing (Type K)," of the Standard Specifications. Temporary railing (Type K), conforming to the details shown on 2004 Standard Plan T3, may be used. Temporary railing (Type K) fabricated prior to January 1, 1993, and conforming to 1988 Standard Plan B11-30 may be used, provided the fabrication date is printed on the required Certificate of Compliance.

TEMPORARY RAILING is designated as being a contingent item of work on the BID PROPOSAL.

10-1.33 CHANNELIZER

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Channelizers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

When no longer required for the work as determined by the Engineer, channelizers and underlying adhesive used to cement the channelizer bases to the pavement shall be removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work.

CHANNELIZER (SURFACE MOUNTED) is designated as being a contingent item of work on the BID PROPOSAL.

10-1.34 TEMPORARY CRASH CUSHION MODULE

This work shall consist of furnishing, installing, and maintaining sand filled temporary crash cushion modules in groupings or arrays at each location shown on the plans, as specified in these special provisions or where designated by the Engineer. The grouping or array of sand filled modules shall form a complete sand filled temporary crash cushion in conformance with the details shown on the plans and these special provisions.

Attention is directed to "Public Safety", "Order of Work", and "Temporary Railing" of these special provisions.

Whenever the work or the Contractor's operations establishes a fixed obstacle, the exposed fixed obstacle shall be protected with a sand filled temporary crash cushion. The sand filled temporary crash cushion shall be in place prior to opening the lanes adjacent to the fixed obstacle to public traffic.

Sand filled temporary crash cushions shall be maintained in place at each location, including times when work is not actively in progress. Sand filled temporary crash cushions may be removed during a work period for access to the work provided that the exposed fixed obstacle is 4.6 m or more from a lane carrying public traffic and the temporary crash cushion is reset to protect the obstacle prior to the end of the work period in which the fixed obstacle was exposed. When no longer required, as determined by the Engineer, sand filled temporary crash cushions shall be removed from the site of the work.

Except for installing, maintaining and removing traffic control devices, whenever work is performed or equipment is operated in the following work areas, the Contractor shall close the adjacent traffic lane unless otherwise provided in the Standard Specifications and these special provisions:

Approach Speed of Public Traffic (Posted Limit) (Miles Per Hour)	Work Areas
Over 45 Miles Per Hour	Within 1.8 m of a traffic lane but not on a traffic lane
35 to 45 Miles Per Hour	Within 1.0 m of a traffic lane but not on a traffic lane

The lane closure provisions of this section shall not apply if the work area is protected by permanent or temporary railing or barrier.

When traffic cones or delineators are used to delineate a temporary edge of a traffic lane, the line of cones or delineators shall be considered to be the edge of the traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 3 m without written approval from the Engineer.

When work is not in progress on a trench or other excavation that required closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

At the Contractor's option, the modules for use in sand filled temporary crash cushions shall be either Energite III Inertial Modules, Fitch Inertial Modules or TrafFix Sand Barrels manufactured after March 31, 1997, or equal:

1. Energite III and Fitch Inertial Modules, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:

    1.1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734
    1.2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501

2. TrafFix Sand Barrels, manufactured by TrafFix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672, telephone (949) 361-5663, FAX (949) 361-9205

    2.1. Northern California: United Rentals, Inc., 1533 Berger Drive, San Jose, CA 95112, telephone (408) 287-4303, FAX (408) 287-1929
    2.2. Southern California: Statewide Safety & Sign, Inc., P.O. Box 1440, Pismo Beach, CA 93448, telephone (800) 559-7080, FAX (805) 929-5786

Modules contained in each temporary crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color, as furnished by the vendor, with black lids. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects. The modules need not be new. Good used undamaged modules conforming to color and quality of the types specified herein may be utilized. If used Fitch modules requiring a seal are furnished, the top edge of the seal shall be securely fastened to the wall of the module by a continuous strip of heavy duty tape.

Modules shall be filled with sand in conformance with the manufacturer's directions, and to the sand capacity in kilograms for each module shown on the plans. Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water as determined by California Test 226.

Modules damaged due to the Contractor's operations shall be repaired immediately by the Contractor at the Contractor's expense. Modules damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at the Contractor's expense.

Temporary crash cushion modules shall be placed on movable pallets or frames conforming to the dimensions shown on the plans. The pallets or frames shall provide a full bearing base beneath the modules. The modules and supporting pallets or frames shall not be moved by sliding or skidding along the pavement or bridge deck.

A Type R or P marker panel shall be attached to the front of the crash cushion as shown on the plans, when the closest point of the crash cushion array is within 3.6 m of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods determined by the Engineer.

At the completion of the project, temporary crash cushion modules, sand filling, pallets or frames, and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion modules shall not be installed in the permanent work.

MEASUREMENT AND PAYMENT

Temporary crash cushion modules will be measured by the unit as determined from the actual count of modules used in the work or ordered by the Engineer at each location. Temporary crash cushion modules placed in conformance with the provisions in "Public Safety" of these special provisions and modules placed in excess of the number specified or shown will not be measured nor paid for.

Repairing modules damaged by public traffic will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Modules damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Modules replaced due to damage by public traffic will be measured and paid for as temporary crash cushion module.

If the Engineer orders a lateral move of the sand filled temporary crash cushions and the repositioning is not shown on the plans, moving the sand filled temporary crash cushion will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications and these temporary crash cushion modules will not be counted for payment in the new position.

The contract price paid per each unit for TEMPORARY CRASH CUSHION MODULE shall include full compensation for furnishing all labor, materials (including sand, pallets or frames and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing, installing, maintaining, moving, and resetting during a work period for access to the work, and removing from the site of the work when no longer required (including those damaged by public traffic) sand filled temporary crash cushion modules, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. TEMPORARY CRASH CUSHION MODULE is designated as being a contingent item of work on the BID PROPOSAL.

10-1.35 TEMPORARY CRASH CUSHION (TYPE ABSORB 350)

This work shall consist of furnishing, installing, and maintaining temporary crash cushion (Type ABSORB 350, TL-2, 5-element) at each location shown on the plans, as specified in these special provisions or where designated by the Engineer.

Temporary crash cushion shall be an ABSORB-350, TL-2, 5-element system, as manufactured by Barrier Systems, Inc., and shall include the items detailed for temporary crash cushion shown on the plans.

The successful bidder can obtain the crash cushion from the manufacturer, Barrier Systems, Inc., through its distributor, Statewide Safety and Signs at the following locations:

522 Lindon Lane, Nipomo, CA 93444
Phone: (805) 929-5070
Fax: (805) 929-5786

323 Commercial Street, San Jose, CA 95112
Phone: (408) 993-9770
Fax: (408) 993-9773

13755 Blaisdell Place, Poway, CA 92064
Phone: (858) 679-7292
Fax: (858) 679-7117

130 Grobic Court, Fairfield, CA 94533
Phone: (707) 864-9952
Fax: (707) 864-9956

The price quoted by the manufacturer for ABSORB-350 (TL-2, 5-element), Fairfield, California is $5,674.00 per 5-element unit, not including sales tax. The above price will be firm for orders placed on or before December 31, 2008, provided delivery is accepted within 90 days after the order is placed.

The Contractor shall furnish the Engineer one copy of the manufacturer's plan and parts list. The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the crash cushion conforms to the contract plans and specifications, conforms to the prequalified design and material requirements, and was manufactured in conformance with the approved quality control program.

Crash cushion shall be installed in conformance with the manufacturer's installation instructions.

Temporary crash cushions (Type ABSORB 350) shall be maintained in place at each location, including times when work is not actively in progress. When no longer required, as determined by the Engineer, Temporary crash cushions (Type ABSORB 350) shall be removed from the site of the work.

Temporary crash cushion systems damaged due to the Contractor's operations shall be repaired immediately by the Contractor at the Contractor's expense. Temporary crash cushion systems damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at the Contractor's expense.

A Type R or P marker panel shall be attached to the front of the temporary crash cushion (Type ABSORB 350), when the closest point of the crash cushion array is within 3.6 m of the traveled way. The marker panel, when required, shall be firmly fastened to the temporary crash cushion (Type ABSORB 350) with commercial quality hardware or by other methods determined by the Engineer.

At the completion of the project, temporary crash cushion systems and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion systems shall not be installed in the permanent work.

MEASURE AND PAYMENT

The quantity of TEMPORARY CRASH CUSHION (Type ABSORB 350, TL-2, 5-element) shall be determined by counting the number of installation locations.

Repairing systems damaged by public traffic will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Systems damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Systems replaced due to damage by public traffic will be measured and paid for as temporary crash cushion (Type ABSORB 350).

The contract unit price paid for TEMPORARY CRASH CUSHION (Type ABSORB 350, TL-2, 5-ELEMENT) shall include full compensation for furnishing all labor, materials (including marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing, installing, maintaining, moving, and removing from the site of the work when no longer required (including those damaged by public traffic) temporary crash cushion systems,

complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

TEMPORARY CRASH CUSHION (Type ABSORB 350, TL-2, 5-ELEMENT) is designated as being a contingent item of work on the BID PROPOSAL.

10-1.36 EXISTING HIGHWAY FACILITIES

The work performed in connection with various existing highway facilities shall conform to the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

REMOVE METAL BEAM GUARD RAILING

Existing metal beam guard railing, where shown on the plans to be removed, shall be removed and disposed of.

Existing concrete anchors or steel foundation tubes shall be completely removed and disposed of. Full compensation for removing concrete anchors shall be considered as included in the contract price paid per meter for remove metal beam guard railing and no separate payment will be made therefor.

PAYMENT

Full compensation for removing and disposing cable anchor assemblies, terminal anchor assemblies or steel foundation tubes shall be considered as included in the contract price paid per meter for REMOVE METAL BEAM GUARD RAILING and no separate payment will be made therefor.

REMOVE METAL BEAM GUARD RAILING is designated as being a contingent item of work on the BID PROPOSAL.

REMOVE TRAFFIC STRIPES, CHANNELIZERS, PAVEMENT MARKINGS AND MARKERS

Traffic stripes, channelizers, and pavement markings and pavement markers removal shall conform to Section 15-2, "Miscellaneous Highway Facilities," of the Standard Specifications and these special provisions.

Traffic stripes, channelizers, pavement markings and markers shall be removed at the location shown on the plans and as directed by the Engineer.

Traffic stripes, channelizers, and pavement markers shall be removed before any change is made in the traffic pattern.

Attention is directed to "Water Pollution Control" of these special provisions.

Existing pavement markers, including underlying adhesive, when no longer required for traffic lane delineation as determined by the Engineer, shall be removed and disposed of.

MEASUREMENT AND PAYMENT

The quantity of traffic stripes, channelizers, pavement markings and markers to be removed will not be measured.

Payment for removing traffic stripes, channleizers, pavement markings, and pavement makers will be made as bid for TRAFFIC STRIPES, CHANNELIZERS, PAVEMENT MARKINGS AND MARKERS REMOVAL.

The lump sum price bid for TRAFFIC STRIPES, CHANNLIZERS, PAVEMENT MARKINGS AND MARKERS REMOVAL shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work (including the disposal of the markers and channelizers) involved in removing channleizers, traffic stripes, pavement markings, and pavement markers removal as shown on the plans, as specified herein, and as directed by the Engineer.

Full compensation for removing channelizers, traffic stripes and pavement markings and markers not shown on the plans shall be considered as included in the contract prices paid for the items of work that obliterated them and no separate payment will be allowed therefor.

REMOVE DRAINAGE FACILITY

Drainage facilities removal shall conform to Section 15-2, "Miscellaneous Highway Facilities," of the Standard Specifications and these special provisions.

Existing box culverts, inlets, headwalls and endwalls, where any portion of these structures is within one meter of the grading plane in excavation areas, or within 0.3-m of original ground in embankment areas, or where shown on the plans to be removed, shall be completely removed and disposed of.

REMOVE ASPHALT CONCRETE DIKE

Existing asphalt concrete dike, where shown on the plans to be removed, shall be removed.

Prior to removing the dike, the outside edge of the asphalt concrete to remain in place shall be cut on a neat line to a minimum depth of 50 mm.

The dike shall be removed in such a manner that the surfacing which is to remain in place is not damaged.

The dike shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

The dike may be buried in embankments in the same manner provided for burying concrete in embankments in Section 15-3, "Removing Concrete," of the Standard Specifications.

MEASUREMENT AND PAYMENT

The quantity of asphalt concrete dike to be removed will not be measured nor paid for.

Full compensation for removing asphalt concrete dike shall be considered as included in the contract prices paid for the items of work that obliterated them and no separate payment will be allowed therefor.

10-1.37 REMOVE RETIRED GAS LINE

Existing retired underground Pacific Gas & Electric (PG&E) gas lines, at those locations shown on the Plans to be removed, shall be removed and disposed of. When shown on the plans or directed by the Engineer, the Contractor shall remove without damage to the pipe and salvage/stockpile the pipe for inspection. The Contractor shall dispose any salvage pipe when directed by the Engineer.

The quantity of removing existing retired underground PG&E gas lines to be paid for will be determined by measuring the actual length of pipe (regardless of size) removed, along the length of the slope to the nearest 0.05 meter.

PAYMENT

Payment for removing existing retired underground PG&E gas lines (regardless of size) will be made as bid per linear meter for REMOVE RETIRED GAS LINE.

The price bid per linear meter for REMOVE RETIRED GAS LINE, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in removing, salvaging, stockpiling, and disposing of the existing retired underground PG&E gas lines, and including excavation and backfilling the empty spaces, as shown on the plans, as specified herein, and as directed by the Engineer.

10-1.38 SLURRY FILL RETIRED GAS LINE

Existing retired underground Pacific Gas & Electric (PG&E) gas lines, at those locations shown on the plans to be slurry filled, shall be filled with a 2-sack cement slurry and abandoned in place.

The quantity of slurry filling existing retired underground PG&E gas lines to be paid for will be determined by measuring the length of pipe, along the length of the slope to the nearest 0.05 meter.

PAYMENT

Payment for slurry filling existing retired underground PG&E gas lines will be made as bid per linear meter, for the sizes set forth on the bid sheet for SLURRY FILL RETIRED GAS LINE.

The price bid per linear meter for SLURRY FILL RETIRED GAS LINE, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in slurry filling existing retired underground PG&E gas lines, and including excavation and backfilling, complete in place, as shown on the plans, as specified herein, and as directed by the Engineer.

10-1.39 RELOCATE ROADSIDE SIGN

Existing roadside signs to be relocated shall be removed and relocated to the new locations shown on the plans.

Each roadside sign shall be installed at the new location on the same day that the sign is removed from its original location.

Existing roadside signs mounted on non-breakaway metal posts shall be re-mounted on new standard breakaway posts. All sign posts shall be Unistrut Telespar 51 mm x 51 mm square posts with yielding breakaway base or equivalent.

MEASUREMENT AND PAYMENT

Payment for relocating roadside signs will be made as bid for RELOCATE ROADSIDE SIGN AND POST.

The quantity of relocated roadside signs shall be determined by counting the number of sign installation locations. Multiple signs on the same post(s) will count as one sign.

The price bid per unit of RELOCATE ROADSIDE SIGN AND POST shall include full compensation for furnishing all labor (including removing existing signs from existing posts and re-mounting existing signs on new breakaway posts), materials (including new standard uni-

strut/breakaway post and assembly), tools, equipment, and incidentals (including disposing of existing non-metal or non breakaway metal posts), and for doing all the work involved in relocating roadside signs and posts, complete in place as shown on the plans, and as specified in these special provisions, and as directed by the Engineer.

10-1.40 REMOVE AND SALVAGE TEMPORARY SHORING AND CABLE RAILING

At locations shown on the plans, the contractor shall remove without damage and salvage all the existing shoring (all types) components, including cable railing. These salvaged shoring materials shall be used to construct the Permanent Shoring at locations shown on the plans or as directed by the Engineer.

The salvaged cable railing components shall be used to construct the cable railing on the (Segmental) Retaining Wall as shown on the plans.

MEASUREMENT AND PAYMENT

The quantity of REMOVE AND SALVAGE TEMPORARY SHORING AND CABLE RAILING to be paid for will be measured by the linear meter as determined from actual length of existing shoring (all types) that is removed.

The contract unit price paid per linear meter of REMOVE AND SALVAGE TEMPORARY SHORING AND CABLE RAILING shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in the removal, salvaging, transporting of the existing temporary shoring and cable railing, including transporting and disposing any unused materials as shown on the plans, complete in place, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.41 MILLING

Existing asphalt concrete pavement shall be milled at the locations and to the dimensions shown on the plans.

Milling asphalt concrete pavement shall be performed by the cold planing method. Planing of the asphalt concrete pavement shall not be done by the heater planing method.

Cold planing machines shall be equipped with a cutter head not less than 750 mm in width and shall be operated so that no fumes or smoke will be produced. The cold planing machine shall plane the pavement without requiring the use of a heating device to soften the pavement during or prior to the planing operation.

The depth, width, and shape of the cut shall be as shown on the typical cross sections or as designated by the Engineer. The final cut shall result in a uniform surface conforming to the

typical cross sections. The outside lines of the planed area shall be neat and uniform. Planing asphalt concrete pavement operations shall be performed without damage to the surfacing to remain in place.

Planed widths of pavement shall be continuous except for intersections at cross streets where the planing shall be carried around the corners and through the conform lines. Following planing operations, a drop-off of more than 45 mm will not be allowed between adjacent lanes open to public traffic.

Where transverse joints are planed in the pavement at conform lines no drop-off shall remain between the existing pavement and the planed area when the pavement is opened to public traffic. If asphalt concrete has not been placed to the level of existing pavement before the pavement is to be opened to public traffic a temporary asphalt concrete taper shall be constructed. Asphalt concrete for temporary tapers shall be placed to the level of the existing pavement and tapered on a slope of 1:30 (Vertical: Horizontal) or flatter to the level of the planed area.

Asphalt concrete for temporary tapers shall be commercial quality and may be spread and compacted by any method that will produce a smooth riding surface. Temporary asphalt concrete tapers shall be completely removed, including the removal of loose material from the underlying surface, before placing the permanent surfacing. The removed material shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Unless specified otherwise, the material planed from the roadway surface, including the material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Removal operations of cold planed material shall be concurrent with planing operations and follow within 15 m of the planer, unless otherwise directed by the Engineer.

The material milled from the roadway surface shall be used as fill upon inspection and approval by the Engineer. The material milled from the roadway surface that is to be used as fill shall be less than 200 millimeters in the largest dimension and shall be free from deleterious material.

MEASUREMENT AND PAYMENT

Cold plane/milling asphalt concrete pavement will be measured by the square meter. The quantity to be paid for will be the actual area of surface cold planed/milled irrespective of the number of passes required to obtain the depth shown on the plans.

The contract price paid per square meter for MILLING shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in cold planning/milling asphalt concrete surfacing, milling asphalt concrete sufacing to

less than 200 millimeters in the largest dimension for use as fill material, and disposing of planed unused material, including furnishing the asphalt concrete for and constructing, maintaining, removing, and disposing of temporary asphalt concrete tapers, as specified in the Standard Specifications and these special provisions and as directed by the Engineer. MILLING is designated as being a contingent item of work on the BID PROPOSAL.

10-1.42 REMOVE CONCRETE BARRIER

Concrete barrier, where shown on the plans to be removed or as directed by the Engineer, shall be removed.

Removing concrete barrier will be measured by the meter, measured along the barrier before removal operations.

Concrete barrier removed shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Where no joint exists between concrete to be removed and concrete to remain in place, the concrete shall be cut on a neat line to a minimum depth of 50 mm with a power driven saw before the concrete is removed.

Where concrete barrier has been removed outside the roadway prism, the backfilled areas shall be graded to drain and blend in with the surrounding terrain.

Concrete barrier to be removed which has portions of the same structure both above and below ground will be considered as concrete above ground for compensation.

PAYMENT

The price bid per linear meter for REMOVE CONCRETE BARRIER shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work (including the disposal of the concrete barrier) involved in removing concrete barrier as shown on the plans, as specified herein, and as directed by the Engineer.

10-1.43 REMOVE CONCRETE

Concrete, where shown on the plans to be removed, or as directed by the Engineer, shall be removed and disposed of. The concrete may contain steel reinforcement.

The pay quantities of concrete to be removed will be measured by the cubic meter, measured before and during removal operations.

Concrete removed shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of material Outside the Highway Right of Way," of the Standard Specifications.

MEASUREMENT AND PAYMENT

Payment for Concrete Removal will be measured by the cubic meter of concrete removed.

The the price bid per cubic meter for CONCRETE REMOVAL shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work (including the disposal of the concrete and reinforcement steel) involved in removing concrete and reinforcing steel as shown on the plans, as specified herein, and as directed by the Engineer.

CONCRETE REMOVAL is designated as being contingent item of work on the BID PROPOSAL, the quantity or pre-bid amount of this bid item set forth on the BID PROPOSAL represents no actual estimate and is nominal only. This quantity or amount may be greatly increased or decreased or reduced to zero. The increase or reduction of this quantity or amount as compared with those set forth on the BID PROPOSAL shall not constitute a basis for claim by the Contractor for extra payment or damages. Payment for the actual work performed base upon the prices bid or work done for the item of work involved will be considered full compensation to the Contractor for the work.

10-1.44 CLEARING AND GRUBBING

Clearing and grubbing shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Vegetation shall be cleared and grubbed only within the excavation and embankment slope lines.

At locations where there is no grading adjacent to a bridge or other structure, clearing and grubbing of vegetation shall be limited to 1.5 m outside the physical limits of the bridge or structure.

Existing vegetation outside the areas to be cleared and grubbed shall be protected from injury or damage resulting from the Contractor's operations.

Activities controlled by the Contractor, except cleanup or other required work, shall be confined within the graded areas of the roadway.

Nothing herein shall be construed as relieving the Contractor of the Contractor's responsibility for final cleanup of the highway as provided in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

Vegetable growth from clearing and grubbing operations may be disposed of in embankments in conformance with the provisions in "Earthwork" of these special provisions.

The cost for removing and disposing trees under 100mm in diameter, measured 1m above the existing ground surface, as shown on the plans or as directed by the Engineer shall be included in this item.

The cost for removing and disposing tree stumps and its roots, as shown on the plans or as directed by the Engineer shall be included in this item.

PAYMENT

Payment for clearing and grubbing will be the lump sum price bid for CLEARING AND GRUBBING.

The lump sum price bid for CLEARING AND GRUBBING shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work (including the removal and disposal of all resulting material) involved in clearing and grubbing as specified herein, as shown on the plans, and as directed by the Engineer.

10-1.45 TREE REMOVAL

Trees shown on the plans, directed by the Engineer, or designated in these special provisions to be removed, shall be removed in accordance with the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Existing Trees outside of protected Environmentally Sensitive Areas and within the limits of earthwork, shall be removed. No more than 150mm of exposed trunk stump shall remain following removal work. Removal of stumps and roots shall be as required to facilitate earthwork operations and shall be included in the contract price paid for CLEARING AND GRUBBING elsewhere in these special provisions.

Attention is directed to "Order of Work" elsewhere in these special provisions regarding time period restrictions for tree removal. Removed tree materials shall be disposed of outside the highway right of way in conformance to the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. At the option of the Contractor, removed trees may be reduced to chips. Chipped material shall be spread within the project limits at locations designated by the Engineer.

Trees not otherwise shown on the plans, or designated in these special provisions to be removed, that are within the limits of excavation and embankment slopes, shall be removed in accordance with the provisions in Section 16 "Clearing and Grubbing," of the Standard Specifications and these special provisions.

These special provisions will not relieve the Contractor from the responsibility to provide additional devices and equipment or take measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

Attention is directed to Section 5-1.46, "General Migratory Bird Protection," of these special provisions regarding verification of tree removal and nesting birds.

The Contractor shall comply with the following:

- Before any trees are removed, the Contractor shall confirm the locations of such trees with the Engineer. No trees will be removed or trimmed in any way without prior written approval from the Engineer.
- The disturbance of existing vegetation or other work necessary to create access to trees shall be approved on a case by case basis by the Engineer, and all such areas shall be restored to the previous condition immediately after the work as any such location is complete. Any such required restoration work of disturbed areas shall be completed by the Contractor at no additional cost to the County.
- Where information contained on the plans pertaining to the location of trees to be removed is found to conflict with field conditions, the work described for that tree shall be applied to the tree at its correct location and no additional compensation will be allowed.
- At the option of the Contractor, removed trees may be removed from the County right of way and become the property of the Contractor.
- Existing trees identified by the Engineer for removal but not shown as such on the plans shall be removed.
- Holes resulting from the removal of trees, outside of the slope lines, shall be backfilled the same day the trees are removed. Soil from the surrounding area may be used to backfill these holes. The backfill shall be graded to conform with the adjacent existing grade.
- Equipment not normally intended to be manually transported by two or fewer individuals shall not be operated or driven on slopes of greater than 1:4 except when approved by the Engineer.

Where required by the Engineer, removal of existing trees shall include removing their stumps and roots 50 mm and larger in diameter to a minimum depth of 0.3 meters below finished grade.

A final inspection shall be performed in conformance with the provisions in Section 5-1.13, "Final Inspection," of the Standard Specifications and shall be completed a minimum of 20 working days before the estimated completion of the contract.

The cost for removing trees 100mm and over in diameter, measured 1m above the existing ground surface, as shown on the plans or as directed by the Engineer, shall be included in this item.

MEASUREMENT AND PAYMENT

The quantity of TREE REMOVAL shall be determined by counting the number of actual removed trees.

The price bid for each TREE REMOVAL shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removal of trees as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer, including chipping and spreading of chipped materials.

TREE REMOVAL is designated as being contingent item of work on the BID PROPOSAL. The quantity or pre-bid amount of this bid item set forth on the BID PROPOSAL represents no actual estimate and is nominal only. This quantity or amount may be greatly increased or decreased or reduced to zero. The increase or reduction of this quantity or amount as compared with those set forth on the BID PROPOSAL shall not constitute a basis for claim by the Contractor for extra payment or damages. Payment for the actual work performed base upon the prices bid or work done for the item of work involved will be considered full compensation to the Contractor for the work.

10-1.46 EARTHWORK

Earthwork shall conform to Section 19, "Earthwork," of the Standard Specifications and these special provisions.

EXCAVATION

Excavations shall be constructed or protected so that they do not endanger life or property. Shoring shall be provided at the location shown on the plans.

Excavation Sequencing - All excavations shall proceed from the top of the cut slope down to the design toe of the cut or top of the shoring. Under no circumstance should the excavations proceed from the toe to top unless directed by the Engineer. Temporary cuts steeper than the slopes indicated on the plans shall not be allowed unless approved or directed by the Engineer. Unless specified otherwise or as directed by the Engineer, the slope of cut surfaces of permanent excavations shall not be steeper than shown on the plans exclusive of terraces and exclusive of roundings described herein. Cut slopes shall be rounded into the existing terrain to produce a contoured transition from cut face to natural ground.

All excavations greater than 5 meters deep will be mapped by the Alameda County Engineering Geologist during construction. The Alameda County Engineering Geologist will

confirm if the geologic conditions exposed in the excavation are consistent with the conditions assumed for analysis and design.

Shoring

Shoring (of various types) shall be constructed at the locations shown on the plans or as directed by the Engineer, and shall remain in place at the end of the job. The Contractor shall provide material submittals for beams and lagging to the Engineer no later than 15 working days before the Contractor's proposed installation date. The Engineer will review and provide comments regarding said submittals within five working days.

Steel Piles

Structural steel for all shoring shall conform to Section 49-5, "Steel Piles," of the Standard Specifications or as specified in these special provisions.

Crushed Rock Fill

Crushed rock fill to be used to backfill the pile holes shall be crushed rock material that conforms to the following grading requirements:

100 percent finer than 37.5 mm (1 ½ in)
<5 percent finer than 4.75 mm (No. 4 sieve)

Rock shall be placed in the drilled holes using a method which results in the void between the steel beam and the sides of the drilled pile hole being uniformly filled with crushed rock fill.

Lagging

All lagging materials shall conform to Section 57-2, "Structural Timber," of the Standard Specifications or as specified in these special provisions.

Excavation Drainage

It is anticipated that free groundwater may be encountered in some areas. The Contractor shall take appropriate measures to control the free water should this occur. Water control measures shall conform to Section 19-3.04, "Water Control and Foundation Treatment," of the Standard Specifications.

Horizontal drains may need to be constructed based on the geologic and water conditions exposed in the excavations. Attention is directed to "Horizontal Drains," of these special provisions.

EMBANKMENT CONSTRUCTION

Embankment construction shall conform to Section 19-6, "Embankment Construction," of the Standard Specifications and these special provisions. Embankment/fill material shall be obtained via cut slopes and other excavations shown on the plans.

Subgrade Preparation

The natural ground surface shall be prepared to receive fill by removing vegetation, non-complying fill, top soil, and other unsuitable material, and where slopes are five horizontal to one vertical or steeper, by benching into competent material as shown on the plans or as directed by the Engineer.

When directed by the Engineer, the Contractor shall excavate the unsuitable material. The limits of excavation of unsuitable materials will be measured by the Engineer's staff when required for calculation of quantities. The Contractor shall submit all requests for these surveys to the Engineer, in writing, on the County's "Construction Survey Request" form. Requests shall be submitted a minimum of two (2) working days in advance of the required surveys. The Contractor shall provide the Engineer with such assistance as may be required. No payment will be made for the cost to the Contractor for any work delay occasioned by making necessary measurements, or by inspection. This excavation will be measured to the nearest cubic meter and paid for as Excavate, Remove, and Replace Unsuitable Material. The resulting spaces shall be filled with Aggregate Base, Class 2 as directed by the Engineer. Aggregate base will not be measured nor paid for.

The unsuitable material removed shall become the property of the Contactor and be disposed of outside the highway right-of-way in conformance of these special provisions.

Fill Placement

Fill/embankment material generated through cut slope operations shall be used in the following order:

Earth materials shall be used which have no more than minor amounts of organic substances or other perishable materials

Clods or hard lumps of earth over 200 millimeters in greatest dimension shall be broken up before compacting the material in embankment, except as provided in the following paragraph.

When the embankment material consists of large rocky material or hard lumps such as hardpan, cemented gravel, or similar irreducible material which cannot be broken readily, such material shall be well distributed throughout the embankment a minimum of 4 m below the finish grade lines shown on the Plans. Sufficient earth or other fine material shall be placed around the larger material as it is deposited so as to fill the interstices and produce a dense, compact embankment.

Fills shall be constructed in layers. The loose thickness of each layer of fill material before compaction shall not exceed 200 millimeters. Completed fills shall be stable masses of well integrated material bonded to adjacent materials and to the materials on which they rest.

Earth fill material shall be placed and compacted a minimum of 200 millimeters beyond the finish grade lines shown on the Plans and the excess fill material shall be trimmed back to the grades shown to obtain the required compaction at the slope face.

The slope of permanent fills shall not be steeper than shown on the plans exclusive of roundings described herein. Fill slopes shall be rounded into existing terrain to produce a contoured transition from fill face to natural ground or to abutting cut or fill surfaces where conditions permit.

Irregularities in the surface resulting from grading or other operations shall be corrected to prevent the formation of depressions or ponding.

When directed by the Engineer, the Contractor shall construct stability fills. Stability fills shall be measured and paid for as indicated in Section 19-2.04, "Slides and Slipouts," of the Standard Specifications.

Compaction for embankment fill shall be as follows:

EMBANKMENT LOCATION*	**RELATIVE COMPACTION****	**MOISTURE CONTENT***
Uppermost 5 m	90% to 93%	+4% to +6% of optimum
Mid-embankment	90% or greater	+2% to +4% of optimum
Lowermost 5 m	93% or greater	+2% to +6% of optimum

*Refers to location within final embankment for either the PG&E pad or the new Vasco Roadway, depending on which embankment is taller.
**Caltrans 216 Test Method

Compaction may be less than ninety (90) percent of relative compaction, as determined by the above test, within 150 millimeters of the slope surface when such surface material is placed and compacted by a method acceptable to the Engineer for the planting of the slopes.

Compaction Testing

Contractor shall provide no less than 48 hours' notice to the County Engineer, in writing, of the need for compaction testing.

Footings which may be affected by any excavation shall be underpinned or otherwise protected against settlement and shall be protected against lateral movement. Fills or other surcharge loads shall not be placed adjacent to any building or structure unless such building or structure is capable of withstanding the additional loads caused by such fill or surcharge.

Embankment Drainage

Proper drainage and other appropriate measures shall be taken to ensure the continuing integrity of fills. All areas shall be graded and drained so that water will not pond or accumulate. Drainage shall be effected in such a manner that it will not cause erosion or endanger the stability of any cut or fill slope or any structure.

When surface drainage is discharged onto any adjoining property, it shall be discharged in such a manner that it will not cause erosion or endanger any cut or fill slope or any building or structure.

Maintenance bench ditches (gravel and earth swales) shall be constructed as shown on the plans in conformance with Section 72-4, "Concrete Slope Protection, Gutter Lining, Ditch Lining, and Channel Lining," of the Standard Specifications and these special provisions and as directed by the Engineer .

Subsurface embankment drains shall be constructed as shown on the plans in accordance with Section 68, "Subsurface Drains," of the Standard Specifications, these special provisions, and as directed by the Engineer.

Geocomposite drain shall consist of a manufactured core not less than 6.35 mm thick nor more than 50 mm thick with one or both sides covered with a layer of filter fabric that will provide a drainage void. The drain shall produce a flow rate, through the drainage void, of at least 25 liters per minute per meter of width at a hydraulic gradient of 1.0 and a minimum externally-applied pressure of 168 kPa. A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be furnished for the geocomposite drain certifying that the drain produces the required flow rate and complies with these special provisions. The Certificate of Compliance shall be accompanied by a flow capability graph for the geocomposite drain showing flow rates and the externally applied pressures and hydraulic gradients. The flow capability graph shall be stamped with the verification of an independent testing laboratory.

Filter fabric for the geocomposite drain shall conform to the provisions for fabric for underdrains in Section 88, "Engineering Fabrics," of the Standard Specifications.

The manufactured core shall be either a preformed grid of embossed plastic, a mat of random shapes of plastic fibers, a drainage net consisting of a uniform pattern of polymeric strands forming 2 sets of continuous flow channels, or a system of plastic pillars and interconnections forming a semirigid mat.

The core material and filter fabric shall be capable of maintaining the drainage void for the entire height of geocomposite drain. Filter fabric shall be integrally bonded to the side of the core material with the drainage void. Core material manufactured from impermeable plastic sheeting having nonconnecting corrugations shall be placed with the corrugations approximately perpendicular to the drainage collection system.

The geocomposite drain shall be installed with the drainage void and the filter fabric facing the embankment. The fabric facing the embankment side shall overlap a minimum of 75 mm at all joints and wrap around the exterior edges a minimum of 75 mm beyond the exterior edge. If additional fabric is needed to provide overlap at joints and wrap-around at edges, the added fabric shall overlap the fabric on the geocomposite drain at least 150 mm and be attached thereto.

Should the fabric on the geocomposite drain be torn or punctured, the damaged section shall be replaced completely or repaired by placing a piece of fabric that is large enough to cover the damaged area and provide a 150-mm overlap.

PAYMENT

The contract unit price paid per cubic meter for ROADWAY EXCAVATION shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in excavating, sloping, rounding tops and ends of excavations, loading, hauling, depositing, spreading and compacting the material, complete in place, subgrade preparation at the grading plane, and embankment placement (including structure excavation and structure backfill, stockpiling material, removal of material from stockpile) to construct all cuts and embankments, complete in place, not including testing, shoring, and embankment drains, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. ROADWAY EXCAVATION is designated as being a contingent item of work on the BID PROPOSAL.

Full compensation for stockpiling material and removal of material from stockpile shall be considered included in the prices paid for the various other items of work and no additional compensation will be made therefor.

The contract unit price paid per linear meter of PERMANENT SHORING shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in the construction of the shoring complete in place, including steel beams, crushed rock backfill, structure backfill, and lagging as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. PERMANENT SHORING is designated as being a contingent item of work on the BID PROPOSAL.

The contract unit price paid per linear meter of EMBANKMENT DRAIN, SIDEHILL FILL TYPE shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in construction of the embankment drains, including all permeable material, geocomposite drain material, steel and plastic pipe (perforated and non-perforated), utility boxes, drain riser and cleanout, energy dissipator, and engineering filter fabric, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for furnishing all labor, materials (including Aggregate Base Class 2 and edge drain filter fabric), tools, equipment, and incidentals, and for doing all the work involved in

constructing maintenance benches and gravel and earth swales, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer, shall be considered as included in the contract prices paid for the various contract items of work and no additional compensation will be allowed therefor

Full compensation for all work, materials, and incidentals herein set forth for compaction including, but not limited to, assistance and preparation for compaction testing, in all required areas, shall be considered as included in the contract prices paid for the various contract items of work and no additional compensation will be allowed therefor.

The contract unit price paid per cubic meter to EXCAVATE, REMOVE, AND REPLACE UNSUITABLE MATERIAL shall include full compensation for furnishing all labor, materials (including aggregate base, Class 2), tools, equipment, and incidentals, and for doing all the work involved to Excavate, Remove, and Replace Unsuitable Material as specified herein, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

EMBANKMENT DRAIN, SIDEHILL FILL AND EXCAVATE, REMOVE AND REPLACE UNSUITABLE MATERIAL, are designated as being contingent items of work on the Bid Proposal. The quantity or pre-bid amount of this bid item set forth on the Bid Proposal represents no actual estimate and is nominal only. This quantity or amount may be greatly increased or decreased or reduced to zero. The increase or reduction of this quantity or amount as compared with those set forth on the Bid Proposal shall not constitute a basis for claim by the Contractor for extra payment or damages. Payment for the actual work performed base upon the prices bid or work done for the item of work involved will be considered full compensation to the Contractor for the work.

10-1.47 GEOSYNTHETIC REINFORCED EMBANKMENT

This work shall consist of placing geosynthetic reinforcement between layers of compacted fill in accordance with the details shown on the plans, as specified in Section 19 "Earthwork," of the Standard Specifications and these special provisions.

Drainage system and other facilities shall be constructed in the geosynthetic reinforced embankment in conformance with the details shown on the plans and these special provisions.

GEOSYNTHETIC REINFORCEMENT

Only one type of geosynthetic reinforcement material shall be used for an entire embankment.

Filter fabric, conforming to the provisions in Section 88, "Engineering Fabrics," of the Standard Specifications, shall be placed in the geosynthetic reinforced embankment at the locations shown on the plans.

Geosynthetic reinforcement material shall be designed for use in subsurface geotechnical slope reinforcement applications. Geosynthetic reinforcement material shall be configured as a geogrid. Geogrid shall have a regular and defined open area. Geogrid shall provide pullout resistance from the soil by a combination of soils shearing friction on the plane surfaces parallel to the direction of shearing and soils bearing on transverse grid surfaces normal to the direction of grid movement. The percentage of the open area for geogrids shall range from 50 to 90 percent of the total projection of a section of the material.

Material Properties

Geosynthetic reinforcement shall meet the following requirements:

LTDS for geosynthetic reinforcement shall be determined by Standard Practice GRI GG4a for stiff geogrids and GRI GG4b for flexible geogrids, and GT7 for geotextiles, respectively. These values shall be minimum average roll values in the machine direction.

Reduction factors applied to the ultimate strength are determined in accordance with GRI GG4a, GRI GG4b, and GRI GT7. The product of the reduction factors of less than 1.30 is not allowed. The reduction factor for creep shall be determined for a 75-year design life as determined by GRI GG4a and GRI GG4b for geogrids and GRI GT7 for geotextiles.

In the absence of specific test data, the default values of reduction factors (installation damage, creep, chemical degradation, biological degradation, and joint) as indicated in the Standard Practice GRI GG4a and GRI GG4b and GRI GT7 shall be applied to the calculations of the LTDS.

Geosynthetic reinforcement material shall be resistant to naturally occurring alkaline and acidic soil conditions, and to attack by bacteria.

All test results used in the calculations of the LTDS shall be submitted to the Engineer no less than 15 working days prior to placement of the geosynthetic reinforcement. The calculation shall itemize each reduction factors. Splice efficiency shall be accounted for in the calculations. All test results that contribute to the calculations of the LTDS shall be prepared and signed by a California-registered Civil Engineer.

Geosynthetic reinforcement shall consist of high density polyethylene, polypropylene, high density polypropylene sheets, or high tenacity polyester yarn.

Geosynthetic reinforcement consisting of high density polyethylene shall be manufactured from high density polyethylene (HDPE) which conforms to ASTM Designation: D 1248.

Geosynthetic reinforcement consisting of polypropylene or high-density polypropylene sheets shall meet the requirements of ASTM Designation: D 4101, Group 1/Class1/Grade 2.

Geosynthetic reinforcement consisting of high tenacity polyester yarn shall be manufactured from high tenacity polyester yarn as determined by ASTM Designation: D 629. In addition to

meeting the requirements for geosynthetic, geogrid shall be encapsulated in an acrylic latex, PVC, polymer or similar coating; shall be sheathed in polyethylene; or shall be polyvinyl chloride impregnated

A certificate of compliance shall be furnished to the Engineer in conformance with Section 6-1.07, "Certificate of Compliance," of the Standard Specifications a minimum of one week prior to placement of geosynthetic reinforcement. The Certificate of Compliance shall be prepared and signed by a representative of the manufacturer who is a California-registered Civil Engineer.

Delivery, Handling, and Storage

Geosynthetic reinforcement shall be furnished in an appropriate protective cover which shall protect it from ultraviolet radiation and from abrasion during shipping and handling.

The Contractor shall check products upon delivery to assure that the geosynthetic reinforcement received is dry and undamaged. Each roll shall be labeled with the manufacturer's name, production identification, roll dimensions, lot number, and date manufactured.

Geosynthetic reinforcement shall be handled and stored in accordance with the manufacturer's recommendations.

Geosynthetic rolls shall be protected from construction equipment, chemicals, sparks and flames, temperatures in excess of 70°C (160°F), and any other environmental conditions that may degrade physical properties. To prevent geosynthetic material from being saturated, if stored outdoors, the rolls shall be elevated from the ground surface or placed on a sacrificial sheet of plastic in an area where water will not accumulate. Geogrids, except for extruded grids, shall be protected with an opaque waterproof cover.

EMBANKMENT MATERIAL

Specifications for embankment material shall conform to the requirement found elsewhere in these special provisions.

CONSTRUCTION

Subgrade Preparation

The Contractor shall prepare the grade that is to receive the layers of geosynthetic reinforcement to the compaction and elevation tolerances described in the Standard Specifications under Section 19-2.05, "Slopes," and these special provisions. The grade shall be smooth and free of loose or extraneous material and objects that may damage the geosynthetic reinforcement during installation. Relative compaction of not less than 90 percent shall be obtained in the embankment foundation for a minimum depth of 150 millimeters.

Geosynthetic Reinforcement Placement

Geosynthetic reinforcement shall be handled and placed in accordance with the manufacturer's recommendations and these special provisions. The geosynthetic reinforcement shall be placed wrinkle free, pulled taut, aligned, and secured before backfill placement to prevent the displacement during placement and compaction of fill.

The geosynthetic reinforcement material shall be placed with the direction of maximum strength perpendicular to the slope alignment. The Contractor shall verify correct orientation of the geosynthetic reinforcement. Each layer of geosynthetic reinforcement shall be placed onto the embankment material to form a continuous mat. Adjacent strips of geosynthetic reinforcement placed in this manner need not be overlapped.

Geosynthetic reinforcement shall be placed at the intervals, elevations, and for the minimum embedment length shown on the plans. Each layer of geosynthetic reinforcement shall not vary more than 150 mm from the theoretical horizontal plane established for that layer for the entire width and length of the reinforcement. All reinforcement shall be 100 percent covered by soil so that reinforcement panels do not contact in overlaps. Geosynthetic reinforcement shall be placed and covered with backfill in the same work shift.

During spreading and compacting of the backfill, a minimum fill thickness of 150 mm is required prior to operation of vehicles over the reinforcement. Sudden braking and sharp turning shall be avoided. Construction equipment shall not be operated or driven directly on the reinforcement. During spreading and compacting of the backfill, at the option of the Engineer, rubber tired vehicles may be driven directly on the material, provided that such traffic is part of the placement operation, that the amount of traffic repetitions is minimized, that speeds or 10 kph or less are maintained, that turning or stopping movements of the vehicle are minimized, and no damage or displacement to the reinforcement is observed.

Geosynthetic reinforcement shall not extend into the pavement structural section.

Each layer of geosynthetic reinforcement shall be placed (unrolled) onto the grade to form a continuous mat. A minimum of 75 mm compacted fill material shall be required between geosynthetic reinforcement layers, unless shown otherwise on the plans.

Fill Placement

Reinforced fill shall be placed from the slope face back toward the fill area to ensure that the reinforcement remains taut. The maximum loose thickness of each lift of embankment material shall not exceed 200 millimeters and shall be compacted in conformance with Section 3, "Embankment Construction," of these Special Provisions.

At locations where compaction is accomplished with hand-operated equipment, fill shall be placed in horizontal layers not more than 150 millimeters in uncompacted thickness.

MEASUREMENT AND PAYMENT

Geosynthetic reinforcement will be measured and paid for by the square meter for the total area of geosynthetic reinforcement as shown on the plans and for any additional area as directed by the Engineer. Payment shall not include additional reinforcement required for overlaps.

Payment for geosynthetic reinforcement will be made as bid per square meter for the types set forth on the bid sheet for GEOGRID.

The contract price paid per square meter of GEOGRID shall include full compensation for furnishing all labor and materials, including tools and equipment, and incidentals, for developing, placing and compacting native and/or imported embankment backfill, and for doing all the work involved in placing the geosynthetic reinforcement layers complete and in place, including splicing, overlapping and anchoring as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. GEOGRID (various types) are designated as being contingent items of work on the BID PROPOSAL.

GEOGRID REINFORCED EMBANKMENT FILL will be measured and paid for by the cubic meter. The contract price paid per cubic meter for GEOGRID REINFORCED EMBANKMENT FILL shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in obtaining and placing the imported borrow, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. GEOGRID REINFORCED EMBANKMENT FILL is designated as being a contingent item of work on the BID PROPOSAL.

Full compensation for revisions to drainage systems or other facilities made necessary by the use of an alternative geosynthetic embankment material shall be considered as included in the contract price paid per square meter for GEOGRID and no adjustment in compensation will be made therefor.

10-1.48 GRAVEL AND EARTH SWALE

Gravel and earth swale shall be constructed as shown on the plans and shall conform to the provisions in Section 19-4, "Ditch Excavation", Section 26, "Aggregate Bases," and Section 68-3, "Edge Drains," of the Standard Specifications and these special provisions.

Gravel and earth swale will not be measured nor paid for. Full compensation for furnishing all labor, materials (including Aggregate Base Class 2 and edge drain filter fabric), tools, equipment, and incidentals, and for doing all the work involved in constructing maintenance benches and gravel and earth swales, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer, shall be considered as included in the contract prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.49 SHOULDER GRAVEL SWALE

Shoulder gravel swale shall be constructed as shown on the plans and shall conform to the provisions in Section 19-4, "Ditch Excavation", Section 26, "Aggregate Bases," and Section 68-3, "Edge Drains," of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

SHOULDER GRAVEL SWALE shall be measured and paid for at the contract unit price per meter and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing shoulder gravel swale, complete in place, including subgrade preparation, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer.

SHOULDER GRAVEL SWALE is designated as being a contingent item of work on the bid proposal. The quantity or pre-bid amount of this bid item set ofth on the Bid Proposal represents no actual estimate and is nominal only. This quantity or amount may be greatly increased or decreased or reduced to zero. The increase or reduction of this quantity or amount as compared with those set forth on the Bid Proposal shall not constitute a basis for claim by the Contractor for extra payment or damages. Payment for the actual work performed based upon the prices bid or work done for the item of work involved will be considered full compensation to the Contractor for the work.

10-1.50 EROSION CONTROL

The following shall apply to the control of erosion and sediment from grading operations:

When grading operations are conducted during the rainy season, at no stage of the work will there be any substantial risk of increased sediment discharge from the site. When grading is performed during the rainy season, the smallest practicable area of erodible land shall be exposed at any one time during grading operations and the time of exposure shall be minimized. Natural features, including vegetation, terrain, watercourses and similar resources shall be preserved wherever possible. Limits of grading shall be clearly defined and marked to prevent damage by construction equipment. Permanent vegetation and structures for erosion and sediment control shall be installed as soon as possible. All such areas where grading has been completed between April 1st and September 15th shall be planted by October 1st. Graded areas completed at other times of the year shall be planted within fifteen (15) days. Adequate provisions shall be made for long-term maintenance of permanent erosion and sediment control structures and vegetation.

No topsoil shall be removed from the site unless otherwise directed or approved by the Engineer. Topsoil overburden shall be stockpiled and redistributed within the graded area after rough grading to provide a suitable base for seeding and planting. Runoff from the stockpiled area shall be controlled to prevent erosion and resultant sedimentation of receiving water.

Runoff shall not be discharged from the site in quantities or at velocities substantially above those which occurred before grading except into drainage facilities whose design has been specifically approved by the Engineer.

The Contractor shall take reasonable precautions to ensure that vehicles do not track or spill earth materials into public streets and shall immediately remove such materials if this occurs.

Emergency Conditions

Should increased sediment discharge occur or become imminent, the Contractor shall take all necessary steps to control such discharge. Such steps may include construction of additional facilities or removal or alternation of facilities required by approved erosion and sediment control plans. Facilities removed or altered shall be restored as soon as possible afterward. The Contractor shall take prompt action to resolve emergency problems. If the Contractor fails to implement corrective measures within the time frame given by the Engineer or within forty-eight (48) hours after having been so directed by the Engineer, whichever is less, the County will have the right to do the corrective work. The Contractor shall be responsible for maintaining corrective measures installed by County forces. The costs associated with the County's corrective work will be deducted from any monies due or to become due the Contractor. The Contractor will have no rights to claim for the monies deducted from the contract for such cause and for the County's taking over of the necessary work.

PAYMENT

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

10-1.51 HYDRO-SEEDING

Hydro-seeding shall conform to Section 20-3, "Erosion Control" of the Standard Specifications and these special provisions.

All disturbed slopes as shown on the plans and those directed by the Engineer must be revegetated to control erosion. The intensity of the revegetation-stabilization effort should be appropriate to the erosion hazard of the slope.

Fertilizer shall conform to Section 20-2.02, "Commercial Fertilizer," of the Standard Specifications and these specifications. All fertilizer shall be labeled in accordance with the applicable State regulations, and bearing the warranty of the Producer for the grade furnished. Fertilizer shall be applied as a mix with seed and fiber in a slurry.

Fiber used in the hydro-seed slurry shall conform to Section 20-2.07, "Fiber," of the Standard Specifications and these specifications.

Seed to be used in the hydro-seed slurry shall conform to Section 20-2.10, "Seed," of the Standard Specifications and these specifications. Seed shall be at least 95% pure, weed-free, and be certified to have a minimum viability of 85%.

MATERIALS

Hydro-seeding shall conform to the following:

HYDROSEED

SCIENTIFIC NAME	COMMON NAME	SEEDING RATE (LBS/ACRE)	% PURITY (MIN.)	% GERMINATION (MIN.)
ARTEMESIA CALIFORNICA	CALIFORNIA SAGEBRUSH	3	95	80
BACCHARIS PILULARIS	COYOTE BRUSH	2	95	80
CLARKIA AMOENA	FAREWELL TO SPRING	5	95	80
ESCHSCHOLZIA CALIFORNICA	CALIFORNIA POPPY	5	95	80
HORDEUM BRACHYANTERUM	MEADOW BARLEY	10	95	80
LUPINUS NANUS	DWARF LUPINE	10	95	80
MIMULUS AURANTIACUS	STICKY MONKEY FLOWER	5	95	80
NASSELLA PULCHRA	PURPLE NEEDLE GRASS	10	95	80

Fertilizer shall have a guaranteed analysis of:

Nitrogen 6%
Phosphorus 20%
Potash 20%

Rate of Application of Material:

Fiber mulch: 1800 lbs/acre
Fertilizer: 300 lbs/acre
Seed: 45 lbs/acre
Adhesive: 80 lbs/acre

DESCRIPTION OF WORK

"Hydro-seeding" is defined as the simultaneous application of seed, fertilizer and fiber in a slurry.

Vegetation shall be restored in all areas as shown on the plans, denuded during construction by hydro-seeding with the specified seed mix. Hydro-seeding shall be performed no earlier than October 1 of the current year and no later than October 31 of the current year. The Contractor shall pay to the County the sum of One Hundred Dollars ($100.00) per day for each and every calendar day delays in completing the hydro-seeding in excess of the time fixed for such work. These "damages" may be waived by the Engineer for extenuating circumstances.

The area of application shall have a firm seedbed that has previously been roughened by scarifying it to a depth of 50 mm to 100 mm (2 to 4 inches) or "track walking," unless a roughened condition already exists. No implement shall be used that will create an excessive

amount of downward movement of soil or clods on sloping areas. The seeding area shall be cleared of all rocks 60 mm (2-1/2 inches) or greater in diameter, organic material and debris. Hydro-seeding shall not begin until the Engineer has inspected and approved of the seedbeds.

Seed shall not remain in the slurry longer than thirty (30) minutes. The slurry shall be mixed for at least 5 minutes after the last addition to the agitator tank before application starts. The slurry shall be applied at a rate that is nonerosive and minimizes runoff.

INSPECTIONS

Hydro-seeded areas will be inspected 30 days after the first rain (3/4" or more in a 24 hour period) by the Engineer. All areas not showing growth or showing a loss of cover shall be reseeded by the Contractor at his expense. The hydro-seeding will be reinspected as soon as possible after March 1 of the following year to determine the success of the seeding. All areas showing inadequate growth as determined by the Engineer shall be reseeded by the Contractor as soon as it is practical, at no additional cost to the County.

MEASUREMENT AND PAYMENT

HYDROSEEDING will be measured by the square meter. The area will be calculated on the basis of actual or computed slope measurements.

The contract price paid per square meter for HYDROSEEDING shall include full compensation for furnishing all labor, materials (including seed, fertilizer, fiber, water, etc.), tools, equipment, and incidentals, and for doing all the work involved in hydro-seeding, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. HYDROSEEDING is designated as being a contingent item of work on the BID PROPOSAL.

Damages, as outlined in the paragraph "Description of Work" of this section, may be subtracted from the payment for HYDROSEEDING.

10-1.52 DISPOSAL OF MATERIALS

The County has not made arrangements for disposal of material. All excess and unsuitable material shall be disposed of by the Contractor in accordance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications, except that written permission of the Engineer for disposal of material will not be required.

PAYMENT

Full compensation for disposing of all materials shall be considered as included in the various items of work and no additional compensation will be allowed therefor.

10-1.53 CONTAMINATED SOILS DISPOSAL

During construction of the project, contaminated soils may be encountered within the project limits. Upon encountering the suspected contaminated soils, the Contractor shall immediately notify the Engineer of the discovery. The Engineer will call the County's consultant to site to verify the nature of the materials encountered.

If determined to be contaminated soils and upon notification by the Engineer, the Contractor shall remove and dispose of the contaminated soils outside roadway right of way, at a landfill site qualified to accept the contaminated materials.

PAYMENT

Full compensation for excavating, removing and disposing of contaminated soils, furnishing all labor (including obtaining approval and processing of the required documents for disposal of contaminated materials at the designated class), tools, equipment and incidentals, and for doing all the work involved in disposing of contaminated soils, if encountered during excavation work, will be paid for by Force Account.

10-1.54 FINISHING ROADWAY

Finishing roadway shall conform to the provisions in Section 22, "Finishing Roadway," of the Standard Specifications.

Full compensation for any necessary finishing shall be considered as included in the prices paid for the various contract items of work requiring finishing and no additional compensation will be allowed therefor.

10-1.55 AGGREGATE BASE

Aggregate base shall conform with Section 26, "Aggregate Bases," of the Standard Specifications and these special provisions.

Aggregate base shall be Class 2, unless otherwise specified.

The use of 100% recycled aggregate base is allowed with the following conditions:

A. Shall conform to Section 26, "Aggregate Bases", of the Standard Specifications
B. Use only within the roadway structural section
C. 5% maximum asphalt concrete
D. No concrete
E. No glass
F. No organic materials

The following defines the difference between recycled and reclaimed:

Recycled – developed through the recycling plant and is re-blended to conform with Section 26 requirements.
Reclaimed – taken from one site, stockpiled, and re-used on another site and does not go through the plant and is not re-blended.

Do not store any material containing reclaimed asphalt concrete within 30 m measured horizontally of any culvert, watercourse, or bridge.

All aggregate base used on the work shall be the same maximum sized aggregate.

Waiver of the R-value requirement will not be allowed. The Durability Index will not be required. The aggregate shall conform to the following additional quality requirement:

QUALITY REQUIREMENTS

TEST	CALIFORNIA TEST METHOD NO.	REQUIREMENT
Loss in Los Angeles Rattler (after 500 revolutions)	211	50% maximum

Class 3 Aggregate base shall be the product of crushing rock or gravel. The portion of the material that is retained on a 9.5 mm sieve shall contain at least 50 percent of particles having three or more fractured faces. Not over 5 percent shall be pieces that show no such faces resulting from crushing. Class 3 Aggregate base shall conform to the following gradation requirement:

AGGREGATE GRADING REQUIREMENTS

	PERCENTAGE PASSING	
SIEVE SIZES	OPERATING RANGE	CONTRACT COMPLIANCE
25 mm (1 in)	100	100
19 mm (3/4 in)	90-100	87-100
12.5 mm (1/2 in)	30-60	25-65
9.5 mm (3/8 in)	0-20	0-25
4.75 mm (No. 4)	0-5	0-10

CLASS 2 AGGREGATE BASE is designated as being a contingent item of work on the BID PROPOSAL.

10-1.56 TREATED PERMEABLE BASE

Treated permeable base shall be asphalt treated and shall conform to the provisions in Section 29, "Treated Permeable Bases," of the Standard Specifications and these special provisions.

The type of asphalt binder to be mixed with aggregate for treated permeable base shall be Grade 64-10 conforming to the provisions in Section 92, "Asphalts," of the Standard Specifications.

10-1.57 SLURRY SEAL

Slurry seal shall conform to the provisions in Section 37-2, "Slurry Seal," of the Standard Specifications and these special provisions.

The aggregate for slurry seal shall be the type as shown on the plans.

Polymer modified asphaltic emulsion shall be composed of a bituminous material uniformly emulsified with water and an emulsifying or stabilization agent and shall contain a polymer.

The polymer used in the manufacture of polymer modified asphaltic emulsions shall be at the option of the Contractor, either neoprene, or a copolymer of butadiene and styrene. The polymer used in the polymer modified asphaltic emulsion shall be homogenous and shall be milled into the product at the colloid mill.

The polymer modified asphalt emulsion shall be grade PMCQS1h and shall conform to the following requirements:

Type	Cationic	
Grade	PMCQS1h	
Properties	Min.	Max
Tests on Emulsion:		
Viscosity SSF @ 25°C, sec AASHTO Designation T-59	15	90
Sieve Test, % AASHTO Designation T-539	—	0.30
Storage Stability, 1 day, % AASHTO Designation T-59	—	1
Residue by Evaporation, % California Test 331	57	—
Particle Charge AASHTO Designation T-59	Positive	
Tests on Residue from Evaporation Test		
Penetration, 25°C AASHTO Designation: T 49	40	90
Ductility, 25°C, mm AASHTO Designation: T 51	400	—
Torsional Recovery, % California Test 332	18	—
or		
Polymer Content, % California Test 401	2.5	—

Note:
When the test for polymer content of polymer modified asphaltic emulsion is used, see sampling requirements in Section 94-1.03, "Sampling" of the Standard Specifications.

The Contractor shall limit the placement of slurry seal to the hours of 7 a.m. to 2 p.m. to allow for the painting of traffic striping and pavement markings. These hours maybe modified upon approval from the Engineer. The slurry seal shall be protected from damage by traffic until the mixture has cured sufficiently.

Slurry seal shall not be placed when the atmospheric temperature is below 10 degrees Celsius or during unsuitable weather as determined by the Engineer. Before placing slurry seal, the pavement surface shall be cleaned by sweeping, or other means necessary to removal all loose particles of paving, dirt, and all other extraneous material. Flushing of the pavement will not be allowed.

The Contractor shall cap all existing pavement markers and cover all utility covers with building paper prior to placement of slurry seal. The Contractor shall remove and dispose of these caps and building papers upon completion of slurry seal surfacing of the streets.

SLURRY SEAL SURFACING TYPE III is designated as being a contingent item of work on the BID PROPOSAL

10-1.58 ASPHALT CONCRETE

GENERAL

Asphalt concrete shall be Type A and shall conform to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions.

A Immediately before adding the asphalt binder to the open graded asphalt concrete mixture, the temperature of the aggregate shall be not more than 135°C. Open graded asphalt concrete shall be spread at a temperature of not less than 105°C measured in the hopper in the asphalt paver.
B. The compaction operation shall be such that the maximum distance between the asphalt paver and the initial breakdown rolling shall be no greater than 15 m.
C. During the placement of open graded asphalt concrete, the speed of the asphalt paver shall not exceed 10 meters per minute.
D. The Contractor shall cover loads of open graded asphalt concrete with tarpaulins. The tarpaulins shall completely cover exposed open graded asphalt concrete in the hauling vehicle until the open graded asphalt concrete has been completely transferred into the asphalt paver hopper.

The grade of asphalt binder to be mixed with aggregate for Type A asphalt concrete shall be Grade PG 64-10 conforming to the provisions in Section 92, "Asphalts," of the Standard Specifications.

The asphalt content of the asphalt mixture will be determined in conformance with the requirements in California Test 379, or in conformance with the requirements in California Test 382.

The amount of asphalt binder used in asphalt concrete placed in dikes, gutters, gutter flares, overside drains and aprons at the ends of drainage structures shall be increased one percent by mass of the aggregate over the amount of asphalt binder determined for use in asphalt concrete placed on the traveled way.

The aggregate for Type A asphalt concrete shall conform to the 19-mm maximum, medium grading specified in Section 39-2.02, "Aggregate," of the Standard Specifications.

RECLAIMED ASPHALT PAVEMENT

The Contractor may produce asphalt concrete using reclaimed asphalt pavement (RAP). Asphalt concrete produced using RAP shall conform to the provisions for asphalt concrete in this section, "Asphalt Concrete," and these special provisions. The Contractor may substitute RAP for a portion of the virgin aggregate in asphalt concrete in an amount not exceeding 5 percent of the asphalt concrete dry aggregate mass.

No RAP is allowed in the final lift of asphalt concrete.

RAP shall be processed from asphalt concrete removed from pavement surfaces. RAP shall be stored in stockpiles on smooth surfaces free of debris and organic material. RAP stockpiles shall consist only of homogeneous RAP. The Contractor may process and stockpile RAP throughout the project's life. Processing and stockpiling operations shall prevent material contamination and segregation.

The Contractor shall determine the amount of asphalt binder to be mixed with the combined virgin aggregate and RAP in conformance with the requirements in California Test 367 amended by Lab Procedure-9 (LP-9), "Asphalt Concrete Using Up To 15% Reclaimed Asphalt Pavement (RAP)." LP-9 is available at:

http://www.dot.ca.gov/hq/esc/Translab/fpmlab.htm

The Contractor shall submit a current (less than one year old) asphalt concrete mix design from two separate sources (primary source and backup source) for asphalt concrete proposed to be used. The asphalt concrete mix design shall have an air void ratio between 3% and 5%. Contractor shall allow ten (10) calendar days for County's review of mix design.

At least 21 days before starting production of asphalt concrete using RAP, the Contractor shall submit a proposed asphalt concrete mix design in writing to the Engineer. The mix design submittal shall consist of the following:

A. RAP:

1. Processed stockpile locations.
2. LP-9 test results.
3. Correlation factor for aggregate gradations from California Test 382 and LP-9.
4. Three 32-kg samples of processed RAP representing the material to be used. The three samples shall be split from the sample the Contractor uses to determine the mix design. The Contractor shall obtain and split the samples in conformance with the requirements in California Test 125 and LP-9.
5. The substitution rate for virgin aggregate and percent RAP.

B. Virgin aggregate and supplemental fine aggregate blend:

1. Percent passing values for each sieve size.
2. Aggregate quality tests results.
3. Each aggregate source to be used including producer, location, and California Mine Identification number.
4. Percentage of each aggregate stockpile, cold feed, and hot bin to be used.
5. Gradation of each aggregate stockpile, cold feed, and hot bin to be used.

C. Asphalt binder:

1. Source.
2. Material Safety Data Sheets.

D. Antistrip additives, if used:

1. Name of product.
2. Name of manufacturer.
3. Manufacturer's designation and proposed rate.
4. Location and method of addition.
5. Material Safety Data Sheets.

E. Asphalt concrete:

1. A completed mix design that reflects the percent of RAP to be used including the electronic worksheet identified in LP-9.
2. In graphical format, stability and air voids versus asphalt binder percentage of asphalt in conformance with the requirements in CTM 367.

Asphalt concrete production using RAP shall not begin until the Engineer approves the mix design. If the Engineer fails to review the mix design in 21 days, and if, in the opinion of the Engineer, work completion is delayed as a result of the failure to review, the Engineer will adjust payment and contract time in conformance with the requirements in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

If proposing a change in the RAP substitution rate, the Contractor shall notify the Engineer. If the substitution rate changes more than 5 percent by dry aggregate mass in the asphalt concrete mixture, the Contractor shall submit a new mix design.

The aggregate gradation for the asphalt concrete produced with RAP shall be calculated based on the mathematical combination of the virgin aggregate gradation during production and the daily RAP gradation. RAP shall be sampled and gradation shall be determined in conformance with the requirements in LP-9. RAP gradations shall be:

A. Determined daily by the Contractor.
B. Used for the mathematical combination of that day's asphalt concrete production.
C. Reported to the Engineer.

The Contractor shall perform quality control testing of the RAP source each day asphalt concrete using RAP is produced.

The Contractor shall perform quality control testing of the aggregates and the asphalt concrete mixture at least once for every 1000 tonnes of asphalt concrete using RAP produced, but not less than 2 tests per day.

Daily, the Contractor shall submit to the Engineer:

A. Results for RAP gradation and the asphalt binder content in RAP determined in conformance with the requirements in LP-9. The Contractor shall sample RAP from the weighhopper or pugmill.
B. Mathematical calculation of the gradation of the virgin aggregate and RAP aggregate blend.
C. Correlation factor for RAP burn-off determined in conformance with the requirements in LP-9.

RAP proportioning shall conform to the provisions for aggregate proportioning specified in Section 39-3.03, "Proportioning," of the Standard Specifications and these special provisions. The Contractor's mixing equipment shall have a device that safely provides a sample representative of the virgin aggregate and RAP incorporated into the asphalt concrete. The Contractor shall sample in conformance with the requirements in California Test 125 and LP-9.

The temperature of asphalt concrete using RAP shall not exceed 165°C.

If batch mixing is used, RAP shall be kept separate from the virgin aggregate until both ingredients enter the weighhopper or pugmill. After introduction to the pugmill and before asphalt binder is added, the mixing time for the virgin aggregate and RAP shall not be less than 5 seconds. After asphalt binder is added, the mixing time shall not be less than 30 seconds.

If continuous mixing is used, the RAP shall be protected from direct contact with the burner flame with a device such as a shield, separator, or second drum.

PAINT BINDER (TACK COAT)

Paint binder (tack coat) shall be applied to existing surfaces to be surfaced and between layers of asphalt concrete, except when eliminated by the Engineer.

Paint binder (tack coat) shall be, at the option of the Contractor, either slow-setting asphaltic emulsion, rapid-setting asphaltic emulsion or paving asphalt. Slow-setting asphaltic emulsion and rapid-setting asphaltic emulsion shall conform to the provisions in Section 39-4.02, "Prime Coat and Paint Binder (Tack Coat)," and the provisions in Section 94, "Asphaltic Emulsions," of the Standard Specifications. When paving asphalt is used for paint binder, the grade will be determined by the Engineer. Paving asphalt shall conform to the provisions in Section 39-4.02, "Prime Coat and Paint Binder (Tack Coat)," and the provisions in Section 92, "Asphalts," of the Standard Specifications.

Paint binder (tack coat) shall be applied in the liter per square meter range limits specified for the surfaces to receive asphalt concrete in the tables below. The exact application rate within the range will be determined by the Engineer.

Application Rates for Asphaltic Emulsion Paint Binder (Tack Coat) on Asphalt Concrete (except Open Graded) and on Portland Cement Concrete Pavement (PCCP)		
Type of surface to receive paint binder (tack coat)	Slow-Setting Asphaltic Emulsion L/m^2(Note A)	Rapid-Setting Asphaltic Emulsion L/m^2(Note B)
Dense, compact surfaces, between layers, and on PCCP	0.20 – 0.35	0.10 – 0.20
Open textured, or dry, aged surfaces	0.35 – 0.90	0.20 – 0.40

Note A: Slow-setting asphaltic emulsion is asphaltic emulsion diluted with additional water. Water shall be added and mixed with the asphaltic emulsion (containing up to 43 percent water) so the resulting mixture contains one part asphaltic emulsion and not more than one part added water. The water shall be added by the emulsion producer or at a facility that has the capability to mix or agitate the combined blend.
Note B: Undiluted rapid-setting asphaltic emulsion.

Application Rates for Paint Binder (Tack Coat) on Asphalt Concrete (except Open Graded) and on Portland Cement Concrete Pavement (PCCP)	
Type of surface to receive paint binder (tack coat)	Paving Asphalt L/m^2
Dense, compact surfaces, between layers, and on PCCP	0.05 – 0.10
Open textured, or dry, aged surfaces	0.10 – 0.25

When asphaltic emulsion is used as paint binder (tack coat), asphalt concrete shall not be placed until the applied asphaltic emulsion has completely changed color from brown to black.

COMPACTION

Asphalt concrete placed in layers of 45 mm or less in compacted thickness or widths of less than 1.5 m shall be spread and compacted with the equipment and by the methods conforming to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications. Other asphalt concrete shall be compacted and finished in conformance with the provisions in Section 39 and the following:

A. The provisions in Section 39-5.02, "Compacting Equipment," of the Standard Specifications shall not apply.
B. The Contractor shall furnish a sufficient number of rollers to obtain the compaction specified in these special provisions and the surface finish required by the Standard Specifications and these special provisions.

C. Rollers shall be equipped with pads and water systems that prevent sticking of asphalt mixtures to the pneumatic-tired or steel-tired wheels. A parting agent that will not damage the asphalt mixture may be used.
D. The second paragraph in Section 39-6.01, "General Requirements," of the Standard Specifications shall not apply.
E. Asphalt concrete and asphalt concrete base shall be compacted to obtain the specified relative compaction before the temperature of the mixture drops below 65°C. Additional rolling to achieve the specified relative compaction will not be permitted after the temperature of the mixture drops below 65°C or once the pavement is opened to public traffic. When vibratory rollers are used as finish rollers the vibratory unit shall be turned off.
F. The fifth and seventh through tenth paragraphs of Section 39-6.03, "Compacting," of the Standard Specifications shall not apply.
G. Asphalt concrete and asphalt concrete base shall be compacted to a relative compaction of not less than 96 percent and shall be finished to the lines, grades, and cross section shown on the plans. In-place density of asphalt concrete and asphalt concrete base will be determined before opening the pavement to public traffic.
H. Relative compaction will be determined by California Test 375.
I. If the test results for a quantity of asphalt concrete or asphalt concrete base indicate that the relative compaction is below 96 percent, the Contractor will be notified. Asphalt concrete or asphalt concrete base spreading operations shall not continue until the Contractor has notified the Engineer of the adjustment that will be made in order to meet the specified relative compaction.
J. If the test results for a quantity of asphalt concrete or asphalt concrete base indicate that the relative compaction is less than 96 percent, the asphalt concrete or asphalt concrete base represented by that quantity shall be removed, except as otherwise provided in these special provisions.

MEASUREMENT AND PAYMENT

The quantity of asphalt concrete to be paid for will be measured by the tonne. The weight shall be the combined weight of the aggregate and asphalt binder.

The quantity of asphalt concrete dikes (regardless of type) to be paid for will be the length in meters measured longitudinally along the centerline of the top of the dike to the nearest 0.1 meter. No deduction in quantities will be made for dikes placed through driveways.

The quantity of liquid asphalt or asphalt emulsion will not be measured nor paid for. Full compensation for furnishing and applying liquid asphalt emulsion shall be considered included in the price bid per tonne of ASPHALT CONCRETE, TYPE A.

Payment for the construction of the asphalt concrete dike, as shown on the plans, will be made as bid per linear meter for ASPHALT CONCRETE DIKE for the various types as set forth on the bid sheet.

The price per linear meter for ASPHALT CONCRETE DIKE for the various types as set forth on the bid sheet shall include full compensation for furnishing all labor, materials, including tack coat, tools, equipment and incidentals and for doing all the work involved in furnishing and constructing asphalt concrete dike, complete in place, as specified herein, and as directed by the Engineer.

ASPHALT CONCRETE, TYPE A (ADDITIONAL BID ITEMS NO. A2 AND A3)

ASPHALT CONCRETE, TYPE A for the specified quantities set forth on the bid sheet are Additional Bid Items. If these additional bid items are not accepted, then this section shall not apply. The exclusion of either or all of these items shall not constitute a basis for claim by the Contractor for extra payment or damages.

Payment for the asphalt concrete, as shown on the plans, will be made as bid per tonne for ASPHALT CONCRETE, TYPE A.

The price per tonne for ASPHALT CONCRET, TYPE A shall include full compensation for furnishing all labor, materials, including tack coat, tools, equipment and incidentals and for doing all the work involved in furnishing and placing asphalt concrete, complete in place, as specified herein, and as directed by the Engineer.

ASPHALT CONCRETE TYPE A is designated as being a contingent item of work on the BID PROPOSAL.

Water furnished and applied to tacky asphaltic emulsion and for mixing-type asphaltic emulsion will not be paid for and full compensation therefor will be considered as included in the contract price paid for ASPHALT CONCRETE, TYPE A.

Additional asphalt concrete surfacing material shall be placed along the edge of the surfacing at road connections and private drives, hand raked, if necessary, and compacted to form smooth, tapered conforms. Full compensation for furnishing all labor and tools and doing allt he work necessary to hand rake said conforms shall be considered as included in the contract prices paid per tonne for ASPHALT CONCRETE, TYPE A and no additional compensation will be allowed therefor.

10-1.59 PAVEMENT REINFORCING FABRIC

Immediately prior to placing binder, pavement reinforcing fabric, and asphalt concrete surfacing, the pavement shall be cleaned of loose and extraneous materials such as, but not limited to, vegetation, sand, dirt, gravel and water.

Before placing the pavement reinforcing fabric, a binder of paving asphalt Grade PG 70-10 shall be applied uniformly to the surface to receive the pavement reinforcing fabric at a rate of not less than 1.15 L per square meter of surface covered. When pavement reinforcing fabric is placed in areas of conform tapers, the binder shall be spread at the approximate rate of 1.4 L per square meter of surface covered. The exact rate of application of asphalt binder will be determined by the Engineer.

Asphalt concrete surfacing shall be placed over the pavement reinforcing fabric in the same work shift that the fabric is placed.

Pavement reinforcing fabric shall not be exposed to public traffic, Contractor's equipment or elements that will damage the fabric prior to placement of asphalt concrete surfacing.

Asphaltic emulsion shall not be substituted for paving asphalt binder for pavement reinforcing fabric.

Full compensation for cleaning pavement immediately in advance of placing binder, pavement reinforcing fabric, and asphalt concrete surfacing shall be considered as included in the contract price paid per square meter for PAVEMENT REINFORCING FABRIC and no separate payment will be made therefor.

10-1.60 SHOULDER BACKING

Shoulder backing shall be constructed adjacent to the edge of new surfacing and shall be constructed in conformance with the details shown on the plans and these special provisions.

Material for shoulder backing shall consist of native material.

Native material shall be bladed or graded from areas adjacent to the shoulder backing as determined by the Engineer.

The areas where shoulder backing is to be constructed and areas where native material is to be obtained for shoulder backing shall be cleared of weeds, grass, and debris

Removed weeds, grass and debris shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside of the Highway Right of Way," of the Standard Specifications.

Shoulder backing material shall be thoroughly mixed with the based material by scarifying or blading and then watered and rolled to form a smooth, firmly compacted surface. Watering shall conform to the provisions in Section 17, "Watering" of the Standard Specifications and Section, 10-1.09, "Watering," of these special provisions

Shoulder backing shall be constructed within 24 hours of placement of asphalt concrete shoulder section or resurfacing.

MEASUREMENT AND PAYMENT

The quantity of native material used for shoulder backing will not be measured nor paid for.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing shoulder backing, complete in place, as shown on the plans, as specified in the Standard Specifications, and these special provisions, and as directed by the Engineer, shall be considered included in the prices paid for the various other items of work and no additional compensation will be made therefor.

10-1.61 SHOULDER RUMBLE STRIP (ASPHALT CONCRETE, ROLLED-IN INDENTATIONS)

This work shall consist of constructing shoulder rumble strips by forming indentations in new asphalt concrete surfacing as shown on the plans and as specified in these special provisions.

Shoulder rumble strips shall be formed by constructing indentations in the top layer of new asphalt concrete surfacing.

Shoulder rumble strips shall not be constructed on approach slabs or structures.

Shoulder rumble strips shall be formed with a steel-tired 2-axle tandem roller, having a roller wheel diameter of 1000 mm or greater, weighing not less than 11 tonnes, and modified by fitting with pipe segments attached to the non-steering roller drum. Pipe segments shall be fabricated from 50-mm diameter commercial quality steel pipe, 300 mm in length, cut longitudinally to

provide a 40 percent segment in cross section. Pipe segments shall be rounded at each end to provide indentations of the dimensions shown on the plans. Pipe segments shall be welded to the driving, non-steering roller drum at approximately 300 mm on center, with the rounded side of the pipe away from the drum. Other means of constructing indentations may be approved by the Engineer.

Breakdown compaction and forming of the rolled-in indentations shall be completed before the temperature of the surface of the asphalt concrete falls below 110°C. After breakdown compaction has been completed, indentations shall be formed by making a single pass with the modified roller drum in the trailing position. Final rolling shall be completed before the pavement temperature drops below 60°C.

Rumble strips shall be constructed within 50 mm of the required alignment. The tandem roller shall be equipped with a sighting device that will enable the operator to maintain the alignment of the rumble strip.

Indentations shall not vary from the dimensions shown on the plans by more than 10 percent.

Finished rumble strips not meeting the specified tolerances, shall be brought within tolerance by either abrasive grinding, or removal and replacement. The corrective method will be selected by the Engineer. Ground surface areas shall be neat and uniform in appearance, and shall be treated with an application of fog seal coat. The corrective work shall be at the Contractor's expense.

MEASUREMENT AND PAYMENT

Shoulder rumble strip (asphalt concrete, rolled-in indentations) will be measured by the meter along each shoulder on which the rumble strip is constructed, without deductions for gaps between the individual rolled-in indentations.

The contract price paid per meter for SHOULDER RUMBLE STRIP (AC, ROLLED-IN) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing shoulder rumble strips (asphalt concrete, rolled-in indentations), complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.62 CONCRETE STRUCTURES

Portland cement concrete structures shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Concrete minor structures shall be acid and sulfate resistant that will withstand the following soil conditions:

pH range	3.05 to 7.05

minimum resistivity:	909 to 4880 ohm-cm
sulfate concentrations:	<1 to 1,860 ppm

Reinforcement for concrete structures shall conform to Section 52, "Reinforcement," of the Standard Specifications as modified herein. Bar reinforcing steel, wire mesh, and dowels shall be grade 60 and be acid and corrosive resistant to withstand pH levels ranging from 3.05 to 7.05 and minimum resistivity values ranging from 909 to 4880 ohm-cm.

10-1.63 REINFORCEMENT

Reinforcement shall conform to the provisions in Section 52, "Reinforcement," of the Standard Specifications and these special provisions.

The yield strength of steel reinforcement (fy) shall be 420 MPa unless specified otherwise in the plans.

The Engineer will arrange for sampling and testing the reinforcing steel.

All bends in reinforcement shall be cold bends.

All reinforcement steel shall be acid and corrosive resistant to withstand pH levels ranging from 3.05 to 7.05 and minimum resistivity values ranging from 909 to 4880 ohm-cm.

The Department's mechanical splices prequalified list can be found at the following internet site:

http://www.dot.ca.gov/hq/esc/approved_products_list/

The provisions of "Welding Quality Control" of these special provisions shall not apply to resistance butt welding.

MEASUREMENT AND PAYMENT

Reinforcement will not be measured nor paid for.

Full compensation for reinforcement shall be considered included in the prices paid for the various other items of work and no additional compensation will be made therefor.

10-1.64 CONCRETE DITCH LINING

Concrete ditch lining shall be constructed as shown on the plans as Concrete "V" Ditch and shall conform to the provisions in Section 19-4, "Ditch Excavation" and Section 53, "Shotcrete," of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

Concrete ditch lining shall be measured and paid for by the meter.

The contract price paid per meter for CONCRETE DITCH LINING shall include furnishing all labor, materials (including wire mesh), tools, equipment, and incidentals, and for doing all the work involved in constructing concrete ditch lining, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. CONCRETE DITCH LINING is designated as being a contingent item of work on the BID PROPOSAL.

10-1.65 ROADSIDE SIGNS

Roadside signs and posts shall be furnished and installed at the locations shown on the plans or where designated by the Engineer and in conformance with the provisions in Section 56-2, "Roadside Signs," of the Standard Specifications and these special provisions.

The Contractor shall furnish roadside sign panels in conformance with the provisions in "Furnish Sign" of these special provisions.

Wood posts shall not be used. New metal posts shall be Unistrut Telespar 51 mm x 51 mm square posts with yielding breakaway base or equivalent.

MEASUREMENT AND PAYMENT

The quantity of installed ROADSIDE SIGN AND POST, and ROADSIDE SIGN AND TWO POSTS shall be determined by counting the number of sign installation locations. Multiple signs on the same post(s) will count as one sign.

The contract price paid per unit of ROADSIDE SIGN AND POST shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing roadside signs and posts, complete in place, including the installation of sign panels and posts, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer.

The contract price paid per unit of ROADSIDE SIGN AND TWO POSTS shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing roadside signs and two posts (each sign), complete in place, including the installation of sign panels and posts, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in relocating existing roadside sign panels onto existing posts,

electroliers, and other sign supports, complete in place, including the installation of sign panels, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer, shall be considered included in the prices paid for the various other items of work and no additional compensation will be made therefor.

Existing sign posts that are not used shall be disposed of by the Contractor as provided in Section 10-1.53, "DISPOSAL OF MATERIALS," of these special provisions.

10-1.66 INSTALL ROADSIDE SIGN PANEL ON EXISTING POST

Roadside sign panels shall be installed on existing posts at the locations shown on the plans or where designated by the Engineer and in conformance with the provisions in Section 56-2.04, "Sign Panel Installation," of the Standard Specifications and these special provisions.

The Contractor shall furnish roadside sign panels in conformance with the provisions in "Furnish Sign" of these special provisions.

Cutting the ends of wood posts in the field and field application of wood preservatives shall conform to the provisions in Section 56-2.02B, "Wood Posts," of the Standard Specifications.

Two holes shall be drilled in each existing post as required to provide a breakaway feature as shown on the plans.

Existing sign panels, as shown on the plans, shall be removed and salvaged or removed and disposed of as provided in Section 15, "Existing Highway Facilities," of the Standard Specifications.

MEASUREMENT AND PAYMENT

Installing roadside sign panels on existing posts, electroliers, or other existing sign supports, will be paid for by the unit as determined from actual count in place.

The contract unit price paid for INSTALL ROADSIDE SIGN PANEL ON EXISTING POST Shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing roadside sign panels on existing posts (including drilling holes in existing posts, removing, salvaging, and disposing of existing sign panels), complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.67 FURNISH SIGN

Signs shall be fabricated and furnished in accordance with details shown on the plans, the Traffic Sign Specifications, and these special provisions.

Traffic Sign Specifications for California sign codes are available for review at:

http://www.dot.ca.gov/hq/traffops/signtech/signdel/specs.htm

Traffic Sign Specifications for signs referenced with Federal MUTCD sign codes can be found in Standard Highway Signs Book, administered by the Federal Highway Administration, which is available for review at:

http://mutcd.fhwa.dot.gov/ser-shs_millennium.htm

Information on cross-referencing California sign codes with the Federal MUTCD sign codes is available at:

http://www.dot.ca.gov/hq/traffops/signtech/signdel/specs.htm

Temporary or permanent signs shall be free from blemishes that may affect the serviceability and detract from the general sign color and appearance when viewing during daytime and nighttime from a distance of 8 m. The face of each finished sign shall be uniform, flat, smooth, and free of defects, scratches, wrinkles, gel, hard spots, streaks, extrusion marks, and air bubbles. The front, back, and edges of the sign panels shall be free of router chatter marks, burns, sharp edges, loose rivets, delaminated skins, excessive adhesive over spray and aluminum marks.

QUALITY CONTROL FOR SIGNS

The requirements of "Quality Control for Signs" in this section shall not apply to construction area signs.

No later than 14 days before sign fabrication, the Contractor shall submit a written copy of the quality control plan for signs to the Engineer for review. The Engineer will have 10 days to review the quality control plan. Sign fabrication shall not begin until the Engineer approves the Contractor's quality control plan in writing. The Contractor shall submit to the Engineer at least 3 copies of the approved quality control plan. The quality control plan shall include, but not be limited to the following requirements:

A. Identification of the party responsible for quality control of signs,
B. Basis of acceptance for incoming raw materials at the fabrication facility,
C. Type, method and frequency of quality control testing at the fabrication facility,
D. List (by manufacturer and product name) of process colors, protective overlay film, retroreflective sheeting and black non-reflective film,
E. Recommended cleaning procedure for each product, and
F. Method of packaging, transport and storage for signs.

No legend shall be installed at the project site. Legend shall include letters, numerals, tildes, bars, arrows, route shields, symbols, logos, borders, artwork, and miscellaneous characters. The style, font, size, and spacing of the legend shall conform to the Standard Alphabets published in the FHWA Standard Highway Signs Book. The legend shall be oriented in the same direction in accordance with the manufacturer's orientation marks found on the retroreflective sheeting.

On multiple panel signs, legend shall be placed across joints without affecting the size, shape, spacing, and appearance of the legend. Background and legend shall be wrapped around interior edges of formed panel signs as shown on plans to prevent delamination.

The following notation shall be placed on the lower right side of the back of each sign where the notation will not be blocked by the sign post or frame:

A. PROPERTY OF COUNTY OF ALAMEDA,
B. Name of the sign manufacturer,
C. Month and year of fabrication,
D. Type of retroreflective sheeting, and
E. Manufacturer's identification and lot number of retroreflective sheeting.

The above notation shall be applied directly to the aluminum sign panels in 6-mm upper case letters and numerals by die-stamp and applied by similar method to the fiberglass reinforced plastic signs. Painting, screening, or engraving the notation will not be allowed. The notation shall be applied without damaging the finish of the sign.

Signs with a protective overlay film shall be marked with a dot of 10 mm diameter. The dot placed on white border shall be black, while the dot placed on black border shall be white. The dot shall be placed on the lower border of the sign before application of the protective overlay film and shall not be placed over the legend and bolt holes. The application method and exact location of the dot shall be determined by the manufacturer of the signs.

For sign panels that have a minor dimension of 1220 mm or less, no splice will be allowed in the retroreflective sheet except for the splice produced during the manufacturing of the retroreflective sheeting. For sign panels that have a minor dimension greater than 1220 mm, only one horizontal splice will be allowed in the retroreflective sheeting.

Unless specified by the manufacturer of the retroreflective sheeting, splices in retroreflective sheeting shall overlap by a minimum of 25 mm. Splices shall not be placed within 50 mm from edges of the panels. Except at the horizontal borders, the splices shall overlap in the direction from top to bottom of the sign to prevent moisture penetration. The retroreflective sheeting at the overlap shall not exhibit a color difference under the incident and reflected light.

Signs exhibiting a significant color difference between daytime and nighttime shall be replaced immediately.

Repairing sign panels will not be allowed except when approved by the Engineer.

The Department will inspect signs at the Contractor's facility and delivery location, and in accordance with Section 6, "Control of Materials," of the Standard Specifications. The Engineer will inspect signs for damage and defects before and after installation.

Regardless of kind, size, type, or whether delivered by the Contractor or by a common carrier, signs shall be protected by thorough wrapping, tarping, or other methods to ensure that signs are not damaged by weather conditions and during transit. Signs shall be dry during transit and shipped on palettes, in crates, or tier racks. Padding and protective materials shall be placed between signs as appropriate. Finished sign panels shall be transported and stored by method that protects the face of signs from damage. The Contractor shall replace wet, damaged, and defective signs.

Signs shall be stored in dry environment at all times. Signs shall not rest directly on the ground or become wet during storage. Signs, whether stored indoor or outdoor, shall be free standing. In areas of high heat and humidity signs shall be stored in enclosed climate-controlled trailers or containers. Signs shall be stored indoor if duration of the storage will exceed 30 days.

Screen processed signs shall be protected, transported and stored as recommended by the manufacturer of the retroreflective sheeting.

When requested, the Contractor shall provide the Engineer test samples of signs and materials used at various stages of production. Sign samples shall be 300 mm x 300 mm in size with applied background, letter or numeral, and border strip.

The Contractor shall assume the costs and responsibilities resulting from the use of patented materials, equipment, devices, and processes for the Contractor's work.

SHEET ALUMINUM

Alloy and temper designations for sheet aluminum shall be in accordance with ASTM Designation: B209.

The Contractor shall furnish the Engineer a Certificate of Compliance in accordance to Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the sheet aluminum.

Sheet aluminum shall be pretreated in accordance to ASTM Designation: B449. Surface of the sheet aluminum shall be cleaned, deoxidized, and coated with a light and tightly adherent chromate conversion coating free of powdery residue. The conversion coating shall be Class 2 with a mass between 108 mg/m^2 and 377 mg/m^2, and an average mass of 269 mg/m^2. Following the cleaning and coating process, the sheet aluminum shall be protected from exposure to grease, oils, dust, and contaminants.

Sheet aluminum shall be free of buckles, warps, dents, cockles, burrs, and defects resulting from fabrication.

Base plate for standard route marker shall be die cut.

RETROREFLECTIVE SHEETING

The contractor shall furnish retroreflective sheeting for sign background and legend in accordance with ASTM Designation: D4956 and "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Retroreflective sheeting shall be applied to sign panels as recommended by the retroreflective sheeting manufacturer without stretching, tearing, and damage.

Class 1, 3, or 4 adhesive backing shall be used for Type II, III, IV, VII, VIII, and IX retroreflective sheeting. Class 2 adhesive backing may also be used for Type II retroreflective sheeting. The adhesive backing shall be pressure sensitive and fungus resistant.

When the color of the retroreflective sheeting determined from instrumental testing is in dispute, the Engineer's visual test will govern.

PROCESS COLOR AND FILM

The Contractor shall furnish and apply screened process color, non-reflective opaque black film, and protective overlay film of the type, kind, and product that are approved by the manufacturer of the retroreflective sheeting.

The Contractor shall furnish the Engineer a Certificate of Compliance in accordance to Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the screened process color, non-reflective opaque black film, and protective overlay film.

The surface of the screened process color shall be flat and smooth. When the screened process colors determined from the instrumental testing in accordance to ASTM Designation: D4956 are in dispute, the Engineer's visual test will govern.

The Contractor shall provide patterns, layouts, and set-ups necessary for the screened process.

The Contractor may use green, red, blue, and brown reverse-screened process colors for background and non-reflective opaque black film or black screened process color for legend. The coefficient of retroreflection for reverse-screened process colors on white retroreflective sheeting shall not be less than 70 percent of the coefficient of retroreflection specified in ASTM Designation: D4956.

The screened process colors and non-reflective opaque black film shall have the same outdoor weatherability as that of the retroreflective sheeting.

After curing, screened process colors shall withstand removal when tested by applying 3M Company Scotch Brand Cellophane Tape No. 600 or equivalent tape over the color and removing with one quick motion at 90°angle.

SINGLE SHEET ALUMINUM SIGN

Single Sheet aluminum signs shall be fabricated and furnished with or without frame. The Contractor shall furnish the sheet aluminum in accordance to "Sheet Aluminum" of these special provisions. Single sheet aluminum signs shall be fabricated from sheet aluminum alloy 6061-T6 or 5052-H38.

Single Sheet aluminum signs shall not have a vertical splice in the sheet aluminum. For signs with depth greater than 1220 mm, one horizontal splice will be allowed in the sheet aluminum.

Framing for single sheet aluminum sign shall consist of aluminum channel or rectangular aluminum tubing. The framing shall have a length tolerance of $\pm$3 mm. The face sheet shall be affixed to the frame with rivets of 5-mm diameter. Rivets shall be placed within the web of channels and shall not be placed less than 13 mm from edges of the sign panels. Rivets shall be made of aluminum alloy 5052 and shall be anodized or treated with conversion coating to prevent corrosion. The exposed portion of rivets on the face of signs shall be the same color as the background or legend where the rivets are placed.

Finished signs shall be flat within a tolerance of $\pm$3 mm per meter when measured across the plane of the sign in all directions. The finished signs shall have an overall tolerance within $\pm$3 mm of the detailed dimensions.

Aluminum channels or rectangular aluminum tubings shall be welded together with the inert gas shielded-arc welding process using E4043 aluminum electrode filler wires as shown on the plans. Width of the filler shall be equal to wall thickness of smallest welded channel or tubing.

MEASUREMENT AND PAYMENT

Furnishing signs (except for construction area signs) will not be measured nor paid for.

Full compensation for furnishing signs and furnishing and installing protective overlay on signs (when protective overlay is required on signs), shall be considered as included in the contract prices paid for the various other items of work and no separate payment will be made therefor.

10-1.68 REINFORCED CONCRETE PIPE

Reinforced concrete pipe shall conform to the provisions in Section 65, "Reinforced Concrete Pipe," of the Standard Specifications and these special provisions.

Reinforced concrete pipe shall be acid and sulfate resistant that will withstand the following soil conditions:

pH range	3.05 to 7.05
minimum resistivity:	909 to 4880 ohm-cm
sulfate concentrations:	<1 to 1,860 ppm

Where embankment will not be placed over the top of the pipe, a relative compaction of not less than 85 percent shall be required below the pipe spring line for pipe installed using Method 1 backfill in trench, as shown on Standard Plan A62D. Where the pipe is to be placed under the traveled way, a relative compaction of not less than 90 percent shall be required unless the minimum distance between the top of the pipe and the pavement surface is the greater of 1.2 m or one half of the outside diameter of the pipe.

Except as otherwise designated by classification on the plans or in the specifications, joints for culvert and drainage pipes shall conform to the plans or specifications for standard joints.

When reinforced concrete pipe is installed in conformance with the details shown on Standard Plan A62DA, the fifth paragraph of Section 19-3.04, "Water Control and Foundation Treatment," of the Standard Specifications shall not apply.

When solid rock or other unyielding material is encountered at the planned elevation of the bottom of the bedding, the material below the bottom of the bedding shall be removed to a depth of 1/50 of the height of the embankment over the top of the culvert, but not less than 150 mm nor more than 300 mm. The resulting trench below the bottom of the bedding shall be backfilled with structure backfill material in conformance with the provisions in Section 19-3.06, "Structure Backfill," of the Standard Specifications.

The excavation and backfill below the planned elevation of the bottom of the bedding will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

The Outer Bedding shown on Standard Plan A62DA shall not be compacted prior to placement of the pipe.

Timber bulkheads shall be constructed and placed across the ends of unconnected reinforced concrete pipe as shown on the plans. Wood for timber bulkheads shall be construction heart grade redwood at least 25 mm thick. Full compensation for constructing and placing timber bulkheads shall be considered as included in the contract price paid per meter for the reinforced concrete pipe involved and no separate payment will be made therefor.

Reinforced concrete pipe shall be either cast or spun. Cast reinforced concrete pipe shall be manufactured by placing the concrete into stationary, vertical, cylindrical metal forms. Spun reinforced concrete pipe shall be manufactured by introducing the concrete into a rotating, horizontal, cylindrical metal form.

Special reinforced concrete pipe, having concrete cover over the steel reinforcement greater than the cover specified in AASHTO Designation: M 170M, shall conform to the provisions in Section 65-1.02, "Materials," and Section 65-1.02A, "Circular Reinforced Concrete Pipe," of the Standard Specifications, except the width of crack produced by the D-load test specified in AASHTO Designation: M 170M shall be the width determined by the following formula:

$$b = \frac{t - 3/8d}{t - 3/8d - C} \times 0.3\text{-mm}$$

Where:

b = Width of crack to be produced in lieu of the 0.3-mm crack specified in AASHTO Designation: M 170M

t = Wall thickness of pipe, mm

d = Effective depth of the section to be tested, m

C = Concrete cover over steel reinforcement in excess of cover specified in AASHTO Designation: M 170M

Reinforced concrete pipe that is to be hydrostatically tested shall be strength tested by the 3-edge bearing method to a maximum D-load of 10 percent greater than the 0.3-mm cracking D-load specified in AASHTO Designation: M 170M or to the actual D-load required to produce a 0.3-mm crack, whichever is the lesser.

Special oval shaped reinforced concrete pipe, having concrete cover over the steel reinforcement greater than the cover specified in AASHTO Designation: M 207M, shall conform to the provisions in Section 65-1.02, "Materials," and Section 65-1.02B, "Oval Shaped Reinforced Concrete Pipe," of the Standard Specifications, except the width of crack produced by the D-load test specified in AASHTO Designation: M 207M shall be the width determined by the following formula:

$$b = \frac{t - 3/8d}{t - 3/8d - C} \times 0.3\text{-mm}$$

Where:

b = Width of crack to be produced in lieu of the 0.3-mm crack specified in AASHTO Designation: M 207M

t = Wall thickness of pipe, mm

d = Effective depth of the section to be tested, m

C = Concrete cover over steel reinforcement in excess of cover specified in AASHTO Designation: M 207

Oval shaped reinforced concrete pipe that is to be hydrostatically tested shall be strength tested by the 3-edge bearing method to a maximum D-load of 10 percent greater than the 0.3-mm cracking D-load specified in AASHTO Designation: M 207M or to the actual D-load required to produce a 0.3-mm crack, whichever is the lesser.

There are nine (9) 2.4 meter (8-foot) surplus sections of 1.5 meter (60") reinforced concrete pipe, Class V, on-site from the PG&E project that the Contractor shall use for the project. These will be "tagged". Contractor shall coordinate with the Engineer to confirm location and availability of reinforced concrete pipe on-site. Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in transporting and installing these surplus sections of (60") reinforced concrete pipe, complete in place, as shown on the plans, and specified in these special provisions, and as directed by the Engineer, shall be considered included in the contract price paid per meter for INSTALL 1500 MM REINFORCED CONCRETE PIPE (CLASS V) and no additional compensation will be made therefor.

10-1.69 REINFORCED CONCRETE BOX

Reinforced concrete box (culvert) shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Reinforced concrete box shall be acid and sulfate resistant that will withstand the following soil conditions:

pH range	3.05 to 7.05
minimum resistivity:	909 to 4880 ohm-cm
sulfate concentrations:	<1 to 1,860 ppm

MATERIALS

Cement Mortar shall conform to the provisions in Section 51-1.135, "Concrete Structures," of the Standard Specifications.

Concrete for cast-in-place RCBC unless noted otherwise on the plans or these specifications shall have a minimum 28-day compressive strength of 4000 psi.

Reinforcement for reinforced concrete box culverts shall conform to Section 52, "Reinforcement," of the Standard Specifications as modified herein. Bar reinforcing steel, wire mesh, and dowels shall be Grade 60.

DESCRIPTION OF WORK

The Contractor shall perform excavation and prepare the foundation as required for the construction of reinforced concrete box culverts as shown on the plans. Reinorced concrete box

culverts shall be constructed in accordance with the Caltrans Standard Plans. The Contractor shall install weepholes and dowels where specified on the plans.

MEASUREMENT

The quantity of reinforced concrete box culverts, cast-in-place to be paid for will be the length of reinforced concrete box culverts, complete in place, measured along the slope at the centerline to the nearest 0.1 meter.

PAYMENT

Payment for reinforced concrete box culverts will be made at the price bid per linear meter for 1200 mm x 1200 mm REINFORCED CONCRETE BOX, as set forth on the BIDDING SHEET.

The unit price bid for 1200 mm x 1200 mm REINFORCED CONCRETE BOX shall include full compensation for furnishing all labor, materials (including cement mortar, culvert bedding, structure excavation, structure backfill, fill, weepholes), tools, equipment, and incidentals, and for doing all work involved in the construction of a 1200 mm x 1200 mm reinforced concrete box culvert, complete in place, as shown on the plans, as specified herein, and as directed by the Engineer.

10-1.70 CONCRETE COLLAR

Concrete collar shall be constructed as shown on the plans and shall conform to the provisions of Section 51-1.02, "Minor Concrete", of the Standard Specifications, and these special provisions.

Concrete collars shall be acid and sulfate resistant that will withstand the following soil conditions:

pH range	3.05 to 7.05
minimum resistivity:	909 to 4880 ohm-cm
sulfate concentrations:	<1 to 1,860 ppm

MEASUREMENT AND PAYMENT

Concrete collar shall be measured and paid for by actual count and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete collar in place, including all bar reinforcing steel necessary, as shown on the plans, and specified in these special provisions, and as directed by the Engineer, and no separate payment will be made for these included items.

10-1.71 DRAINAGE INLET

Drainage inlets shall be reinforced concrete and of the type shown on the plans. The drainage inlet shall be constructed as shown on the plans and shall conform to the provisions of Section 51-1.02, "Minor Concrete", of the Standard Specifications, and these special provisions.

Concrete drainage inlets shall be acid and sulfate resistant that will withstand the following soil conditions:

pH range	3.05 to 7.05
minimum resistivity:	909 to 4880 ohm-cm
sulfate concentrations:	<1 to 1,860 ppm

MEASUREMENT AND PAYMENT

DRAINAGE INLETS shall be measured and paid for by actual count of the type shown on the plans and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete drainage inlet in place, including structure excavation, structure backfill, all bar reinforcing steel, steps, concrete, frames, grates and angle assemblies necessary, and thermoplastic drainagle inlet markings, complete in place, as shown on the plans, and specified in these special provisions, and as directed by the Engineer, and no separate payment will be made for these included items.

10-1.72 ABANDON CULVERTS AND PIPE LINES

Existing culverts and utility pipe lines, where shown on the plans or directed by the Engineer to be abandoned, shall be abandoned in place or at the contractor's option, the culverts and pipe lines shall be removed and disposed of. All resulting openings into existing structures, that are to remain in place, shall be plugged with commercial quality concrete containing not less than 470 pounds per cubic yard, unless otherwise specified.

Abandoning culverts and pipelines shall conform to the following:

Culverts and pipe lines, that intersect the side slopes, shall be removed to a depth not less than 3 feet, measured normal to the plane of the finished side slope, before being abandoned.

Culvert and pipe lines, 24 inches in diameter and larger, shall be backfilled with sand by any method acceptable to the Engineer, which completely fills the pipe. Sand backfill material shall be clean, free draining, free from roots and other deleterious material.

The ends of culverts and pipe lines shall be securely closed by a 0.5 foot thick tight fitting plug or wall of commercial quality concrete.

Culverts and pipe lines shall not be abandoned until their use is no longer requitred. The contractor shall notify the Engineer in advance of any intended culvert or pipe line abandonment.

Full compensation for plugs, culvert/pipe removal, structure excavation, and backfill (including sand backfill) shall be considered as included in the contract prices paid for the various other items of work and no separate payment will be made therefor.

10-1.73 WATER QUALITY AND HYDROMODIFICATION BASIN

Water Quality and Hydromodification basin shall be constructed and installed as shown on the plans and shall conform to Section 19, "Earthwork", Section 51, "Concrete Structures", Section 65, "Reinforced Concrete Pipe", Section 66, "Corrugated Metal Pipe", Section 70, "Miscellaneous Facilities", and Section 72, "Rock Slope Protection", of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

The lump sum payment of WATER QUALITY AND HYDROMODIFICATION BASIN shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the basin, inflow pipe discharge/energy dissipation structure, riser outlet structure primary overflow spillway, and impact type energy dissipator in place, including all bar reinforcing steel necessary, as shown on the plans, and specified in these special provisions, and as directed by the Engineer, and no separate payment will be made for these included items.

10-1.74 STORM WATER TREATMENT UNIT

Storm water treatment unit shall be furnished and installed/constructed as shown on the plans and shall conform to these special provisions.

Storm water treatment unit shall be the CDS™ Technologies Model PMSU20_15_4 as shown on the plans The quality of materials and the finished sections shall be subject to inspection by the Engineer. All sections shall be inspected for general appearance, dimensions, soundness, etc. The sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once. All sections which have been damaged beyond repair during delivery will be rejected and, if already installed, shall be repaired to the Engineer's acceptance level, if permitted, or removed and replaced, entirely at the Contractor's expense.

The Contractor shall guarantee the unit free from defects in materials and workmanship for a period of at least one year following installation. This period shall include one full rainy season, October 15 to April 15.

MEASUREMENT AND PAYMENT

STORM WATER TREATMENT UNIT will be measured as one complete installed unit assembly as shown on plans. The contract unit price paid for each STORM WATER TREATMENT UNIT shall include full compensation for furnishing all labor, materials (including frames and grates), tools, equipment and incidentals for doing all the work involved in stalling storm water treatment unit, complete in place, including delivering to the site, setting in place, installation of access cover including cover frame, proper fit and alignment, installation of pipe fitting, testing, cleanup, backfilling, including product information and extended warranty as shown on the plans, as stated in these specifications, and as directed by the Engineer.

The contractor shall obtain and provide to the County all product information on the CDS Stormwater Treatment Unit, including owner's manual that includes information on operation and maintenance. The Contractor shall also obtain an extended five (5) year all parts and labor warranty for this unit. This extended warranty shall extend the standard one year warranty by five years.

10-1.75 CORRUGATED METAL PIPE

Corrugated metal pipe culverts shall conform to the provisions in Section 66, "Corrugated Metal Pipe," of the Standard Specifications and these special provisions.

Corrugated steel pipe shall be fabricated from zinc-coated steel sheet and shall be acid and corrosive resistant to withstand pH levels ranging from 3.05 to 7.05 and minimum resistivity values ranging from 909 to 4880 ohm-cm.

CORRUGATED METAL PIPE is designated as being a contingent item of work on the BID PROPOSAL.

10-1.76 CORRUGATED PLASTIC PIPE

Corrugated plastic pipe shall conform to the provisions in Section 64, "Plastic Pipe," of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

Corrugated plastic pipe shall be measured and paid for at the contract unit price per meter and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing the pipe, complete in place, including structure excavation and structure backfill and connecting new pipe to existing or new

facilities, including collars or tees, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer. CORRUGATED PLASTIC PIPE is designated as being a contingent item of work on the BID PROPOSAL.

10-1.77 MISCELLANEOUS FACILITIES

Pipe downdrains shall conform to the provisions in Section 69, "Overside Drains," of the Standard Specifications and these special provisions.

Flared end sections and pipe inlets shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications and these special provisions.

300 MM CORRUGATED STEEL PIPE DOWNDRAIN (1.63 MM THICK) and 900 MM CORRUGATED STEEL PIPE INLET (2.77 MM THICK) are designated as being a contingent items of work on the BID PROPOSAL. The quantity or pre-bid amount of these bid items set forth on the BID PROPSAL represents no actual estimate and is nominal only. These quantities or amounts may be greatly increased or decreased or reduced to zero. The increase or reduction of these quantities or amounts as compared with those set forth on the BID Proposal shall not constitute a basis for claim by the Contractor for extra payment or damages Payment for the actual work performed base upon the prices bid or work done for the items of work involved will be considered full compensation to the Contractor for the work.

10-1.78 EDGE DRAIN

Edge drains shall conform to the provisions in Section 68-3, "Edge Drains," of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

The contract price paid per meter for EDGE DRAIN (slotted and unslotted) shall include full compensation for furnishing all labor, materials (edge drains, outlets, vents, cleanouts, covers, expansion plugs, pavement markers, splash pads) tools, equipment, and incidentals and for doing all the work involved in constructing edge drains, edge drain outlets, vents, and cleanouts, including outlet and vent covers, expansion plugs, pavement markers, concrete splash pads, connecting outlets and vents to drainage facilities, and excavation and backfill for outlets, vents, and cleanouts to be installed in embankments and existing shoulders, complete in place, including excavation, filter fabric and treated permeable material, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

10-1.79 HORIZONTAL DRAIN

Horizontal drains shall conform to the provisions in Section 68-2, "Horizontal Drains," of the Standard Specifications and these special provisions.

Cut and fill slopes shall be provided with horizontal drains as necessary for stability and as directed by the Engineer. In areas where free ground water may be encountered, horizontal drains shall be installed as needed to reduce the potential for build up of hydrostatic pressure within the rock mass.

The number and locations of horizontal drains will be determined by the Engineering Geologist during excavation of the design cuts. The average length of each horizontal drain shall be assumed to be 70 meters.

The collector pipe will conduct water produced from each horizontal drain to a location outside the area as directed by the Engineer. The collector pipe shall consist of 150 mm (6-inch) diameter Schedule 40 PVC pipe.

MEASUREMENT AND PAYMENT

Horizontal drains will be measured by the nearest 0.05 meter for furnishing and installing drain pipe. The quantity of furnishing and installing drain pipe shall be the length of pipe installed regardless of whether slotted pipe or non-slotted pipe is used.

Outlet pipe and collector pipe will be measured by the nearest 0.05 meter for furnishing and installing pipe. Outlet pipe will extend from the ground surface to the connection with collector pipe.

The price bid per meter for HORIZONTAL DRAIN shall include full compensation for furnishing all labor, materials (including outlet pipes, collector pipes, fittings, valves, joints, cleanouts), tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing the horizontal drains, complete in place, including boring, pipe, and fittings, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Horizontal Drain is designated as being contingent item of work on the Bid Proposal.

10-1.80 OVERSIDE DRAIN

Overside drains, entrance tapers, tapered inlets, anchor assemblies, corrugated steel pipe downdrains, and metal pipe downdrain anchor assemblies shall conform to the provisions in Section 69, "Overside Drains," of the Standard Specifications and these special provisions.

Steel entrance tapers, reducers, and pipe downdrains shall be fabricated from ainc-coated steel sheet.

MEASUREMENT AND PAYMENT

Overside drains will be measured by the nearest 0.05 meter for furnishing and installing drain pipe.

The price bid per meter for OVERSIDE DRAIN shall include full compensation for furnishing all labor, materials (including entrance tapers, tapered inlets, anchor assemblies, corrugated steel pipe downdrains, and metal pipe downdrain anchor assemblies), tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing the horizontal drains, complete in place, including boring, pipe, and fittings, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. OVERSIDE DRAIN is designated as being contingent item of work on the Bid Proposal.

10-1.81 CABLE ANCHORAGE SYSTEM

Cable anchorage systems for pipe downdrains shall be installed as shown on the plans and in conformance with the provisions in Section 69-1.02C, "Anchor Assemblies," of the Standard Specifications and these special provisions.

Cables, welded steel eyes, steel rods, turnbuckles, thimbles, cable clamps, and anchor plates shall conform to the provisions for similar materials in Section 83-1.02B, "Metal Beam Guard Railing," of the Standard Specifications.

Steel pipes shall conform to the provisions for similar materials in Section 56-1.02E, "Pipe Posts," of the Standard Specifications.

Concrete anchors shall be constructed of Class 4 concrete conforming to the provisions in Section 90-1.01, "Description," of the Standard Specifications.

PAYMENT

Full compensation for the cable anchorage systems shall be considered as included in the prices paid for various contract items for work involved, and no separate payment will be allowed therefor.

10-1.82 ROCK SLOPE PROTECTION

Rock slope protection work shall conform to Section 72, "Slope Protection," of the Standard Specifications.

Rock slope protection shall be the Class specified on the plans and shall be placed at the locations as shown on the plans or as modified in writing by the Engineer.

Rock slope protection shall be placed by hand or mechanical means to lines and grades shown on the plans. Placing rocks by dumping will not be permitted. Rocks shall be placed as to provide a minimum of voids. Manual placement may be required to accomplish this. Unless otherwise specified on the plans, method of placement for all rock slope protection shall be Method B.

MEASUREMENT AND PAYMENT

The quantity for each type/class of ROCK SLOPE PROTECTION, to be paid for will be measured by the tonne and each truckload shall be accompanied by a weight slip furnished by a licensed weighmaster in accordance with Section 9-1.01, "Measurement of Quantities", of the Standard Specifications. A copy of the weight slip shall be furnished to the County Engineer at the point and time of delivery.

The contract price paid per tonne for the various types/classes of ROCK SLOPE PROTECTION, as set forth on the bid sheet shall include full compensation for furnishing all labor, materials (including rock slope protection fabric), tools, equipment and incidentals and for doing all the work involved in placing rock slope protection, including placing rock slope protection fabric, complete in place, as shown on the plans, as specified herein, and as directed by the Engineer.

Rock Slope Protection (for the various types of Classes) is designated as being a Contingent Item(s) of Work on the Bid Sheet.

Rock slope protection fabric shall be woven or nonwoven type fabric, Type A or Type B, at the option of the Contractor.

Rock slope protection (all classes and methods of placement) and fabric for the construction of the Water Quality and Hydromodification Basin shall be not be paid for under this item. Rock slope protection (all classes and methods of placement) and fabric for the construction of the Water Quality and Hydromodification Basin shall be paid for and included in the price paid for WATER QUALITY AND HYDROMODIFICATION BASIN.

10-1.83 MISCELLANEOUS IRON AND STEEL

Miscellaneous iron and steel shall conform to the provisions in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

All miscellaneous iron and steel shall be acid and corrosive resistant to withstand pH levels ranging from 3.05 to 7.05 and minimum resistivity values ranging from 909 to 4880 ohm-cm.

MEASUREMENT AND PAYMENT

Miscellaneous iron and steel will not be measured nor paid for.

Full compensation for miscellaneous iron and steel shall be considered included in the prices paid for the various other items of work and no additional compensation will be made therefor.

10-1.84 MONUMENTS (NEW AND RESET EXISTING MONUMENTS)

The Contractor shall furnish and install cast-in-place survey monuments at the locations shown on the plans and as directed by the Engineer.

Monuments shall be constructed to conform to the dimensions and details shown on Design Guidelines DG-602.

Concrete for monument bases shall conform to the provisions of Section 90, "Portland Cement Concrete," of the Standard Specifications and shall be either Class 2 or Class 3, at the option of the Contractor, except that 25 millimeter maximum size aggregate shall be used.

Monument frames and covers shall be set in Class 3 portland cement concrete.

When the monument casting is located in the pavement area, it shall not be constructed to final grade until the pavement has been completed. The top of monument castings shall be set flush with the ground line or pavement surface, whichever is applicable.

MEASUREMENT AND PAYMENT

The quantity of monuments to be paid for will be the total number of monuments installed, complete in place.

Payment for standard concrete monuments will be made as bid per STANDARD CONCRETE MONUMENT, complete in place.

The price bid per STANDARD CONCRETE MONUMENT shall include full compensation for furnishing all labor, materials (including frames and covers), tools, equipment and incidentals, and for doing all the work involved in constructing the survey monuments, complete in place, including necessary excavation and backfill, as shown on the plans, as specified herein, and as directed by the Engineer.

10-1.85 ADJUSTMENT OF EXISTING SURVEY MONUMENTS

Existing concrete survey monuments shall be adjusted to the grade of the finished roadways surface in accordance with these special provisions, and as directed by the Engineer.

The Contractor shall reference the existing monuments for convenient recovery by the Contractor after the paving is completed. The monuments shall be covered with building paper and paved over. The actual adjusting operations shall occur only after the resurfacing is complete, and shall be accomplished as follows:

The Contractor shall first dig a "pilot hole" through the new asphalt surface to uncover the lid of the existing survey monuments.

The Contractor shall remove the existing monument frame and cover, and shall install a new cast iron frame and cover in conformance with County Standards.

At areas where new structural section is needed, the Contractor shall contact the Alameda County Survey Supervisor (510-670-5489) 72 hours prior to all work involving removal, key cutting, milling, etc., which may affect existing survey monuments.

The Contractor shall preserve and protect the monuments from being disturbed. The Contractor will be charged for the cost of restoring survey monuments if disturbed by reason of his operations. The charge will be deducted from monies due, or to become due, the Contractor.

Class 3 concrete for adjusting existing monuments shall conform to Section 90, "Portland Cement Concrete," of the Standard Specifications. The Contractor shall make every effort to salvage the existing monument frames and covers, and all frames and covers shall be thoroughly cleaned, match-marked, and delivered to the County Survey Supervisor, at Corporation Yard No. 4, 951 Turner Court, Hayward.

MEASUREMENT AND PAYMENT

The quantity of ADJUSTMENT OF EXISTING MONUMENT to be paid for will be determined by counting the adjusted monuments, complete in place.

Payment for adjustment of existing monuments will be made as bid for ADJUSTMENT OF EXISTING MONUMENT as set forth on the bid sheet. The price bid per ADJUSTMENT OF EXISTING MONUMENT shall include full compensation for furnishing all labor, materials (including Class 3 concrete), tools, equipment and incidentals, and for doing all the work involved in adjusting the existing monuments, as shown on the plans, as specified herein, and as directed by the Engineer.

10-1.86 CHAIN LINK FENCE

Chain link fence shall be Type CL-1.8 and shall conform to the provisions in Section 80, "Fences," of the Standard Specifications.

10-1.87 EXCLUSION FENCE

Exclusion fence shall be furnished and installed as shown on the plans and shall conform to the provisions in Section 80, "Fences," of the Standard Specifications and these special provisions.

Attention is directed to "Continuous Grade Beam for Exclusion Fence" of these special provisions.

MEASUREMENT AND PAYMENT

Exclusion fence shall be measured and paid for at the contract price per meter for EXCLUSION FENCE. Full compensation for clearing the line of the fence and disposing of the resulting material, excavating high points in the existing ground between posts, excavating holes, disposing of surplus excavated material, and furnishing and placing portland cement concrete footings, and connecting new fences to structures and existing cross fences, and constructing temporary fences for the protection of stock, shall be considered as included in the price paid for the EXCLUSION FENCE and no additional compensation will be allowed therefor.

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing exclusion fences and access gates, except for continuous grade beams, complete in place, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer.

10-1.88 CONTINUOUS GRADE BEAM FOR EXCLUSION FENCE

Continuous Grade Beam for Exclusion Fence shall be furnished and installed as shown on the plans and shall conform to these special provisions.

This work shall be constructed of minor concrete conforming to the provisions in Section 90-10, "Minor Concrete," of the Standard Specifications.

Continuous grade beams shall be acid and sulfate resistant that will withstand the following soil conditions:

pH range	3.05 to 7.05
minimum resistivity:	909 to 4880 ohm-cm
sulfate concentrations:	<1 to 1,860 ppm

Attention is directed to "Exclusion Fence" of these special provisions.

MEASUREMENT AND PAYMENT

Continuous Grade Beam for Exclusion Fence shall be measured and paid for at the contract price per meter for CONTINUOUS GRADE BEAM FOR EXCLUSION FENCE.

The above price and payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing continuous grade beams for exclusion fences and access gates, complete in place, including subgrade preparation, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer.

10-1.89 MARKERS AND DELINEATORS

Markers, including REFLECTIVE MARKERS (CONCRETE BARRIER), CULVERT/MILEPOST MARKERS, and delineators shall conform to the provisions in Section 82, "Markers and Delineators," of the Standard Specifications and these special provisions.

Markers and delineators on flexible posts shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. Flexible posts shall be made from a flexible white plastic which shall be resistant to impact, ultraviolet light, ozone, and hydrocarbons. Flexible posts shall resist stiffening with age and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability.

Retroreflective sheeting for metal and flexible target plates shall be the retroreflective sheeting designated for channelizers, markers, and delineators conforming to the requirements in ASTM Designation: D 4956-95 and in conformance with the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

The Contractor shall furnish and install markers and delineators in conformance with the details and locations shown on the plans, as specified in these special provisions, and as directed by the Engineer.

The Contractor shall furnish a Certificate of Compliance to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for plastic markers.

MEASUREMENT AND PAYMENT

Markers, including REFLECTIVE MARKERS (CONCRETE BARRIER), CULVERT/MILEPOST MARKERS, and delineators will be measured as units determined from actual count in place.

The contract unit price paid for each type of marker and delineator as set forth on the bid sheet shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing markers and delineators, complete in place, as shown on the plans, as specified in the Standard Specifications, and these special provisions, and as directed by the Engineer.

10-1.90 METAL BEAM GUARD RAILING

Metal beam guard railing shall be constructed in conformance with the provisions in Section 83-1, "Railings," of the Standard Specifications and these special provisions.

Attention is directed to "Order of Work" of these special provisions.

Line posts shall be wood, steel, or plastic. Blocks shall be wood or plastic.

Metal beam guard railing elements and required backup plates, terminal sections, end caps, and return caps shall conform to the requirements of Type 2 W-Beam as shown in AASHTO Designation: M 180.

ALTERNATIVE IN-LINE TERMINAL SYSTEM

Alternative in-line terminal system shall be furnished and installed as shown on the plans and in conformance with these special provisions.

The allowable alternatives for an in-line terminal system shall consist of one of the following or a Department approved equal.

(1) TERMINAL SYSTEM (TYPE SKT) - Terminal system (Type SKT) shall be a SKT 350 Sequential Kinking Terminal manufactured by Road Systems, Inc., located in Big Spring, Texas, and shall include items detailed for terminal system (Type SKT) shown on the plans. The SKT 350 Sequential Kinking Terminal can be obtained from the distributor, Universal Industrial Sales, P.O. Box 699, Pleasant Grove, UT 84062, Telephone (801) 785–0505 or from the distributor, Gregory Highway Products, 4100 13th Street, S.W., Canton OH 44708, Telephone (330) 477–4800.

(2) TERMINAL SYSTEM (TYPE ET) - Terminal system (Type ET) shall be an ET-2000 PLUS (4-tube system) extruder terminal as manufactured by Trinity Industries, Inc., and shall include items detailed for terminal system (Type ET) shown on the plans. The ET-2000 PLUS (4-tube system) extruder terminal can be obtained from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, Telephone (800) 772–7976.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the terminal systems furnished conform to the contract plans and specifications, conform to the prequalified design and material requirements, and were manufactured in conformance with the approved quality control program.

Terminal systems shall be installed in conformance with the manufacturer's installation instructions and these requirements. Each terminal system installed shall be identified by painting the type of terminal system in neat black letters and figures 60 mm high on the backside of the rail element between system posts numbers 4 and 5.

For terminal system (Type ET) the steel foundation tubes with soil plates attached shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock,

placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. The wood terminal posts shall be inserted into the steel foundation tubes by hand and shall not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

For terminal system (Type SKT) the soil tubes shall be, at the Contractor's option, driven with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. Wood posts shall be inserted into the steel foundation tubes by hand. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

Surplus excavated material remaining after the terminal system has been installed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

MEASUREMENT AND PAYMENT

The contract unit price paid for ALTERNATIVE IN-LINE TERMINAL SYSTEM shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing alternative in-line terminal system, complete in place, including excavation, backfill and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.91 GUARDRAIL REFLECTOR ASSEMBLY

Guardrail reflector assembly shall be furnished and installed as shown on the plans and shall conform to these special provisions.

MEASUREMENT AND PAYMENT

The quantity of guardrail reflectors to be paid for will be the total number of guardrail reflectors installed, complete in place.

Payment for guardrail reflectors will be made as bid per GUARDRAIL REFLECTOR ASSEMBLY, complete in place.

The price bid per GUARDRAIL REFLECTOR ASSEMBLY shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the guardrail reflector assembly, complete in place, as shown on the plans, as specified IN these special provisions, and as directed by the Engineer.

10-1.92 CABLE RAILING

Cable railing shall conform to the provisions in Section 83-1, "Railings," of the Standard Specifications.

The salvaged cable railing components shall be used to construct the cable railing on the (Segmental) Retaining Wall as shown on the plans.

10-1.93 BOLLARDS

Bollards shall be furnished and installed as shown on the plans and in conformance with these special provisions. Bollards shall be collapsible with a securing/locking mechanism and have a breakaway feature.

MEASUREMENT AND PAYMENT

BOLLARD shall be measured and paid for by actual count installed and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the bollard, complete in place, including excavation, backfill, concrete, reinforcing, furnishing and installing the collapsible bollard with a breakaway feature, cast iron lid and frame, breakaway inserts, and a securing/locking mechanism, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer.

10-1.94 CONCRETE BARRIER

Concrete barriers shall conform to the provisions in Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

Concrete barrier markers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. At those locations shown on the plans, concrete barrier markers shall be cemented to the barrier in conformance with the manufacturer's recommendations.

10-1.95 REINFORCED CONCRETE RETAINING WALL AND BARRIER

Reinforced Concrete retaining walls shall conform to the provisions in Section 51, "Concrete Structures," Section 52, "Reinforcement," and Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

The concrete retaining wall will be measured and paid for at the contract unit price per cubic meter of CONCRETE RETAINING WALL (TYPE 6A) and BARRIER (TYPE 60D). The contract price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete retaining wall and barrier, including all structure excavation, structure backfill, bar reinforcing steel and miscellaneous iron and steel, complete in place, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer, and no separate payment will be made for these included items.

CONCRETE GUTTER (STD PLAN B3-9) will be measured and paid for at the contract unit price per meter. The contract price shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the Concrete Gutter (Std. Plan B3-9), including all structure excavation, structure backfill, bar reinforcing steel and miscellaneous iron and steel, outlets, grates, wall drains, wall drains with pipe domes, complete in place, as shown on the plans, and as specified in these special provisions, and as directed by the Engineer, and no separate payment will be made for these included items.

10-1.96 CRASH CUSHION (TYPE ADIEM)

Crash cushion shall be furnished and installed as shown on the plans and in conformance with the provisions in the Standard Specifications and these special provisions.

Crash cushion shall be an ADIEM-350 as manufactured by Trinity Industries, Inc. or an equal as approved by the Engineer, and shall include the items detailed for crash cushion shown on the plans.

The successful bidder can obtain the crash cushion from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, Utah 84014, telephone 1-800-772-7976.

The price quoted by the manufacturer for ADIEM-350, FOB Centerville, Utah is $12,750, not including sales tax.

The above price will be firm for orders placed on or before July 27, 2008, provided delivery is accepted within 90 days after the order is placed.

The Contractor shall furnish the Engineer one copy of the manufacturer's plan and parts list.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the crash cushion conforms to the contract plans and specifications, conforms to the prequalified

design and material requirements, and was manufactured in conformance with the approved quality control program.

Crash cushion shall be installed in conformance with the manufacturer's installation instructions.

Surplus excavated material remaining after the crash cushion has been installed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

Crash cushion (Type ADIEM) will be measured by the unit as determined from actual count in place in the completed work.

MEASUREMENT AND PAYMENT

The contract unit price paid for CRASH CUSHION (TYPE ADIEM) shall include full compensation for furnishing all labor, materials (including anchor bolts, nuts, washers, and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing the ADIEM type crash cushion, complete in place, including structure excavation, structure backfill, and disposing of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

10-1.97 THERMOPLASTIC TRAFFIC STRIPE AND PAVEMENT MARKING

Thermoplastic traffic stripes (traffic lines) and pavement markings shall conform with the provisions in Section 84, "Traffic Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

Thermoplastic material shall be free of lead and chromium, and shall conform to the requirements in State Specification PTH-02ALKYD.

Retroreflectivity of the thermoplastic traffic stripes and pavement markings shall conform to the requirements in ASTM Designation: D 6359-99. White thermoplastic traffic stripes and pavement markings shall have a minimum initial retroreflectivity of 250 $mcd \cdot m^{-2} \cdot lx^{-1}$. Yellow thermoplastic traffic stripes and pavement markings shall have a minimum initial retroreflectivity of 150 $mcd \cdot m^{-2} \cdot lx^{-1}$.

Where striping joins existing striping, as shown on the plans, the Contractor shall begin and end the transition from the existing striping pattern into or from the new striping pattern a sufficient distance to ensure continuity of the striping pattern.

Thermoplastic traffic stripes shall be applied at the minimum thickness and application rate as specified below. The minimum application rate is based on a solid stripe of 100 mm in width.

Minimum Stripe Thickness (mm)	Minimum Application Rate (kg/m)
2.5	0.5

Thermoplastic traffic stripes and pavement markings shall be free of runs, bubbles, craters, drag marks, stretch marks, and debris.

The cat tracks and dribble lines on the pavement shall be established by the Contractor. The Contractor shall notify Robert Jackson of Alameda County Public Works Agency at (510) 670-5538, 72 hours prior to establishing cat tracks and dribble lines on the pavement.

Traffic stripes shall be placed on the cat tracks and dribble lines established by the Contractor and approved by the County. The Contractor shall notify Robert Jackson of Alameda County Public Works Agency at (510) 670-5538, 72 hours prior to placing traffic stripes, to allow the County to approve the established cat tracks and dribble lines. Said notification shall not be given until after the cat tracks and dribble lines have been established.

All additional work necessary to establish satisfactory stripes shall be performed by the Contractor at his expense.

Permanent tape shall not be used instead of thermoplastic traffic stripes and pavement markings.

10-1.98 PAVEMENT MARKERS

Pavement markers shall be placed in conformance with the provisions in Section 85, "Pavement Markers," of the Standard Specifications and these special provisions.

Attention is directed to "Traffic Control System For Lane Closure" of these special provisions regarding the use of moving lane closures during placement of pavement markers with bituminous adhesive.

The Contractor shall furnish the Engineer certificates of compliance for the pavement markers in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Retroreflective pavement markers shall be marked as abrasion resistant on the body of the markers.

Retroreflective pavement markers placed in pavement recesses shall be cemented with a flexible, polymer-modified, hot-melt asphaltic adhesive conforming to the following requirements:

Specification	ASTM Designation	Requirement
Penetration, mm, 100 g, 5 seconds, 25°C	D 5	3.0 Maximum
Softening Point, °C	D 36	93 Minimum
Brookfield Thermosel Viscosity, Pa·s, No. 27 Spindle, 20 RPM, 191°C	D 4402	2.5 - 6
Ductility, cm, 5 cm/min, 25°C	D 113	15 Minimum
Ductility, cm, 1 cm/min, 4°C	D 113	5 Minimum
Flexibility	D 3111[1,2,3,4]	No breaks or cracks

Notes:
1. Modify ASTM Designation: D 3111, Paragraph 6, to "The test apparatus consists of a mandrel 25.4 mm in diameter by 75 to 150 mm in length, supported at each end."
2. Modify ASTM Designation: D 3111, Paragraph 7, to "The test specimen dimensions are 25.4 mm wide, 152 mm long, and 3.18 mm thick."
3. Modify ASTM Designation: D 3111, Paragraph 8, to "Condition the test specimens and apparatus for 4 hours at –7°C before testing.
4. Modify ASTM Designation: D 3111, Paragraph 10.5, to "Bend the test specimens 90° over the mandrel at a uniform rate in 10 seconds while maintaining intimate contact with the mandrel."

Testing of adhesive bond strength will be performed on sandblasted concrete brick surface in conformance with the requirements in California Test 669 and these special provisions. The concrete brick surface will be sandblasted in conformance with the requirements in California Test 423. The test plugs of 51 mm diameter will be conditioned at 105°C for a minimum of 2 hours before bonding to the sandblasted concrete surface. The adhesive sample will be heated to the application temperature as recommended by the manufacturer and a sample of 75 mm diameter in area will be poured onto the sandblasted concrete surface. The heated plug will immediately be pressed onto the puddle of hot adhesive to squeeze out excess adhesive. The excess adhesive extruding from under the plug will be removed. The assembly will be allowed to cure for 24 hours at 23°C ± 2°C and then be tested to bond failure at a crosshead speed of 5.1 mm per minute. The reported peak load and the bond strength value will be the average of 3 tests, respectively. The same bond strength test will be performed on retroreflective pavement markers. Instead of placing the heated adhesive sample on the sandblasted concrete surface, it will be placed on the bottom of the pavement markers.

Minimum bond strength to the sandblasted concrete brick surface shall be 0.69-MPa and minimum bond strength to retroreflective pavement markers shall be 0.82-MPa.

10-1.99 SEGMENTAL RETAINING WALL

Segmental Retaining Wall (SRW) shall consist of constructing a compacted aggregate base leveling pad and placing dry stacked concrete wall units with unit fill in conjunction with compacted SRW backfill stabilized by horizontal layers of geogrid reinforcement. Segmental Retaining Wall shall conform to details shown on the plans, as specified in Section 19

"Earthwork" of the Standard Specifications, these special provisions, and as directed by the Engineer

WALL UNITS

Wall units shall be machine-formed precast concrete blocks specifically designed for retaining wall applications

A. Wall units shall meet the following architectural requirements:

1. Color of units shall be tan.
2. Finish of units shall be split-faced.
3. Units shall be erected with a running bond configuration.

B. Wall units shall meet the following structural requirements:

1. Wall unit concrete shall have a minimum 28-day compressive strength of 20.7 MPa in accordance with ASTM C90. The concrete shall have adequate freeze/thaw protection with a maximum moisture absorption rate of 8% by weight.
2. Units shall interlock to provide a minimum shear capacity between units of $a_u = 5.8$ kN and $\lambda_u = 30°$ as tested in accordance with NCMA (National Concrete Masonry Association) SRWU-2.
3. Units shall provide a minimum connection strength between the units and the geogrid reinforcement of $a_{cs} = 13$ kN and $\lambda_{cs} = 40°$ up to a maximum connection capacity of 19 kN/m as tested in accordance with NCMA SRWU-1.

C. Wall units shall meet the following constructability and geometric requirements:

1. Units shall be capable of attaining convex and concave curves and/or corners.
2. Units shall be positively engaged to the units below so as to provide the wall batter as shown on the plans.
3. Standard units shall have a minimum depth of 500 mm as measured from the front face of the unit to the furthest extension of the rear of the unit. Cap units shall have a nominal depth of 300 mm as measured from the front face of the unit to the furthest extension of the rear of the unit.
4. All units shall be clean, sound, and free of cracks, excessive chipping, or other defects that would interfere with the proper placement of the unit or significantly impair the strength or performance of the construction.

LEVELING PAD MATERIAL

Material for the leveling pad shall consist of Class 2 Aggregate Base.

WALL UNIT FILL MATERIAL

Material for the wall unit fill shall consist of Class 3 Permeable Material. Class 3 permeable material for the wall unit fill shall consist of hard, durable, clean gravel, or crushed stone, and shall be free of organic material, clay balls, or other deleterious materials. Class 3 permeable material shall conform to the following grading requirements:

SIEVE SIZE	PERCENT PASSING
19 mm	100
9.5 mm	30-60
4.75 mm	0-15
75 µm	0-5

SRW BACKFILL MATERIAL

SRW backfill material shall be free of organics or other deleterious material and shall conform to the following:

1. Plasticity Index shall be less than or equal to 10 as determined by California Test Method 204.
2. Angle of internal friction shall be a minimum of 32 degrees as determined by a remolded shear test or triaxial compression test (California Test Method 230).
3. Soil pH shall be between 3 and 9 as determined by California Test Method 643.
4. Gradation shall be determined by California Test Method 202 and shall meet the following requirements:

SIEVE SIZE	PERCENT PASSING
65 mm	100
4.75 mm	20-100
600 µm	15-70
75 µm	0-30

GEOGRID REINFORCEMENT

Geogrid reinforcement material shall be designed for use in subsurface embankment reinforcement applications and have a regular and defined open area. Geogrid reinforcement shall obtain pullout resistance from the soil by a combination of soil shearing friction on the plane surfaces parallel to the direction of shearing and soil bearing on transverse grid surfaces normal to the direction of grid movement. The percentage of the open area for geogrid reinforcement shall not vary from the range of 50 to 90 percent of the total projection of a section of the material. Geogrid reinforcement shall consist of high density polyethylene or high tenacity

polyester yarn configured into a grid and shall meet one of the applicable material requirements below:

1. Geogrid reinforcement shall be manufactured from high density polyethylene (HDPE) which conforms to ASTM D 1248 or

2. Geogrid reinforcement shall be manufactured from high tenacity polyester yarn as determined by ASTM D 629 and shall be encapsulated in an acrylic latex coating or similar.

Geogrid reinforcement shall meet the following strength and durability requirements:

1. Long Term Design Strength (LTDS) for geogrid reinforcement shall be equal to or greater than values shown on the plans as determined in accordance with the requirements for geogrid reinforcement included in the Federal Highway Administration Publication No. FHWA-NHI-00-043 titled, "Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines." LTDS for geogrid reinforcement are minimum average roll values.

2. Geogrid shall be resistant to naturally occurring alkaline and acidic soil conditions, and to attack by bacteria.

Geogrid reinforcement shall be handled and stored in accordance with the manufacturer's recommendations and these special provisions. Geogrid reinforcement shall be furnished in an appropriate protective cover which shall protect it from ultraviolet radiation and abrasion during shipping and handling and shall remain in said cover until installed. Only as much geogrid reinforcement shall be placed as can be covered with backfill in the same work shift.

FILTER FABRIC

Filter fabric shall conform to the requirements in Section 88, "Engineering Fabrics," of the Standard Specifications and these special provisions. Filter fabric type shall be for underdrains.

CERTIFICATION

A. The Engineer shall be furnished a Certificate of Compliance according to the provisions found in Section 6-1.07, "Certificate of Compliance," of the Standard Specifications for the wall units and geogrid reinforcement supplied for the project within two weeks after the award of the contract. The Certificate of Compliance shall be prepared and signed by representative(s) of the manufacturer(s) who are registered Civil Engineers. The certificate, as a minimum, shall include the following:

1. A copy of these Special Provisions and the relevant Retaining Wall sheets of the contract plans.

2. A statement that the wall units and geogrid reinforcement meet the requirements of this specification.
3. Test results which contributed to the determination of the LTDS. All test results which contributed to the determination of the LTDS shall be reviewed and signed by a registered Civil Engineer.

CONSTRUCTION

The foundation for the Segmental Retaining Wall shall be excavated to the lines and grades shown on the plans. Relative compaction of not less than 95 percent shall be obtained in the foundation to a minimum depth of 150 millimeters. Any subgrade soil determined to be unsuitable shall be removed and replaced as directed by the Engineer.

The leveling pad shall be prepared after the subgrade soils have been approved by the Engineer. Class 2 Aggregate Base Material shall be placed to the dimensions and relative compaction shown on the plans. The finished surface of the leveling pad shall be smooth and devoid of any significant bumps or irregularities greater than 5 mm. The leveling pad should be level from front to back and between steps along the length of the retaining wall.

The first course of wall units shall be placed on the leveling pad such that the units are in full contact with the pad. The units shall be checked for level and alignment. Unit fill material shall be placed in and behind the wall units. All unit fill material and debris shall be cleaned from the top of units prior to the installation of the next course. The Contractor shall ensure that each course is completely filled prior to proceeding to the next course. The uppermost row of wall units (caps units) shall be glued to the underlying units with adhesive conforming to Standard Specification 95-2.01.

Geogrid reinforcement shall be handled and placed in accordance with the manufacturer's recommendations. The geogrid reinforcement shall be laid horizontally at the elevation specified on the plans, on smoothly compacted fill. The geogrid shall be placed such that the direction of the required tensile strength (LTDS) is oriented perpendicular to the retaining wall layout line. Overlapping of geogrid reinforcement shall not be allowed. The grade to receive the layer of geogrid reinforcement shall conform to the compaction requirements shown on the plans and elevation tolerances described in the Standard Specifications and shall be free of loose or extraneous material and objects that may damage the reinforcement during installation.

The geogrid shall be attached to the wall units as recommended by the manufacturer and approved by the Engineer. The geogrid reinforcement shall be pulled taut, aligned, and placed in a wrinkle free manner. Slack in geogrid reinforcement shall be removed in a manner, and to such a degree, as approved by the Engineer. Geogrid reinforcement shall be secured in place with staples, pins, sand bags, or backfill material as required by construction conditions, weather conditions, or as directed by the Engineer to prevent the displacement of the geogrid reinforcement during compaction and placement of the fill material.

During spreading and compacting of the backfill material, equipment or vehicles shall not be operated or driven directly on the geogrid reinforcement. At least 150 mm of backfill material shall be maintained between the geogrid reinforcement and the Contractor's equipment. Only

lightweight compaction equipment shall be allowed within 1.0 meter of the wall face. If the geogrid reinforcement is damaged during construction operations, the entire damaged section or sections shall be removed and placed at the Contractor's expense.

Compaction

The various materials used in the Segmental Retaining Wall shall be compacted to relative compaction shown on the plans and within plus or minus 2 percentage points of the optimum moisture content according to California Test Method 216.

MEASUREMENT AND PAYMENT

The SEGMENTAL RETAINING WALL will be measured and paid for by the square meter of projected wall facing. The square meter area for payment will be based on the height and length as shown on the plans and any additional area as directed by the Engineer. The height will be taken as the difference in elevation on the outer face from the bottom of the lowest block to the top of the uppermost block. No additional payment shall be made for wall heights greater than shown on the plans. The contract price paid per square meter for SEGMENTAL RETAINING WALL shall include full compensation for furnishing all labor and materials, including tools, equipment, and incidentals, and for doing all the work involved in constructing the Segmental Retaining Wall, complete in place, including excavation, backfill, geogrid reinforcement, wall units, leveling pad, unit fill material, wall drain material, plastic pipe, filter fabric, and all parts or appurtenances to the Segmental Retaining Wall, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. SEGMENTAL RETAINING WALL is designated as being a contingent item of work on the BID PROPOSAL.

10-1.100 CLEANING SITE AND MISCELLANEOUS THINGS

The Contractor shall remove all obstructions which interfere with the completion of the work. The cost of removing these obstructions shall be included in this item when there is no specific bid item for their removal. These obstructions may be guardrails, barricades, street signs, markers, pipe culverts, underdrains, spillway assemblies, etc.

Those guardrails, barricades, street signs, etc., which are required at the end of the work, shall be replaced as directed by the Engineer. All remaining guardrails, barricades, street signs, etc., which in the judgment of the Engineer are of value but are not required to be replaced, shall be carefully cleaned and stockpiled at locations designated by the Engineer. Items which have no value to the County shall be disposed of by the Contractor as provided in these special provisions.

The cost of providing flagmen, watchmen and pilot cars; directing traffic; and operating and maintaining signs, lights, and barricades as specified in Section 14.6, "TRAFFIC," of these special provisions shall be included in this item.

The Contractor shall make all arrangements for the removal and/or replacement of pipes, conduits, fire hydrants, overhead wires, telephone cables, etc.

Should construction be underway by other forces, or by other Contractors within or adjacent to the limits of the work specified, or should work of any other nature be underway by other forces within or adjacent to said limits, the Contractor shall cooperate with all such forces or other Contractors to the end that any delay or hindrance to their work will be avoided. The right is reserved to perform other or additional work at or near the site (including designated material sources), at any time by the use of other forces.

On completion of the work, the Contractor shall clean all portions of the job. He shall remove all debris and foreign material from drainage structures and pipes. All culverts shall be cleaned and all material disposed of as provided in these special provisions.

The cost of the cleaning of the site shall be included in this item.

The cost of removing and resetting mailboxes shall be included in this item when there is no item on the Bid Sheet for removing and resetting mailboxes.

It is the intent of these plans and specifications that the Contractor furnish a complete, first-class, and finished job in all respects; and the Contractor shall do and furnish everything called for or indicated on the plans or in the specifications, or necessary, in the fullest interpretation, of the plans and specifications to properly complete the job.

MEASUREMENT AND PAYMENT

Payment for cleaning site and miscellaneous things will be made as bid for CLEANING SITE AND MISCELLANEOUS THINGS.

The lump sum price bid shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in performing a complete job as shown on the plans, as specified herein, and as directed by the Engineer.

SECTION 10-2 TREE PLANTING AND REVEGETATION

TREE AND PLANT ESTABLISHMENT PERIOD (ADDITIONAL BID ITEMS NO. A4 THRU A10)

TREE for the specified types set forth on the bid sheet and PLANT ESTABLISHMENT PERIOD are Additional Bid Items No. A4 thru A10. If any or all of these additional bid items are not accepted, then their respective section(s) shall not apply. The exclusion of either or all these items shall not constitute a basis for claim by the Contractor for extra payment or damages.

10-2.01 GENERAL

All landscape-related work shall be performed under the supervision of a licensed landscape contractor with a valid C-27 license.

The Contractor shall furnish all labor, materials, tools, equipment, and incidentals to complete all planting and related work for revegetating any areas disturbed by his construction activities and those areas shown on the plans.

10-2.02 MATERIALS

Fertilizer

Fertilizer for use in tree pits shall be Agriform 21 gram tablets of 20-10-5 composition or approved equal and shall have the following guaranteed chemical analysis:

Ingredient	Percentage
Nitrogen	20
Phosphoric Acid	10
Water Soluble Potash	5

Fertilizer shall be shall be a slow release type in tablet form, uniform in composition, in perfect condition and delivered to the site in the original, unopened containers, each bearing the Manufacturer's guaranteed statement of analysis.

Post Plant Fertilizers used during the plant establishment period shall be commercial fertilizers containing the following:

Ammonium Sulfate: 21-0-0 (containing approximately 21% ammonia)
Complete Fertilizer: 16-6-8 (Nitrogen-Phosphoric acid-Potash)

Store fertilizer in weatherproof storage place in accordance with local codes and in such a manner that its effectiveness will not be impaired.

Prepared Backfill

All soil backfill in pits for trees shall be prepared of soil consisting of 33% bulk humus and 67% excavated native soil, measured by volume. The prepared soil shall be mixed in an adjacent area to the planting work, and shall be accurately proportioned using a suitable measuring container such as a wheelbarrow of measured capacity.

Bulk humus shall be nitrogen stabilized redwood sawdust which shall be friable and free of weed seed, dust, and other objectionable materials. Substantially, all bulk humus shall pass a one-inch sieve. Bulk humus shall comply with the requirements in the Agricultural Code of the State of California and shall be packaged so that compliance can be readily determined.

Protective Cages

Protective cages shall made of ½" galvanized woven wire cloth in 4-foot wide rolls, 6-foot long #3 rebar stakes and bailing wire.

Mulch

Mulch shall consist of clean wood chips and/or tree bark that is free of leaves, twigs, rocks, clods and litter. At least 75 percent, by volume, of the mulch particles shall have lengths between 1/2" and 3", and not less than 3/8" in width and 1/16" in thickness.

Tree Stakes & Ties

Stake trees per detail shown on the plan, driving all stakes into the native soil prior to backfilling hole. Secure trees with tree ties at the lowest point that prevents them from flopping over.

Tree stakes shall be 50 mm {2-inch} diameter Lodgepole Pine with tapered driving point and chamfered top, treated with copper napthanate to heartwood.

Tree ties shall be 30 mm {1 ¼-inch} nylon webbing, length as required. See tree staking detail on plans.

Watering Assemblies

Watering Assemblies shall be DRiWATER® tubes and inserts or equivalent consisting of two parts: 1) a 9-inch long, standard 3-inch diameter polyvinyl chloride pipe (PVC) and 2) a UV treated PVC end cap to fit a standard 3-inch diameter PVC pipe. Five watering assemblies shall be placed within each tree pit and evenly placed around the tree. Watering assemblies shall be installed after the tree has been installed and before the pit is backfilled. The bottom of the assemblies shall remain open and placed in contact with the root balls. The top of the assemblies

shall be positioned one inch above the mulch and covered with the UV treated PVC end cap. The top of the assembly shall be tilted away from the tree, but not more than 15 degrees from the vertical position. A biodegradable water retaining gel/shall be inserted into the tube and covered per manufacturer's instructions.

Plant Materials

The following is the list of trees to be installed as shown on the plans:

TREE SPECIES TABLE

SYMBOL	SPECIES	COMMON NAME	QUANTITY	SIZE
	TREE			
1	*AESCULUS CALIFORNICA*	CALIFORNIA BUCKEYE	42	15 GAL.
2	*POPULUS NIGRA*	LOMBARDI POPLAR	3	15 GAL.
3	*QUERCUS AGRIFOLIA*	COAST LIVE OAK	109	15 GAL.
4	*QUERCUS LOBATA*	VALLEY OAK	50	15 GAL.
5	*SEQUOIA SEMPERVIRENS*	COAST REDWOOD	9	15 GAL.
6	*SEQUOIIADENDRON GIGANTEUM*	GIANT REDWOOD	3	15 GAL.

Quality and Nomenclature - Tree names listed shall conform to the U.S. Department of Agriculture, Natural Resources Conservation District Plants Database at http://plants.usda.gov/index.html.

Health - Trees shall be well grown, free from insect pests and disease and shall be grown in nurseries which have been inspected by the State Department of Agriculture and have complied with the regulations thereof. All trees shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certifications required by law shall accompany each shipment of plants, and certificates shall be delivered to the Engineer. The Contractor shall obtain clearance from the County Agricultural Commissioner, as required by law, before installing trees delivered from outside the County. Evidence that such clearance has been obtained shall be presented to the Engineer.

Habit of Growth - Trees shall be of symmetrical growth typical for the species and variety. The height and spread of all plant materials shall be measured with branches in their normal position in conformance with AAN Publication 260.1, 1973.
The Contractor shall furnish the Engineer with a statement from the vendor that the order for the plants required for this contract has been received and accepted by said vendor. The statement from said vendor shall also include the names, sizes, and quantities of plants ordered and the anticipated date of delivery.

Root Condition - Trees shall be well-rooted, and roots shall show no evidence of having been restricted or deformed at any time. Root condition of trees in containers will be determined by removal of earth from the roots of not less than two plants no more than two percent (2%) of the

total number of plants of each species or variety. When container-grown trees are from several sources, the roots of not less than two trees of each species or variety from each source will be inspected by the Engineer. In case the sample trees inspected are found to be defective, the County reserves the right to reject the entire lot or lots of trees represented by the defective samples. Any trees rendered unsuitable for planting because of this inspection will be considered samples and will not be paid for.

10-2.03 DESCRIPTION OF WORK

Prior to excavation for planting or placing of stakes, the Contractor will locate all electric cables, conduits and utility lines so that proper precautions may be taken not to damage such facilities. In the event of a conflict between such lines and plant locations, the Contractor will promptly notify the Engineer, who will arrange for relocation of one or the other. Failure to follow this procedure places upon the Contractor the responsibility to repair damages, at his own expense, which result from work hereunder.

Each tree shall be handled and packed in the approved manner for that species or variety and all necessary precautions shall be taken to insure that the plants will arrive at the work site in proper condition for successful growth. Trucks used for transporting trees shall be equipped with covers to protect trees from windburn.

No trees shall be transported to the planting area that are not thoroughly wet throughout the ball of earth surrounding the roots. Any trees that, in the opinion of the Engineer, are dry or in a wilted condition when delivered to the planting area will not be accepted, and shall be replaced by the Contractor at his expense.

Any trees delivered to the site, which are found to be not true to name or unsuitable in growth or condition, shall be removed from the site immediately and replaced with acceptable trees. Trees shall not be pruned prior to delivery unless authorized by the Engineer. Trees shall not be topped before delivery. The Contractor shall maintain each tree in a healthy growing condition from the time it is delivered until planting has been accepted.

The planting of trees in the locations shown on the plans or as designated by the Engineer shall be done in the following manner:

Planting operations shall be conducted in such a manner that no damage will result to adjacent site improvements and existing plantings. The Contractor shall be responsible for any damage resulting from his operations, and shall repair or replace such damage at his expense. Vehicles of any kind will not be allowed to pass over curbs, planted areas, etc., unless proper protection is provided.

All pits for trees shall be placed outside of the roadway at a distance of 6 feet from the hinge-point at the outer edge of the soft shoulder (see detail in the plans).

No planting shall be done in soil that is too wet or too dry or otherwise in a condition not generally accepted as satisfactory for planting from a horticultural standpoint.

All pits for trees shall be dug with vertical sides and level bottoms. Scarify sides to remove the glaze if drilling is used to prepare pits. Pits shall be a minimum of 6" deeper and 12" wider than the root ball. Foot tamp backfill material below root ball to prevent settling of plant. See tree planting details shown on the plan.

Nursery stakes shall be removed. Containers shall be cut and trees shall be removed from the containers in such a manner that the balls of earth surrounding the roots are not broken. Plants will be planted and watered as specified immediately after removal from the containers. Containers shall not be cut prior to delivery of the trees to the planting area.

Each tree shall be planted in the center of the pit. No soil in muddy condition shall be used for backfilling. No filling will be permitted around trunks or stems. All broken or frayed roots shall be properly cut off. Pits shall be backfilled with compacted prepared backfill to the bottom of the root ball. The top of the root ball, after planting, will be 1 inch higher than the grade of the existing ground. The rest of the tree pit will be filled with prepared backfill and compacted by tamping and watering.

Six (6) fertilizer tablets as specified herein shall be placed in the bottom of each tree pit.

The tree shall be staked and tied in accordance with the details as shown on the plan.

Pruning after planting shall be limited to the minimum necessary for the removal of injured twigs and branches and the installation of the protective cages. On any branches larger than one-half inch in diameter, the cuts shall be coated with tree wound compound.

Each tree shall be protected from deer and mice by constructing protective cages. The specified wire cloth shall be used to form a 24" diameter by 4' tall cage around each tree. The cage shall be close with 2 inches of overlapping wire cloth that is tied securely with bailing wire at each end and at every 12" along the seam. The cage shall be centered on the tree. The bottom 3" of the cage shall be buried a minimum of 3" below the soil. On level ground, the height of the cages shall be a minimum of 44" above ground. On slopes, the down-slope side of the cage shall be a minimum height of 44" above ground. Three rebar rods shall be evenly spaced around the inside of the cage and staked in adjacent to the cloth until the top end of the rod is flush with the top end of the cage. Each rod shall be securely tied to the cage with bailing wire at three locations.

Mulch shall be applied around each tree at a depth of 4" and within a 3-foot radius of the tree. Mulch shall not be in direct contact with the trunk of the tree.

Watering of trees and shrubs shall be done by the Contractor during the planting and 180 day maintenance period.

After all container planting operations have been completed, the Contractor shall remove all trash, excess soil, empty plant containers, and other debris from the work site. All scars, ruts or other marks in the project area caused by the revegetation work, shall be repaired and the work site left in a neat orderly condition.

The Contractor shall maintain all container grown trees from the initial planting through acceptance of the planting phase and for a three (3) year Plant Establishment (maintenance) period after acceptance of planting. This maintenance includes but is not limited to regular watering and weeding, promptly replacing sick, dead, or lost trees, and controlling pests and infestations. If in the opinion of the Engineer, the maintenance of the plantings has not been adequate and a substantial number of the plants have been or need to be replaced, the Engineer may extend the Plant Establishment period an additional thirty (30) calendar days at no additional cost to the County. The purpose of the Plant Establishment period is to insure that the plants are healthy and well-established prior to the acceptance of the plantings.

Plant Establishment (Maintenance) Period (3 Years)

The Plant Establishment (maintenance) for a period of three (3) years and shall begin upon acceptance and approval of the entire project by the County Engineer.

The Contractor shall maintain all container grown trees from the initial planting through acceptance of the planting phase and for a 3 year Plant Establishment (maintenance) period after acceptance and approval of the entire project by the County Engineer. If in the opinion of the Engineer, the maintenance of the plantings has not been adequate and a substantial number of the plants have been or need to be replaced, the Engineer may extend the Plant Establishment period an additional thirty (30ninety (90) calendar days at no additional cost to the County. The purpose of the Plant Establishment period is to insure that the plants are healthy and well-established prior to the acceptance of the plantings.

Plant Establishment (Maintenance) shall be in conformance with Section 20-4.08, "Plant Establishment Work," of the Standard Specifications with the following amendments:

The Plant Establishment Work shall consist of: watering, weeding, spraying, pruning, fertilizing, treatment of diseases, insects and pests, repair of erosion and vandalism, promptly replacing sick, dead, or lost trees and incidental work necessary to establish the landscaping to the satisfaction of the Engineer.

Contractor shall meet with the Engineer on a quarterly basis during the Plant Establishment Period to review the work. Contractor shall submit annual reports within 10 working days following every fourth field meeting. The Plant Establishment Work may be extended by the County if planted areas are improperly maintained, or other corrective work is not completed per the following. Periodic unscheduled inspections may be made by the Engineer to ensure that proper maintenance is being conducted. Contractor will be given three (3) calendar days to complete any corrective action.

Contractor shall record all maintenance activities and observations in a monthly maintenance log book that shall be available for review at all quarterly meetings. The log book shall be submitted to the County on an annual basis. Log book shall be organized and shall as a minimum requirement include, but not be limited to the following information:

Plant Conditions: Contractor shall examine conditions of each plant, planting basin, staking, watering tubes, weed growth and mulch. Contractor shall record all replanting of plants and pest or disease control measures.

Watering: Contractor shall examine the soil moisture around each plant to ensure adequate moisture. Contractor shall record all watering applications and include an approximation of amounts applied. Modifications to the watering schedule shall be recorded.

Weed and Debris Control: Keep all planting areas free from weeds, paper, glass, debris and trash during the entire duration of the contract. Contractor shall clear the planting areas a minimum of once a week.

Trees and Ground Covers Fertilization: Trees and Ground Covers Fertilization program for the project shall alternate between ammonium sulfate and a complete fertilizer (16-6-8) at a rate of 2.72 kilograms {6 lbs.} per 93 square meter {1000 square feet}. Fertilize with the complete fertilizer at the rate specified as soon as planting is completed. Coordinate watering with fertilization to water thoroughly immediately following completion of fertilization application. Contractor to sweep all fertilizer granules from sidewalks and driveways, as well as prevent its application on adjacent private properties. Sixty days following, top dress all planted areas with ammonium sulfate (21-0-0) at the rate of 2.27 kilograms {6 lbs.} per 93 square meter {1000 square feet}. Repeat on a 60 calendar days alternating cycle adjusting as required by the growth of the plant materials and approval of the Engineer.

Watering: Contractor shall provide water as needed for plant health. Watering of plant materials should encourage deep rooting by watering in a manner that the soil profile is wetted to a continuous depth of at least three inches when tested with a soil probe.

Period and Frequency of Watering	**Normal Year ET for Area (Oakland CIMIS data) cm / month**	**Water Requirement ñ cm/ month (50% of ET)**
Summer season (May-Aug) Twice a week	12.95-15.24	6.35-7.62
Fall until rains (Sep - Nov) Once a week unless sufficient rainfall	10.16-3.56	6.10-3.05
Rainy season (Nov - Apr) Every other week unless sufficient rainfall	2.29-9.91	1.27-5.08

The Contractor shall recognize that these guidelines are provided for his convenience and shall be responsible for watering plants in a manner that will maintain plant health and vigor and promote plant establishment growth. Frequency of watering is subject to reduction if plants appear to be suffering from excessive water, or increase if the majority of the plants appear to be stressed and in danger of perishing as determined by the Engineer. Contractor shall monitor evapotranspiration (ET) rate as provided through the State California Irrigation Management Information System (CIMIS)[1] and increase or decrease the rates of watering appropriately.

Pruning: Do not top trees. All pruning shall be to the standards set by the International Society of Arboriculture (ISA) and American National Standards Institute (ANSI) to maintain adequate clearance for vehicles, as well as upon directed by the Engineer. All pruning shall be reviewed by the Engineer prior to work being done.

Contractor shall replace the plant stakes with a larger diameter/ longer height stake to provide adequate support to the plants during the plant establishment period as directed by the Engineer. All stakes shall be removed at the end of the Plant Establishment Period. Plant stakes shall be removed at any time during the plant establishment period when ordered by the Engineer. All nursery stakes and ties shall be removed from the plant materials at time of installation.

Thirty calendar days prior to the end of the Plant Establishment Period, Contractor shall request in writing a final review of the work by the County. If upon review, the plant material is in good healthy condition of active growth, and all landscaped areas are weed free, and in a neat and orderly condition, final acceptance shall be given effective at the end of the designated period.

A final inspection, for the plant establishment work shall be completed a minimum of 30 working days before the end of the three year plant establishment period. The Engineer, at his discretion, reserves the right to conduct progress inspections at any time during the plant establishment period.

Maintenance Bond

The Contractor will be required to furnish the County with a separate maintenance bond for the Plant Establishment Period (3 years), to be submitted to the Engineer a minimum of one month prior to the anticipated acceptance date of the project. Said bond shall be surety bond, shall be executed by a corporation duly and legally licensed to transact business in the State of California, shall be issued at the expense of the Contractor, and shall be maintained by the Contractor during the three (3) years plant establishment period, and shall be in the amount specified below.

The Contractor shall secure a maintenance bond in the amount of one hundred percent (100%) of the total contract price bid for all landscape items, and shall guarantee the faithful maintenance of the item after the entire contract is accepted by the County, and shall insure the County of Alameda during the duration of this three (3) years plant establishment period. The maintenance bond shall be in effect immediately after the Contractor received the final written

acceptance of the entire project and will be in effect for a duration of three (3) full years thereafter.

The maintenance bond is specific for those landscape items and is separate from the entire project. Upon acceptance of the maintenance bond by the County, the Contractor will be paid in the final progress payment the full amount of the installed portion at the contract bid price for those contract bid items.

Full compensation for providing a separate maintenance bond for the 3-year Plant Establishment period including an extension period if required, will be considered included in the bid price paid for PLANT ESTABLISHMENT PERIOD (3 YEARS), and no additional compensation will be allowed therefor.

Guarantees And Replacements

Trees shall be guaranteed to be healthy and actively growing at the end of three (3) years from the date of final acceptance by the Engineer.

During the plant establishment period, if a plant is unhealthy or dying said plant shall immediately be replaced by the Contractor. Plant replacement species and size shall be comparable to the similar plants existing at the time of replacement and as approved by the County.

10-2.04 INSPECTIONS

The Engineer shall inspect the placing and planting of all trees. The Contractor shall request inspections at least 48 hours in advance of the time inspection is required. These inspections will take place at the following times:

The planting inspection will be when trees are spotted for planting, but before planting holes are excavated. Relative position of all trees are subject to approval of the Engineer.

The Contractor shall notify the Engineer at least three (3) days prior to the delivery date for plant materials. The number of plants delivered to the job site on any day will be no more than can be planted and watered on that day. Inspection of materials shall include quality, nomenclature, health, habit of growth, and root condition as specified herein.

The acceptance of planting inspection will be held when all specified work, except the Plant Establishment period, has been completed.

The final inspection will be at the completion of the three (3) year Plant Establishment period. The purpose of this inspection will be to inspect and to review the quality of maintenance, the health of the trees, and to determine which trees, if any, are to be replaced. Before final acceptance by the Engineer, all tree basins shall be clean and free of debris and

weeds, plant materials shall be living, healthy and free of infestations and all damaged or lost plants replaced.

The Contractor or his authorized representative shall be on the site at each inspection.

MEASUREMENT

Planting and revegetation shall include planting trees in accordance with the plant schedule as shown on the plans and as specified herein. Measurement for planting and revegetation will be for each unit as set forth on the bid sheet, complete in place under bid item "TREE:"

PAYMENT

Payment for planting and revegetation shall be made at the price bid for each type under "TREE:" as set forth on the BIDDING SHEET.

The price bid for each type under "TREE:" shall include full compensation for all labor, materials (including trees, stakes, cages, fertilizer, water, mulch, bulk humus, 3-inch Tube & Inserts, etc.), tools, equipment, and incidentals and for doing all work involved in planting and the site preparation, as shown on the plans, as specified herein, and as directed by the Engineer.

The lump sum price bid for PLANT ESTABLISHMENT PERIOD (3 YEARS) shall include full compensation for all labor, materials (including providing maintenance bond), tools, equipment, and incidentals and for doing all work involved in maintaining, watering, weeding, fertilizing, and revegetating and replacing trees during the 3 year Plant Establishment period as specified herein and as directed by the Engineer.

SECTION 10-3 LIGHTING SYSTEM

10-3.01 DESCRIPTION

Street lighting and related electrical work shall conform to Section 86, "Signals, Lighting, and Electrical Systems," of the Standard Specifications and these special provisions.

10-3.02 MATERIALS, EQUIPMENT LIST AND DRAWINGS

Equipment list and drawings shall conform to Section 86-1.04, "Equipment List and Drawings," of the Standard Specifications and these special provisions. The Contractor shall submit to the Engineer within ten (10) days after receiving the fully executed contract a list of equipment and materials proposed for installation in accordance with Section 86-1.04, "Equipment List and Drawings," of the Standard Specifications. Upon County approval of the list, the Contractor shall order equipment to expedite delivery. Delay in ordering equipment shall not entitle Contractor to additional working days to perform the work.

The Contractor, upon completion of the project, shall furnish one a mylar "record drawing" showing, in detail, all modifications or changes to the project plans. Full compensation for furnishing "record drawing" shall be considered as included in the contract prices paid for the various items of work and no additional compensation will be allowed therefor.

Five copies of the manufacturer's cabinet wiring diagram shall be furnished with the controller cabinet, one (1) for the Contractor's use in showing any "As-Built" changes, and four (4) for County records.

10-3.03 WARRANTIES, GUARANTEES AND INSTRUCTION SHEETS

Warranties, guarantees and instruction sheets shall conform to Section 86-1.05, "Warranties, Guarantees and Instruction Sheets," of the Standard Specifications and these special provisions.

The lighting system installed under these special provisions, including all equipment, workmanship and appurtenances furnished or performed in connection therewith, shall be guaranteed to the County by the Contractor for a period of not less than one (1) year following the date of acceptance thereof. If any part (or parts) is found to be defective in materials or workmanship within the one-year period and it is determined that said part (or parts) cannot be repaired satisfactorily on the site, the Contractor shall immediately provide a replacement part (or parts) of equal kind and/or type during the repair period. The Contractor shall be responsible for the removal, handling, repair or replacement, and reinstallation of the part (or parts) until such time as the lighting system is functioning as specified and as intended herein; the repair period shall in no event exceed 72 hours, including acquisition of parts. The one (1) year guarantee on the repaired or replaced parts shall again commence with the date of reassembly of

the system. The one (1) year guarantee period is not applicable to equipment supplied by County for use on this project.

10-3.04 ON-SITE MEETING

Prior to the actual beginning of any work on the lighting system, an on-site meeting shall be held to familiarize all parties with the work to be done and the County inspection procedures. The Contractor, at his/her convenience but not less than 48 hours in advance, shall notify the Engineer of the proposed meeting date, time (between 8:30 a.m. and 3:00 p.m.) and location.

10-3.05 SCHEDULE OF WORK

Scheduling of work shall conform to the provisions in Section 86-1.07, "Scheduling of Work," of the Standard Specifications and these special provisions.

The schedule of work shall be submitted to the Engineer for his approval prior to commencing work. Work shall include, in addition to other requirements, all dates, activities and other pertinent data necessary to describe the Contractor's proposed activities on the project in connection with the installation of a Lighting System. The schedule shall include, but shall not necessarily be limited to the Lighting System:

- Conduit and Conductor Installation
- Controller Installation
- System Test
- Job Ready for Acceptance

The schedule shall also include all other major items of work.

10-3.06 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS

Maintaining existing and temporary electrical systems shall conform to Section 86-1.06, "Maintaining Existing and Temporary Electrical Systems," of the Standard Specifications and these special provisions.

The Contractor shall be responsible for keeping all or any part of an existing or temporary system in effective operation. No payment will be made for this item.

10-3.08 SERVICE ENCLOSURE

The service enclosure shall be 120/240 volt AC with a 4-jaw meter socket, test block, landing lug, lug neutral and solid neutral containing 100/3 main breaker (Westinghouse #QC3100 or

equivalent), 50/2 lighting breaker (Westinghouse #QC2050 or equivalent), 50/1 signal breaker (Westinghouse #QC1050 or equivalent).

10-3.09 FUSED SPLICE CONNECTORS

Splice connector fuse current ratings shall be as shown on sheet ES-13 of the Standard Plans except that the minimum current rating shall be 10 amperes.

10-3.10 LUMINAIRES

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

Ballasts shall be the lag or lead regulator, non-regulating reactor, autotransformer, or high reactants type. The luminaires wattage shall be as shown on the plans, if wattage is not indicated, 200 watts shall be used. All luminaires shall be 120/240 volt multitap, cobra style, Type III, medium cut off, high pressure sodium.

Pole numbers for safety lighting shall be obtained from PG&E and shall be installed by the Contractor is accordance with CSA requirements for number size, height and orientation.

The second paragraph in Section 86-6.07B(2), "Contactor," of the Standard Specifications is amended to read:

> The contactor shall be the mercury displacement type. The mercury contactor shall have a minimum rating of 70 amperes.

10-3.11 FOUNDATIONS

Foundations shall conform to the provisions in Section 86-2.03, "Foundations," of the Standard Specifications and these special provisions.

Portland cement concrete shall conform to Section 90-10, "Minor Concrete," of the Standard Specifications and shall contain not less than 279 kilograms of cement per cubic meter, except that concrete for reinforced pile foundations shall contain not less than 334 kilograms of cement per cubic meter. A ground consisting of a continuous #6 bare solid copper wire with 4 large coils placed at the bottom of foundation, and continuing to 900 mm above the top of foundation is required.

In lieu of P cabinet foundation height (H), shown on Sheet ES-4B of the Standard Plans, P cabinet foundation height (H) shall be 1.1 meter and shall extend 457 meter above adjacent finished grade.

10-3.12 CONDUIT

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

All conduit for use on this project shall be of rigid metallic type unless otherwise indicated on the plans or drawings. Rigid metal conduit to be installed shall not be used as a drilling or jacking rod. The use of a line boring machine to install galvanized steel conduit is prohibited due to its non-linear path and frictional galvanizing removal. All metallic conduit shall be acid and corrosive resistant to withstand pH levels ranging from 3.05 to 7.05 and minimum resistivity values ranging from 909 to 4880 ohm-cm.

The ends of conduit entering or ending at a pull box, controller cabinet, or service cabinet shall be sealed with an approved duct sealing compound after conductors have been installed.

In the presence of the Engineer, all conduit shall be cleaned/pulled with a correct sized mandrel, blown out with compressed air, and pulling of a tight fitting rag attached to the pulling rope prior to the installation of any conductors.

Insulated metal threaded bonding bushings will be required on metal conduit. Slip or compression couplings or bushings are not allowed.

In addition to the requirements of Section 86-2.05, "Conduit," of the Standard Specifications, conduit shall be installed in accordance with State of California Electrical Safety Orders (ESO). Conduit joints and connections shall be watertight and rustproof by an application of an approved noninsulating thread compound (Crouse Hinds STL-2 Screw Threading Lubricant and Sealer or approved equal).

Conduit threads and damaged conduit surfaces shall be painted either with high zinc dust content paint conforming to the requirements of Military Specification MIL-P-21035 or with primer conforming to the provisions of Section 91 "Paint," of the Standard Specifications, except that the paint shall not be thinned.

At locations where conduit is to be installed by jacking or drilling as provided in Section 86-2.05C, "Installation," of the Standard Specifications, conduit may be installed, if approved by the Engineer, under the following specifications:

Alameda County does not allow trenches to be unfilled or left open overnight – NO EXCEPTIONS. All excavated areas in the pavement shall be backfilled, except for the top 30 millimeters, by the end of each work period;

Conduit shall be placed under existing pavement in a trench approximately 50 millimeters wider than the outside diameter of the conduit to be installed. Trench width shall not exceed 150 millimeters;

The outline of all areas of pavement to be removed shall be cut to a minimum depth of 75 millimeters with an abrasive type saw or with a rock cutting excavator specifically designed for this purpose. Cuts shall be neat and true with no shatter outside the removal area;

Trench shall be backfilled with commercial quality pea gravel concrete containing not less than 335 kilograms of cement per cubic meter. The conduit shall be placed in the bottom of the trench not less than 610 millimeters below the pavement surface for asphalt surfaced roadways and 460 millimeters below the pavement surface for portland cement concrete surfaced roadways. The top 30 millimeters of asphalt surfaced roadways shall be backfilled with asphalt concrete produced from commercial quality paving asphalt and aggregates. Calcium chloride shall not be used in concrete that will be in contact with metal conduit.

Conduit to be installed for residential type driveways or in dirt areas shall be placed at a depth of not less than 1 meter. Conduit placed in planter strips or sidewalk areas shall be placed at a depth of not less than 760 millimeters.

Prior to spreading asphalt concrete, paint binder shall be applied as specified in Section 39-4.02, "Prime Coat and Paint Binder," of the Standard Specifications.

Spreading and compacting of asphalt concrete shall be performed by any method which will produce an asphalt concrete surfacing of uniform smoothness, texture, and density.

With the Engineer's approval, conduit runs shown in sidewalk areas on the plans may be placed in the street adjacent to the front edge of the curb with pull boxes located behind the curb in the paved sidewalk area.

10-3.13 PULL BOXES

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

Drain rock shall be 38 millimeters river run flat rock (tradename "NOEE"). It shall be free of debris and dirt prior to placement in pull boxes. Sump shall extend outside box by not less than 150 millimeters.

Recesses for suspension of ballasts will not be required.

Pull box lids shall have a non-slip diamond texture with I.D. specifying use.

Spacing between pull boxes shall not exceed 30 meters unless otherwise indicated on the plans or directed by the Engineer.

Grout and roofing paper in bottom of pull boxes will not be required.

All pull boxes shall be of precast reinforced concrete and have covers with polyurethane caps with brass hold downs.

Service pull box at base of service pole shall be #5 and shall have a lid that designates "SERVICE."

Where the sump of an existing pull box is disturbed by the Contractor's operation, the sump shall be reconstructed. If the sump was grouted, the old grout shall be removed and new grout placed.

Pull boxes are not to be installed outside of the County, State or City right of way. All pull boxes shall be placed either at least fifty (50) millimeters off back of curb or at least fifty (50) millimeters from the rear of walkways. AT NO TIME SHALL PULL BOXES HAVE LESS THAN FIFTY (50) MILLIMETERS OF CONCRETE SURROUNDING THE OUTSIDE PERIMETER. Pull boxes shall not be placed in the center of walkways. Pull boxes shall not be placed within or in front of any proposed or existing driveway or within or in front of the pedestrian ramps for the handicapped unless otherwise directed by the Engineer.

Pull boxes located within a driveway or in a traveled way, or as directed by the Engineer, shall conform to Sheet ES-8 of the Standard Plans for Traffic Pull Box.

Pull boxes located outside of an existing concrete area, in dirt or within a planter strip or island, shall be set with a concrete cap which shall extend 150 millimeters on all outside surface areas, with a minimum thickness of 100 millimeters.

Pull boxes shall have ground rods/electrodes.

10-3.14 CONDUCTORS AND WIRING

Conductors and wiring shall conform to the provisions of Section 86-2.08, "Conductors," and Section 86-2.09, "Wiring," of the Standard Specifications and these special provisions.

Aluminum conductors shall not be substituted for copper conductors.

Conductors shall be spliced by the use of "C" shaped compression connectors as shown on sheet ES-13 of the Standard Plans. All splices and connections are soldered.

Unless otherwise specified, signal interconnect cable (SIC) shall be 6 twisted pair, No. 19 gauge solid conductor, IMSA #20-2 cable.

Splices shall be insulated by "Method B" as shown on Sheet ES-13 of the Standard Plans.

Wiring for the main and auto flashing switch mounted on controller cabinet door shall be adequate to carry full system load.

Terminal strips in pole-mounted signal terminal compartments shall be 12-terminal barrier type with two #10 screws per terminal that will accommodate not less than three spade-type lugs on each screw.

Conductors No. 8 AWG and larger shall be stranded.

The first paragraph in Section 86-2.08B, "Multiple Circuit Conductors," of the Standard Specifications is amended to read:

> Conductors for traffic signal, flashing beacon and multiple lighting installations shall be UL listed and rated for 600-volt operation. The insulation for No.16 AWG or smaller conductors shall be Type TF. The insulation for No. 14 AWG and larger conductors shall be one of the following:
>
> - Type TW polyvinyl chloride conforming to the requirements of ASTM Designation D2219.
> - Type THW polyvinyl chloride.
> - Type USE, Type RHH, or Type RHW cross-linked polyethylene.
>
> Minimum thickness of any of the above insulations shall be 1 millimeter for conductor sizes No. 14 to No. 10 AWG, inclusive, and 1.4 millimeter for No. 8 to No. 2 AWG, inclusive.

Conductors shall be permanently identified with regard to function. Identification shall be placed on each conductor, or each group of conductors comprising a signal phase, in each pull box and near the end of terminated conductors.

Identification shall be by direct labeling, tags or bands fastened to the conductors in such a manner that they will not move along the conductors. Labeling shall be by mechanical methods to produce an embossed or engraved surface.

No conductors shall be installed until all pull boxes are set to grade and drain rock installed. A pull wire shall be used in lieu of rope.

Exactly 0.91 m of wire slack measured from grade at top of box to center of wire loop shall be placed in each pull box (approximately 3 m overall).

Mast arm signal equipment shall be wired and spliced to nearest pull box. Jumpers in poles are not allowed, this is for all wire including neutrals and grounds.

10-3.15 REMOVING, REINSTALLING, OR SALVAGING ELECTRICAL EQUIPMENT & CONDUCTORS

Removing, reinstalling, or salvaging electrical equipment shall conform to the provisions in Section 86-7, "Removing, Reinstalling or Salvaging Electrical Equipment," of the Standard Specifications.

At the discretion of the Engineer, existing cables and/or conductors shown on the plans to be removed and not reused or salvaged shall become the property of the Contractor and shall be removed from the roadway right of way in accordance with the provisions in Section 7-1.13, "Disposal of Materials Outside the Highway Right of Way", except that written permission from the Engineer for disposal of material will not be required or salvaged electrical materials shall be hauled to the Alameda County Corporation Yard No. 4 located at 951 Turner Court, Hayward, CA, and stockpiled. The Contractor shall provide equipment as necessary, to safely unload and stockpile the material. A minimum of two working days notice shall be given prior to delivery.

10-3.16 BONDING AND GROUNDING

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

Grounding to existing water systems will not be permitted.

Grounding jumper shall be attached by a 5 millimeter or larger brass bolt in the signal standard or controller pedestal and shall be run to the conduit, ground rod or bonding wire in adjacent pull box. The grounding jumper shall be visible after the cap has been poured on the foundation.

10-3.17 SERVICE

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

Meter socket boxes shall be provided with manual circuit closing device in rain-tight cabinet with lock (Master "Secret Service" Model No. 2396 with short shank or approved equal) and two (2) keys.

In lieu of fuse type overcurrent protections, nonadjustable trip circuit breakers of adequate amperage rating shall be used.

The fourth paragraph of Section 86-2.11, "Service," of the Standard Specifications is amended to read:

The Contractor shall arrange with the serving utility to complete all service installations and shall pay all fees connected therewith. The Contractor shall contact all serving utilities prior to performing any service work and shall do all work and furnish all materials necessary to conform to the requirements of the utilities.

The service connection shall be in underground conduit from the controller cabinet to the service point.

Service pull box at base of service pole shall have a lid which designates "SERVICE."

Service equipment enclosures shall be provided with a factory applied rust resistant prime coat and baked enamel finish coat to match the controller cabinet exterior.

10-3.18 FUNCTIONAL TESTING

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

Section 86-2.14C, "Functional Testing," of the Standard Specifications is modified to read as follows:

The Contractor shall give five (5) days notice to the Engineer prior to turning on any equipment. The Contractor shall also insure that a qualified service representative and/or representative of the manufacturer and/or manufacturers familiar with the equipment installed, shall be present at the time the equipment is turned on. The representative shall remain at the controller until it has been demonstrated that his portion of the control equipment functions as intended in the plans, as required in the Specifications, and to the satisfaction of the Engineer. If an authorized manufacturer's representative of any portion of the control equipment is not present at the time indicated by the Contractor or fails to show that his equipment operates as intended, the functional test will be discontinued and postponed until such time as the above stipulations can be met.

If unsatisfactory performance of the system develops, the conditions shall be corrected and the test shall be repeated until the 5 days of continuous satisfactory performance is obtained.

Tests shall start prior to 10:00 a.m., but shall not start on a Thursday, Friday or on any second or first day preceding a holiday.

A shutdown of the electrical system resulting from damage caused by public, traffic, or from a power interruption or from unsatisfactory performance of County-furnished materials shall not constitute discontinuity of the functional test.

Upon successful completion of the 5-day field test and throughout the remainder of the construction period and during the guarantee period, the Contractor shall replace or repair

defective parts or equipment within 72 hours of being notified of such defective condition and provide such maintenance and repair assistance to the County as may be reasonably necessary. Spare parts for equipment supplied by the County are available from the Alameda County Corporation Yard No. 4 at 951 Turner Court, Hayward, CA. (510/670-5500).

PAYMENT

Payment for the Lighting System shall be paid in accordance with the provisions of Section 86-8.01, "Payment," of the Standard Specifications and these special provisions.

The quantity of LUMINAIRE to be paid for will be measured by the unit as determined from actual count in place at the locations shown on the plans or at other locations designated by the Engineer. Each luminaire will be counted once at each location shown on the plans or at other locations determined by the Engineer.

The contract unit price paid each for LUMINAIRE shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing luminaires, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The price bid per linear meter for CONDUIT (FOR LUMINAIRES), shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in installing conduit, and including excavation and backfilling, as shown on the plans, as specified herein, and as directed by the Engineer.

Full compensation for all other additional materials and labor, not specified herein or shown on the plans, which are necessary to complete the installation, including functional testing, shall be considered included in the prices paid for the various items of work, and no additional compensation will be allowed therefor.

SECTION 11. (BLANK)

SECTION 12. (BLANK)

SECTION 13. (BLANK)

SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

GENERAL.—The work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to work financed in whole or in part with Federal funds will apply to such work. The "Required Contract Provisions, Federal-Aid Construction Contracts, "Form FHWA 1273, are included in this Section 14. Whenever in said required contract provisions references are made to "SHA contracting officer," "SHA resident engineer," or "authorized representative of the SHA," such references shall be construed to mean "Engineer" as defined in Section 1-1.18 of the Standard Specifications.

PERFORMANCE OF PREVIOUS CONTRACT.—In addition to the provisions in Section II, "Nondiscrimination," and Section VII, "Subletting or Assigning the Contract," of the required contract provisions, the Contractor shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of $10,000 will be considered under the provisions of Section VII of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

NON-COLLUSION PROVISION.—The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary projects.

Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28, USC, Sec. 1746, is included in the proposal.

PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN SUBCONTRACTING.—Part 26, Title 49, Code of Federal Regulations applies to this Federal-aid project. Pertinent sections of said Code are incorporated in part or in its entirety within other sections of these special provisions.

Schedule B—Information for Determining Joint Venture Eligibility

(This form need not be filled in if all joint venture firms are DBE owned.)

1. Name of joint venture _____

_____

2. Address of joint venture _____

_____

3. Phone number of joint venture _____

_____

4. Identify the firms which comprise the joint venture. (The DBE partner must complete Schedule A.) _____

_____

a. Describe the role of the DBE firm in the joint venture.

_____

b. Describe very briefly the experience and business qualifications of each non-DBE joint venturer: _____

_____

5. Nature of the joint venture's business _____

_____

6. Provide a copy of the joint venture agreement.

7. What is the claimed percentage of DBE ownership? ___

_____

8. Ownership of joint venture: (This need not be filled in if described in the joint venture agreement, provided by question 6.).

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a. Profit and loss sharing.
b. Capital contributions, including equipment.
c. Other applicable ownership interests.

9. Control of and participation in this contract. Identify by name, race, sex, and "firm" those individuals (and their titles) who are responsible for day-to-day management and policy decision making, including, but not limited to, those with prime responsibility for:

a. Financial decisions _____

_____

b. Management decisions, such as:

1. Estimating _____

_____

2. Marketing and sales _____

_____

3. Hiring and firing of management personnel ___

_____

4. Purchasing of major items or supplies _____

_____

c. Supervision of field operations _____

_____

Note.—If, after filing this Schedule B and before the completion of the joint venture's work on the contract covered by this regulation, there is any significant change in the information submitted, the joint venture must inform the grantee, either directly or through the prime contractor if the joint venture is a subcontractor.

Affidavit

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned covenant and agree to provide to grantee current, complete and accurate information regarding actual joint venture work and the payment therefor and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture, by authorized representatives of the grantee or the Federal funding agency. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements."

Name of Firm	Name of Firm
Signature	Signature
Name	Name
Title	Title
Date	Date

Date _____

State of _____

County of _____

On this ____ day of _____, 19 __, before me appeared (Name) _____, to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____

Commission expires _____

[Seal]

Date _____

State of _____

County of _____

On this ___ day of _____, 19 __, before me appeared (Name) _____ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public _____

Commission expires _____

[Seal]

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

(Exclusive of Appalachian Contracts)

ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4, and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. **Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively

administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

III NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

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c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3)] issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c) the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit

as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

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5. Apprentices and Trainees (Programs of the U.S. DOT):

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding:

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

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c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

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2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever being an officer, agent, or employee of the United States, or any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized

for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

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d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract,

grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

FEDERAL-AID FEMALE AND MINORITY GOALS

In accordance with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-aid Construction Contracts" the following are the goals for female utilization:

Goal for Women (applies nationwide)... .....(percent)	6.9

The following are goals for minority utilization:

CALIFORNIA ECONOMIC AREA

	Goal (Percent)
174 Redding, CA:	
Non-SMSA Counties ..... CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehama.	6.8
175 Eureka, CA:	
Non-SMSA Counties ..... CA Del Norte; CA Humboldt; CA Trinity.	6.6
176 San Francisco-Oakland-San Jose, CA:	
SMSA Counties:	
7120 Salinas-Seaside-Monterey, CA.... ..... CA Monterey.	28.9
7360 San Francisco-Oakland, CA..... CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo.	25.6
7400 San Jose, CA..... CA Santa Clara.	19.6
7485 Santa Cruz, CA. ..... CA Santa Cruz.	14.9
7500 Santa Rosa, CA..... CA Sonoma.	9.1
8720 Vallejo-Fairfield-Napa, CA ..... CA Napa; CA Solano	17.1
Non-SMSA Counties..... CA Lake; CA Mendocino; CA San Benito.	23.2
177 Sacramento, CA:	
SMSA Counties:	
6920 Sacramento, CA..... CA Placer; CA Sacramento; CA Yolo.	16.1
Non-SMSA Counties..... CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba.	14.3
178 Stockton-Modesto, CA:	
SMSA Counties:	
5170 Modesto, CA ..... CA Stanislaus.	12.3
8120 Stockton, CA ..... CA San Joaquin.	24.3
Non-SMSA Counties..... CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Tuolumne.	19.8
179 Fresno-Bakersfield, CA:	
SMSA Counties:	
0680 Bakersfield, CA..... CA Kern.	19.1
2840 Fresno, CA ..... CA Fresno.	26.1
Non-SMSA Counties..... CA Kings; CA Madera; CA Tulare.	23.6
180 Los Angeles, CA:	
SMSA Counties:	
0360 Anaheim-Santa Ana-Garden Grove, CA. ..... CA Orange.	11.9
4480 Los Angeles-Long Beach, CA ..... CA Los Angeles.	28.3
6000 Oxnard-Simi Valley-Ventura, CA ..... CA Ventura.	21.5

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6780 Riverside-San Bernardino-Ontario, CA. 19.0
CA Riverside;
CA San Bernardino.
7480 Santa Barbara-Santa Maria-Lompoc, CA 19.7
CA Santa Barbara.
Non-SMSA Counties 24.6
CA Inyo; CA Mono;
CA San Luis Obispo.

181 San Diego, CA:

SMSA Counties
7320 San Diego, CA. 16.9
CA San Diego.
Non-SMSA Counties 18.2
CA Imperial.

In addition to the reporting requirements set forth elsewhere in this contract the Contractor and subcontractors holding subcontracts, not including material suppliers, of $10,000 or more, shall submit for every month of July during which work is performed, employment data as contained under Form FHWA PR-1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

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(To be used, when applicable, in Federal-aid projects)
***Insert number of trainees.**

FEDERAL REQUIREMENT TRAINING SPECIAL PROVISIONS

FEDERAL REQUIREMENT TRAINING SPECIAL PROVISION. -- As part of the Contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The Contractor shall provide on-the-job training to develop full journeymen in the types of trades or job classification involved.

The goal for the number of trainees or apprentices to be trained under the requirements of this special provision will be 13 .

In the event the Contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees or apprentices are to be trained by the subcontractor, provided however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The Contractor shall also ensure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of trainees or apprentices in each occupation shall be in their first year of apprenticeship or training.

The number of trainees or apprentices shall be distributed among the work classifications on the basis of the Contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing work, the Contractor shall submit to the Department for approval the number of trainees or apprentices to be trained in each selected classification and training program to be used. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. The Contractor will be credited for each trainee or apprentice employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees or apprentices as provided hereinafter.

Training and upgrading of minorities and women toward journeymen status is a primary objective of this Training Special Provision. Accordingly, the Contractor shall make every effort to enroll minority and women trainees or apprentices (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees or apprentices) to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee or apprentice in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the Contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by both the Department and the Federal Highway Administration. The Department and the Federal Highway Administration will approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee or apprentice for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with the State of California, Department of Industrial Relations, Division of Apprenticeship Standards recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office.

Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training. Except as otherwise noted below, the Contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein.

This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the Contractor where he does one or more of the following and the trainees or apprentices are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or apprentice or pays the trainee's or apprentice's wages during the offsite training period.

No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee or apprentice as a journeyman, is caused by the

Contractor and evidences a lack of good faith on the part of the Contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee or apprentice will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program. It is not required that all trainees or apprentices be on board for the entire length of the contract. A Contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees or apprentices specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Only trainees or apprentices registered in a program approved by the State of California's State Administrator of Apprenticeship may be employed on the project and said trainees or apprentices shall be paid the standard wage specified under the regulations of the craft or trade at which they are employed.

The Contractor shall furnish the trainee or apprentice a copy of the program he will follow in providing the training. The Contractor shall provide each trainee or apprentice with a certification showing the type and length of training satisfactorily completed.

The Contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision

FR-16

Alameda County Public Works Agency

SUSTAINABLE DESIGN GUIDE

Project Checklist

SPEC NO:	PROJECT:
CONTRACTOR:	
DATE:	INSPECTOR:

DID THE CONTRACTOR:	YES	NO
Use recycled water for dust control and/or irrigation operations?		
Use energy-efficient materials (other than those specified in the project plans and special provisions)?		
Use recycled paper for submittals to the Engineer?		
Use recycled motor oil where applicable?		
Use recycled-content materials?		
Use materials manufactured in the United States?		
Use local vendors located in Alameda County?		
Recycle packaging waste?		
Comply with the Construction & Demolition requirements?		

If you answered "No" to any of the questions above, please give a brief explanation:

What challenges, if any, did the Contractor face in applying the above strategies?

Contractor's Signature

Date

A

AB	aggregate base
ABBC	asbestos bonded bituminous coated
ABM	air-blown mortar
Abn	abandon
Abut	abutment
AC	asphalt concrete
ACB	asphalt concrete base
ACP	asbestos cement pipe
ADL	added dead load
Adj	adjust
AFES	alternative flared end section
Ahd	ahead
Alt	alternate
AM	time from midnight to noon
AP	alternative pipe
APC	alternative pipe culvert
Approx	approximate
APU	alternative pipe underdrain
ARS	acceleration response spectrum
AS	aggregate subbase
ASRP	aluminum spiral rib pipe
Assy	assembly
ATPB	asphalt treated permeable base
ATPM	asphalt treated permeable material
Ave	avenue
Avg	average
@	at

B

BAGR	bridge approoch guard railing
BB	beginning of bridge
B-B	back-to-back
BC	begin horizontal curve
BCR	begin curb return
Beg	begin
Bit Ctd	bituminous coated
Bk	back
Bkf	backfill
Bldg	building
BLM	bridge-log mile
Blvd	boulevard
BM	bench mark
Bot	bottom
Br	bridge
Brg	bearing
BTU	british thermal unit
BVC	begin vertical curve
BW	barbed wire

C

CAA	cable anchor assembly
cal	calorie
CAP	corrugated aluminum pipe
CAPA	corrugated aluminum pipe arch
CAS	construction area sign
CB	concrete barrier
CBW	concrete block wall
C-C	center to center
CG	center of gravity

C continued

Chnl	channel
CI	cast iron
CIDH	cast-in-drilled-hole
CIP	cast-in-place, cast iron pipe
CIPCP	cast in place concrete pipe
CISS	cast-in-steel-shell
CJP	complete joint penetration
CL	chain link
CL-6	chain link fence (6 ft)
Cl	class
Clr	clear, clearance
CM	corrugated metal
cm	centimeters
CMP	corrugated metal pipe
Co	county
Col	column
Conc	concrete
Cond	conduit
Conn	connector
Const	construct, construction
Cont	continuous
Coord	coordinate
CP	candlepower
Cr	creek
CRSP	concreted rock slope protection
CSP	corrugated steel pipe
CSPA	corrugated steel pipe arch
CTB	cement treated base
CTPB	cement treated permeable base
CTPM	cement treated permeable material
Ctrs	centers
Culv	culvert
℄	centerline

D

D	depth
DD	downdrain
Dbl	double
Deg	degree
Del	delineator
Det	detail, detour
DF	douglas fir
DI	drainage inlet, drop inlet
Dia	diameter
Diaph	diaphragm
Dist	distance, district
DMBB	double metal beam barrier
Dr	drive
DTBB	double thrie beam barrier
Dwy	driveway

E

E	east
EA	each
Ease	easement
EB	end of bridge, eastbound
EC	end horizontal curve
ECR	end curb return
ED	edge drain
EDC	edge drain cleanout
EDO	edge drain outlet
EDV	edge drain vent
Elec	electralier
Elect	electric
Elev	elevation
Emb	embankment
Engr	Engineer
EOD	edge of deck
EP	edge of pavement
Eq	equation
ES	edge of shoulder
ETW	edge of traveled way
EVC	end vertical curve
EW	endwall
Exc	excavation
Exist, (E)	existing
Exp	expansion, expressway
Exp Jt	expansion joint
Ext	exterior

F

F & C	frame and cover
F & G	frame and grate
FB	floor beam
Fdn	foundation
FEBT	facing eastbound traffic
FES	flared end section
FF	filter fabric
FG	finished grade
FH	fire hydrant
Fig	figure
FL	flow line
FNBT	facing northbound traffic
FOB	free on board
FOC	face of concrete
Fr Rd	frontage road
FS	far side, finished surface
FSBT	facing southbound traffic
Ftg	footing
FWBT	facing westbound traffic
Fwy	freeway

G

g	acceleration due to gravity
Ga	gage
Galv	galvanized
GP	grading plane
GR	guard railing
GSP	galvanized steel pipe

G continued

Gtr	gutter

H

H	height
h, hr	hour
HD	horizontal drain
hdwl	headwall
Hex Hd	hexagonal head
Horiz	horizontal
HP	hinge point, horsepower
HPS	high performance steel
HS	high strength
HW	headwall, high water
HWM	high water mark
Hwy	highway

I

IB	imported borrow
ID	inside diameter
IF	inside face
Int	interior
Inv	invert
Irr	irrigation

J

Jct	junction
JP	joint pole
JPCP	jointed plain concrete pavement
JS	junction structure
Jt	joint

K

km	kilometer (always lower case)
KP	kilometer post

L

L	length
Lat	latitude
LCB	lean concrete base
Ln	lane
Loc	location
LOL	layout line
Long	longitude
Longit	longitudinal
LS	lump sum
Lt	left

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — Santa Rosa — No. 58698 — Exp. 12-31-06 — CIVIL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ACRONYMS AND ABBREVIATIONS (A-L)

NO SCALE

A10A

2004 Std PLAN A10A

07-20-04

M

Maint	maintenance
Max	maximum
MB	metal beam
MBB	metal beam barrier
MBGR	metal beam guard railing
Med	median
MH	manhole
Min	minimum
Misc	miscellaneous
Misc I & S	miscellaneous iron and steel
Mkr	marker
mm	millimeter(s)
Mod	modified,
	modify
Mon	monument
MP	metal plate
MPGR	metal plate guard railing
MR	movement rating
MSE	mechanically stabilized embankment
Mtl	material

N

N	north
(N)	new
NB	northbound
No.	number (must have period)
Nos.	numbers (must have period)
NPS	nominal pipe size
NS	near side
NTS	not to scale
ø	nominal diameter

O

Oblr	obliterate
OC	overcrossing
OD	outside diameter
OF	outside face
OG	original ground
OGAC	open graded asphalt concrete
OH	overhead
O-O	out to out
Opp	opposite

P

P	page
PAP	perforated aluminum pipe
PB	pull box
PC	point of curvature,
	precast
PCC	point of compound curve,
	portland cement concrete
PCP	perforated concrete pipe,
	prestressed concrete pipe
PCVC	point of compound vertical curve
Ped	pedestrian
Ped OC	pedestrian overcrossing
Ped UC	pedestrian undercrossing
Perm Mtl	permeable material
PG	profile grade

P continued

PI	point of intersection
PJP	partial joint penetration
PL	plate
P/L	property line
PM	post mile,
	time from noon to midnight
PN	paving notch
POC	point of horizontal curve
POT	point of tangent
POVC	point of vertical curve
PP	pipe pile,
	plastic pipe,
	power pole
PPL	preformed permeable liner
PPP	perforated plastic pipe
PRC	point of reverse curve
PRF	pavement reinforcing fabric
PRVC	point of reverse vertical curve
PS&E	plans, specifications and estimates
PS, P/S	prestressed
PSP	perforated steel pipe
PT	point of tangency
PVC	polyvinyl chloride
Pvmt	pavement

Q

Qty	quantity

R

R	radius
R & D	remove and dispose
R & S	remove and salvage
R/C	rate of change
RCA	reinforced concrete arch
RCB	reinforced concrete box
RCP	reinforced concrete pipe
RCPA	reinforced concrete pipe arch
Rd	road
Reinf	reinforced,
	reinforcement,
	reinforcing
Rel	relocate
Repl	replacement
Ret	retaining
Rev	revised
Rdwy	roadway
RM	road-mixed
RP	radius point,
	reference point
RR	railroad
RSP	rock slope protection
Rt	right
Rte	route
RW	redwood,
	retaining wall
R/W	right of way
Rwy	railway

S

S	south,
	supplement
SAE	structure approach embankment
Salv	salvage
SAPP	structural aluminum plate pipe
SB	southbound
SC	sand cushion
SCSP	sacked concrete slope protection,
	slotted corrugated steel pipe
SD	storm drain
Sec	second,
	section
Sep	separation
SG	subgrade
Shld	shoulder
Sht	sheet
SI	international system of units
Sim	similar
SL	station line
SM	selected material
Spec	special,
	specifications
SPP	slotted plastic pipe
SS	slope stake
SSBM	strap and saddle bracket method
SSD	structural section drain
SSPA	structural steel plate arch
SSPP	structural steel plate pipe
SSPPA	structural steel plate pipe arch
SSRP	steel spiral rib pipe
St	street
STA, Sta	station
STBB	single thrie beam barrier
Std	standard
Str	structure
Surf	surfacing
SW	sidewalk,
	sound wall
Swr	sewer
Sym	symmetrical
S4S	surface 4 sides

T

T	semi-tangent
TAB	tablet
Tan	tangent
TBB	thrie beam barrier
Tbr	timber
TC	top of curb
TCB	traffic control box
Tel	telephone
Temp	temporary
TG	top of grade
Tot	total
TP	telephone pole
TPB	treated permeable base
TPM	treated permeable material
Trans	transition,
	transverse

T continued

TS	traffic signal,
	tubular steel
Typ	typical

U

UC	undercrossing
UD	underdrain
UON	unless otherwise noted
UP	underpass

V

V	valve,
	design speed
Var	variable
VC	vertical curve
VCP	vitrified clay pipe
Vert	vertical
Via	viaduct
Vol	volume

W

W	west,
	width
WB	westbound
WH	weep hole
WM	wire mesh
WS	water surface
WSP	welded steel pipe
Wt	weight
WV	water valve
WW	wing wall
WWLOL	wingwall layout line

X

X Sec	cross section
Xing	crossing

Y

Yr	year
Yrs	years

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

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REGISTERED PROFESSIONAL ENGINEER — Santa Rosa — No. 58698 — Exp. 12-31-06 — CIVIL — STATE OF CALIFORNIA

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SI PREFIXES

SYMBOL	PREFIX	MULTIPLICATION FACTOR
m	milli-	10^{-3}
k	kilo-	10^{3}
M	mega-	10^{6}
G	giga-	10^{9}

METRIC UNITS (SI)

SYMBOL	UNIT
m	meter
g	gram
s	second
A	ampere
°C	degrees Celsius
Hz	hertz
N	newton
Pa	pascal
L	liter
ha	hectare
W	Watt

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ACRONYMS AND ABBREVIATIONS (M-Z)

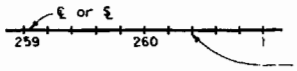
NO SCALE

A10B

2004 Std PLAN A10B

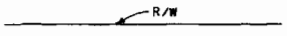
07-20-04

SYMBOLOGY FOR CONSTRUCTION FEATURES

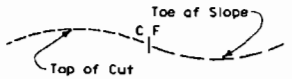


Centerline
Station Line
Alignment Line

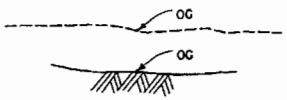
Intermediate ticks @ 20 m intervals



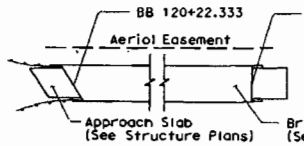
Right of Way Line



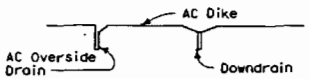
Slope Line



Original Ground Line



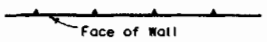
Structure (Bridge



Dike, Downdrain and Oversize Drain

Pipe Culvert - single line
(900 mm or less in diameter)
(plus - other drainage features)

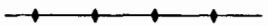
Pipe Culvert - two lines
greater than 900 mm in diameter)
(plus - other drainage features)



Wall

Existing Guard Railing
(to be modified)

New Guard Railing

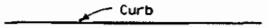


Concrete (Median) Barrier

Wall on Barrier

Temporary Railing (Type K)

Double Thrie Beam Barrier



Curb without Gutter

Curb with Gutter
(curb-lip, flow line, back-top of curb)

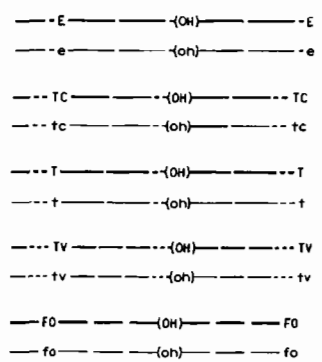
Fence

Ditch Flow Line

Existing Walls or Barriers should be shown as hollow filled
(See example of Wall below)

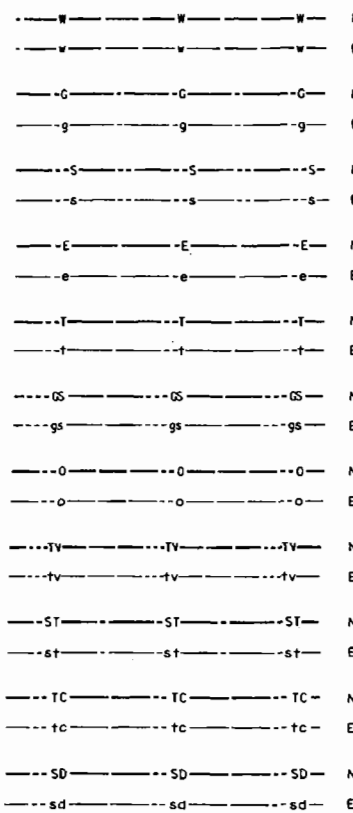
Existing Wall

AERIAL UTILITES



New Electrical
Exist Electricol
New Telemeter Cable
Exist Telemeter Cable
New Telephone
Exist Telephone
New Television
Exist Television
New Fiber Optic
Exist Fiber Optic

UNDERGROUND UTILITES



New Water
Exist Water
New Gas
Exist Gas
New Sewer
Exist Sewer
New Electricol
Exist Electrical
New Telephone
Exist Telephone
New Gasoline
Exist Gasoline
New Oil
Exist Oil
New Television
Exist Televison
New Steam
Exist Steam
New Telemeter Cable
Exist Telemeter Cable
New Storm Drain
Exist Storm Drain

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

Caltrans Metric

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Jeff C. Kepley
No. 53561
Exp. 6-30-07
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SYMBOLS
(SHEET 1 OF 2)

NO SCALE

A10C

2004 Std PLAN A10C

07-14-04

PHOTOGRAMMETRIC MAPPING LINES AND SYMBOLS

PHOTOGRAMMETRIC MAPPING IS DPOPPED OUT ON FINAL CONTRACT PLANS

- Curb
- Lane Stripe
- Edge of Traveled Way (State Highway)
- Edge of Traveled Way (Other)
- Edge of Asphalt (Shoulder)
- Concrete
- Guard Railing
- Median Barrier
- Fence
- Masonry Wall
- Masonry Wall and Fence
- Retaining Wall
- Retaining Wall and Fence
- Retaining Wall and Masonry Wall
- Flowline (Natural and Manmade)
- Edge of Body of Water, Surface Hatched and Spot Elevation on Surface (22.67)
- Deck (DECK) Building Covered Porch or Parking
- Dirt Pile, Rock (DP) (R)
- Pool, Spa (POOL) (P) (SPA) (S)
- Trees, Brush, or Vegetation over ½ contour interval in height
- Vineyard Row
- Cattle Guard
- Overhead Sign - Single Post
- Overhead Sign - Two Post
- Trail
- Dirt Road (DIRT)

SYMBOLS
ENLARGED FOR CLARITY

- Left Turn Lane Arrow
- HOV Lane (High Occupancy Vehicle)
- Drop Inlet, Round Drop Inlet
- Manhole
- Fire Hydrant
- Valve Cover, Stand Pipe, Well, Utility Box, Railroad Crossing Standard (VC SP WELL UB RS)
- Utility Pole, Pole and Wires, Pole with Wires and Anchor
- Transmission Tower
- Electrolier, Electrolier on Pole
- Traffic Signal, Railroad Signal (TS RS)
- Call Box
- Signs - Single Post, Two Posts
- Single Tree, Palm (P)
- Marsh or Swamp
- Crash Cushion (CC)
- Tank (TANK) (T)

TOPOGRAPHY

- Index Contour (324) Intermediate Contours Index Contour (322)
- GNV Contour (Ground Not Visible)
- Depression Contour
- GNV Depresion Contour
- 342.43 Spot Elevation (at decimal point)

RAILROAD

- Scale 1:1000
- Scale 1:500, 1:200

CONTROL POINTS

- Horizontal and Vertial Control Point
- Horizontal Control Point
- Vertial Control Point

BOUNDARY LINE

- State
- County
- City
- Forest
- Subdivision, Section, Grant
- Rancho

WATER WAYS

- Rivers, Streams and Creeks - small (One Line)
- Rivers, Streams and Creeks - large (Two Lines) (which defines the water edge)
- Ocean -(Graduated Line Weights) (Land / Ocean)
- Water Edge, Lake, Pond, Swamp

Caltrans Metric

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

Jeffrey C. Kepley
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Jeff C. Kepley No. 53361 Exp. 6-30-07 CIVIL — Registered Professional Engineer — State of California

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SYMBOLS (SHEET 2 OF 2)

NO SCALE

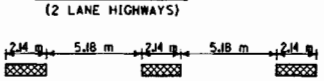
A10D

2004 Std PLAN A10D

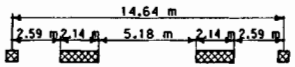
07-16-04

CENTERLINES
(2 LANE HIGHWAYS)

DETAIL 1



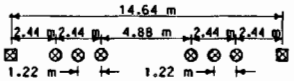
DETAIL 2



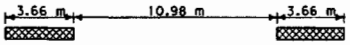
DETAIL 3

Detail 3 deleted

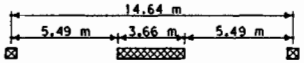
DETAIL 4



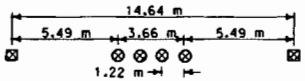
DETAIL 5



DETAIL 6

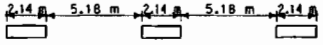


DETAIL 7

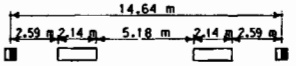


LANELINES
(MULTILANE HIGHWAYS)

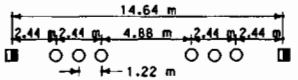
DETAIL 8



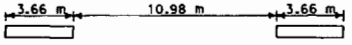
DETAIL 9



DETAIL 10

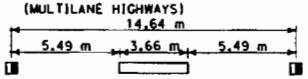


DETAIL 11

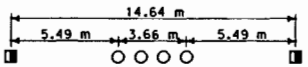


LANELINES (CONT)
(MULTILANE HIGHWAYS)

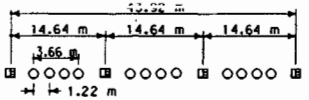
DETAIL 12



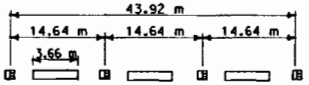
DETAIL 13



DETAIL 14

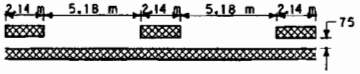


DETAIL 14A

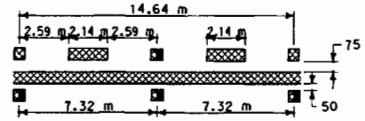


NO PASSING ZONES-ONE DIRECTION

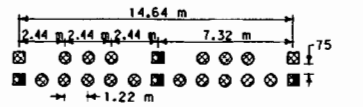
DETAIL 15



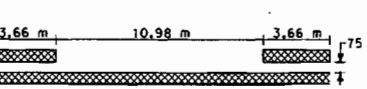
DETAIL 16



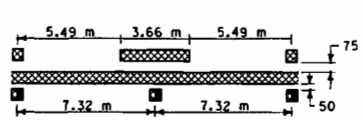
DETAIL 17



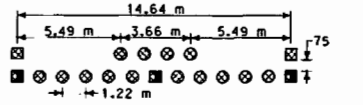
DETAIL 18



DETAIL 19



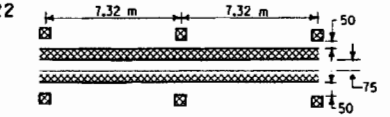
DETAIL 20



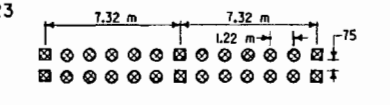
NO PASSING ZONES-TWO DIRECTION

DETAIL 21

DETAIL 22



DETAIL 23



LEGEND

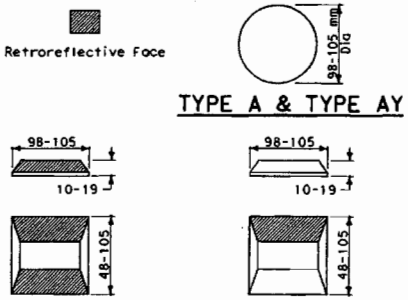
MARKERS

- 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

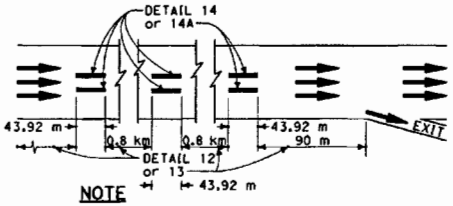
LINES

- 100 mm White
- 100 mm Yellow
- Direction of Travel

MARKER DETAILS



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.

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

Donald E. Howe
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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Donald E. Howe No. C46402 exp. 3-31-07 CIVIL STATE OF CALIFORNIA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

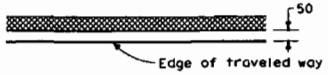
A20A

05-07-04

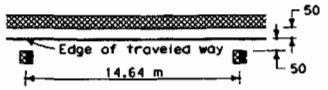
2004 Std PLAN A20A

LEFT EDGELINES
(DIVIDED HIGHWAYS)

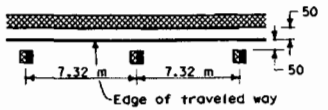
DETAIL 24



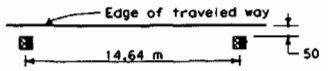
DETAIL 25



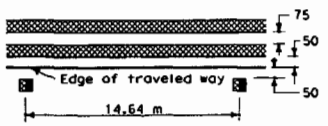
DETAIL 25A



DETAIL 26



DETAIL 27

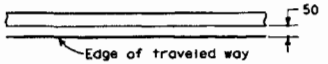


RIGHT EDGELINES

DETAIL 27A

Detail 27A deleted

DETAIL 27B

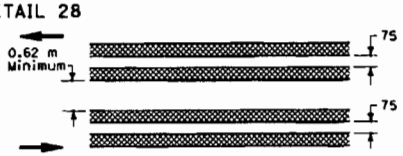


RIGHT EDGELINE EXTENSION THROUGH INTERSECTIONS

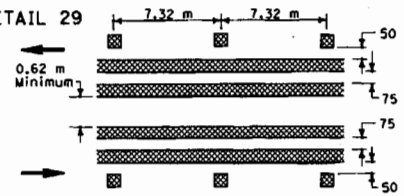
DETAIL 27C

MEDIAN ISLANDS

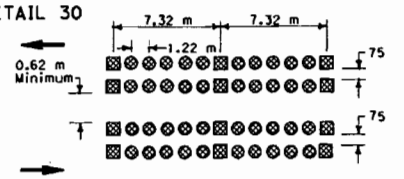
DETAIL 28



DETAIL 29

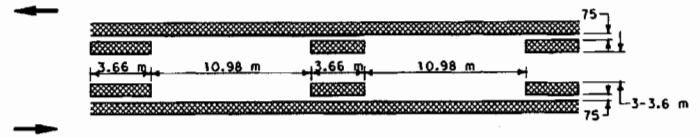


DETAIL 30

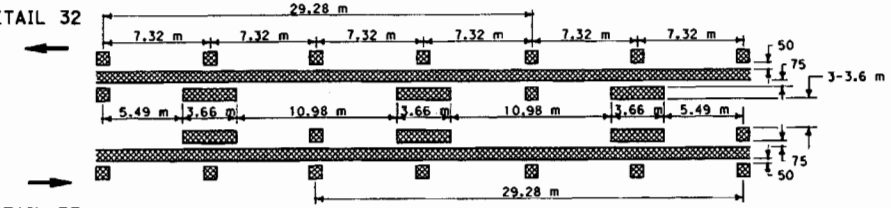


TWO-WAY LEFT TURN LANES

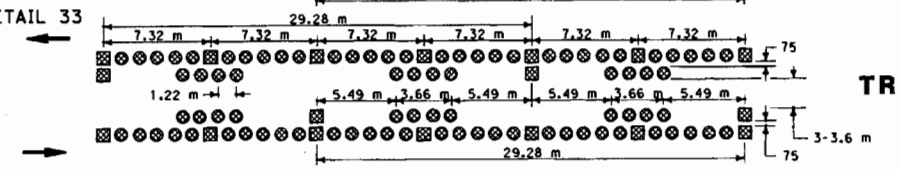
DETAIL 31



DETAIL 32



DETAIL 33



LEGEND

MARKERS

- TYPE AY Yellow Non-reflective
- TYPE D Two-way Yellow Retroreflective
- TYPE H One-way Yellow Retroreflective

LINES

- 100 mm White
- 100 mm Yellow
- Direction of Travel

Caltrans Metric

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

Donald E. Howe
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Registered Professional Engineer — Donald E. Howe — No. C46402 — Exp. 3-31-07 — Civil — State of California

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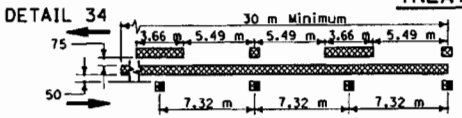
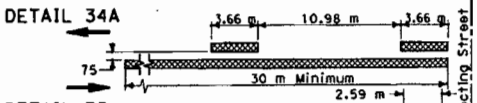
INTERSECTION TREATMENTS

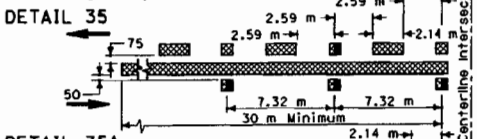
DETAIL 34



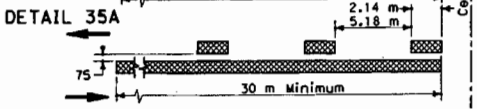
DETAIL 34A



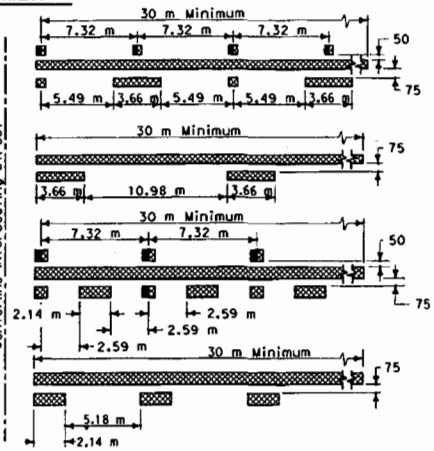
DETAIL 35



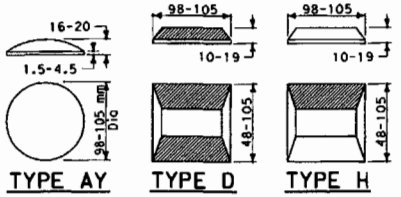
DETAIL 35A



Centerline intersecting Street



MARKER DETAILS



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A20B

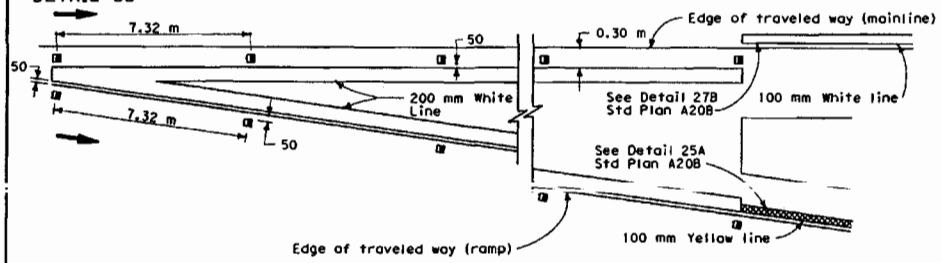
2004 Std PLAN A20B

9

04-23-04

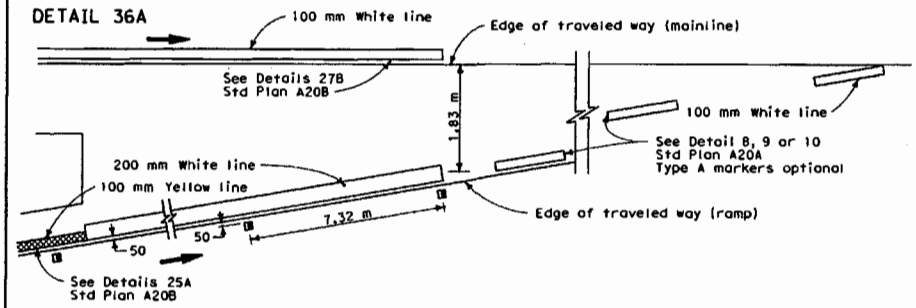
EXIT RAMP NEUTRAL AREA (GORE) TREATMENT

DETAIL 36



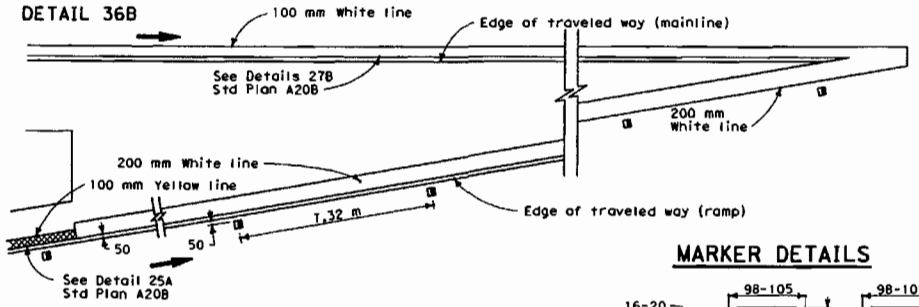
ENTRANCE RAMP NEUTRAL AREA (MERGE) TREATMENT

DETAIL 36A

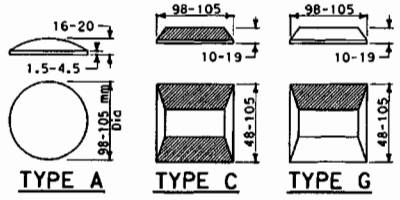


ENTRANCE RAMP NEUTRAL AREA (ACCELERATION LANE) TREATMENT

DETAIL 36B



MARKER DETAILS



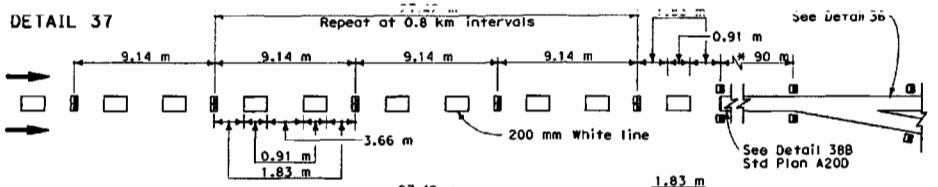
LEGEND

MARKERS

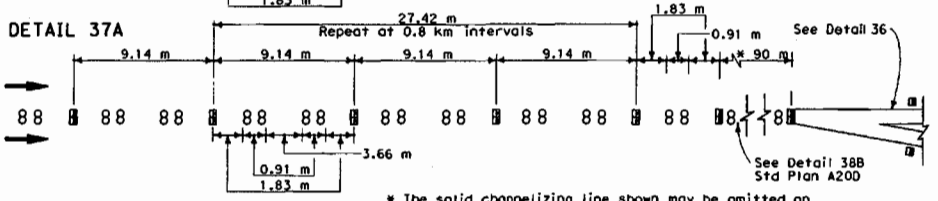
- ○ TYPE A White Non-reflective
- ▯ TYPE C Red-clear Retroreflective
- ▮ TYPE G One-way Clear Retroreflective
- ← Direction of Travel

LANE DROP AT EXIT RAMPS

DETAIL 37



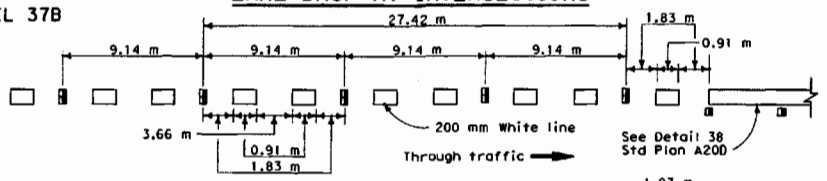
DETAIL 37A



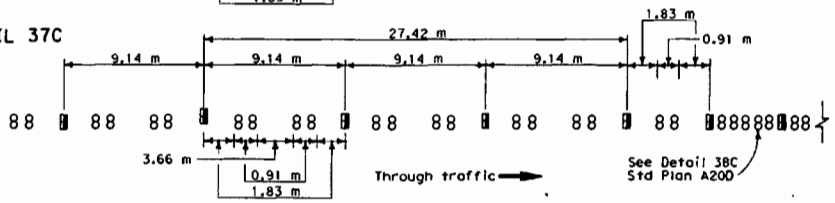
* The solid channelizing line shown may be omitted on short auxiliary lanes where weaving length is critical.

LANE DROP AT INTERSECTIONS

DETAIL 37B



DETAIL 37C



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINE TYPICAL DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A20C

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

Donald E Howe
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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Registered Professional Engineer — Donald E. Howe — No. C46402 — Exp. 3-31-07 — Civil — State of California

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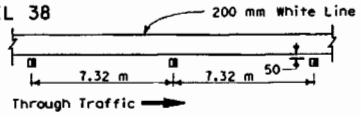
2004 Std PLAN A20C

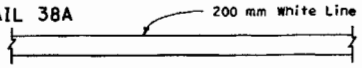
04-23-04

CHANNELIZING LINE

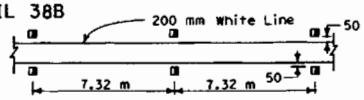
DETAIL 38



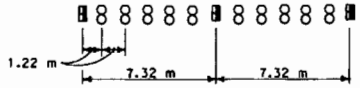
DETAIL 38A



DETAIL 38B

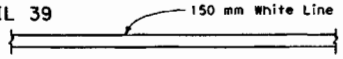


DETAIL 38C



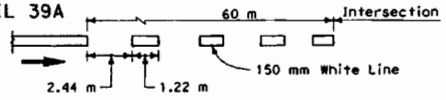
BIKE LANE LINE

DETAIL 39



INTERSECTION LINE
BIKE LANE

DETAIL 39A

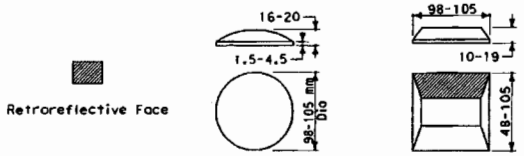


LEGEND

MARKERS

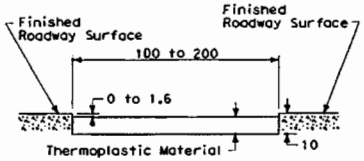
- TYPE A White Non-reflective
- TYPE AY Yellow Non-Reflective
- TYPE G One-way Clear Retroreflective
- 100 mm Yellow Line
- Direction of Travel

MARKER DETAILS



TYPE A & TYPE AY

TYPE G



DETAIL FOR RECESSED THERMOPLASTIC TRAFFIC STRIPE

See Notes A and B.

RECESSED THERMOPLASTIC NOTES

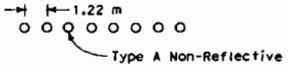
A. See typical traffic line details for pavement marking patterns.

B. The top of the thermoplastic installed in recessed pavement shall be 0 to 1.6 mm below the pavement surface.

LANE LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 40

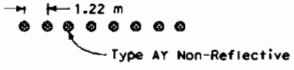
DETAIL 40A



CENTER LINE EXTENSIONS THROUGH INTERSECTIONS

DETAIL 41

DETAIL 41A



Caltrans Metric

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

Donald E. Howe
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Donald E. Howe No. C46402 Exp. 3-31-07 CIVIL STATE OF CALIFORNIA

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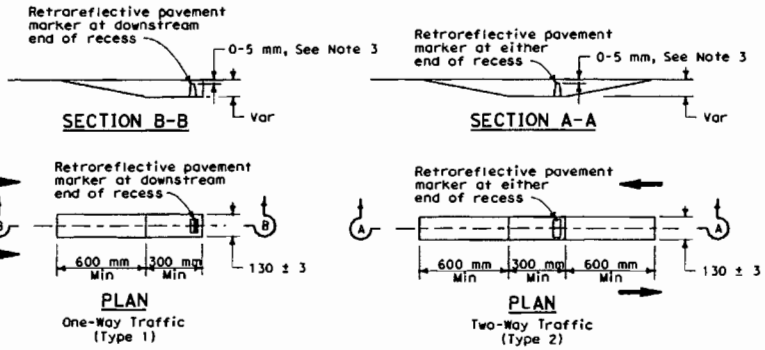
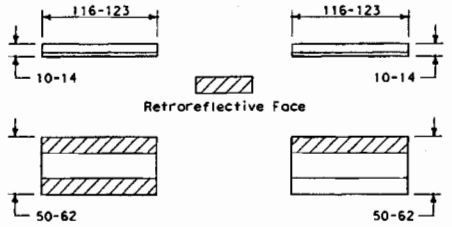


RECESS DETAIL FOR RETROREFLECTIVE PAVEMENT MARKER



See Notes 1 and 2.

RECESSED MARKER NOTES

1. See typical traffic line details for marker patterns to be used with recessed pavement markers. Detail 14 requires a Type 2 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 0-5 mm below the pavement surface.

RETROREFLECTIVE PAVEMENT MARKER FOR RECESSED INSTALLATION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKERS AND TRAFFIC LINES TYPICAL DETAILS

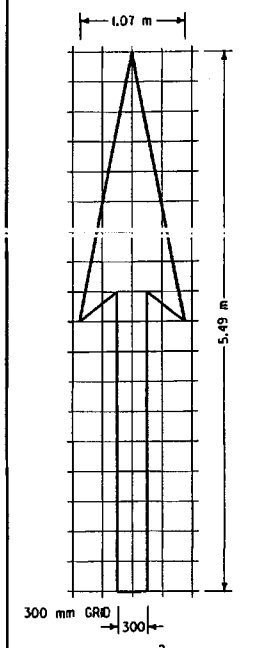
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A20D

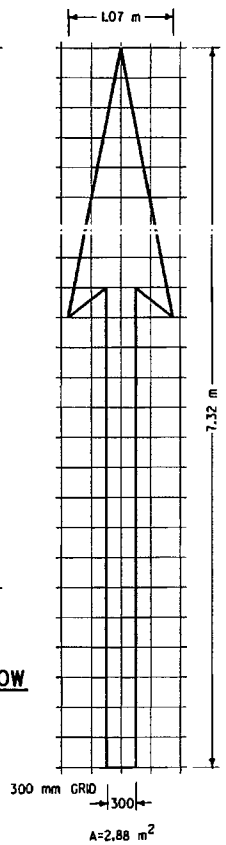
2004 Std PLAN A20D

04-23-04



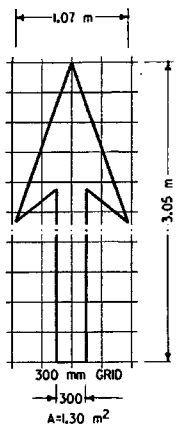
A=2.32 m^2

TYPE I(5.49 m) ARROW



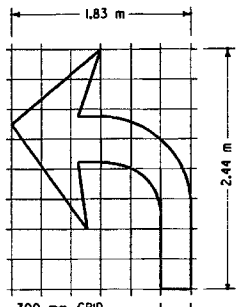
A=2.88 m^2

TYPE I(7.32 m) ARROW



A=1.30 m^2

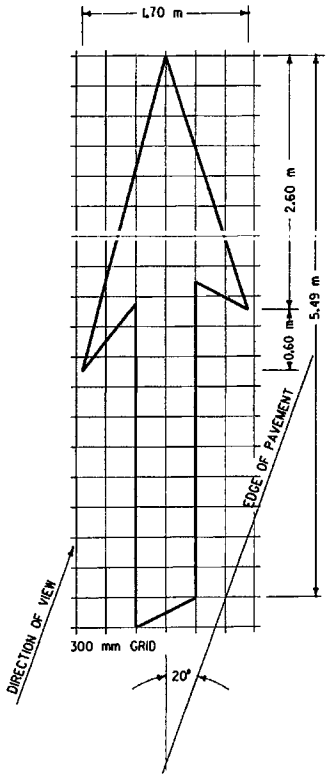
TYPE I(3.05 m) ARROW



A=1.39 m^2

TYPE IV (L) ARROW

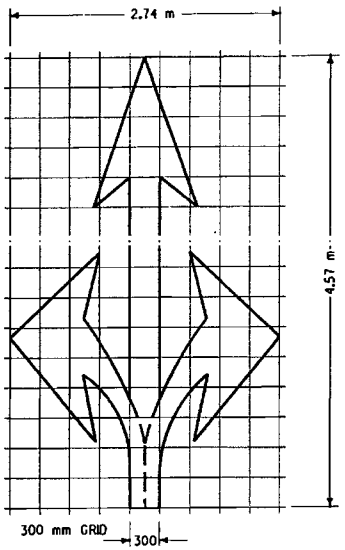
(FOR TYPE IV(R) ARROW, USE MIRROR IMAGE)



A=3.90 m^2

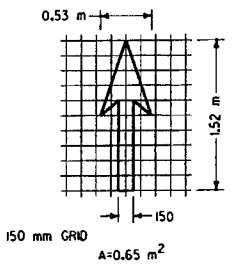
TYPE VI ARROW

RIGHT LANE DROP ARROW (FOR LEFT LANE, USE MIRROR IMAGE)



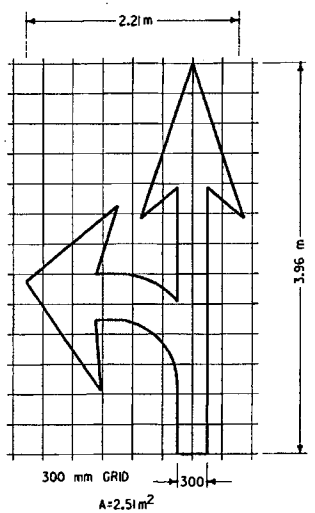
A=3.34 m^2

TYPE VIII ARROW



A=0.65 m^2

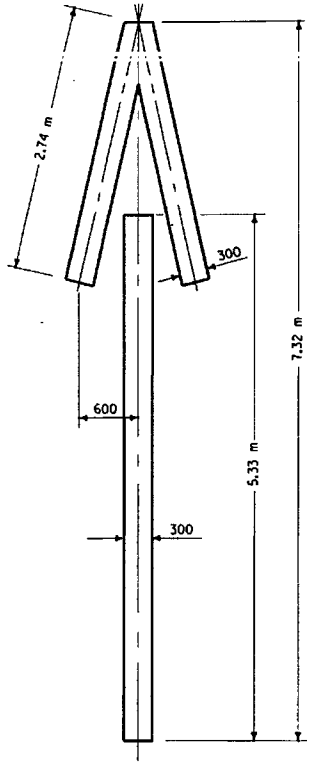
BIKE LANE ARROW



A=2.51m^2

TYPE VII(L) ARROW

(FOR TYPE VII(R) ARROW, USE MIRROR IMAGE)



A=3.06 m^2

TYPE V ARROW

NOTE

MINOR VARIATIONS IN DIMENSIONS MAY BE ACCEPTED BY THE ENGINEER.

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

Donald E. Hose
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — Donald E. Hose — No. C46402 — Exp. 3-31-07 — CIVIL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS ARROWS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A24A

2004 Std PLAN A24A

04-23-04

Caltrans Metric

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

Donald E. Howe
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — Donald E. Howe — No. C45402 — Exp. 3-31-07 — CIVIL — STATE OF CALIFORNIA

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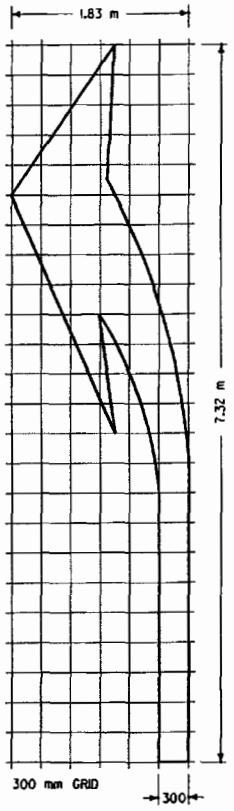
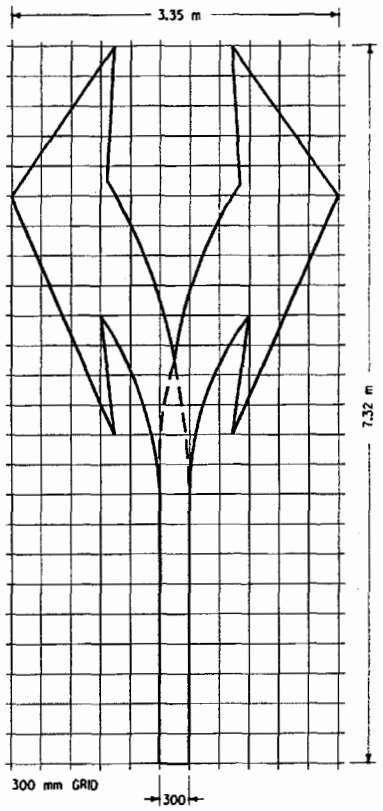


A=3.90 m^2

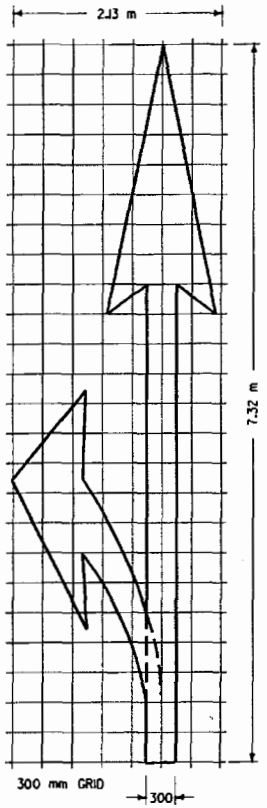
TYPE III(L) ARROW

(FOR TYPE III(R) USE MIRROR IMAGE)



A=6.78 m^2

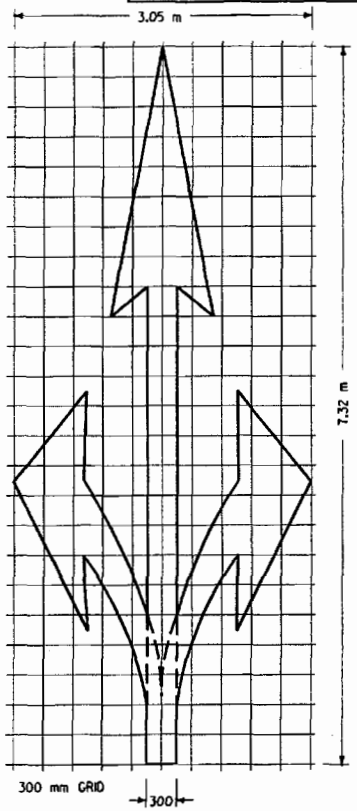
TYPE III(B) ARROW



A=4.18 m^2

TYPE II(L) ARROW

(FOR TYPE II(R) USE MIRROR IMAGE)



A=5.48 m^2

TYPE II(B) ARROW

NOTE

MINOR VARIATIONS IN DIMENSIONS MAY BE ACCEPTED BY THE ENGINEER.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

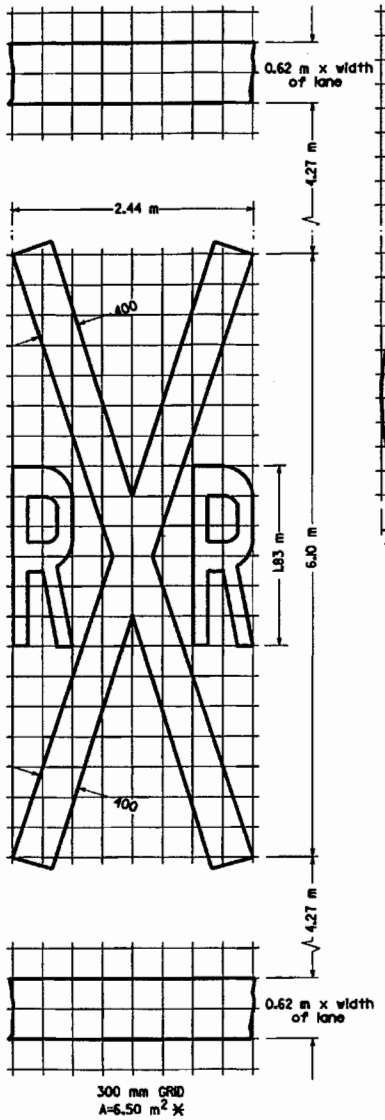
PAVEMENT MARKINGS ARROWS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

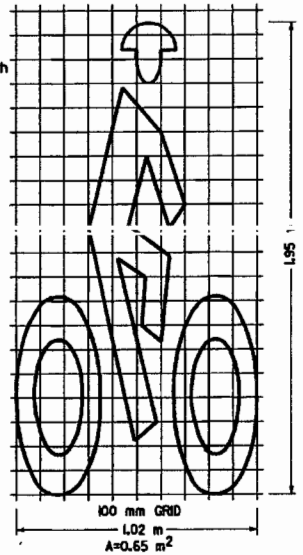
A24B

04-23-04

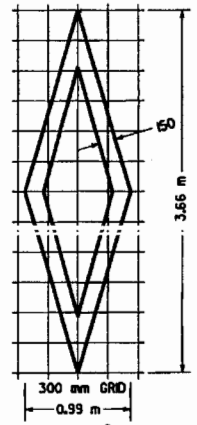


RAILROAD CROSSING SYMBOL

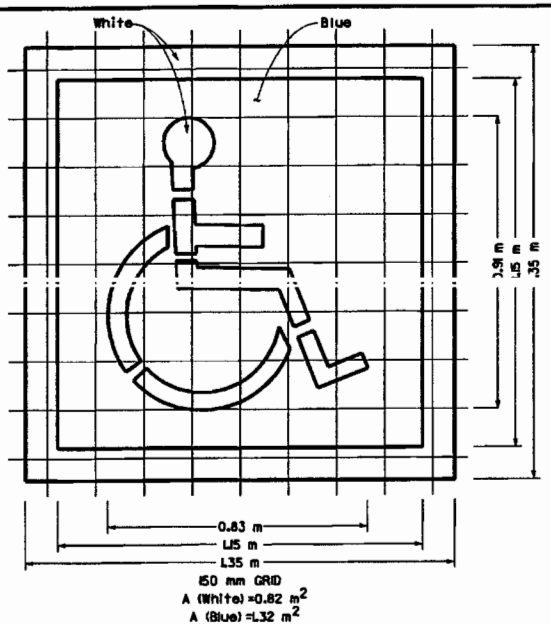
*6.5 m² DOES NOT INCLUDE THE 0.6 m x VARIABLE WIDTH TRANSVERSE LINES.



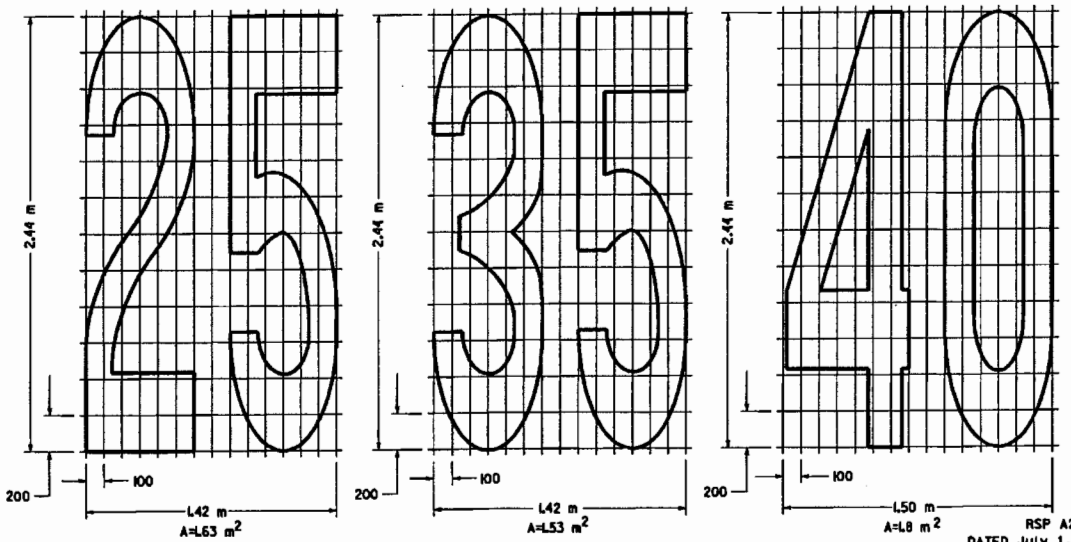
BIKE LANE SYMBOL



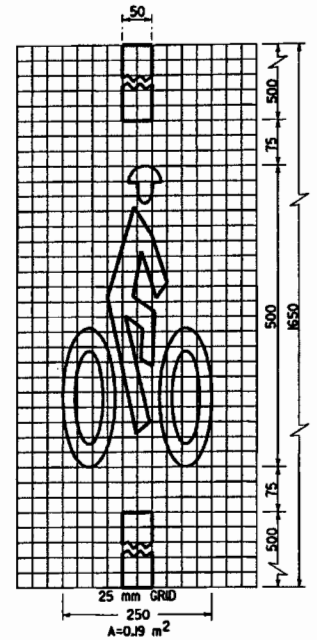
DIAMOND SYMBOL



INTERNATIONAL SYMBOL OF ACCESSIBILITY MARKING



NUMERALS



BICYCLE LOOP DETECTOR SYMBOL

NOTE:

1. Minor variations in dimensions may be accepted by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS SYMBOLS AND NUMERALS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP A24C DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A24C
DATED July 1, 2004 - PAGE 11 OF THE STANDARD PLANS BOOK DATED July 2004.

REVISED STANDARD PLAN RSP A24C

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

Donald E. Howe
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

Donald E. Howe
C46402
EXP. 3-31-09
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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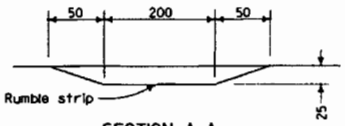
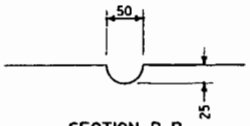
To accompany plans dated _____

2004 REVISED Std PLAN RSP A24C

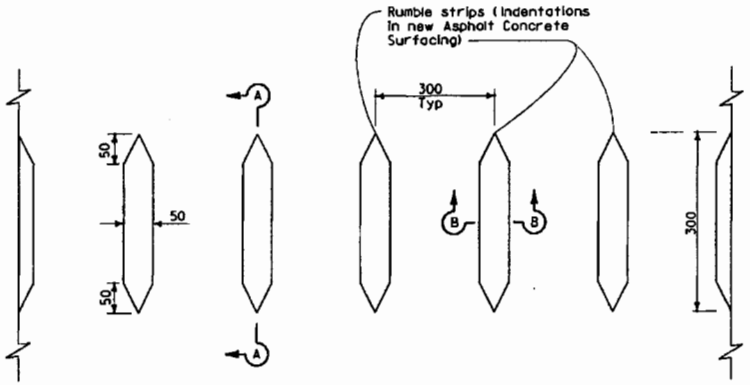
5-27-08



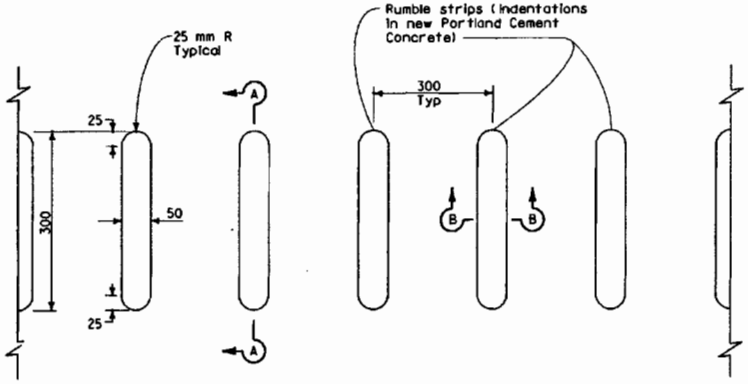
SECTION A-A



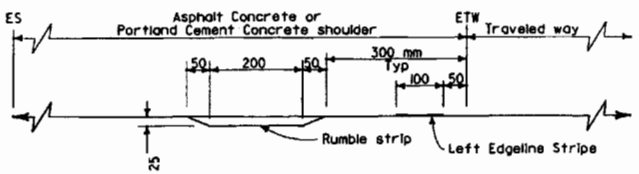
SECTION B-B



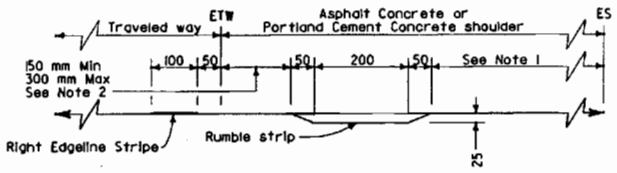
PLAN
ASPHALT CONCRETE SURFACING
ROLLED-IN INDENTATIONS
DETAIL A



PLAN
PORTLAND CEMENT CONCRETE
ROLLED-IN INDENTATIONS
DETAIL B



RUMBLE STRIP PLACEMENT
LEFT OF DIRECTION OF TRAVEL



RUMBLE STRIP PLACEMENT
RIGHT OF DIRECTION OF TRAVEL

TYPICAL ROLLED-IN RUMBLE STRIP SHOULDER PLACEMENT

NOTES:

1. Where bicycles are permitted, shoulder rumble strips should not be used right of direction of travel unless a minimum of 1.5 meters of clear shoulder width for bicycle use is available between the rumble strip and the outer edge of the shoulder. Where bicycles are not permitted, a minimum of 1.2 meters of distance is required between the rumble strip and the outer edge of the shoulder.
2. Unless otherwise shown on the plans or specified in the special provisions, the 150 mm offset from the edge of traveled way to the edge of the rumble strip shall be used for rumble strip placement right of the direction of travel.

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

Craig A. Copelan
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
Craig A. Copelan
No. C36301
Exp. 6-30-06
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

SHOULDER RUMBLE STRIP DETAILS ROLLED-IN INDENTATIONS

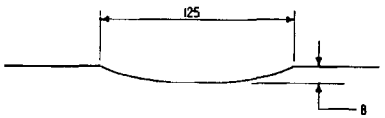
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

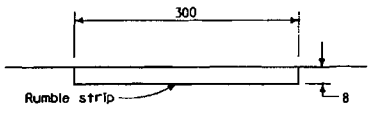
A40A

05-13-04

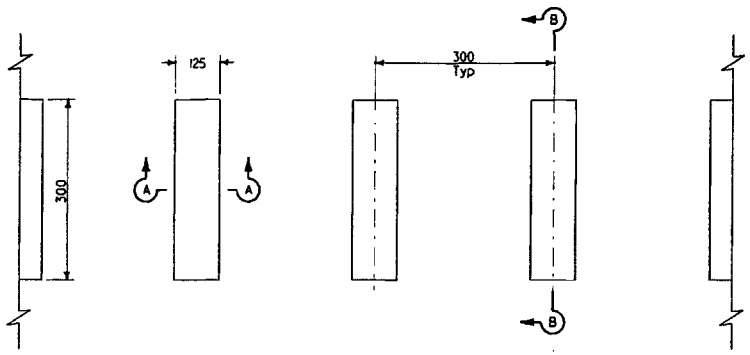
2004 Std PLAN A40A



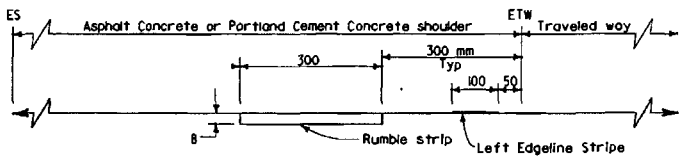
SECTION A-A



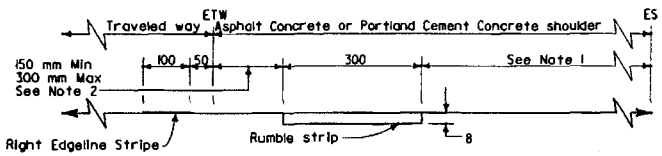
SECTION B-B



PLAN
GROUND-IN INDENTATIONS



RUMBLE STRIP PLACEMENT
LEFT OF DIRECTION OF TRAVEL



RUMBLE STRIP PLACEMENT
RIGHT OF DIRECTION OF TRAVEL

TYPICAL GROUND-IN RUMBLE STRIP SHOULDER PLACEMENT

NOTES:

1. Where bicycles are permitted, shoulder rumble strips should not be used right of direction of travel unless a minimum of 1.5 meters of clear shoulder width for bicycle use is available between the rumble strip and the outer edge of the shoulder. Where bicycles are not permitted, a minimum of 1.2 meters of distance is required between the rumble strip and the outer edge of the shoulder.
2. Unless otherwise shown on the plans or specified in the special provisions, the 150 mm offset from the edge of traveled way to the edge of the rumble strip shall be used for rumble strip placement right of the direction of travel.

Caltrans Metric

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

Craig A. Copelan
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Craig A. Copelan
No. C36301
Exp. 6-30-06
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

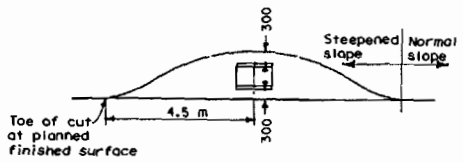
SHOULDER RUMBLE STRIP DETAILS GROUND-IN INDENTATIONS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

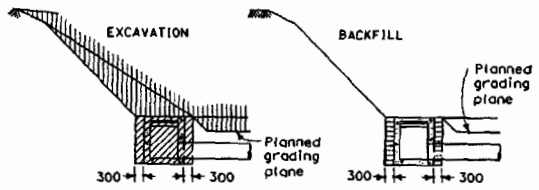
A40B

05-13-04



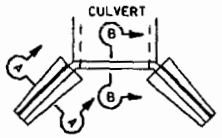
PLAN

See Note 2

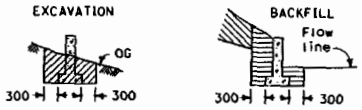


SECTION

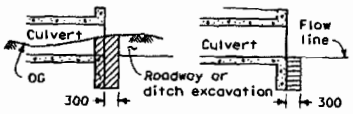
RECESSES AT DRAINAGE INLETS



PLAN OF WING WALL

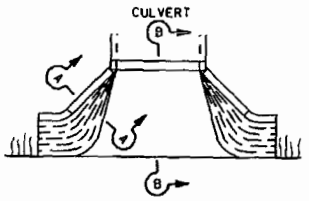


SECTION A-A

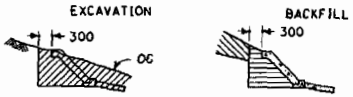


SECTION B-B

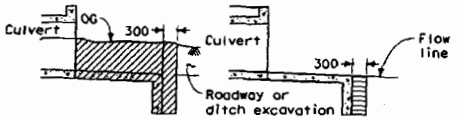
WING WALLS



PLAN OF WRARPED WING WALL



SECTION A-A



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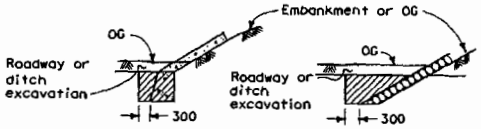
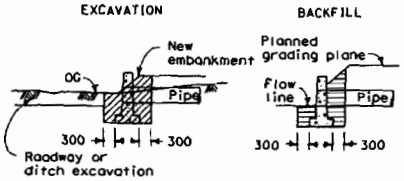
WARPED WING WALLS



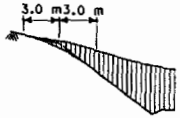
SLOPE PROTECTION

See Note 3



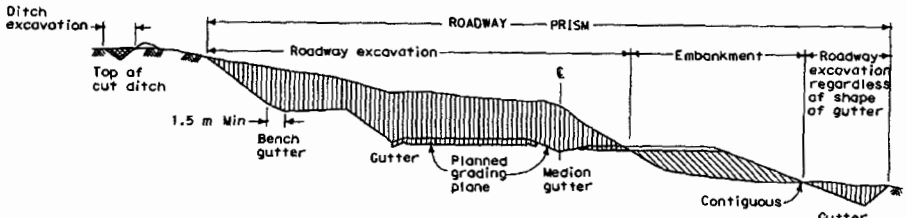
PIPE HEADWALLS

PAVED OR LINED DITCH

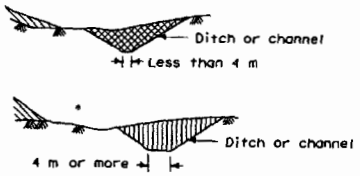


SLOPE ROUNDING

DIKE AND GUTTER



ROADWAY EXCAVATION - DITCH EXCAVATION



NOTES

1. This drawing indicates the work to be done and limits of payment for:
   - Roadway Excavation
   - Ditch Excavation
   - Structure Excavation for Slope Protection
2. Slopes and dimensions may vary to fit field conditions.
3. Top limit of structure excavation is original ground if ditch is not excavated.

LEGEND

- Structure Excavation
- Structure Backfill
- Ditch Excavation
- Slope Protection
- Roadway Excavation
- Roadway Embankment
- Original Ground

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL MISCELLANEOUS DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A62A

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

REGISTERED CIVIL ENGINEER — Dean L. Forester

July 1, 2004
PLANS APPROVAL DATE

Dean Lee Forester
No. C37765
Exp. 12-31-04
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER

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Caltrans Metric

2004 Std PLAN A62A

04-30-04

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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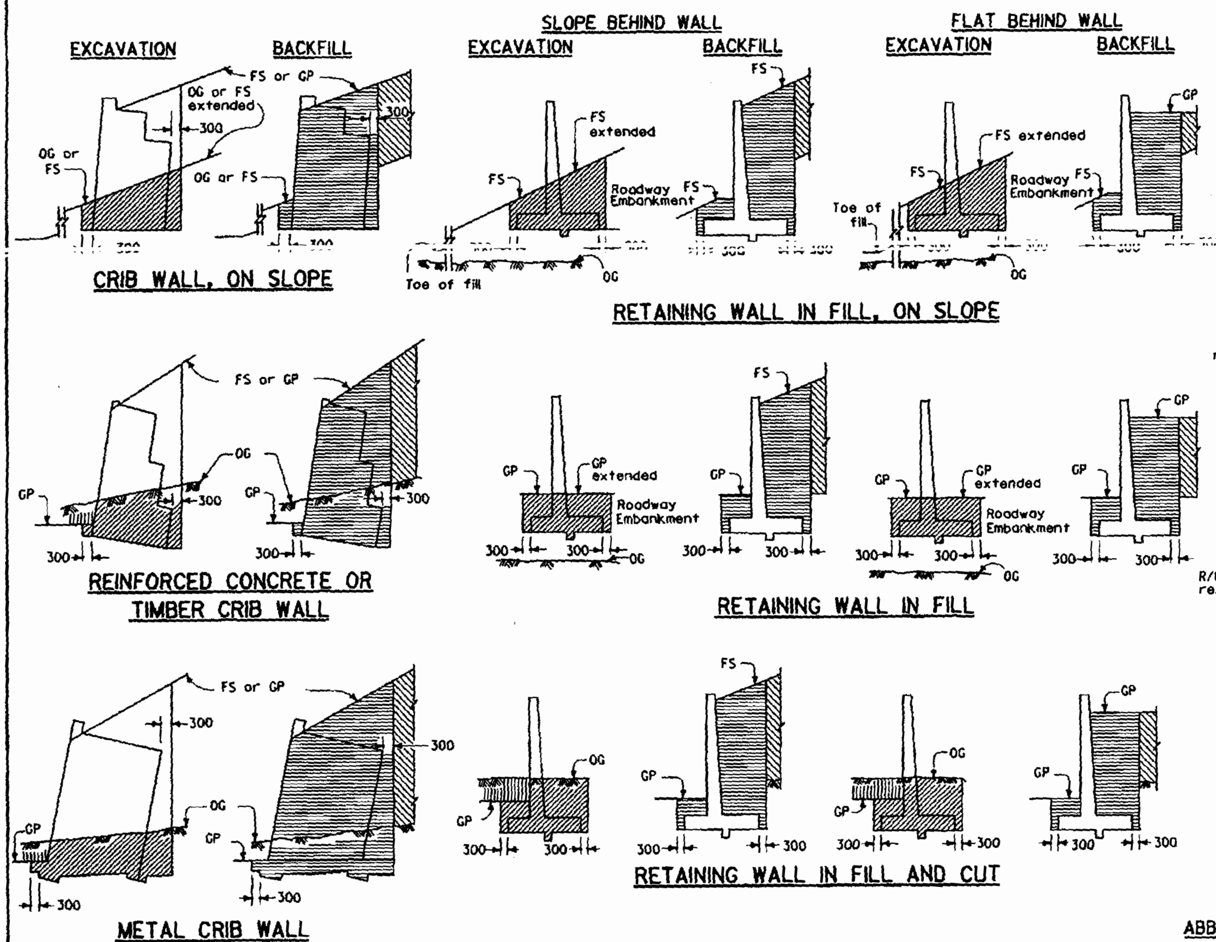
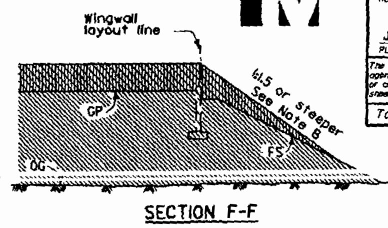
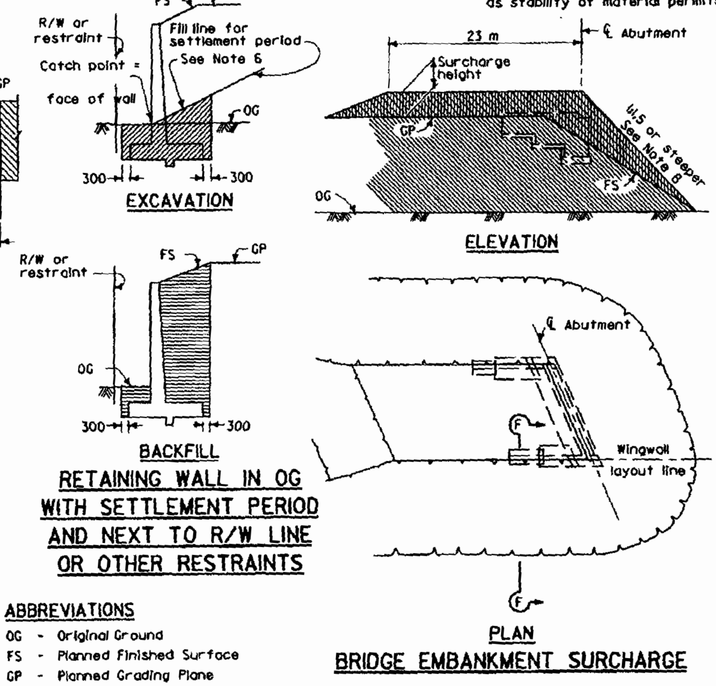
Caltrans Metric

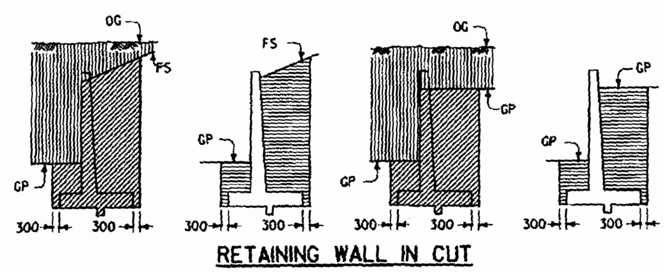




SURCHARGE NOTES

7. ... be placed at locations and to the heights listed in the special provisions.
8. Surcharge slopes to be as steep as stability of material permits.





NOTES

1. Roadway embankment is not delineated on excavation drawings for clarity.
2. Embankment, if any, must be in place before structure excavation is made.
3. If no roadway or ditch excavation or embankment is involved at the wall, structure excavation will be measured from the original ground.
4. No deduction for crib wall member volumes is made from structure backfill quantities.
5. When an embankment settlement period is required, the upper limits of structure excavation are raised to conform to the elevation of the embankment after the settlement period or, when an embankment surcharge is used to the finished surface and grading plane elevations.
6. Embankment slopes to be as steep as material permits. Slope assumed to be 1:1 for purposes of quantity calculations.

ABBREVIATIONS

OG - Original Ground
FS - Planned Finished Surface
GP - Planned Grading Plane

LEGEND

- Structure Excavation
- Structure Backfill
- Roadway Excavation
- Roadway Embankment
- Bridge Embankment Surcharge

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

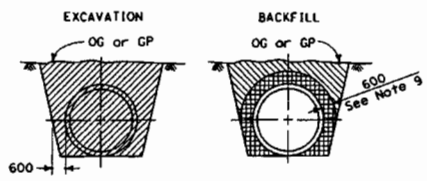
LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BRIDGE SURCHARGE AND WALL

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A62B

03-26-04



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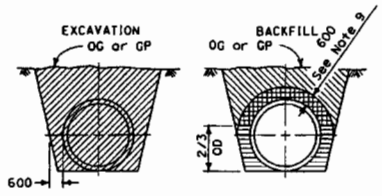

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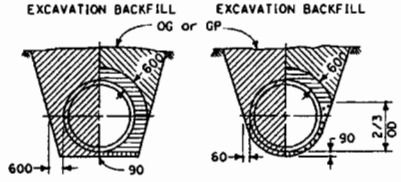
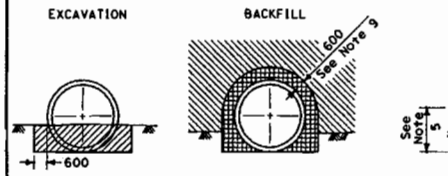
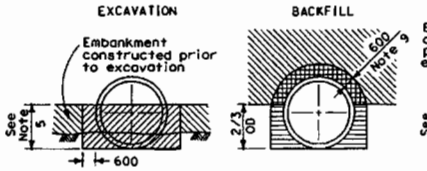


SAND BEDDING SOIL CEMENT BEDDING

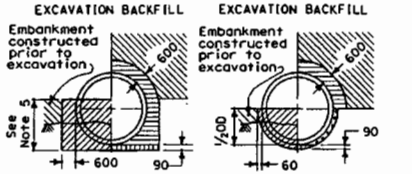
IN TRENCH



IN EMBANKMENT



IN EMBANKMENT



SAND BEDDING SOIL CEMENT BEDDING

A B

IN EMBANKMENT

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 1

Cover (in meters)	Minimum Class & D-Load
1.80	Class II 500
1.81 - 2.40	Class III 650
2.41 - 3.00	Class III Special 800
3.01 - 3.60	Class IV 1000
3.61 - 4.20	Class IV Special 1200
4.21 - 5.10	Class V 1400
5.11 - 6.00	Class V Special 1700

See Notes 6 and 9

METHOD 1

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 2

Cover (in meters)	Minimum Class & D-Load
4.80	Class II 500
4.81 - 6.00	Class III 650
6.01 - 7.50	Class III Special 800
7.51 - 8.50	Class IV 1000
8.51 - 10.60	Class IV Special 1200
10.61 - 12.80	Class V 1400
12.81 - 15.00	Class V Special 1700

See Notes 8 and 9

METHOD 2

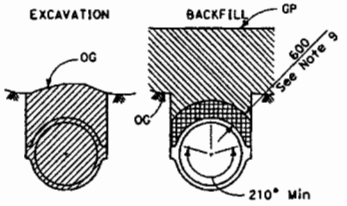
REINFORCED CONCRETE PIPE

See Notes 1, 2, 7 and 10

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 3

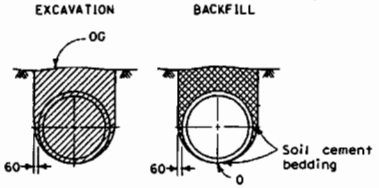
Cover (in meters)	Minimum Class & D-Load
7.90	Class II 500
7.91 - 9.70	Class III 650
9.71 - 11.50	Class III Special 800
11.51 - 13.70	Class IV 1000
13.71 - 17.00	Class IV Special 1200
17.01 - 20.70	Class V 1400
20.71 - 24.00	Class V Special 1700

METHOD 3



IN TRENCH ONLY

CAST-IN-PLACE



IN TRENCH ONLY

PRECAST

See Notes 7 and 11

NON-REINFORCED CONCRETE PIPE

LEGEND

- Structure Excavation (Culvert)
- Structure Backfill (Culvert) 95% relative compaction
- Structure Backfill (Culvert) 90% relative compaction
- Loose Backfill
- Sand Bedding
- Soil Cement Bedding
- Roadway Embankment
- Original Ground

OD = Outside diameter for circular pipes and maximum vertical dimension for other shapes

ID = Inside diameter for circular pipes and minimum vertical dimension for other shapes

RCP = Reinforced concrete pipe

NOTES

1. Unless otherwise shown on the plans or specified in the special provisions, the Contractor shall have the option of selecting the class of RCP and the method of backfill to be used, provided the height of cover does not exceed the value shown for the RCP selected.
   Example:
   600 mm RCP culvert with maximum cover of 5.80 m the options are:
   a) Class V Special or stronger with Method 1.
   b) Class III or stronger with Method 2.
   c) Class II or stronger with Method 3.
   Cover is defined as the maximum vertical distance from top of pipe to finished grade within the length of any given culvert.
2. The class of RCP, method of backfill and bedding selected shall be the same throughout the length of any given culvert.
3. The "length of any culvert" is defined as the culvert between:
   a) Successive drainage structures (inlets, junction boxes, headwalls, etc.).
   b) A drainage structure and the inlet or outlet end of the culvert.
   c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
4. Slope or shore excavation sides as necessary.
5. Embankment height prior to excavation for installation of all classes of RCP under Methods 2 and 3A shall be as follows:
   Pipe sizes 300 mm to 1050 mm I D = 750 mm
   Pipe sizes 1200 mm to 2100 mm I D = 2/3 OD
   Pipe sizes larger than 2100 mm I D = 1500 mm
6. The maximum size for all classes of RCP placed under Method 1 is 1950 mm ID.
7. Non-reinforced precast pipe sizes 900 mm or smaller may also be placed under Methods 1, 2 or 3.
8. Oval or arch shaped RCP shall be placed under Method 2 only.
9. Embankment compaction requirements govern over the 90% relative compaction backfill requirement within 750 mm of finished grade.
10. Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimums.
11. Where the precast non-reinforced concrete pipe is used as a substitute for the cast-in-place pipe, both the wall thickness and the concrete strength shall be at least as great as that specified for the cast-in-place pipe. The fill height allowed shall not exceed that shown for the cast-in-place pipe.

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER Dallas Forester No. C37785 Exp. 12-31-04 CIVIL STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

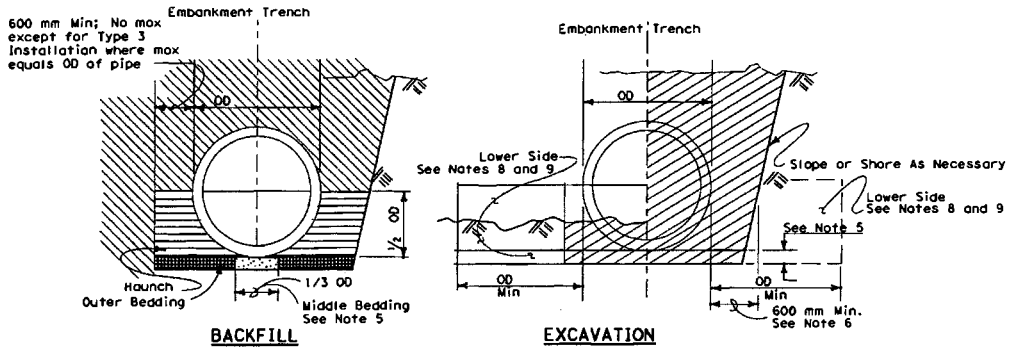
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A62D

04-01-04

2004 Std PLAN A62D



BACKFILL **EXCAVATION**

Roadway Embankment

Structure Backfill (Culvert) See Note 6

Structure Backfill (Culvert) See Note 6

Loose Backfill

Excavation Structure (Culvert)

OD - Outside diameter of pipe
RCP - Reinforced concrete pipe

TYPE 1 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 30 and the maximum percentage passing the 75 µm sieve size shall be 12.

TYPE 2 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 90 percent relative compaction. In addition, the minimum sand equivalent in these areas shall be 25.

TYPE 3 INSTALLATION:

The haunch and outer bedding shall be compacted to a minimum 85 percent relative compaction. 90 percent relative compaction will be required where the fill over the pipe is less than 1.2 meters or ½ OD.

INSTALLATION TYPE 1

MINIMUM CLASS AND D-LOAD	COVER (IN METERS)	
	2700 DIA. AND SMALLER	OVER 2700 DIA
Class II 50D	4.50	4.00
Class III 65D	4.51 - 6.40	4.01 - 5.80
Class III Special 80D	6.41 - 8.20	5.81 - 7.60
Class IV 100D	8.21 - 9.70	7.61 - 9.10
Class IV Special 120D	9.71 - 12.50	9.11 - 11.90
Class V 140D	12.51 - 15.20	11.91 - 14.30
Class V Special 170D	15.21 - 18.00	14.31 - 17.70

INSTALLATION TYPE 2

MINIMUM CLASS AND D-LOAD	COVER (IN METERS)
Class II 50D	3.00
Class III 65D	3.01 - 4.60
Class III Special 80D	4.61 - 6.10
Class IV 100D	6.11 - 7.60
Class IV Special 120D	7.61 - 9.80
Class V 140D	9.81 - 11.90
Class V Special 170D	11.91 - 14.30

INSTALLATION TYPE 3

MINIMUM CLASS AND D-LOAD	COVER (IN METERS)	
	1200 DIA. AND SMALLER	OVER 1200 DIA
Class II 50D	2.40	1.80
Class III 65D	2.41 - 3.40	1.81 - 2.70
Class III Special 80D	3.41 - 4.60	2.71 - 4.00
Class IV 100D	4.61 - 5.50	4.01 - 4.90
Class IV Special 120D	5.51 - 6.70	4.91 - 6.10
Class V 140D	6.71 - 8.20	6.11 - 7.60
Class V Special 170D	8.21 - 10.00	7.61 - 9.50

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Dalton Forrester
No. C37765
Exp. 12-31-04
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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NOTES:

1. Unless otherwise shown on the plans or specified in the special provision, the Contractor shall have the option of selecting the class of RCP and the type of installation to be used, provided the height of cover does not exceed the value shown for the RCP selected.
   Example: 600 mm RCP culvert with maximum cover of 5.80 m the options are:
   a) Class III or stronger with Installation Type 1.
   b) Class III Special or stronger with Installation Type 2.
   c) Class IV Special or stronger with Installation Type 3.
   Cover is defined as the maximum vertical distance from top of the pipe to finished grade within the length of any given culvert.
2. The class of RCP and Installation Type selected shall be the same throughout the length of any given culvert.
3. The "length of any culvert" is defined as the culvert between:
   a) Successive drainage structure (inlets, junction boxes, headwalls, etc.).
   b) A drainage structure and the inlet or outlet end of the culvert.
   c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
4. Oval and arch shaped RCP shall not be used.
5. 1/25 OD min, not less than 75 mm.
6. Slurry cement backfill may be substituted for backfill in the outer bedding and haunch areas. If slurry is used the outer and middle beddings shall be omitted. Prior to installation the soil under the middle 1/3 of the outside diameter of the pipe shall be softened by scarifying or other means to a minimum depth of 1/25 OD, but not less than 75 mm. Where slurry cement backfill is used clear distance to trench wall may be reduced as set forth in Section 19-3.062 of the Standard Specifications.
7. Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimums.
8. Lower side shall be suitable material as determined by the Engineer. Otherwise it shall be considered unsuitable as set forth in Section 19-2.02 of the Standard Specifications. See Note 9.
9. Where the pipe is placed in a trench, if the trench walls are sloped at 5 vertical to 1 horizontal or steeper for at least 90 percent of the trench height or up to not less than 300 mm from the grading plane, the firmness of the soil in the lower side need not be considered.
10. Non-reinforced precast concrete pipe sizes 900 mm or smaller may be placed under installation Types 1, 2 or 3.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A62DA

04-20-04

2004 Std PLAN A62DA

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Dalton Forrester
No. C37765
Exp. 12-31-04
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REGISTERED PROFESSIONAL ENGINEER
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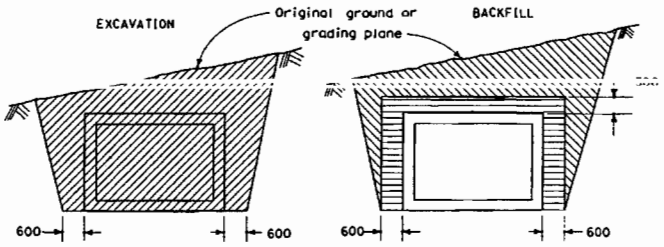
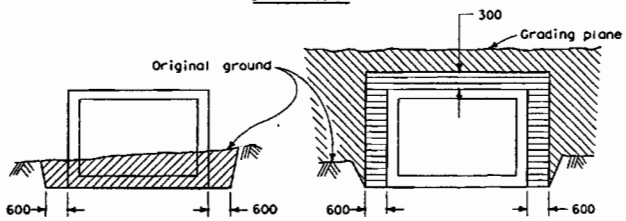
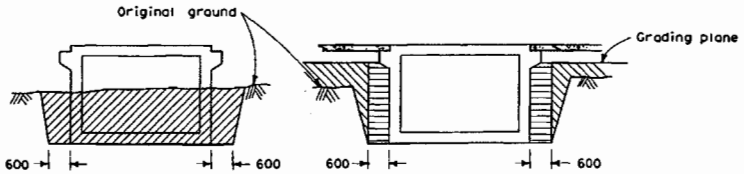


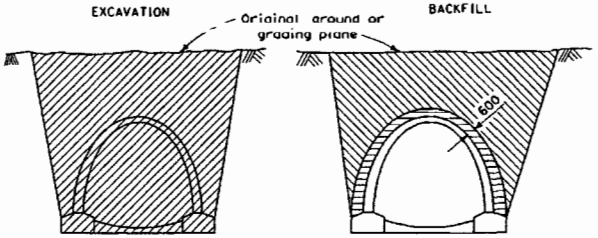
IN TRENCH



IN EMBANKMENT



EXPOSED TOP
REINFORCED CONCRETE BOX CULVERT



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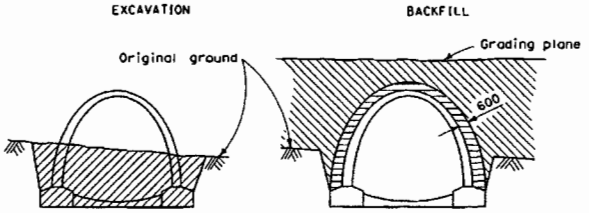


IN EMBANKMENT
REINFORCED CONCRETE ARCH CULVERT

NOTES

1. Slope or shore excavation sides as necessary.
2. Dimensions shown are minimum.

LEGEND

- Structure Excavation (Culvert)
- Structure Backfill (Culvert) 95% relative compaction
- Roadway Embankment
- Original Ground

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

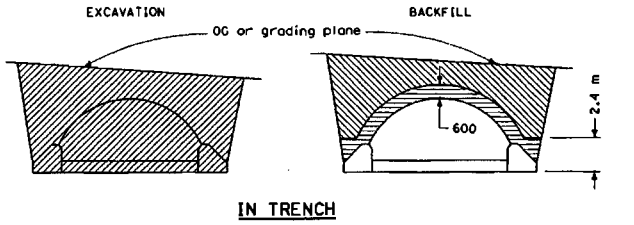
EXCAVATION AND BACKFILL CAST-IN-PLACE REINFORCED CONCRETE BOX AND ARCH CULVERTS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A62E

04-01-04



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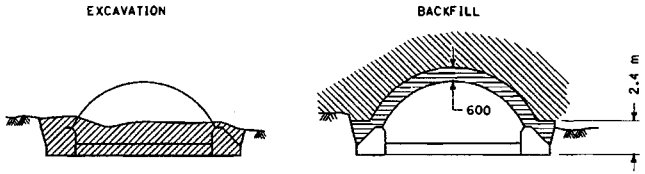
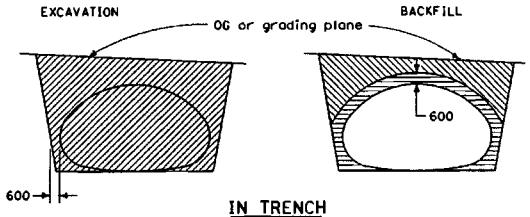
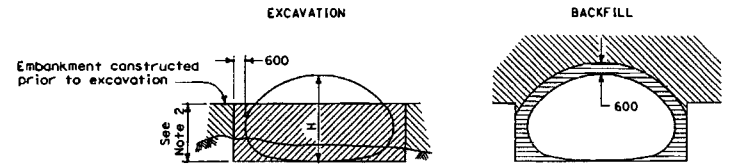


IN EMBANKMENT

STRUCTURAL STEEL PLATE ARCHES

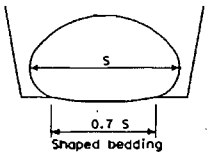


IN TRENCH



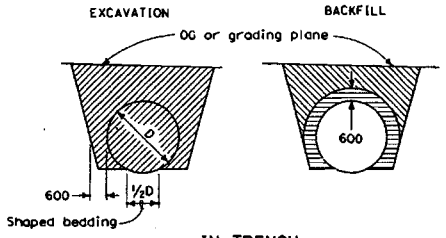
IN EMBANKMENT

STRUCTURAL STEEL PLATE PIPE ARCHES AND VEHICULAR UNDERCROSSING



SHAPED BEDDING

S = Larger than 2100 mm



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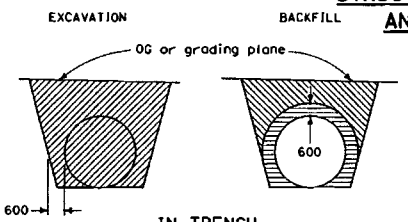
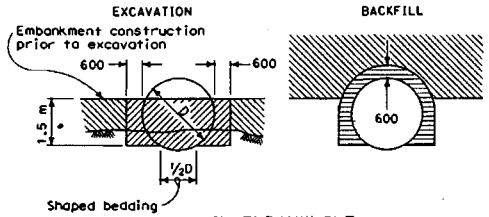


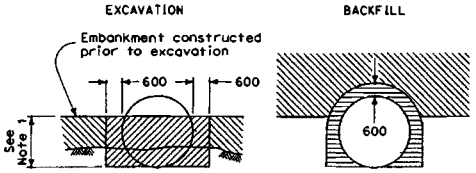
IN TRENCH



IN EMBANKMENT

PIPES

Larger than 2100 mm



IN EMBANKMENT

METAL AND PLASTIC PIPES AND CORRUGATED METAL PIPE ARCHES

2100 mm or Smaller

NOTES

1. PIPES: 750 mm minimum for diameters up to and including 1050 mm then 2/3 diameter but no more than 1500 mm required. CORRUGATED METAL PIPE ARCHES: 750 mm maximum.
2. 2/3 H up to 1500 mm maximum.
3. Slope or shore excavation sides as necessary.
4. Backfill shall be placed full width of excavation except as noted.
5. Diagrams do not apply to overside drains.
6. Dimensions shown are minimum.
7. For strutting requirement of structural steel plate pipe, arches and vehicular undercrossing during construction, see Standard Plan D88A.

LEGEND

- Structure Excavation (Culvert)
- Structure Backfill (Culvert) 95% Relative Compaction
- Roadway Embankment
- Original ground

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL METAL AND PLASTIC CULVERTS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A62F

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

REGISTERED CIVIL ENGINEER — July 1, 2004 — PLANS APPROVAL DATE

Dallas Forester — No. C37765 — Exp. 12-31-04 — CIVIL — STATE OF CALIFORNIA

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04-01-04

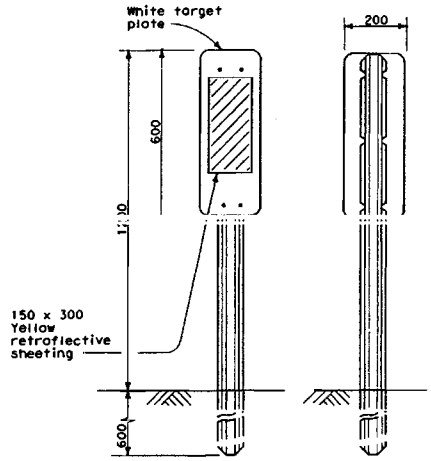
DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

Greg W. Edwards No. C36386 Exp. 6-30-06 Civil

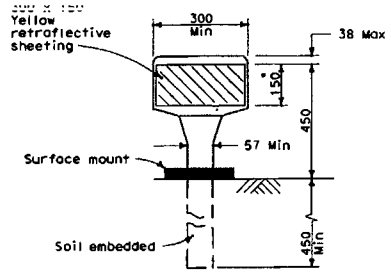
REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

July 1, 2004
PLANS APPROVAL DATE

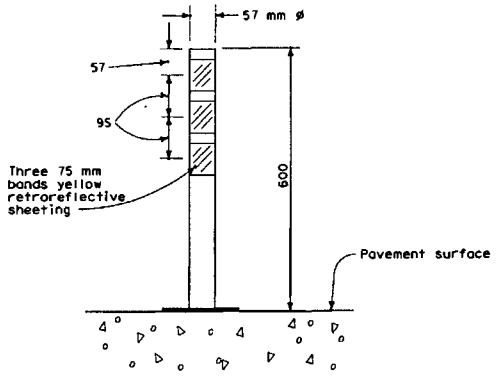


FRONT BACK

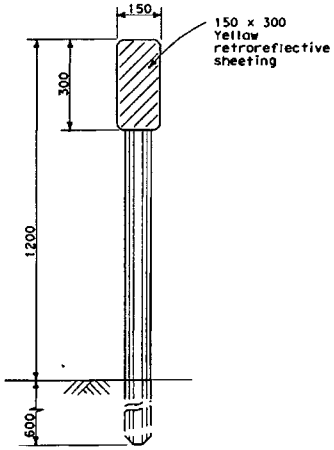
TYPE L-1
See Note 1



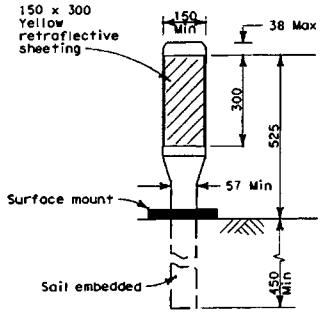
TYPE K-1
(Flexible post with horizonal orientation of sheeting)



TYPE Q
(Tubular flexible post surface mount)



TYPE L-2
See Note 1



TYPE K-2
(Flexible post with vertical orientation of sheeting)

NOTE

1. See Standard Plan A73B for metal post details and additional markers.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

OBJECT MARKERS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A73A

01-09-04

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Greg W. Edwards No. C36386 Exp. 6-30-05 CIVIL STATE OF CAL

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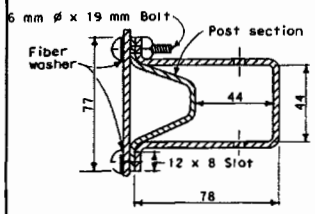
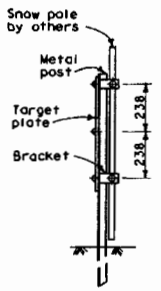
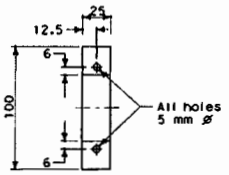
Caltrans Metric



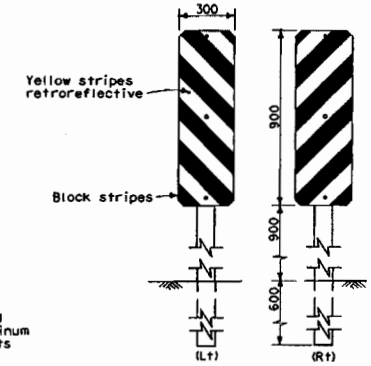
TOP VIEW



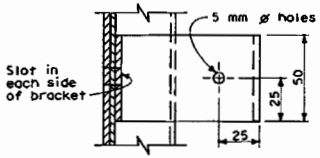
POST SIDE VIEW



SIDE VIEW



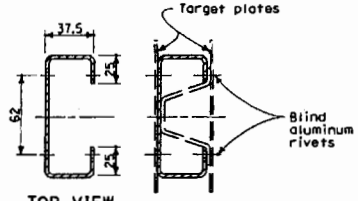
TYPE P



Bracket to be 3.2 x 50 mm mild steel galvanized after fabrication

SIDE VIEW

SNOW POLE BRACKET



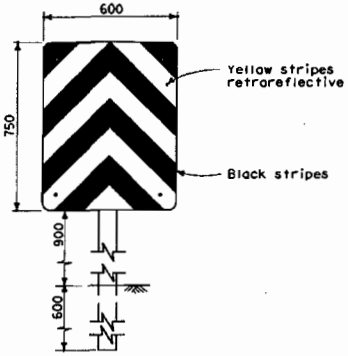
TOP VIEW

Material: Aluminum 1.25 mm thick (3003-H14 Alloy)

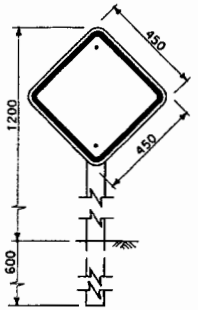
TWO PLATE POST MOUNT

NOTES

1. See Standard Plan A73A for additional object markers.
2. Type P and R markers shall have orange and white retroreflective stripes in work zones.



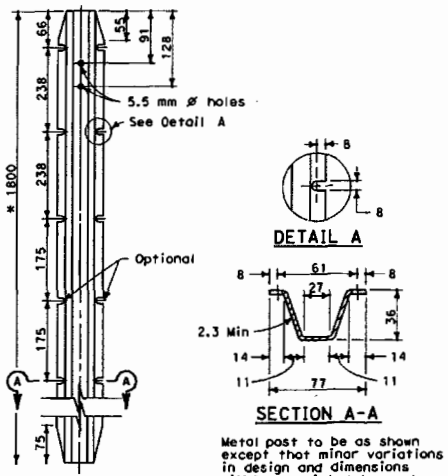
TYPE R



TYPE N-1, N-2, N-3

N-1. Yellow retroreflective background with black border.
N-2. Red retroreflective background with black border.
N-3. Orange retroreflective background with black border.

OBJECT MARKERS



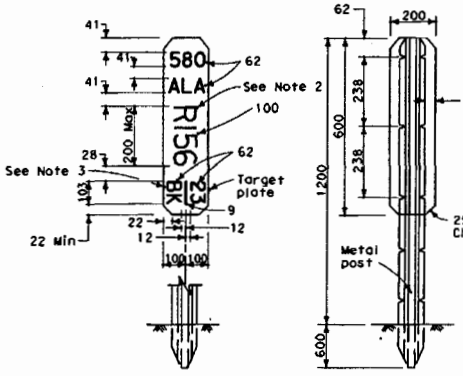
DETAIL A

SECTION A-A

Metal post to be as shown except that minor variations in design and dimensions will be permitted to meet manufacturer's standards.

* 2400 mm for Type P object marker

METAL POST DETAIL



FRONT BACK

HIGHWAY POST MARKER

HIGHWAY POST MARKER NOTES

1. The marker shall be white (non-reflective) target plate with black Series D numerals and letters.
2. A post mile prefix, such as "R", shall apply only when directed by the Engineer.
3. "BK" (Back), "AH" (Ahead), or a blank space shall apply as directed by the Engineer.
4. All information shall be in English units (miles).

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

MARKERS

NO SCALE

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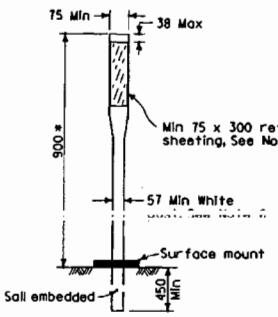
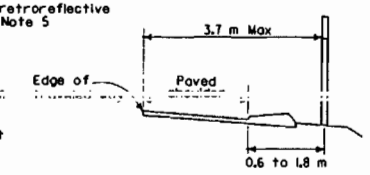
A73B

04-09-04

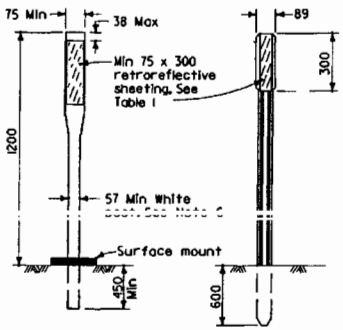


* 700 Min where speeds are 65 km/h or less.

CHANNELIZERS



DELINEATOR POSITIONING

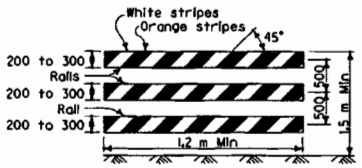


CLASS 1 FLEXIBLE POST

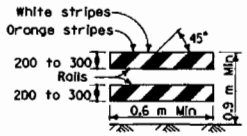
CLASS 2 METAL POST

See Note 4

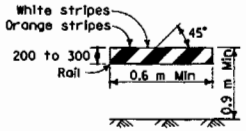
DELINEATORS



TYPE III BARRICADE



TYPE II BARRICADE



TYPE I BARRICADE

See Note A

BARRICADES (See Note 3)

Only face of rails shown. Barricade construction materials and supports as specified in the specifications.

TABLE 2 - BARRICADES			
BARRICADE	TYPE I	TYPE II	TYPE III
Width of Rail	200 Min-300 Max *	200 Min-300 Max *	200 Min-300 Max *
Length of Rail	0.6 m Min	0.6 m Min	1.2 m Min
Width of Stripes * *	150	150	150
Height	0.9 m Min	0.9 m Min	1.5 m Min
Number of Retroreflective Rail Faces	2 (one each direction)	4 (two each direction)	3 if facing traffic in one direction 6 if facing traffic in two direction

* For the wooden option dimensions are nominal lumber dimensions.

* * For rails less than 0.9 m long, 100 mm wide stripes shall be used.

NOTE A

Barricades to have a minimum of 0.17 m^2 of retroreflective area facing traffic when used on freeways, expressways, and other high speed highways.

TABLE 1- DELINEATORS		
TYPE	RETROREFLECTIVE SHEETING	
	FRONT	BACK
E	White	White (See Note 1)
F	White	None
G	Yellow	None
I	Yellow	Yellow (See Note 1)
J	Red	None

NOTES

1. The retroreflective sheeting used on the back of delineator shall be a minimum size of 75 mm x 75 mm.
2. The type of delineator to be installed will be designated on the plans.
3. All barricade stripes shall be retroreflective.
4. See Standard Plan A73B for Metal Post Details.
5. Unless shown otherwise on the plans, or as directed by the Engineer, the color of the retroreflective sheeting for permanent channelizers shall conform to the color of the pavement markings it supplements.
6. Except, Class 1 (Flexible Post) temporary delineators and temporary channelizers in work zones shall be orange post with white retroreflective sheeting.

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

REGISTERED CIVIL ENGINEER

July 1, 2004

PLANS APPROVAL DATE

Greg R. Edwards No. C36386 Exp. 6-30-06 CIVIL STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DELINEATORS, CHANNELIZERS AND BARRICADES

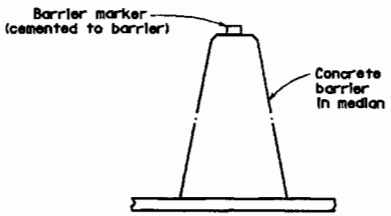
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A73C

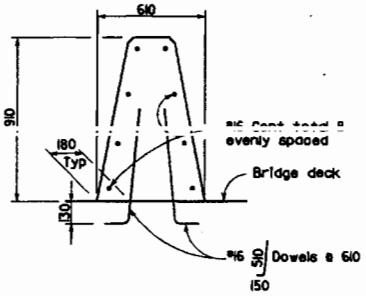
2004 Std PLAN A73C

04-09-04



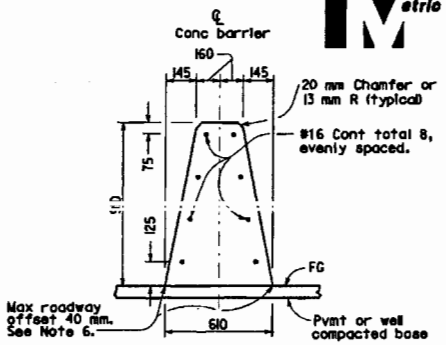
CONCRETE BARRIER TYPE 60 DELINEATION

See Notes 7 and 8

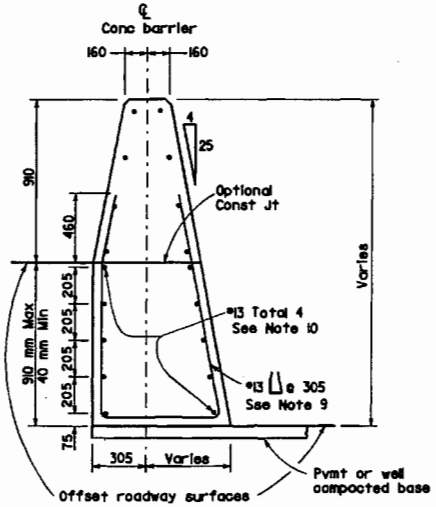


CONCRETE BARRIER TYPE 60A

Details similar to Type 60 except as noted.

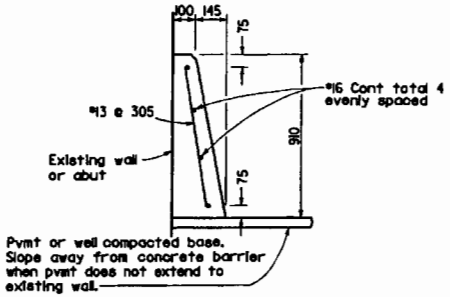


CONCRETE BARRIER TYPE 60



CONCRETE BARRIER TYPE 60C

Details similar to Type 60 except as noted.
Concrete barrier end anchor when necessary.
910 mm roadway surfaces offset shown.



CONCRETE BARRIER TYPE 60D

NOTES

1. See Standard Plan A76B for details of Concrete Barrier Type 60 end anchors, connection to structures and transitions to Concrete Barrier Type 50 and Concrete Barrier Type 60S.
2. See Standard Plan A76C for Concrete Barrier Type 60 transitions at bridge column and sign pedestals.
3. Where glare screen is required on Concrete Barrier Type 60, use Concrete Barrier Type 60G.
4. Where the concrete barrier is added to the face of existing concrete structure, match existing weep holes.
5. Expansion joints in concrete barrier shall be located at all deck, pavement and principal wall joints. Expansion joint filler material shall be the same size as joint or 13 mm minimum.
6. Where roadway offset is greater than 40 mm, see Concrete Barrier Type 60C.
7. Barrier delineation to be used when required by the Special Provisions.
8. Spacing of barrier markers to match spacing of raised pavement markers on the adjacent median edgeline pavement delineation.
9. Reinforcing stirrup not required for roadway offsets less than 305 mm.
10. For roadway surfaces offset greater than 40 mm to 75 mm, no rebars required. For roadway surfaces offset greater than 75 mm to 205 mm, use two #13 rebars at 75 mm above the lower roadway surface. For roadway surfaces offset greater than 205 mm to 305 mm, use two #13 rebars at 75 mm above the lower roadway surface and two #13 rebars at 205 mm above the lower roadway surface. For roadway surfaces offset greater than 305 mm to 910 mm, use two #13 rebars at 75 mm above the lower roadway surface and two #13 rebars at every 205 mm increment vertical spacing above the first two #13 rebars.

Metric

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

Randall D. Hiatt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Randall D. Hiatt
No. C50200
Exp. 6-30-09
CIVIL
STATE OF CALIFORNIA

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To accompany plans dated _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60

NO SCALE

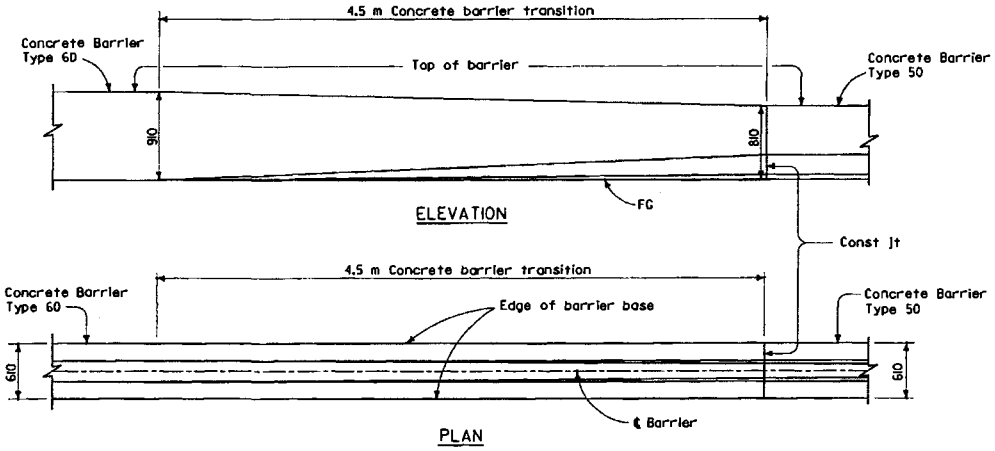
ALL DIMENSIONS ARE IN
MILLIMETERS UNLESS OTHERWISE SHOWN

RSP A76A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A76A
DATED July 1, 2004 - PAGE 29 OF THE STANDARD PLANS BOOK DATED July 2004.

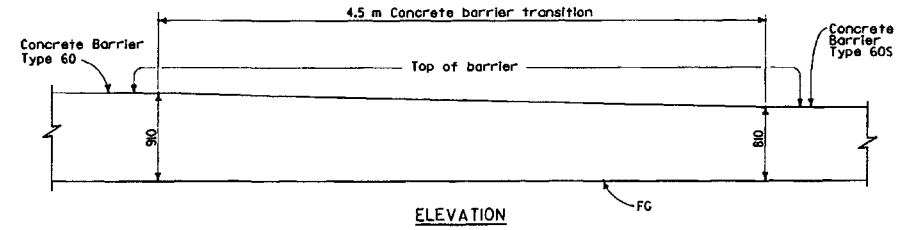
REVISED STANDARD PLAN RSP A76A

5-21-08

2004 REVISED Std PLAN RSP A76A



TRANSITION CONCRETE BARRIER TYPE 60 TO CONCRETE BARRIER TYPE 50



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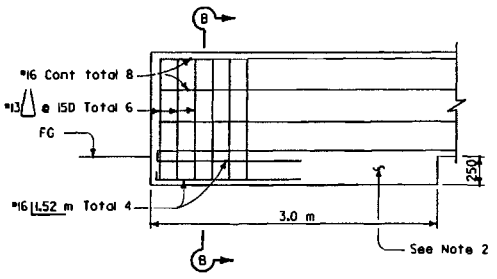
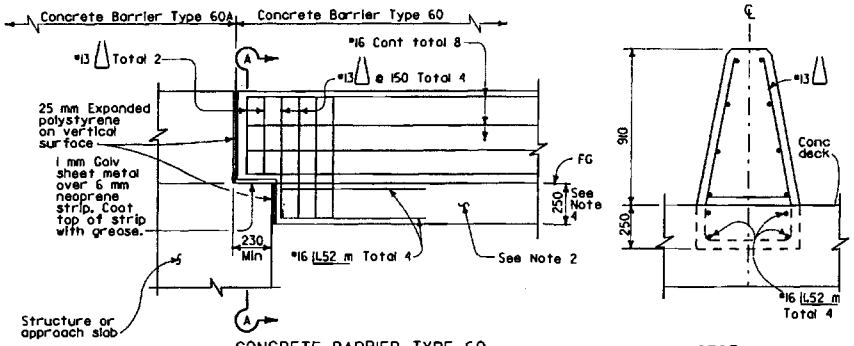


CONCRETE BARRIER TYPE 60

CONCRETE BARRIER END ANCHORAGE

SECTION B-B



CONCRETE BARRIER TYPE 60

CONNECTION TO STRUCTURE

SECTION A-A

NOTES

1. See Standard Plan A76A for Concrete Barrier Type 60 and Type 60A.
2. Footing monolithic or doweled with 2-#25x205 mm @ 610 mm. The footing is required at concrete barrier ends and at interruptions in concrete barrier.
3. Expansion joints in concrete barrier shall be located at all deck, pavement and principal wall joints. Expansion joint filler material shall be the same size as joint or 13 mm minimum.
4. 250 mm Concrete barrier footing extends 3.0 m back from structure.
5. See Standard Plan A78I for transition to Thrie Beam Barrier.

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

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Ellis K. Hirst No. C17926 Exp. 6-30-05 CIVIL STATE OF CALIFORNIA

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TYPE 60

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A76B

04-20-04

2004 Std PLAN A76B

Caltrans Metric

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July 1, 2004
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REGISTERED PROFESSIONAL ENGINEER
Ellis K. Hirst
No. C17926
Exp. 6-30-05
CIVIL
STATE OF CALIFORNIA

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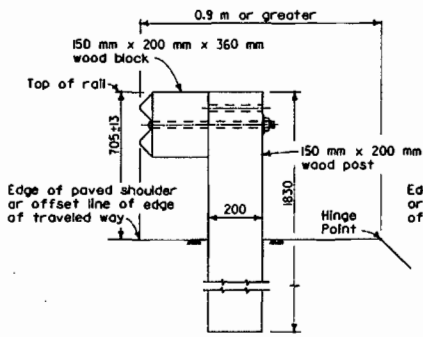
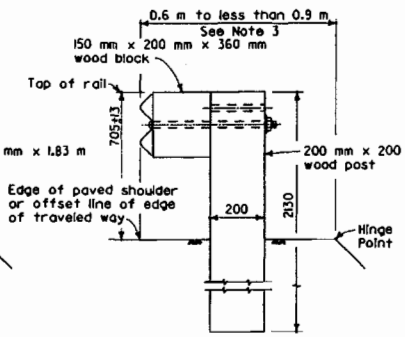
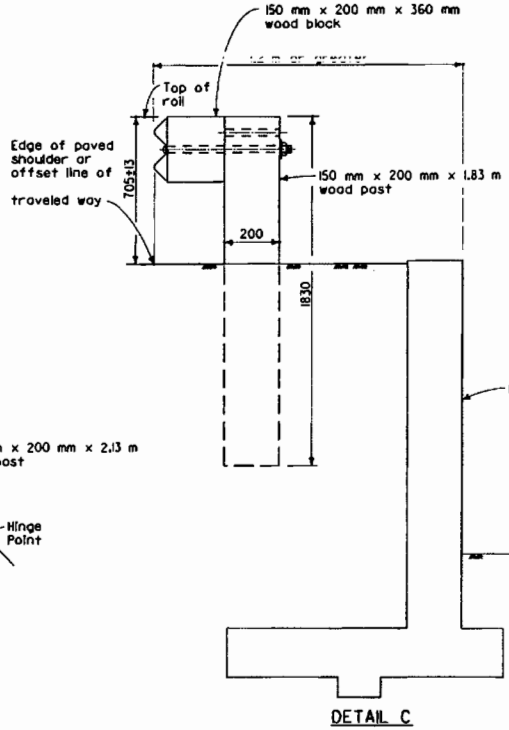


DETAIL A
TYPICAL ROADWAY INSTALLATION
See Note 1

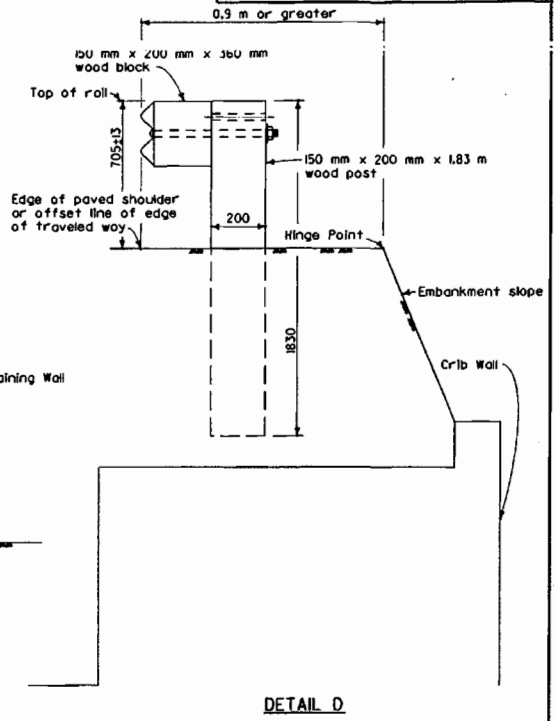


DETAIL B
NARROW ROADWAY INSTALLATION
See Note 1

POST EMBEDMENT



DETAIL C



DETAIL D

INSTALLATION AT EARTH RETAINING WALLS

NOTES

1. These installation details also applicable to steel line post installations with notched blocks. For additional installation details, see Standard Plans A77A1 and A77A2.
2. Where the distance between the face of the rail and the hinge point is less than 0.6 m, see the Project Plans for special details.
3. For dike positioning with guard railing installations, see Standard Plan A77C4.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL LINE POST EMBEDMENT AND HINGE POINT OFFSET DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A77C3

04-30-04

NOTES

1. When necessary to place dike in front of face of guard railing, only Type C dike may be used. For dike details, see Standard Plan A87A.
2. For standard railing post embedment, see Standard Plans A77C3.
3. Guard railing delineation to be used where shown on the Project Plans.
4. When dike or curb is placed under guard railing, the maximum height of the dike or curb shall be 100 mm. Mountable dike should not be used. For dike and curb details, see Standard Plans A87A and A87B.
5. For details of typical distance between the face of rail and hinge point, see Standard Plan A77C3.

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Elvia K. Hirst — C17926 — 6-30-05 — CIVIL — STATE OF CALIFORNIA

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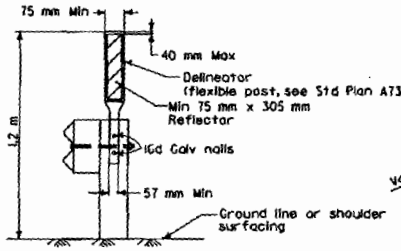
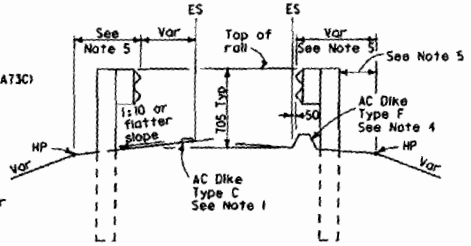


GUARD RAILING DELINEATION
See Note 3



DIKE POSITIONING
See Note 1

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING TYPICAL RAILING DELINEATION AND DIKE POSITIONING DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A77C4

04-30-04

2004 Std PLAN A77C4

Caltrans Metric

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

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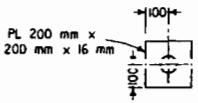
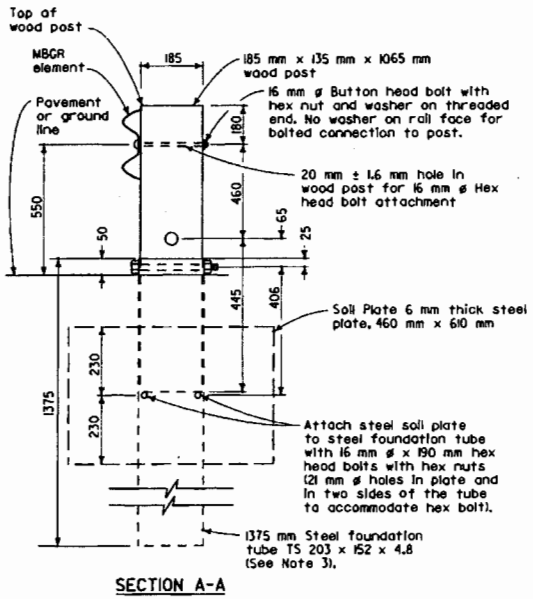
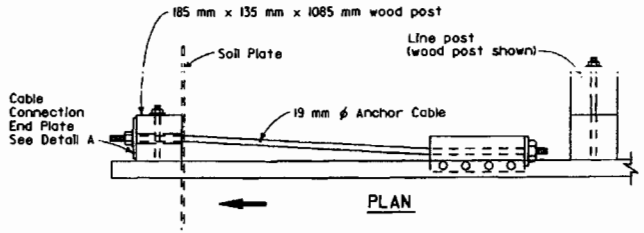


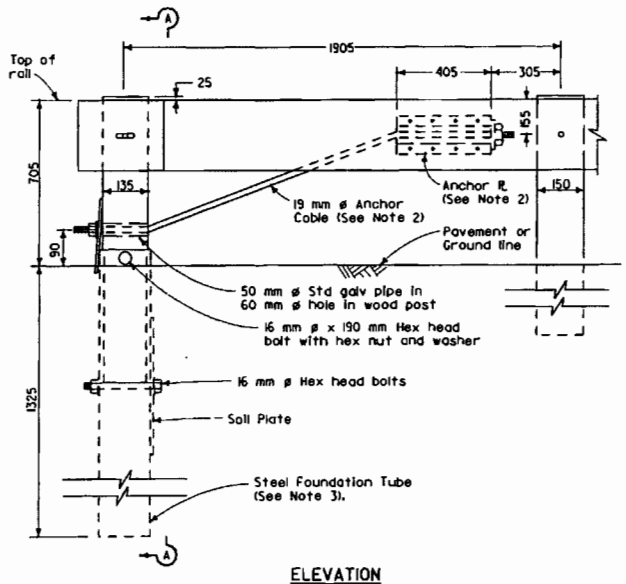
DETAIL A
CABLE CONNECTION
END PLATE



SECTION A-A



PLAN



ELEVATION
END ANCHOR
ASSEMBLY (TYPE SFT)
See Note 1

NOTES

1. See the A77E, A77F and A77G series of Standard Plans for typical use of End Anchor Assembly (Type SFT).
2. For details of the anchor plate and 19 mm cable, see Standard Plan A77H3.
3. A 1830 mm length steel foundation tube, TS 203 x 152 x 4.8, without a soil plate, may be furnished and installed in place of the 1375 mm length steel foundation tube and soil plate shown. Minimum embedment of the 1830 mm length tube shall be 1760 mm. A 16 mm ø hex head bolt and nut shall be installed in the hole in the 1830 mm length tube to keep the wood post from dropping into the tube.
4. Direction of traffic indicated by ⟶ .

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL RAILING
END ANCHOR ASSEMBLY
(TYPE SFT)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A77H1

04-30-04

Caltrans Metric

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

Ellis K. Hirst
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Ellis K. Hirst — No. C17926 — Exp. 6-30-05 — CIVIL — STATE OF CALIFORNIA

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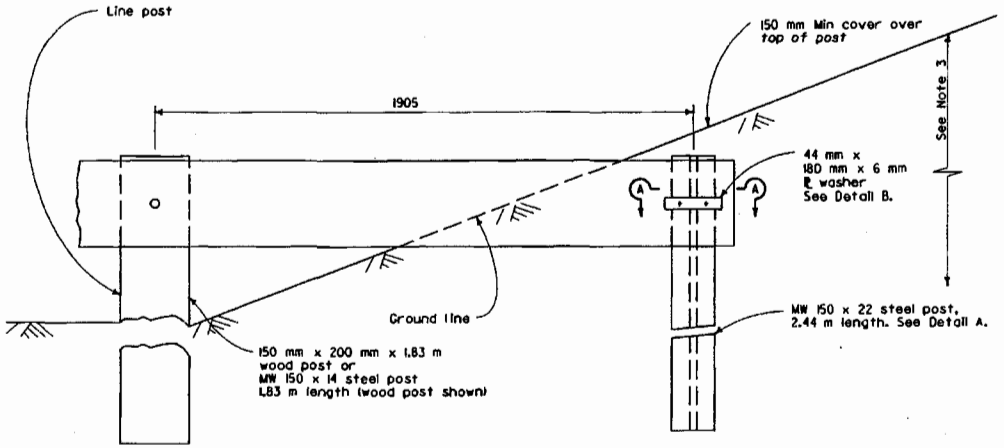
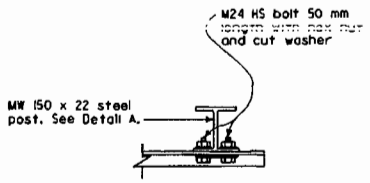
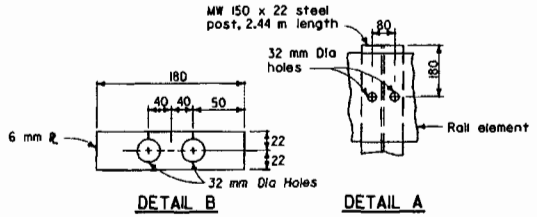


BURIED POST END ANCHOR
See Note 3



SECTION A-A



DETAIL B

DETAIL A

NOTES

1. For typical use of this type of end anchor, with guard railing, see the A77E, A77F and A77G Series of the Standard Plans.
2. Holes excavation in the slope to construct the buried post end anchor shall be backfilled with selected earth, placed in layers appraximately 0.3 meters thick. Each layer shall be moistened and thoroughly compacted.
3. The buried post end anchor shall only be constructed at those locations where the slope perpendicular to the roadway is non-traversable.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM GUARD RAILING
BURIED POST END ANCHOR

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

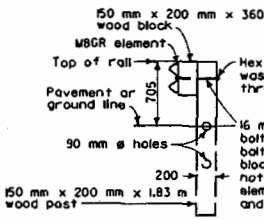
A77I2

05-06-04

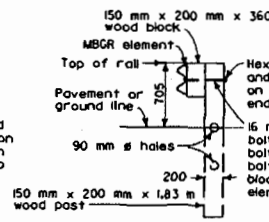
TABLE A

POST OFFSET DIMENSIONS		
Post No.	915 mm System End Offset	1070 mm System End Offset
1	915 mm	1070 mm
2	565 mm	705 mm
3	300 mm	420 mm
4	170 mm	270 mm
5	75 mm	150 mm
6	20 mm	70 mm
7	0 mm	20 mm
8	0 mm	0 mm

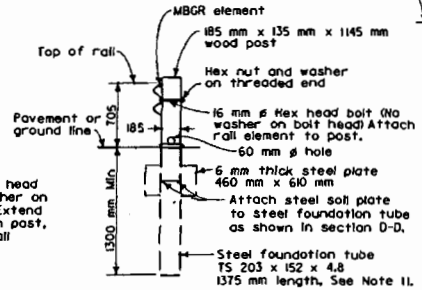
See Note 12



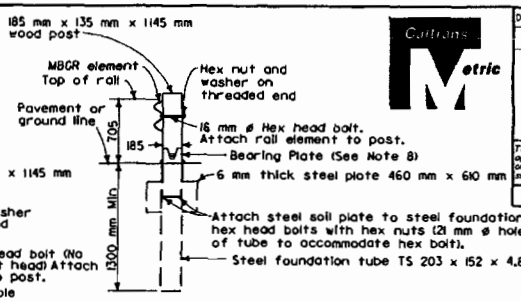
SECTION A-A



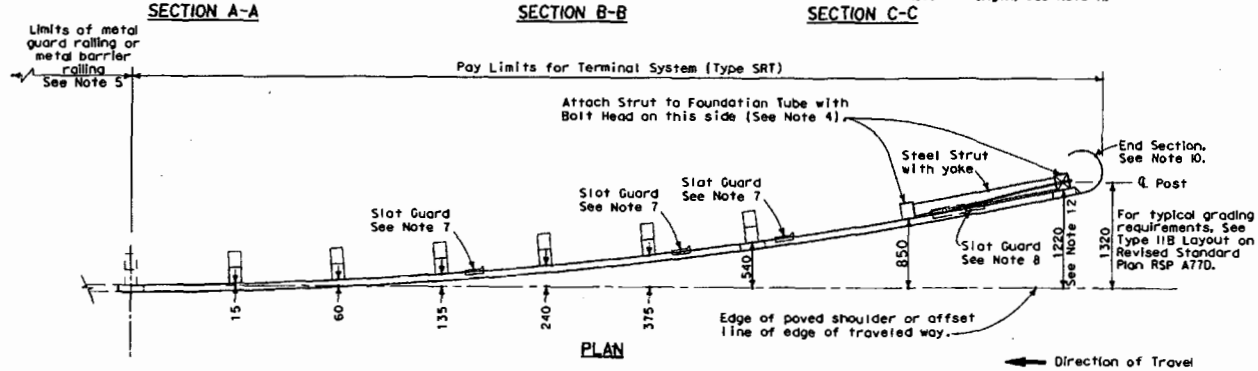
SECTION B-B



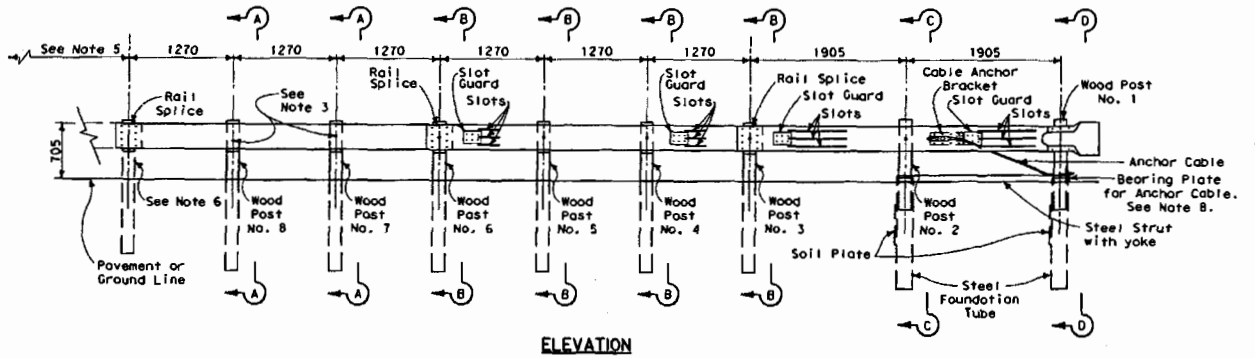
SECTION C-C



SECTION D-D
(Terminal Section not shown)



PLAN



ELEVATION

TERMINAL SYSTEM (TYPE SRT)

(8 Post System)
See Note 9

NOTES:

1. For additional details of Terminal System (Type SRT), refer to the manufacturer's installation instructions.
2. The post offset dimensions are given to the center of the traffic face of the block, except at the first two posts, where the dimension is to the center of the traffic face of the post. Offset points are to be located by chord measurements at the back of the rail equal to the nominal post spacings shown. Posts are to be set approximately radial to the railing at each post locations.
3. Do not attach rail elements to posts 7 and 8.
4. Attach strut to Post Nos. 1 and 2 foundation tubes with 16 mm ø hex head bolts, washers and hex nuts. Bolts extend through the strut, steel foundation tube, and wood posts.
5. For the length and type of metal beam guard railing or metal barrier railing the terminal system is attached to, see the Project Plans.
6. Attach rail element to this post and block. Payment for this post, block and hardware is included in payment for the type of railing or barrier the terminal system is attached to, not part of payment for Terminal System (Type SRT).
7. The deflector angle of the slot guard is to be positioned immediatley downstream of the slots.
8. For bearing plate orientation, refer to the manufacturer's installation instructions.
9. For typical use of this terminal system with guard railing, see the A77E, A77F and A77G Series of Standard Plans. See Standard Plan A78E for typical use of this terminal system with single thrie beam barrier.
10. A complete wrap around end section may continued to be used in existing installations. New installations shall be constructed with the ¼wrap end section shown.
11. A 1830 mm length steel foundation tube, TS 203 x 152 x 4.8, without a soil plate, may be furnished and installed in place of the 1375 mm length steel foundation tube and soil plate shown. Minimum embedment of the 1830 mm length tube shall be 1760 mm. A 16 mm ø hex head bolt and nut shall be installed in the hole in 1830 mm length tube to keep the wood post from dropping into the tube.
12. Where site conditions will not accommodate use of the standard 1220 mm system end offset, 1070 mm or 915 mm system end offsets, as applicable, may be used. See Table A for post offset dimensions for 1070 mm and 915 mm system end offsets.

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

Ellis K. Hirst
REGISTERED CIVIL ENGINEER

July 1, 2004
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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM RAILING TERMINAL SYSTEM (TYPE SRT)

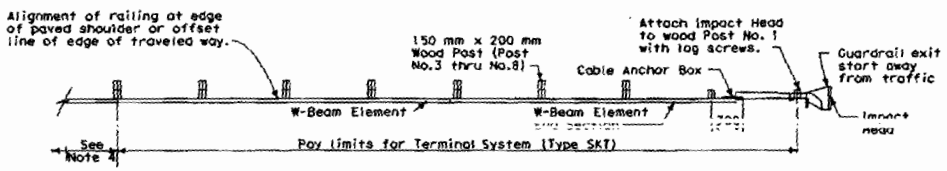
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

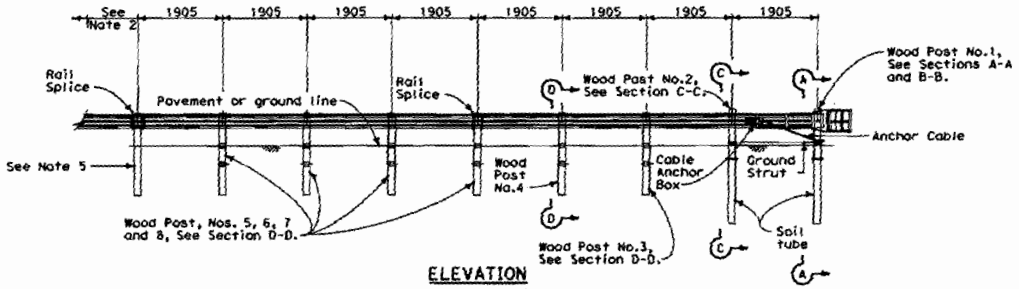
A77L1

05-21-04

2004 Std PLAN A77L1

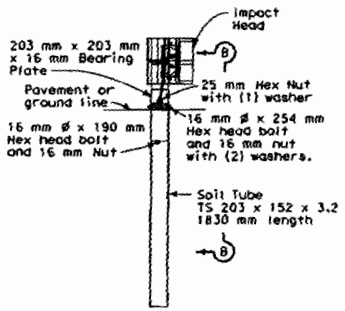


PLAN

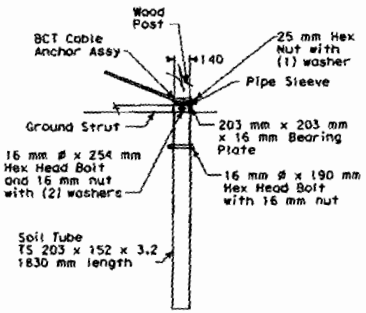


ELEVATION

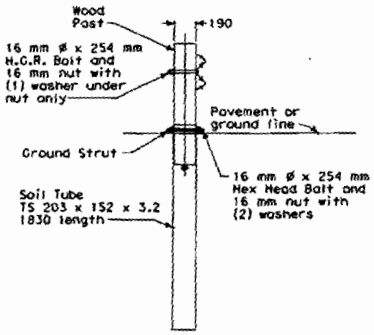
TERMINAL SYSTEM (TYPE SKT)



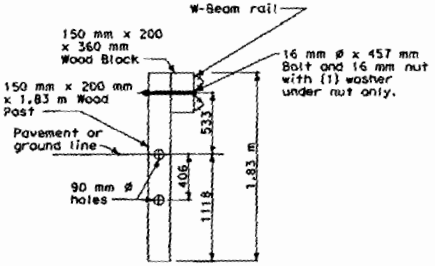
SECTION A-A
Post No. 1



SECTION B-B
Partial view Post No. 1



SECTION C-C
at Post #2



SECTION D-D
Post No. 3 through No. 8.

NOTES

1. For additional details of Terminal System (Type SKT), refer to the manufacturer's installation instructions.
2. Terminal System (Type SKT) must be constructed so that the full length of the terminal system guard railing is in straight alignment. Terminal System (Type SKT) can be flared at a maximum rate of 25:1 to prevent the impact head from encroaching on the shoulder. The flare is not required and may be decreased or eliminated for specific installations.
3. Terminal System (Type SKT) not to be used where extrusion of the rail on the back side of the installation would be in the path of pedestrian traffic or where there is less than 7.62 m between the outlet side of the Impacted Head and any adjacent vehicle traffic.
4. For the length and type of metal beam guard railing or metal barrier railing the terminal system is attached to, see Project Plans. For typical use of this terminal system with guard railing, see the A77E, A77F and A77G Series of the Standard Plans.
5. Attach rail element to this post and block. Payment for this post, block and hardware is included in payment for the type of railing or barrier the terminal system is attached to, not part of payment for Terminal System (Type SKT).

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

REGISTERED CIVIL ENGINEER

July 1, 2004
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Exp. 6-30-05

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL BEAM RAILING TERMINAL SYSTEM (TYPE SKT)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A77L2

05-19-04

2004 Std PLAN A77L2

NOTES

1. For additional details of Terminal System (Type ET), refer to the manufacturer's installation instructions.
2. Terminal System (Type ET) must be constructed so that the full length of the terminal system guard railing is in straight alignment. The Guard Rail Extruder head of the terminal system shall not encroach upon the adjacent paved shoulder or lane. A traffic approach flare of 25:1 for the full length of Terminal System (Type ET) installation may be used where the Guard Rail Extruder head would encroach upon the adjacent paved shoulder or lane.
3. Slide Guard Rail Extruder over the end of the rail element and attach to Post No. 1 with lag screws. Do not bolt rail element to post. Guard Rail Extruder attachment brackets have 3 holes in each bracket to provide tolerance adjustment. Use the holes in the bracket closest to center of Post No. 1. Drill 6 mm pilot holes to accommodate lag screws.
4. Attach strut to Post Nos. 1 and 2 foundation tubes with hex head bolts, washers and hex nuts. Bolts extend through the strut, steel foundation tube, and wood posts. Channel side of strut to face downword.
5. For length and type of metal beam guard railing or metal barrier railing the terminal system is attached to, see Project Plans. For typical use of this terminal system, see the A77E, A77F and A77G Series of the Standard Plans.
6. Attach rail element to this post and block. Payment for this post, block and hardware included in payment for the type of railing or barrier the terminal system is attached to, not part of the payment for Terminal System (Type ET).
7. Yellow retroreflective sheeting, as provided by Terminal System (Type ET) manufacturer, shall be adhered to the face of extruder head. The sheeting shall be consistent with the design pattern and colors of a Type P object marker panel.
8. Attach rail to Post No. 2 (no wood block) in same manner shown in section A-A. Do not bolt rail to Post No. 1, See Note 3.
9. Terminal System (Type ET) not to be used where extrusion of the rail on the back side of the installation would be in the path of pedestrian or vehicular traffic.
10. A continuous rail element section between Post Nos. 1 and 5 (no intermediate rail splices) may continue to be used in existing installations. New installations shall be constructed as shown width two rail element sections between Post Nos. 1 and 5.
11. A 1830 mm length steel foundation tube, TS 203 x 152 x 4.8, without a soil plate, may be furnished and installed in place of the 1375 mm length steel foundation tube and soil plate shown. Minimum embedment of the 1830 mm length tube shall be 1760 mm. A 16 mm ø hex head bolt and nuts shall be installed in the hole in the 1830 mm length tube to keep the wood post from dropping into the tube.

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

Ellis K. Hirst
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Ellis K. Hirst No. C17926 Exp. 6-30-05 CIVIL STATE OF CA. REGISTERED PROFESSIONAL ENGINEER

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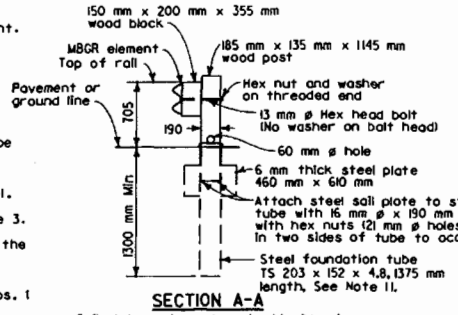
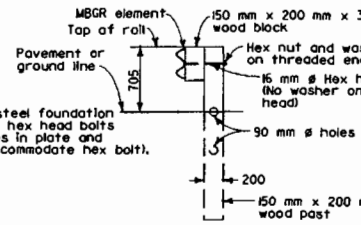


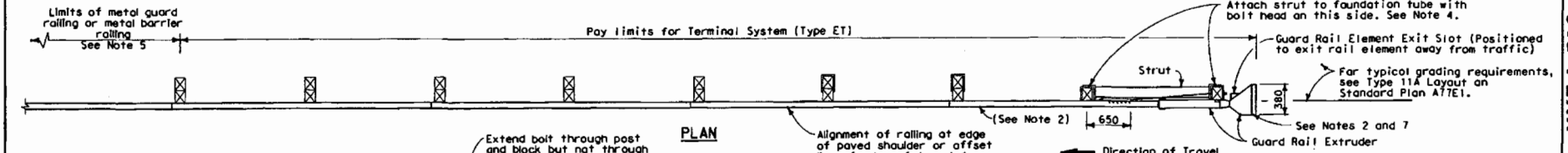
SECTION A-A

Soil plate and wood post attachment to steel foundation tube similar for Post Nos. 1, 2 and 4. Wood blocks not used with Post Nos. 1 and 2. See Note 8.

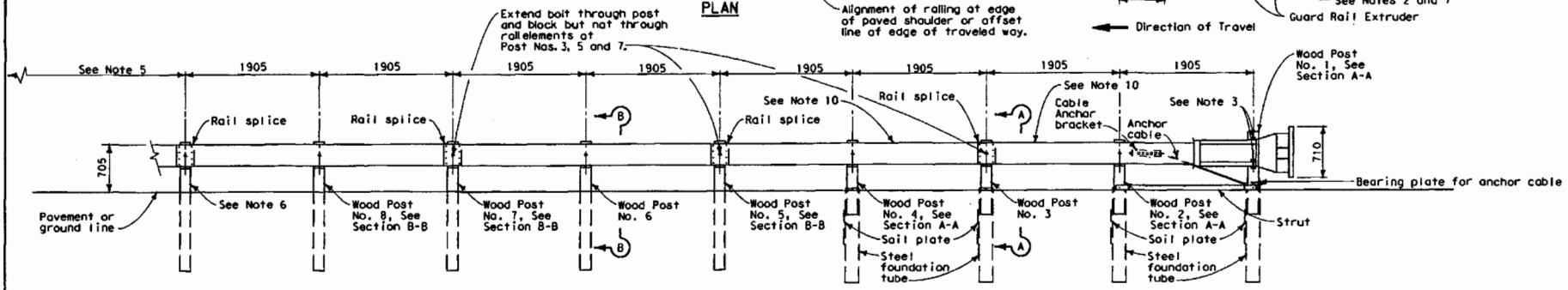


SECTION B-B

Post Nos. 5, 7 and 8 similar except rail elements are not attached to Post Nos. 5 and 7



PLAN



ELEVATION

TERMINAL SYSTEM (TYPE ET)

(Type ET PLUS shown)
See Notes 9 and 10

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METAL BEAM RAILING TERMINAL SYSTEM (TYPE ET)

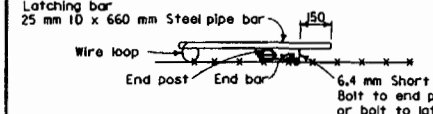
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A77L3

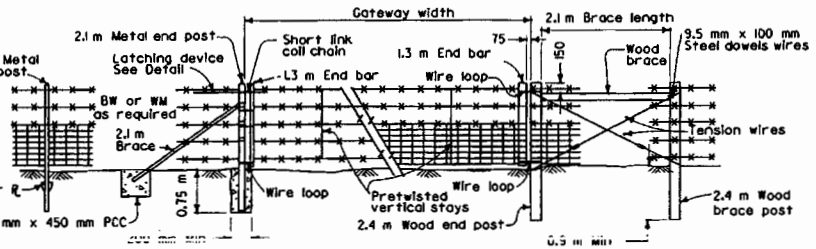
05-19-04

2004 Std PLAN A77L3



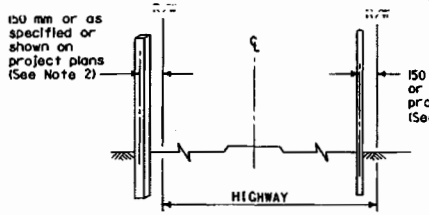
LATCHING DEVICE FOR GATEWAYS

See Note 1



METAL POST INSTALLATION

WOOD POST INSTALLATION

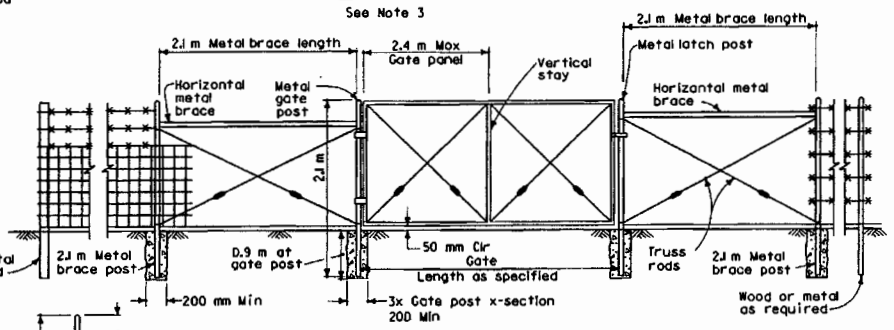


OTHER HIGHWAYS — FREEWAYS

FENCE LOCATION

GATEWAY

See Note 3

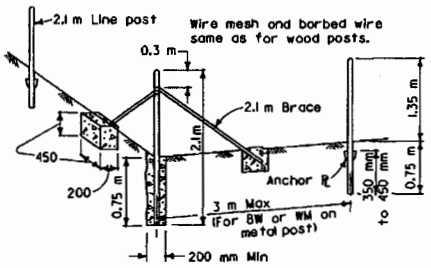


WIRE MESH GATE INSTALLATION FOR EITHER WOOD OR METAL POST FENCES

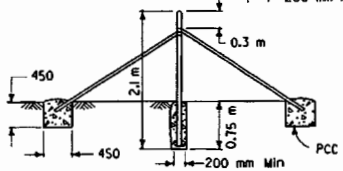
WIRE MESH GATE POST (See Note 4)		
GATE WIDTHS (m)	NOMINAL ID (mm)	MASS PER METER (kg)
Up thru 1.83	65	7.37
Over 1.83 thru 3.66	90	13.56
Over 3.66 thru 5.49	125	21.76
Over 5.49 to 7.32 max	150	28.23

NOTES

1. Metal end post and end bar shown. Use wood end post and end bar for wood post installation.
2. Offset to be 0.6 m at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 6 m long.
3. Gateway to be used when specified in the special provisions.
4. Post dimensions and masses are minimums. Larger sizes may be used on approval of the Engineer.
5. Line post spacing for wood post equals 3.7 m maximum. Line post spacing for metal post equals 3 m maximum.



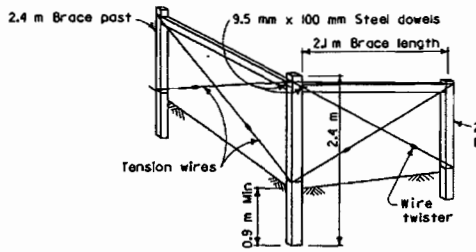
END AND CORNER POST ASSEMBLY



PULL POST ASSEMBLY

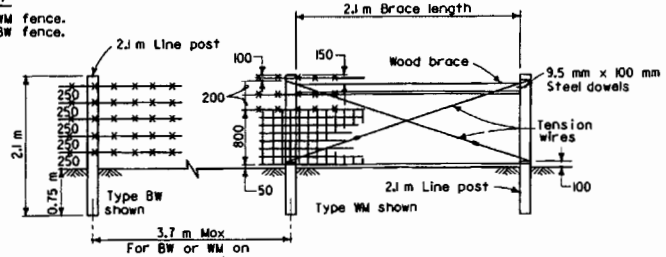
At 200 m maximum intervals for WM fence.
At 400 m maximum intervals for BW fence.

METAL POST INSTALLATION



END AND CORNER POST ASSEMBLY

Type BW = 5 lines of barbed wire.
Type WM = Wire mesh and 3 lines of barbed wire.



PULL POST ASSEMBLY

At 200 m maximum intervals for WM fence.
At 400 m maximum intervals for BW fence.

WOOD POST INSTALLATION

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BARBED WIRE AND WIRE MESH FENCES

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A86

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

REGISTERED CIVIL ENGINEER — Glenn DeCou, No. C34547, Exp. 9-30-05, CIVIL, STATE OF CALIFORNIA

July 1, 2004
PLANS APPROVAL DATE

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03-26-04

NOTES:

1. For additional details of Crash Cushion (Type ADIEM), refer to the manufacturer's installation instructions.
2. Crash Cushion (Type ADIEM) may be used at sites where the sides of the crash cushion would be exposed to opposing directions of travel (bidirectional traffic) or the same direction of travel (unidirectional traffic).
3. The crash cushion concrete base shall be placed on a smooth surface (pavement or well compacted soil base) on the same horizontal plane as the barrier or railing it is to be attached to.
4. Installation of the crash cushion concrete base shall be accomplished by driving the anchor rods in well compacted soil base or soft asphalt concrete or by driving the anchor rods in drilled holes in hard asphalt concrete or portland cement concrete. See Table A for the location and lengths of anchor rod to be used.
5. Attach the crash cushion to the barrier or railing by bolting the splice angle plates to the crash cushion and the barrier or railing.
6. Lubricate the crash cushion base track and slide the modules along the track to the positions shown.
7. Yellow retroreflective sheeting, as provided by the crash cushion manufacturer, shall be adhered to the first module facing approaching traffic and that of the Type R object marker panel for bidirectional traffic.
8. For the length and type of barrier or railing the crash cushion is to be attached to, see the Project Plans.

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Ellis K. Hirst
No. C17926
Exp. 6-30-05
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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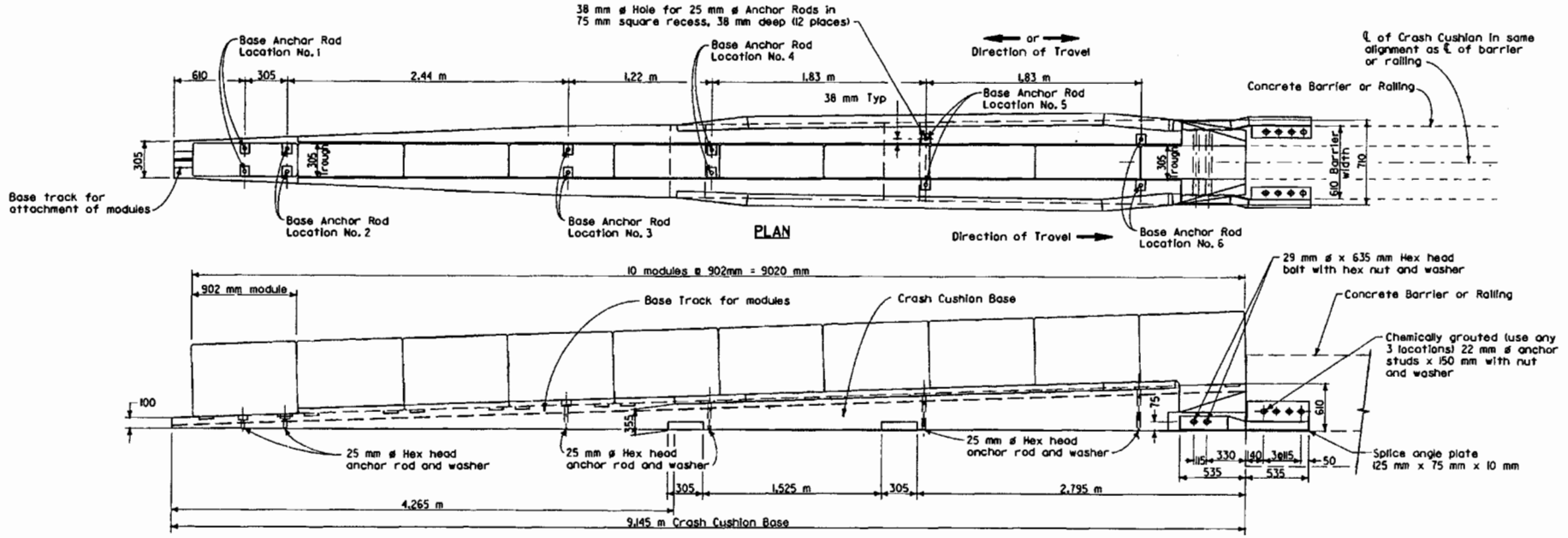

ELEVATION

CRASH CUSHION (TYPE ADIEM)

See Note 3

TABLE A

BASE ANCHOR RODS AND LOCATIONS	PORTLAND CEMENT CONCRETE PAVEMENT	ASPHALT CONCRETE PAVEMENT	WELL COMPACTED BASE
	Rod Length	Rod Length	Rod Length
2 at Location No. 1	455 mm	610 mm	760 mm
2 at Location No. 2	455 mm	610 mm	760 mm
2 at Location No. 3	610 mm	760 mm	915 mm
2 at Location No. 4	610 mm	760 mm	915 mm
2 at Location No. 5	915 mm	1065 mm	1220 mm
2 at Location No. 6	915 mm	1065 mm	1220 mm

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CRASH CUSHION (TYPE ADIEM)

NO SCALE

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A82B1

04-20-04

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

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July 1, 2004
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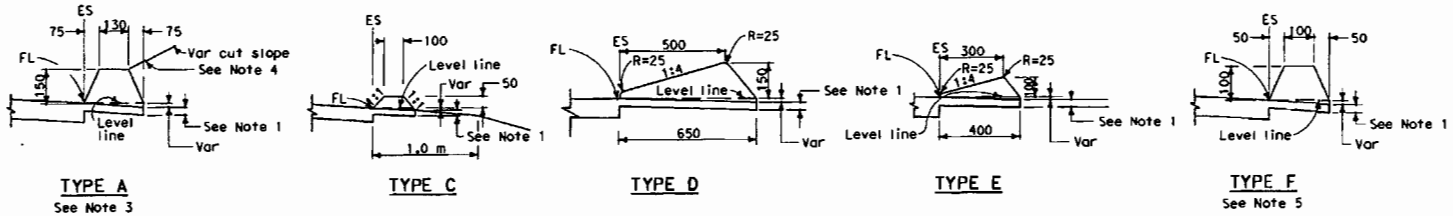
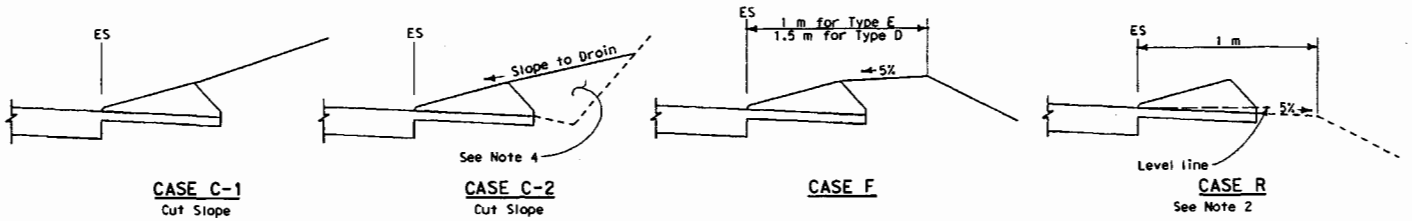


DIKES



TYPE D AND E BACKFILL DETAILS

NOTES

1. For AC shoulders only, extend top layer of AC placed on the shoulder under dike with no joint at the ES.
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 A77F for dike positioning details.
6. Type B dike deleted.

DIKE QUANTITIES

TYPE	CUBIC METERS PER METER
A	0.033
C	0.009
D	0.065
E	0.027
F	0.016

Quantities based on 5% cross slope.

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DEPARTMENT OF TRANSPORTATION

ASPHALT CONCRETE DIKES

NO SCALE

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A87B

05-04-04

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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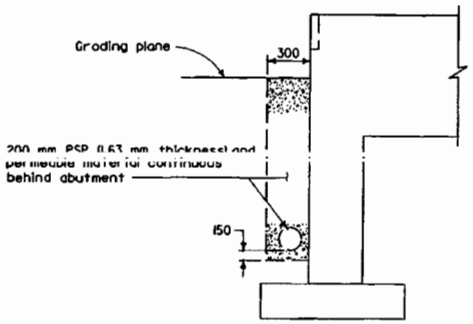
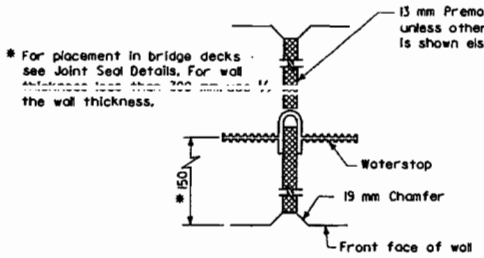


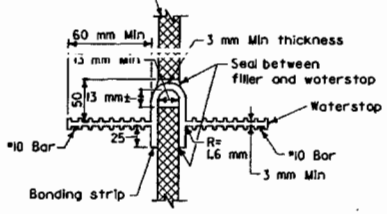
BRIDGE DETAIL 3-5

200 mm PSP AND PERMEABLE MATERIAL



BRIDGE DETAIL 3-4

WALL EXPANSION JOINT



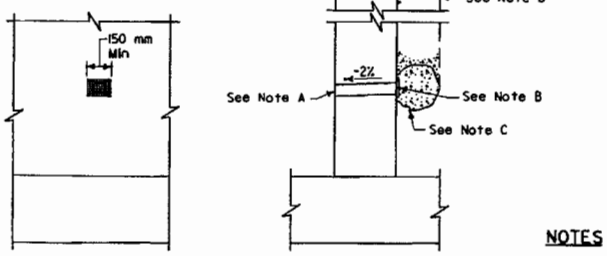
BRIDGE DETAIL 3-6

WATERSTOP

NOTES

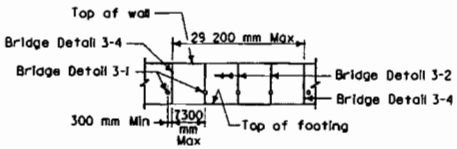
Holes will be permitted in the outer 13 millimeters of the web for wire, rings, etc. Tie web to #10 reinforcing bars @ 400 millimeters maximum intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.

Waterstop to have 5 or more pairs of of raised ribs to provide 65 square millimeters minimum rib cross-section area on each half of the waterstop.



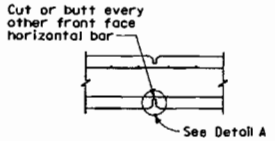
BRIDGE DETAIL 3-1

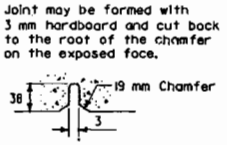
WEEP HOLE AND PERVIOUS BACKFILL



BRIDGE DETAIL 3-3

WALL EXPANSION JOINTS AND WEAKENED PLANES





BRIDGE DETAIL 3-2

WEAKENED PLANES

NOTES

A. 100 millimeter ø Drains @ 7600 millimeters maximum center to center (2750 millimeters center to center for Type 3 and 2800 millimeters center to center for Type 4 retaining wall(s). For walls adjacent to sidewalks or curbs, provide 100 millimeters plastic pipe under the sidewalk to discharge thru curb face. Exposed wall drains shall be located 75 millimeters ± above finished grade.

B. 150 millimeters square aluminum or galvanized steel wire 6 millimeters mesh hardware cloth (minimum wire diameter 0.64 millimeters). Anchor firmly to backface.

C. 0.03 cubic meter pervious backfill material in a nonwoven filter fabric, securely tied.

D. Pervious backfill material continuous behind retaining wall or abutment.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BRIDGE DETAILS

NO SCALE

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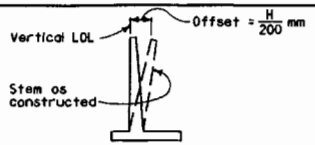
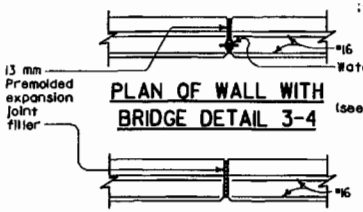
B0-3

06-15-04



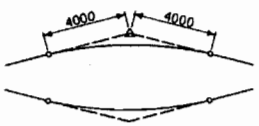
APPROXIMATE WALL OFFSET VALUES

Not required for wall Types 3 and 4. Values for offsetting forms to be determined by the Engineer.



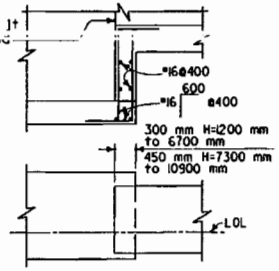
PLAN OF WALL WITH BRIDGE DETAIL 3-4

PLAN OF WALL WITH EXPANSION JOINT ONLY

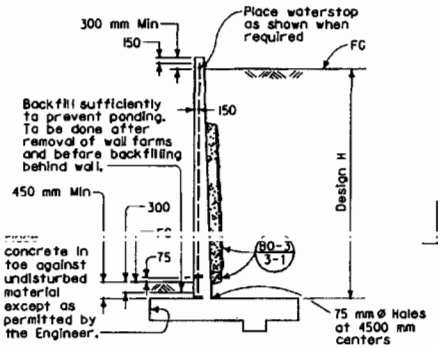


8000 mm VC AT TOP OF WALL SLOPE CHANGE

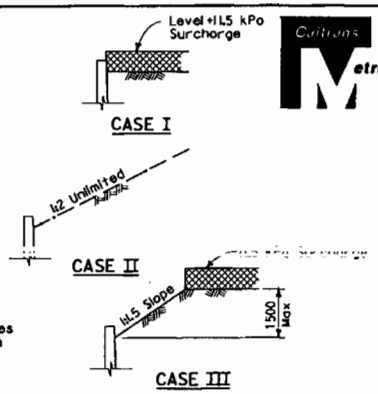
Where shown on the plans



FOOTING STEP



DESIGN AND DRAINAGE



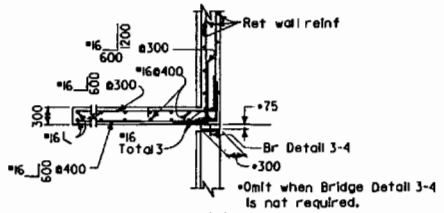
DETAIL OF DESIGN LOADING CASES

Case I Level +11.5 kPa surcharge

Case II 1:2 Unlimited slope

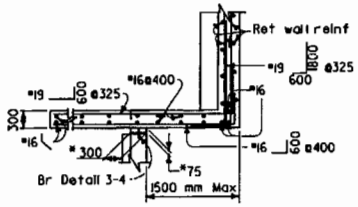
Case III 1:1.5 Limited slope (1500 max height) +11.5 kPa surcharge

NOTE: Surcharge Limits Shown Apply To Retaining Walls Type 1 and 3.



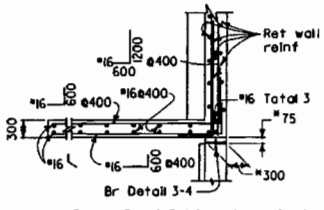
PLAN

(For return wall Type "A")



PLAN

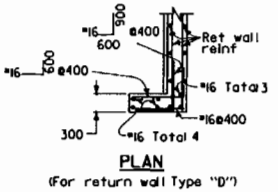
(For return wall Type "B")



*Omit when Bridge Detail 3-4 is not required.

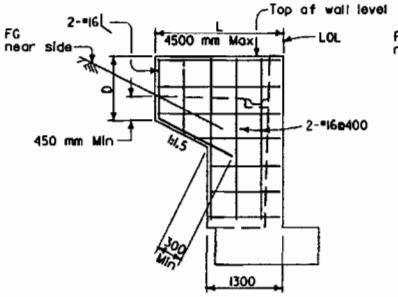
PLAN

(For return wall Type "C")



PLAN

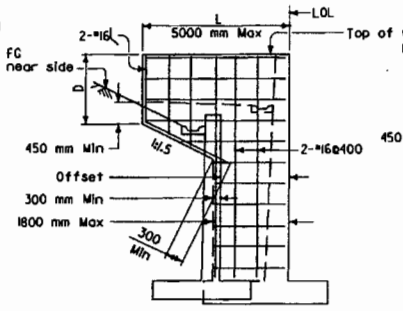
(For return wall Type "D")



ELEVATION

RETURN WALL TYPE "A"

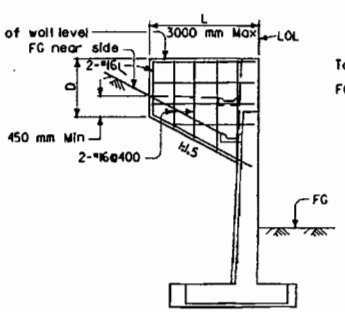
Use where H=2400 mm or less



ELEVATION

RETURN WALL TYPE "B"

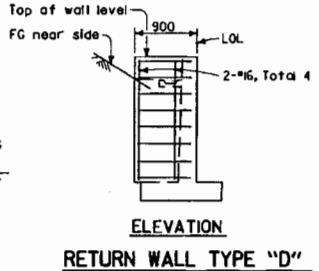
Use where H=3000 mm or more on offset walls



ELEVATION

RETURN WALL TYPE "C"

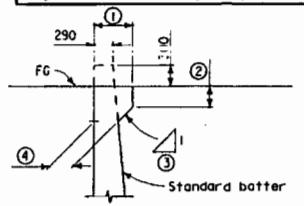
Use where H=3000 or more on straight walls



ELEVATION

RETURN WALL TYPE "D"

Use where H=1800 or less



Dimensions ①, ② and ③ to be as shown elsewhere in the Project Plans.

④ Stem width at base of haunch to be determined as shown.

STEM WIDTH AT BASE OF HAUNCH

NOTES

Design Conditions:

Design H may be exceeded by 150 millimeters before going to the next size. Special footing design is required where foundation material is incapable of supporting toe pressure listed in table.

Return wall not required unless shown elsewhere.

Design Data:

f'_c = 10 MPa f_c = 25 MPa f_s = 168 MPa

n = 10 earth = 19 kN/m³

11.5 kPa surcharge:

Equivalent fluid pressure =

5.6 kPa/m maximum for determination of toe pressure.

4.2 kPa/m minimum for determination of heel pressure.

Earth pressures for h:2 unlimited slope, h:1.5 slope, and h:1.5 unlimited slope, determined from Rankine's formula with Ø=33°-42°.

Caltrans Metric

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

Duncan Y. Wu
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Duncan Y. Wu No. 45803 Exp. 12-31-06 CIVIL STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL DETAILS No. 1

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

B3-8

06-08-04

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

Caltrans Metric

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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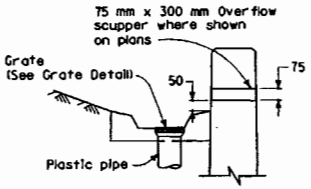
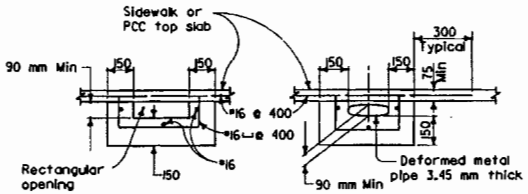


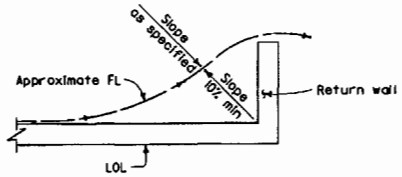
WALL DRAIN DETAIL
Scale: 1:10



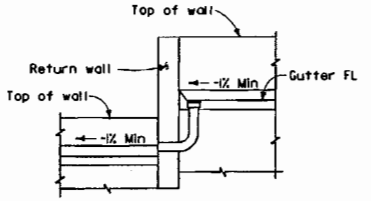
NOTE

Area of opening to be not less than that of pipe from wall gutter. Make opening transition in wall. Edge opening in curb face to 19 mm minimum radius.

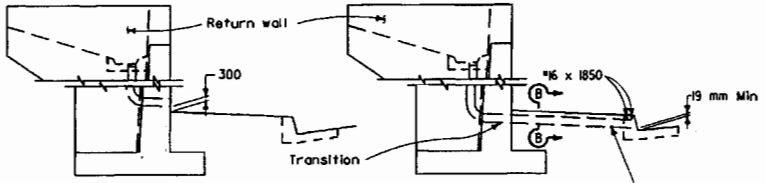
OUTLET DETAIL - SECTION B-B
Scale: 1:10



WALL DRAINAGE WHERE GUTTER NOT REQUIRED
Scale: 1:50



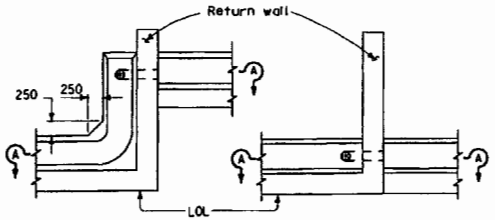
SECTION A-A



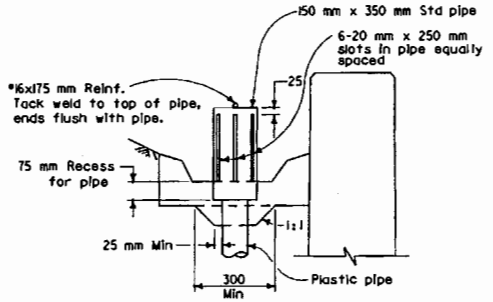
RETAINING WALL, FACE OF WALL OUTLET
Scale: 1:50

100 mm Plastic pipe when wall drain is 100 mm or less. For larger pipe see "Outlet Detail".

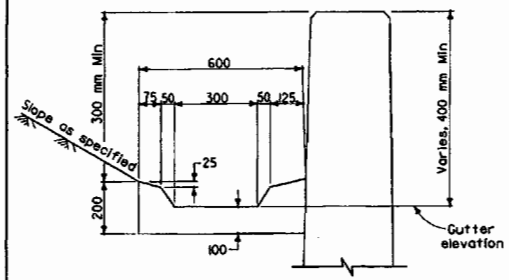
RETAINING WALL, GUTTER OUTLET
Scale: 1:50



PLAN-OFFSET WALL PLAN-CONTINUOUS WALL
DRAIN THROUGH RETURN WALL
Scale: 1:50

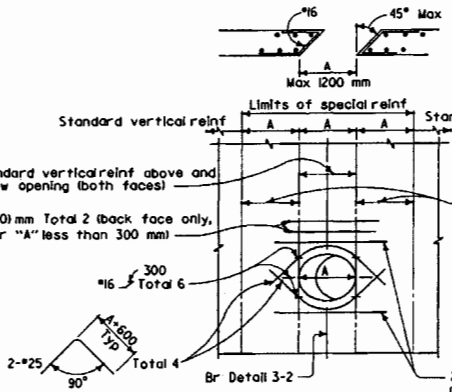


WALL DRAIN WITH PIPE DOME



TYPICAL GUTTER DETAIL
Scale: 1:10

GRATE DETAIL
Sizes to fit standard hubs



Standard vertical reinforcement plus additional vertical bars corresponding in size and number to bars cut by the opening. Place half on each side. Extend the additional bars into the footing the same as other vertical wall reinforcement and to a minimum of 60 bar diameters above the top of utility opening if wall height permits. Bundle bars as required.

Horizontal reinf to be standard except as shown.

All reinf to clear opening by 50 mm minimum.

Expansion joints shall not be located within the limits of special reinforcing.

RETAINING WALL UTILITY OPENING
Max size of opening (A) = 1200 mm
To be used in conjunction with sheet B3-8

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

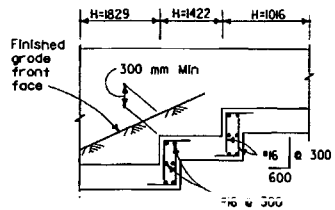
RETAINING WALL DETAILS No. 2

NO SCALE

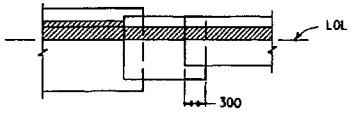
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

B3-9

05-24-04

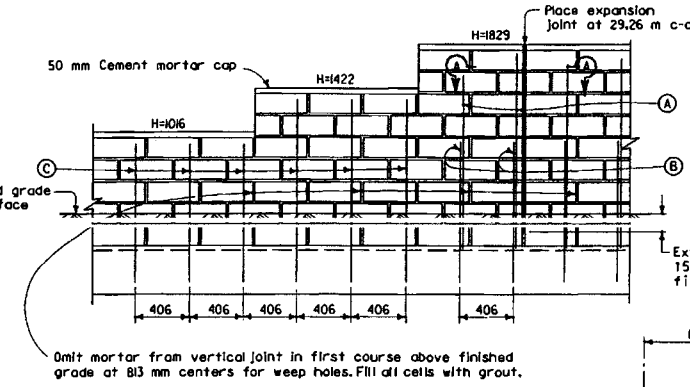


ELEVATION



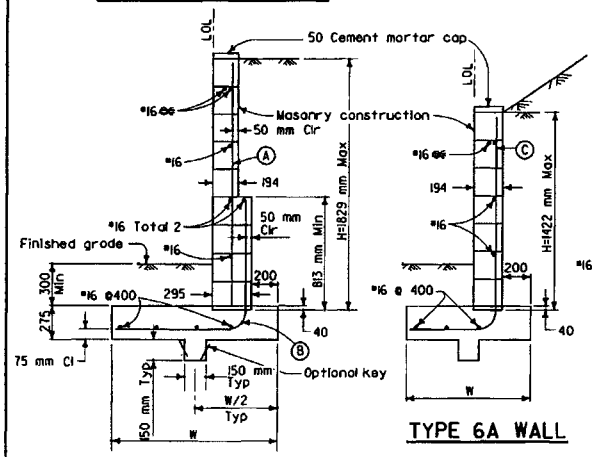
PLAN

FOOTING STEP DETAILS

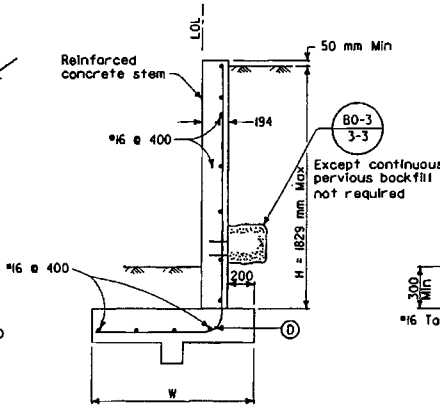


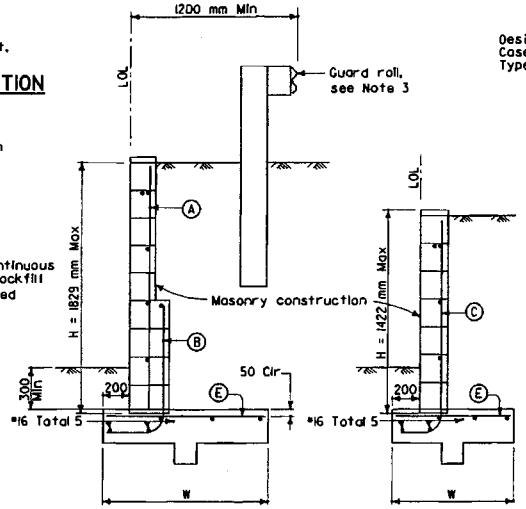
ELEVATION - MASONRY CONSTRUCTION

SECTION A-A

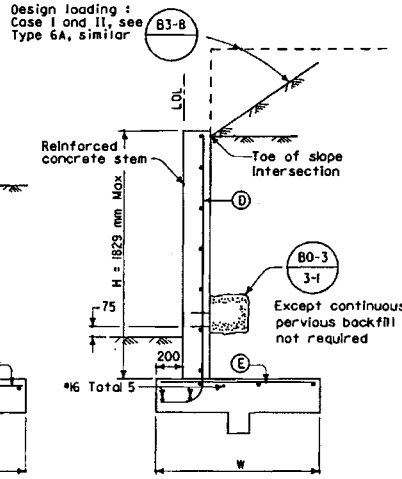


TYPE 6A WALL





TYPE 6B WALL



DESIGN DATA

Reinforced Concrete: f_c = 10 MPa f'_c = 25 MPa f_s = 168 MPa n = 10

Earth = 19 kN/m^3

Minimum allowable soil bearing capacity of foundation material = 95 kPa

Type	Design H	1016	1219	1422	1626	1829
6A	W	1000	1100	1200	1300	1400
6A	Ⓐ				#16@406	#16@406
6A	Ⓑ				#16@406	#16@406
6A	Ⓒ	#16@406	#16@406	#16@406		
6A	Ⓓ	#16@375	#16@375	#16@375	#16@375	#16@300

NOTES

1. For details not shown at "6B", see "6A".
2. Type 6 retaining wall shall be limited to use for walls of Design H of 1829 mm or less.
3. Where traffic is adjacent to the top of wall, guard rails should be set back from the top front face of wall at least 1200 mm.
4. Unless otherwise stipulated, the contractor will have the option of constructing the Type 6 walls of either masonry or reinforced concrete.
5. For reinforced concrete wall stem joint details, See B0-3 3-3 and B0-3 3-4.
6. No splices are allowed on Ⓐ, Ⓑ and Ⓒ bars.
7. At Ⓓ bar, no splices are allowed within 500 mm above the top of footing.

Type	Design H	1016	1219	1422	1626	1829
6B	W	850	950	1050	1150	1250
6B	Ⓐ				#16@406	#16@406
6B	Ⓑ				#16@406	#16@406
6B	Ⓒ	#16@406	#16@406	#16@406		
6B	Ⓓ	#16@375	#16@375	#16@375	#16@375	#16@300
6B	Ⓔ	#16@375	#16@375	#16@375	#16@375	#16@300

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

Duncan Y. Hon
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

RETAINING WALL TYPE 6 1829 mm MAXIMUM

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

B3-11

03-26-04

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

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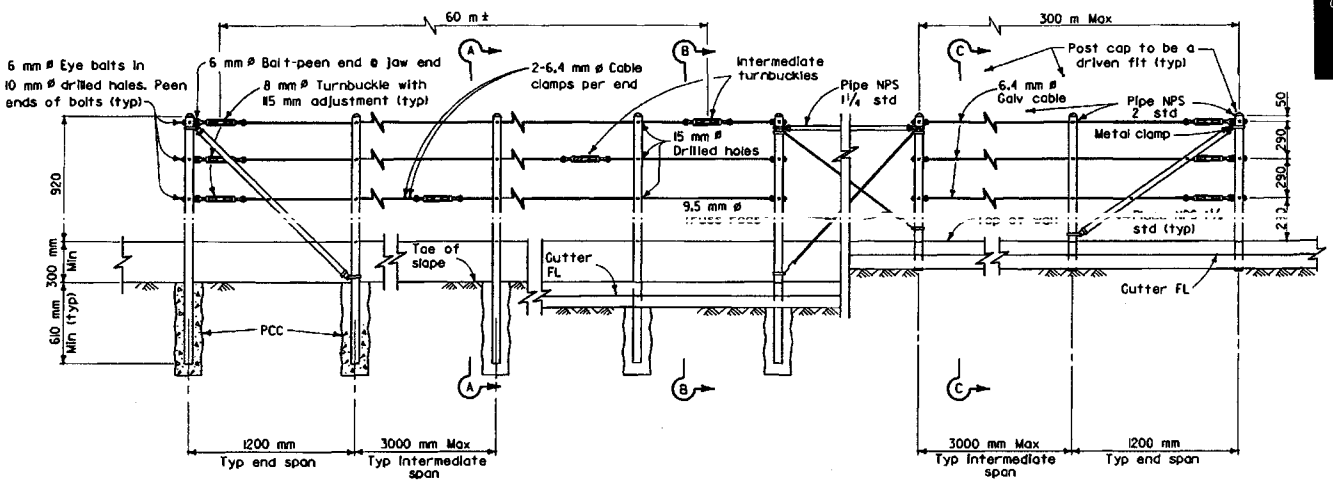
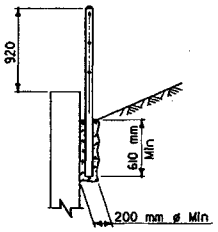


EXISTING WALL (WITHOUT GUTTER)
Existing

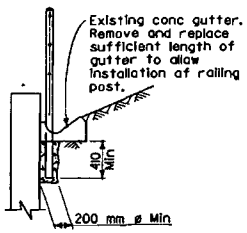
RETAINING WALL (WITH GUTTER)
Existing

RETAINING WALL (WITH GUTTER)
New construction

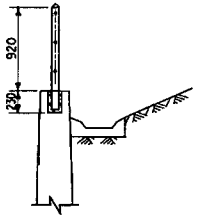
ELEVATION



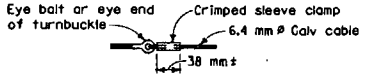
SECTION A-A
Existing



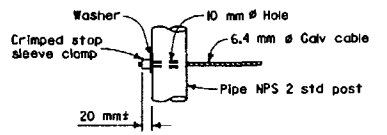
SECTION B-B
Existing



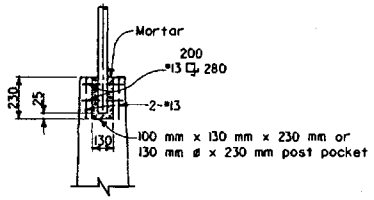
SECTION C-C
New construction



ALTERNATIVE CABLE CONNECTION



ALTERNATIVE DEAD END ANCHORAGE



POST POCKET

NOTES

1. Maximum distance between turnbuckles shall be 60 m.
2. Intermediate turnbuckles to be placed in adjacent spans.
3. Cable shall not be spliced between intermediate turnbuckles and end posts.
4. All posts, cable, and hardware to be galvanized.
5. Posts to be vertical.
6. Alignment of holes in posts may vary to conform to slope of top of retaining wall.
7. The Contractor shall verify all dependent dimensions in the field before ordering or fabricating any material.
8. Alternative details may be submitted by the Contractor for approval by the Engineer.
9. Line posts shall be braced horizontally and trussed diagonally in both directions at intervals not to exceed 300 m.
10. Post pockets to be centered in top of wall.
11. Typical end spans, braced in both directions, shall be constructed at changes in line where the angle of deflection is 15° or more.
12. Provide thimbles at all cable loops.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CABLE RAILING

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

B11-47

07-08-04

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

REGISTERED CIVIL ENGINEER

July 1, 2004
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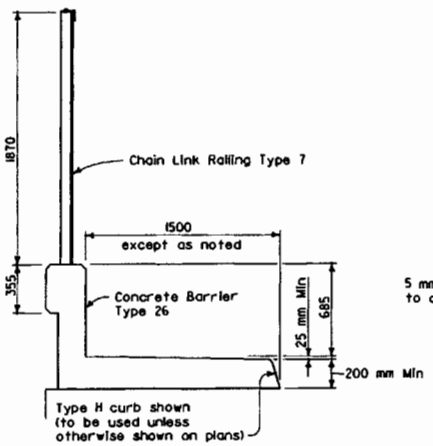
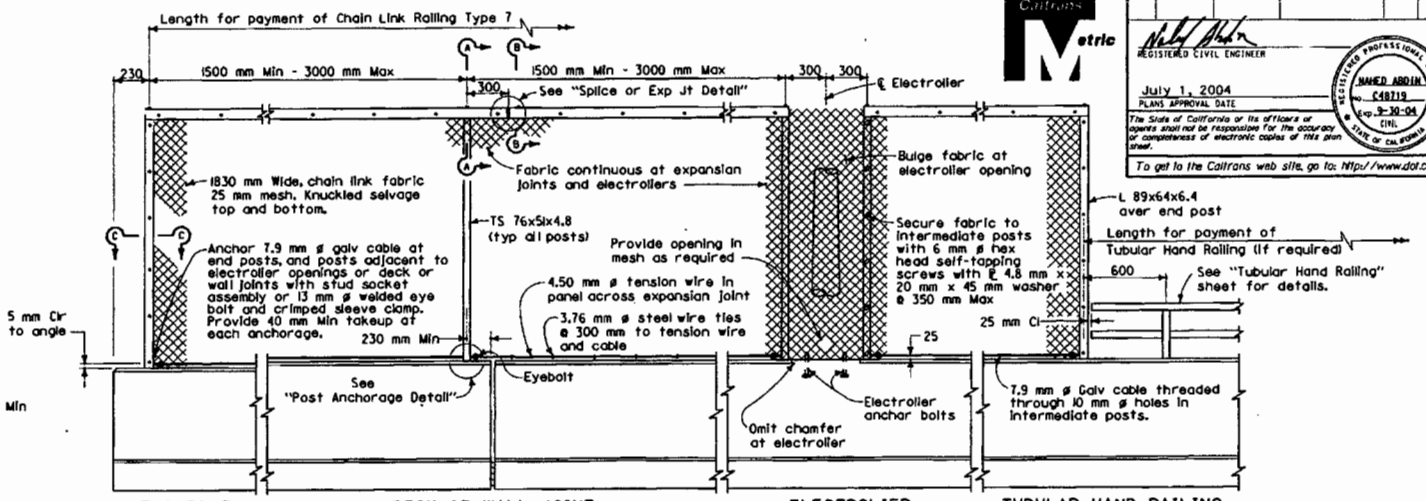
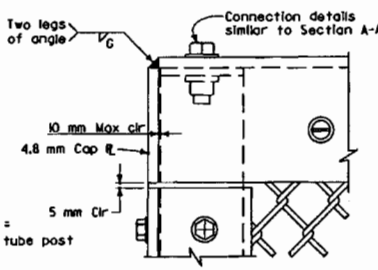


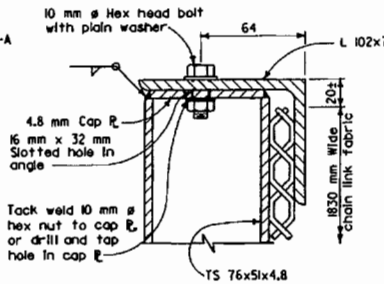
TYPICAL SECTION



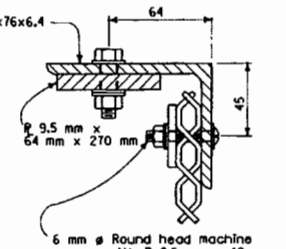
ELEVATION



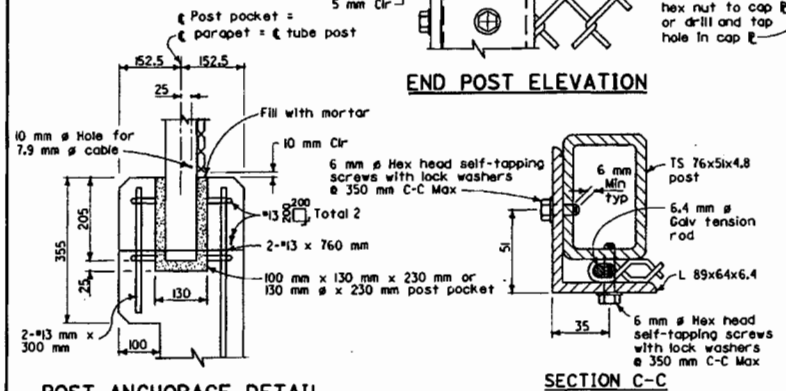
END POST ELEVATION



SECTION A-A

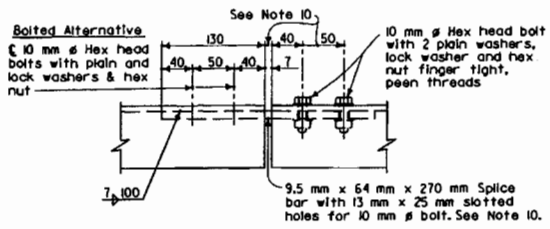


SECTION B-B



POST ANCHORAGE DETAIL

SECTION C-C



SPLICE OR EXPANSION JOINT DETAIL

NOTES

1. Railing assembly except chain link fabric to be galvanized after fabrication.
2. Posts shall be vertical.
3. Railing shall conform to horizontal and vertical alignment. When railing is placed on a curved horizontal alignment with radius of 45 m or less, thread the 7.9 mm ø cable through 10 mm ø welded eye rods embedded 100 mm into the top of the concrete parapet and equally spaced to limit the midordinate distance between the 7.9 mm ø cable and the curve to 25 mm maximum. Horizontal angle shall be bent to conform to horizontal alignment if radius is 45 m or less and may be on 3 m chords if radius is over 45 m.
4. Horizontal angle shall be continuous over not less than two intermediate posts, except that a shorter length is permitted at expansion joints, electroliers and other rail discontinuities.
5. When rail is on slope, place fabric parallel to slope.
6. Alternative details may be submitted by Contractor for Engineer's approval.
7. For details and reinforcement not shown see Standard Plan B11-54.
8. See Project Plans for limits of Chain Link Railing Type 7.
9. Provide thimbles at all cable loops.
10. Expansion joint same dimension as expansion joint in deck or wall. Increase slotted hole length and splice bar length correspondingly.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

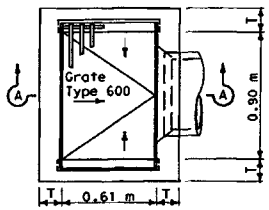
CHAIN LINK RAILING TYPE 7

NO SCALE

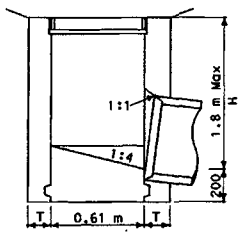
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

B11-52

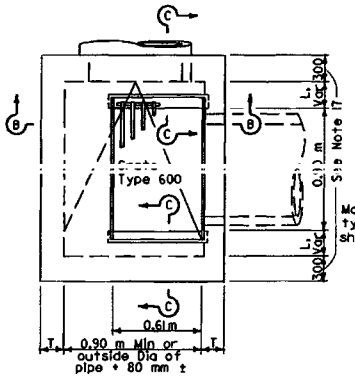
07-06-04



TYPE G1



SECTION A-A



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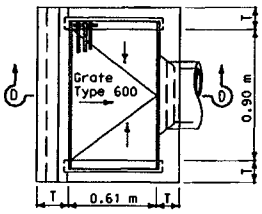
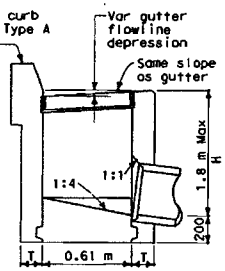
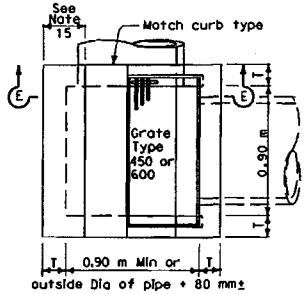


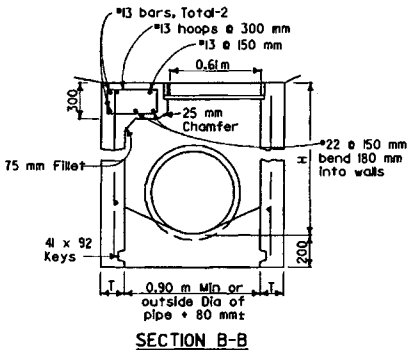
TYPE G3



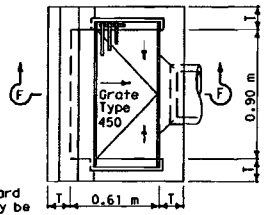
SECTION D-D



TYPE G4



SECTION B-B



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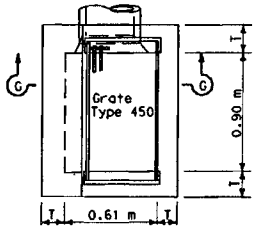

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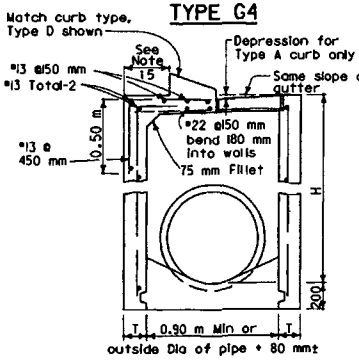

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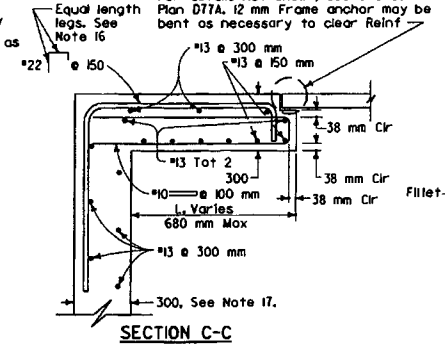
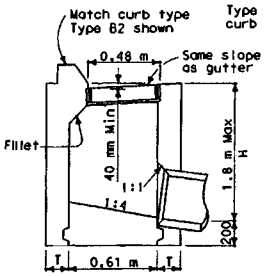


SECTION C-C



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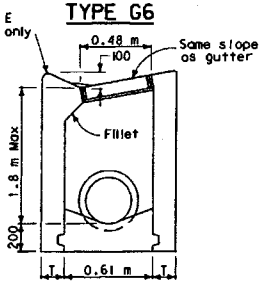

SECTION G-G

NOTES

1. "H" is the difference in elevation between the outlet pipe flow line and the normal gutter grade line undepressed.
2. For "T" wall thickness, see Table A below.
3. Wall reinforcing not required when "H" is 2.5 m or less and the unsupported width or length is 2.1 m or less. Walls exceeding these limits shall be reinforced with #13 bars @ 450 mm ± centers placed 40 mm clear to inside of box unless otherwise shown.
4. Inlet bottom reinforcing not required. See Standard Plan D74C for alternative reinforced bottom and alternative half round bottom.
5. Steps-None required where "H" is less than 0.75 m. Where "H" is 0.75 m or more, install steps with lowest rung 300 mm above the floor and highest rung not more than 150 mm below top of inlet. The distance between steps shall not exceed 300 mm and shall be uniform throughout the length of the wall. Place steps in the wall without an opening. Steps inserts may be substituted for the bar steps. Step inserts shall comply with State Industrial Safety requirements. See Standard Plan D74C for step details.
6. Details shown apply to both metal and concrete pipe.
7. Pipe(s) can be placed in any wall.
8. Curb section shall match adjacent curb.
9. Basin floors shall have wood trowel finish and a minimum slope of 4% from all directions toward outlet pipe.
10. Galvanizing-See Standard Specifications or Special Provisions.
11. Cast-in-place or Precast alternative is optional with contractor, See Standard Specifications.
12. Set inlet so that grate bars are parallel to direction of principal surface flow.
13. See Standard Plans D77A and D77B for grate and frame details and masses of miscellaneous iron and steel.
14. See Standard Plan D78 for gutter depression details.
15. This dimension will vary with different grates, curbs types, box width and wall thickness.
16. Bar may be rotated as necessary to clear opening. Where "L" is 150 mm or less, bar may be omitted.
17. Where "L" is 150 mm or less, wall thickness shall be as shown in Table A.
18. Cast-in-place inlets to be formed around all pipes/stubs intersecting the inlet, and concrete poured in one continuous operation. Precast inlets shall have mortared connections conforming to details for Type GCP inlet shown on Standard Plan D75B. See Standard Specifications for mortar composition.

TABLE A

CONCRETE QUANTITIES

Type	H=0.90 m to 2.50 m (T=150 mm)		H=2.5 m to 6.00 m (T=200 mm)	
	H=0.90 m (m3)	Additional PCC per meter (m3)	H=2.5 m (m3)	Additional PCC per meter (m3)
G-1	0.69	0.55	(1)	(1)
G-2*	1.01	0.63	3.32	1.14
G-3	0.75	0.55	(1)	(1)
G-4* (Type 600)	0.93	0.63	2.67	0.88
G-4* (Type 450)	0.95	0.63	2.69	0.88
G-5	0.75	0.55	(1)	(1)
G-6	0.76	0.55	(1)	(1)

(1) Maximum allowable height 1.8 m. Table based on 200 mm floor slab. No deductions are to be made to these quantities because of pipe openings, different floor alternatives or different curb types. * Quantities for Type G-2 and G-4 inlets based on the minimum interior dimensions shown.

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Registered Professional Engineer — Glenn DeCou — No. C34547 — Exp. 9-30-05 — Civil — State of California

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLETS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D73

05-12-04

2004 Std PLAN D73

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

Caltrans Metric

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-05
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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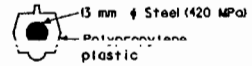
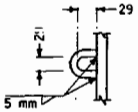
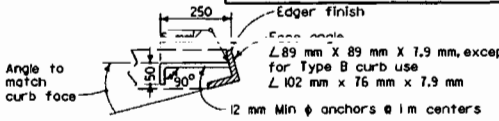


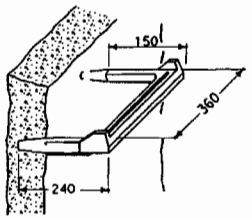
TYPICAL SECTION
(STEP INSERT)



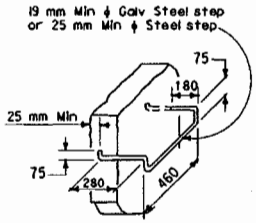
STIRRUP



FACE ANGLE ANCHOR DETAIL A



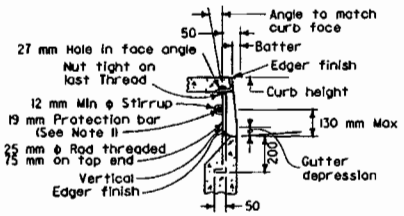
STEP INSERT



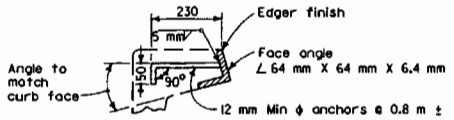
BAR STEP

STEP DETAILS

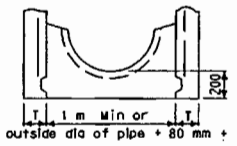
FACE ANGLE DETAIL A	
Length of Curb Opening	No of Anchors
1.1 m or Less	2
2.1 m	3
3.0 m	4
4.3 m	5
6.4 m	7



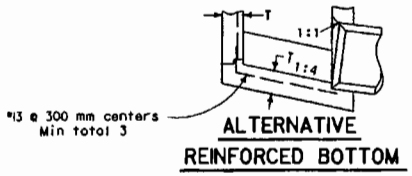
CURB SUPPORT DETAIL
See Note 2



FACE ANGLE ANCHOR DETAIL B



ALTERNATIVE
HALF ROUND BOTTOM



ALTERNATIVE
REINFORCED BOTTOM

NOTES

1. When shown on the project plans, place a 19 mm plain round protection bar horizontally across length of the opening and bend back 100 mm into the inlet wall on each side.
2. Curb supports shall be evenly spaced and minimal in number such that maximum span of unsupported curb is 2.1 m.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D74C

05-04-01

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
No. C34541
Exp. 9-30-05
CIVIL
STATE OF CALIFORNIA

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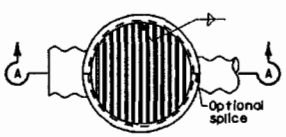
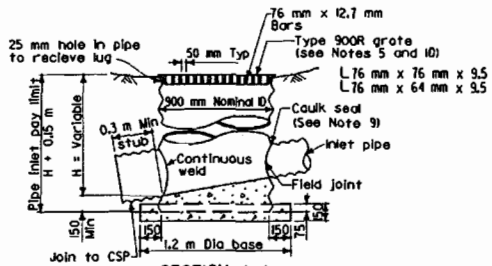
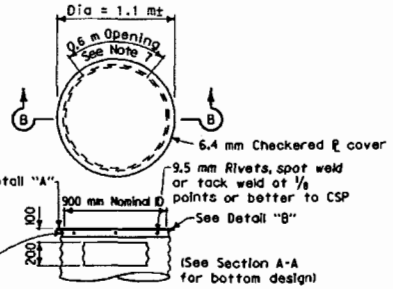




SECTION A-A

TYPE GMP

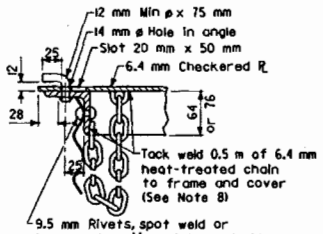
STEEL PIPE INLET WITH GRATE



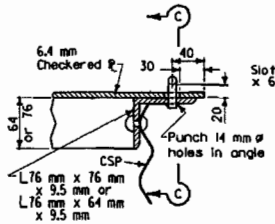
SECTION B-B

TYPE OMP or OMPI

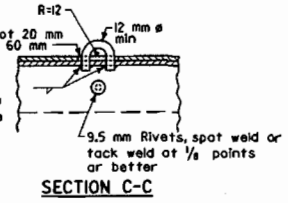
STEEL PIPE INLET WITH SIDE OPENING AND STEEL COVER (See Note 6)



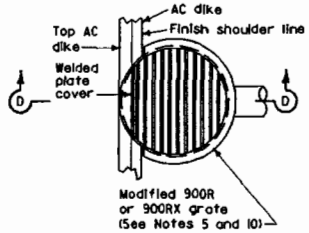
DETAIL "A"

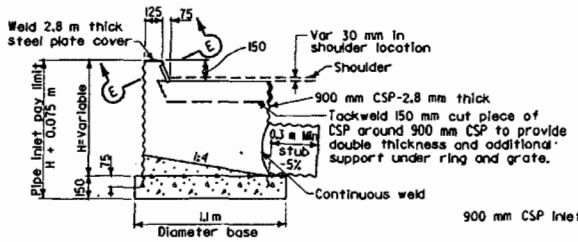


DETAIL "B"



SECTION C-C



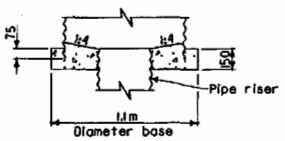


SECTION D-D

TYPE ODI

STEEL PIPE INLET WITH GRATE AND RAISED OPENING AT AC DIKE FLOWLINE

SECTION E-E



TYPE ODI BASE DETAIL FOR PIPE RISER CONNECTION

NOTES

1. For Details of concrete pipe inlets, see New Standard Plan NSP D75B.
2. For details of ladder and steps and when ladder or steps are required, see Standard Plan D75C.
3. Inlet pipes shall not protrude into basin.
4. Except for inlets used for junction boxes, basin floors shall have minimum slope of 1:4 from all directions toward outlet pipe, and a wood trowel finish.
5. See Standard Plans D77A and D77B for Grate and Frame Details and mass of Miscellaneous Iron and Steel.
6. Designation of Type OMPI pipe inlets on plans indicates trash racks are to be furnished and installed on all side openings. See Standard Plan D75C for trash rack details.
7. More than one side opening may be required. Location and number as ordered by the Engineer.
8. Chain to be provided when specified.
9. Caulk seal with pliable mixture of sand, portland cement, and emulsified asphalt (Mixture of 1 part portland cement, 3-5 parts sand, and 1½ parts SSI emulsified asphalt.)
10. Place pipe so bars of grate will be parallel with main surface flow.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

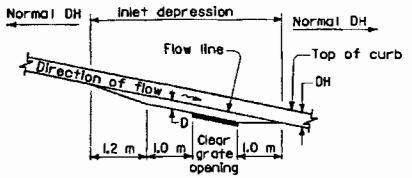
PIPE INLETS

NO SCALE

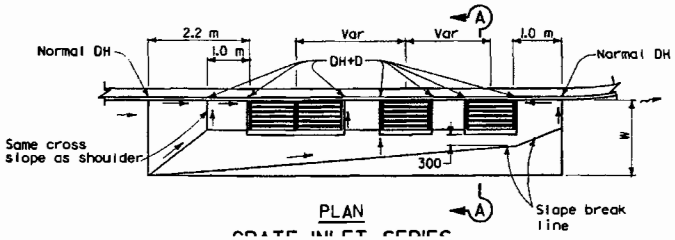
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D75A

03-28-04

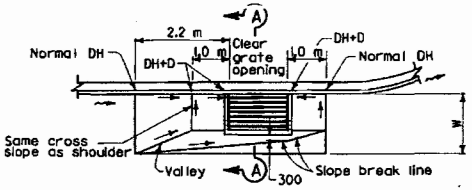


PROFILE



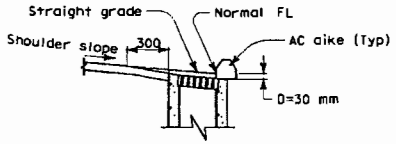
PLAN

GRATE INLET SERIES



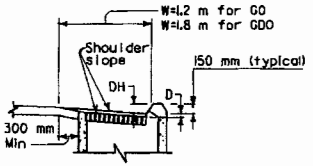
PLAN

TYPE GO AND GI THRU G6 INLETS ON GRADE

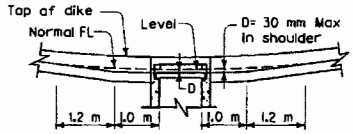


SECTION A-A

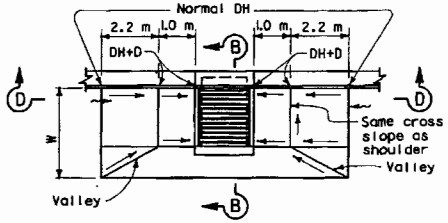
(Single grate shown)



SECTION B-B



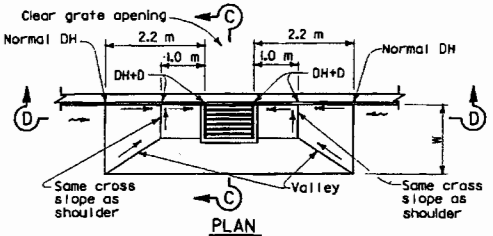
SECTION D-D



PLAN

TYPE GO AND GDO INLET GRADE SAG

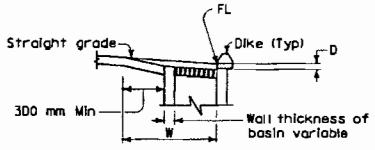
(GDO shown)



PLAN

TYPE GI THRU G6 GT3 AND GT4

INLETS IN GRADE SAG



SECTION C-C

NOTES

1. W = Width of depressed apron. Depressed aprons shall be 1.2 m unless indicated otherwise.

   D = Inlet depression. The inlet depression shall be 30 mm unless indicated otherwise.

   DH = Dike Height.

   → = Straight grade, downward slope.

   ⇝ = Direction of flow.

2. Apron shall be asphalt concrete and match thickness of adjacent shoulder pavement.

3. Establish curb opening height of Type GO or GDO at midpoint of grate. See Standard Plan D74B for details of curb opening.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

INLET DEPRESSIONS ASPHALT CONCRETE SHOULDERS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP D78C DATED APRIL 28, 2005 SUPERSEDES STANDARD PLAN D78C DATED JULY 1, 2004-PAGE 160 OF THE STANDARD PLANS BOOK DATED JULY 2004.

REVISED STANDARD PLAN RSP D78C

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

Glenn DeCou
REGISTERED CIVIL ENGINEER

April 28, 2005
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-05
CIVIL
STATE OF CALIFORNIA

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To accompany plans dated _____

2004 REVISED Std PLAN RSP D78C

5-4-05

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Dalton Forrester
No. C37765
Exp. 12-31-04
CIVIL
STATE OF CALIFORNIA

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WALL A

f'c = 42 MPa

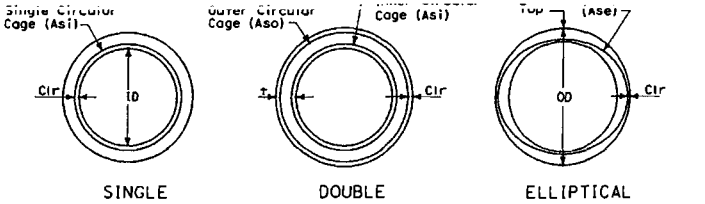
ID	t	MINIMUM COVER TO 3 m MAX COVER									6 m MAX COVER									12 m MAX COVER	
		METHOD 1			METHOD 2			METHOD 3A			METHOD 1			METHOD 2			METHOD 3A			METHOD 3A	
mm		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso
600	63	360	–	–	280	–	–	210	–	–	470	–	–	300	–	–	210	–	–	420	–
750	69	400	–	–	380	–	–	320	–	–	660	–	640	420	–	–	300	–	–	570	380
900	75	450	280	490	440	280	440	360	250	360	780	400	800	530	340	550	340	210	340	700	470
1050	88	530	320	590	490	320	490	380	280	380	850	440	950	570	360	590	360	230	380	740	510
1200	100	660	380	680	510	340	530	400	280	400	950	480	1090	640	380	640	400	250	400	800	550
1350	113	680	400	700	530	360	530	400	300	420	1040	530	1230	680	420	700	440	300	440	870	590
1500	125	700	400	720	550	360	550	400	300	420	1140	570	1380	740	470	760	490	320	490	950	640
1650	138	720	420	740	550	360	570	420	300	420	1250	610	1500	800	510	830	530	340	530	1040	680
1800	150	740	420	760	550	360	570	400	300	420	1330	660	1630	870	550	890	550	360	570	1120	720
1950	163	760	420	780	570	380	590	420	300	440	1460	700	1910	930	590	950	590	400	610	1210	780
2100	175	800	440	830	590	380	610	420	300	550	1570	760	–	990	640	1040	660	420	680	1290	830
2250	188	850	470	870	640	400	660	440	300	610	–	–	–	1080	680	1140	700	470	720	1400	890
2400	200	910	490	930	660	420	700	440	300	700	–	–	–	1140	720	1290	740	490	760	1500	950
2550	213	970	530	990	720	470	800	490	320	800	–	–	–	1230	760	1480	800	530	830	1590	990
2700	225	1040	570	1060	760	490	890	530	340	890	–	–	–	1310	830	1690	850	550	890	1690	1060

WALL AA

		WALL AA	
		24 m MAX COVER	
		METHOD 3B	
ID	t	Asi	Aso
mm			
600	144	280	150
750	150	400	150
900	163	510	150
1050	175	610	210
1200	188	720	220
1350	200	850	360
1500	213	990	440
1650	225	1100	530
1800	238	1210	590
1950	250	1330	680

f'c = 42 MPa

f'c = 49 MPa



WALL B

f'c = 35 MPa

ID	t	MINIMUM COVER TO 3 m MAX COVER									6 m MAX COVER									12 m MAX COVER	
		METHOD 1			METHOD 2			METHOD 3A			METHOD 1			METHOD 2			METHOD 3A			METHOD 3A	
mm		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso
600	75	250	–	–	210	–	–	190	–	–	380	–	–	250	–	–	190	–	–	380	–
750	88	400	–	320	300	–	250	250	–	210	530	–	470	340	–	280	230	–	210	510	–
900	100	380	190	380	280	170	300	230	150	230	490	230	590	340	190	340	230	150	230	470	280
1050	113	440	230	440	320	190	340	280	170	280	570	300	740	380	210	400	280	170	280	530	320
1200	125	510	280	510	380	230	380	300	190	320	660	340	910	440	250	470	320	190	320	610	380
1350	138	550	300	550	400	250	400	320	210	320	760	380	1060	510	300	510	360	210	380	700	440
1500	150	570	320	590	420	280	420	340	210	340	850	440	1270	570	340	570	400	230	420	780	490
1650	163	610	320	640	440	300	440	360	230	380	930	490	1550	640	380	640	440	300	440	870	550
1800	175	640	340	660	440	300	470	360	230	400	1100	550	1840	700	420	720	530	320	530	950	610
1950	188	660	360	680	470	320	510	380	250	470	1310	590	2140	760	470	780	550	340	570	1040	680
2100	200	700	380	720	490	320	550	380	250	550	1480	640	–	830	510	870	590	360	610	1120	720
2250	213	760	400	780	530	340	640	400	250	640	–	–	–	890	550	1040	640	380	660	1190	760
2400	225	830	420	850	570	340	720	420	250	720	–	–	–	950	590	1160	680	420	720	1250	800
2550	238	890	470	950	610	380	800	470	300	800	–	–	–	1040	660	1350	740	470	800	1350	870
2700	250	950	510	1140	660	400	910	510	320	910	–	–	–	1100	680	1500	800	510	910	1420	970

WALL BB

		WALL BB	
		24 m MAX COVER	
		METHOD 3B	
ID	t	Asi	Aso
mm			
600	163	230	150
750	175	340	150
900	188	440	150
1050	200	530	150
1200	213	660	190
1350	225	780	280
1500	238	870	340
1650	250	1140	420
1800	265	1230	510
1950	280	1310	570
2100	290	1330	610
2250	305	1440	700

f'c = 35 MPa

f'c = 42 MPa

f'c = 49 MPa

WALL X

f'c = 42 MPa

ID	t	MIN COVER TO 3 m MAX COVER						3.1 m TO 6 m MAX COVER						6.1 m TO 9 m MAX COVER					
		METHOD 3A			METHOD 3B			METHOD 3A			METHOD 3B			METHOD 3A			METHOD 3B		
mm		Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso	Ase	Asi	Aso		Asi	Aso	
600	47	280	–	–	250	–	–	250	–	–	210	–	–	380	–		320	–	
750	53	380	–	–	360	–	–	320	–	–	250	–	–	490	–		400	–	
900	59	400	320	400	380	280	380	360	–	300	300	–	250	440	320		450	–	
1050	63	610	490	610	570	440	570	420	–	420	340	–	340	660	490		510	380	
1200	69	660	510	660	590	470	610	530	–	490	420	–	380	740	550		590	440	
1350	75	660	530	660	610	490	610	590	–	510	490	–	400	760	550		590	440	
1500	88	610	490	640	570	440	590	680	–	530	550	–	420	780	570		610	470	
1650	94	610	490	610	570	440	590	590	420	590	490	360	490	890	640		700	530	
1800	105	570	440	570	530	400	550	590	420	590	490	340	490	870	610		700	510	
1950	119	530	400	550	510	380	510	590	420	610	490	360	510	870	610		700	510	
2100	132	530	400	570	490	360	530	610	440	640	510	360	530	890	640		720	510	
2250	144	510	380	590	470	340	590	700	490	720	590	400	590	990	720		830	590	
2400	150	510	380	680	490	340	680	720	510	740	590	420	680	990	720		830	590	
2550	163	510	380	760	530	340	760	780	550	800	660	470	760	1120	780		910	660	
2700	175	550	380	870	490	340	870	850	590	890	720	510	870	1250	850		990	720	

CAGE REINFORCEMENT

t = Pipe barrel wall thickness, mm

Asi = Inner cage reinforcement, or single circular cage reinforcement, square mm/m

Aso = Outer cage reinforcement, square mm/m

Ase = Elliptical single cage reinforcement, square mm/m

ID = Inside Diameter, mm

OD = Outside Diameter, mm

Clr = Design clearance, mm (see Note 6)

DESIGN NOTES

Design: Bridge Design Specifications (1983 AASHTO with interims and revisions by Caltrans)

A. Earth Loading:
Earth Pressures - Vertical: 22.0 kPa/m
Horizontal: Varies, see design lateral pressure chart (Circular Pipe only)

B. Unit Stresses: (Used in Design Tables)
fy = 450 MPa
f'c = See Tables

C. The RCP as shown on this sheet is not intended to be used in a corrosive environment. A special design may be required.

CONSTRUCTION NOTES

1. For details of the method of excavation, backfill and bedding (Method 1, Method 2, etc.), see Standard Plan A62D.
2. The tables for minimum allowable classes and D-loads of RCP on Standard Plan A62D shall not apply to direct design RCP.
3. Notes 3, 9 and 10 on Standard Plan A62D shall apply to direct design RCP.
4. Throughout the length of any given culvert, the direct design selected by the Contractor shall be the same, including the method of excavation, backfill and bedding.
5. The embankment height prior to excavation specified in note 5 of the Standard Plan A62D shall apply to the direct design RCP installation when Method 2, 3A or 3B are used.
6. For single circular cage reinforcement, minimum clearance shall be 40% of the wall thickness (t). For elliptical and double circular cage reinforcement where the wall thickness (t) is less than 65 mm, the minimum clearance (Clr) for reinforcement shall be 20 mm, and where the wall thickness (t) is 65 mm or more the minimum clearance (Clr) for reinforcement shall be 25 mm.
7. Minimum cover measured at the edge of pavement shall be 600 mm to top of AC pavement and 300 mm to top of rigid pavement.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PRECAST REINFORCED CONCRETE PIPE
DIRECT DESIGN METHOD

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D79

04-01-04

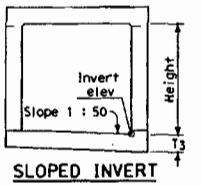
	SPAN (mm)	1220						1520							1830							2135							2440							
	HEIGHT (mm)	610		915		1220		610		915		1220		1520	915		1220		1520		1830	915		1220		1520		1830	2135	1220		1520		1830		2135	2440
	Maximum Earth Cover (m)	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	3.0	3.0	6.0	3.0	6.0	3.0	3.0	3.0	3.0
Conc	Roof T_1 (mm)	180	180	180	180	180	180	190	190	190	190	190	190	190	205	205	205	205	205	205	205	205	230	205	230	205	230	205	230	215	230	215	230	215	230	215	230
	Walls T_2 (mm)	150	150	150	150	150	165	150	150	150	150	150	180	165	190	150	150	150	180	165	190	180	215	150	150	150	180	165	190	180	215	205	240	150	180	165	190
	Invert T_3 (mm)	150	150	150	150	150	165	165	180	165	180	165	180	165	180	180	205	180	205	180	205	180	205	205	230	205	230	205	230	205	230	205	230	205	240	205	255
Reinf	Spacing (mm)	175	175	175	175	175	175	215	150	215	140	215	140	215	140	190	125	190	125	190	125	190	115	165	125	165	115	165	140	165	140	165	140	150	125	150	125
	"a" Size Bar #	19	19	19	19	19	19	22	19	22	19	22	19	22	19	22	19	22	19	22	19	22	19	22	19	22	19	22	19	22	22	22	22	22	22	22	22
	"e" Size Bar #	13	13	13	16	16	19	13	13	13	13	16	16	19	19	13	13	16	16	19	19	22	19	13	13	16	16	19	19	19	22	22	22	16	16	16	19
Quantities	Concrete m^3/m	0.69	0.69	0.78	0.78	0.87	0.94	0.83	0.85	0.93	0.95	1.02	1.11	1.16	1.27	1.09	1.14	1.18	1.32	1.32	1.48	1.48	1.70	1.27	1.38	1.36	1.56	1.50	1.72	1.68	1.95	1.92	2.21	1.52	1.77	1.66	1.96
	Reinforcement kg/m	71	71	74	82	86	100	86	89	86	101	100	121	122	156	104	121	122	143	144	179	185	220	140	140	156	176	180	219	193	263	238	286	183	225	195	254

	SPAN (mm)	3050							3660							4270																					
	HEIGHT (mm)	1520		1830		2135		2440	2745		3050		1830		2135		2440		2745		3050		3350		3660		2135		2440		2745		3050		3350		3660	
	Maximum Earth Cover (m)	3.0	6.0	3.0	6.0	3.0	6.0	3.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0	3.0	6.0
Conc	Roof T_1 (mm)	205	270	205	270	205	270	205	270	205	270	215	280	215	305	215	305	215	305	215	305	215	305	240	305	240	305	240	355	240	355	240	355	240	355	255	355	255	355
	Walls T_2 (mm)	205	205	205	230	205	230	205	255	215	290	240	320	205	255	215	270	215	270	215	290	230	320	270	345	290	380	240	280	240	290	240	290	255	320	270	355	290	380
	Invert T_3 (mm)	205	280	205	280	205	280	205	280	205	280	215	280	215	320	230	320	230	320	230	320	230	320	240	330	255	330	255	370	255	370	255	370	255	370	270	370	270	380
Reinforcement	Spacing (mm)	325	300	300	300	275	275	250	275	275	275	250	250	225	250	225	250	225	250	200	250	200	250	225	250	225	200	250	225	250	225	250	200	250	200	250	200	250	250
	**"a" Size Bar #	19	22	19	22	19	22	19	22	19	19	19	19	19	22	19	22	19	22	19	22	19	22	19	19	19	19	22	22	22	22	22	22	22	22	22	22	19	22
	"b" Size Bar #	19	22	19	22	19	22	19	22	19	19	22	22	19	22	19	22	19	22	19	22	22	22	19	22	19	22	19	22	22	22	22	22	22	22	22	22	19	25
	"b" Dimension "B" (mm)	900	900	900	925	900	1150	900	1150	900	1150	900	1150	950	975	1150	1150	1150	1150	1100	1150	1100	1325	1100	1325	1325	1325	850	1275	1025	1325	1025	1375	1025	1375	1075	1375	1075	1375
	"b" Dimension "Bw" (mm)	1475	1525	1475	1525	1475	1525	1475	1525	1475	1525	1400	1400	1850	1800	1900	2025	1900	2025	1500	1500	1500	1500	1500	1500	1325	1325	1975	2150	2150	2550	2150	2550	1850	1850	1850	1850	1850	1850
	"c" Size Bar #	19	22	19	22	19	22	19	22	22	22	22	22	19	22	19	22	19	22	19	22	19	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	25	25
	"c" Dimension "C" (mm)	1025	1025	2250	1425	2325	1425	2500	1425	2325	1425	2325	1425	1325	1100	2475	1700	2475	1700	2475	1700	2475	1700	2475	1700	2475	1700	1225	1275	2075	2075	1800	1800	1850	1950	2725	1950	2725	1950
	W"e" Size Bar #	13	13	13	13	13	13	13	13	13	13	16	16	13	13	13	13	13	13	13	13	13	13	16	16	16	16	13	13	13	13	13	13	13	13	16	19	19	19
Quantities	Concrete m^3/m	2.01	2.50	2.14	2.74	2.26	2.88	2.38	3.17	2.58	3.50	2.98	3.93	2.49	3.50	2.72	3.73	2.81	3.89	3.00	4.22	3.21	4.63	3.78	5.04	4.22	5.56	3.36	4.73	3.51	4.93	3.67	5.10	3.89	5.45	4.26	5.95	4.64	6.46
	Reinforcement kg/m	284	397	347	424	387	484	446	504	467	487	536	555	439	539	525	609	543	625	598	615	618	631	655	701	696	795	557	701	668	777	663	874	668	863	732	887	799	900

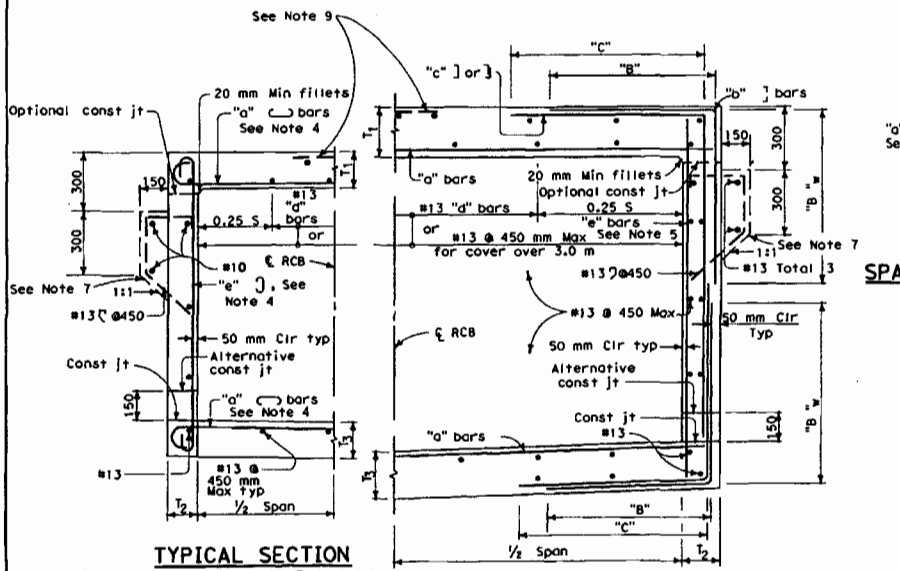
* See Note 5
** See Note 6

"d" bars, for earth covers up to and including 3.0 m

Span (mm)	1220	1520	1830	2135	2440	3050	3660	4270
Number	7	8	9	10	11	12	15	20

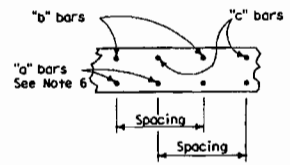


SLOPED INVERT

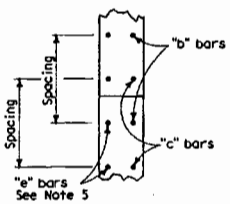


TYPICAL SECTION
SPANS 1220 mm THRU 2440 mm

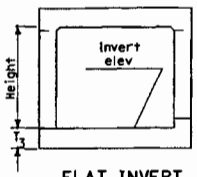
TYPICAL SECTION
SPANS 3050 mm THRU 4270 mm



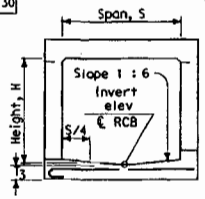
ROOF SECTION
SPANS 3050 mm THRU 4270 mm
INVERT SIMILAR



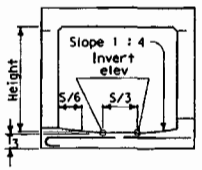
WALL SECTION
SPANS 3050 mm THRU 4270 mm



FLAT INVERT



V INVERT



TRAPEZOIDAL INVERT

ALTERNATIVE INVERTS

NOTES

1. For boxes with span or height less than any of those shown in table, use next greater size box concrete dimensions and reinforcement. Make necessary changes in bar lengths and quantities.
2. Quantities are approximate and for design purposes only.
3. For boxes with span or height or cover greater than those shown in tables, a special design is required.
4. It is permissable to eliminate the 180° hooks on every other bar.
5. "e" bars are at half spacing (spans 3050 mm - 4270 mm only).
6. "a" bars are at half spacing (spans 3050 mm - 4270 mm only).
7. Provide paving notch when top is exposed and when pavement is portland cement concrete, and adjust quantities.
8. For design and details not shown, see Standard Plan D82.
9. For exposed top, provide #13 @ 450 mm each way (600 mm lap "c" bars or full span and adjust).

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE SINGLE BOX CULVERT

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D80

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

REGISTERED CIVIL ENGINEER — Dallas Forester
No. C37765 Exp. 12-31-04 CIVIL — STATE OF CALIFORNIA

July 1, 2004
PLANS APPROVAL DATE

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

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2004 Std PLAN D80

04-20-04

DESIGN NOTES

Specifications:
Design:
Bridge Design Specification (1983 AASHTO Specifications with revisions by Caltrans)
Load Factors: 1.5 D + 1.5 E + 2.5 (L + 1)
Where D=Dead Load
E=Earth Load
L=Live Load
I =Impact
Capacity reduction factor is included.

Loading:
Live load:
HS20-44 truck
Apply impact only to the roof slab.

Earth Cover (mm)	Impact (%)
301 to 600	20
601 to 900	10
Over 900	0

No surcharge on walls due to live load.

Earth load:
Earth pressures for two conditions:
22.0 kPa/m vertical, 6.6 kPa/m horizontal.
22.0 kPa/m vertical, 22.0 kPa/m horizontal.

Unit stresses:
f'_c = 25 MPa
f_y = 400 MPa

Distribution "d" bars:
Up to and including 3.0 m cover
Expressed as a percent of main positive reinforcement required: $\frac{100}{0.05726\sqrt{S}}$, Max 50%.

Over 3.0 m cover
#13 @ 450 mm maximum.

Shear:
Maximum allowable shear, $v_c = 0.291\sqrt{f'_c}$, MPa

Exclusions:
Compressive reinforcement and negative-moment reduction (for continuity) do not apply.
Axial loading on members has not been considered.

CONSTRUCTION NOTES

Construction loads:
Strutting required as shown on Standard Plan D88. Strutting may be required on culvert extensions when existing parapet is removed.

Expansion joints:
Invert:
No expansion joints shall be permitted.

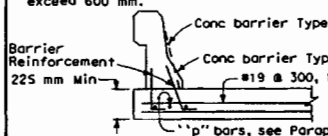
Roof and Walls:
When cover is less than span length-
Place 13 mm expansion joint filler at 9 m± centers outside the paved roadway lanes and place Bridge Detail 3-2, Standard Plan B0-3, at 9 m centers under paved roadway lanes.
When cover is more than span length-
Place 13 mm premolded expansion joint filler at 9 m± centers and additional 13 mm premolded expansion joints at locations of change in foundation character, as directed by the Engineer.

Construction joints:
Temporary joints may be permitted if normal (or radial) to ℄ of RCB. Otherwise, the contractor is to submit a proposal for consideration.

Cutoff walls:
1.2 m cutoff walls are to be provided at inlet and/or outlet unless adjacent channel is lined and unless otherwise shown. These walls are to be extended if scour conditions warrant.

Earthwork:
See Standard Plan A62E.

Backfill:
See Standard Specifications, except that the difference in level of backfill (against outside walls) shall not exceed 600 mm.



BARRIER SECTION (9.0 m MINIMUM)

GENERAL NOTES

Designation:
Standard single or multiple box culverts are shown on plans as span times height with maximum cover over roof thus: 2440 mm x 1520 mm RCB with 3 m or DBL 3050 mm x 1520 mm RCB with 6 m, followed by alternatives.

Alternatives:
Single cell: Invert will be sloped unless "trapezoidal invert", "flat invert" or "V invert" is included in designation
Multiple cell: Invert will be vee unless "flat invert" is specified. Ends of culvert will be rounded unless "square ends" are designated. Parapets will be as shown unless designated in plans. Such designations may be different for inlet and outlet ends.

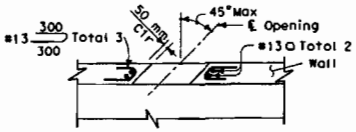
Quantities are for the sloped or vee invert and do not include "d" bars, nor splices in longitudinal bars, nor temperature reinforcement for exposed roof, nor concrete or reinforcement for parapets, cutoff walls or paving notches.

Reinforcement placement:
Main reinforcement is to be placed transverse or, for curved culverts, radial. When radial, reinforcing spacing of the "a", "f" and "g" bars is measured along the centerline. Stagger splices not shown. Hooks may be rotated or tilted, as necessary, for clearance.

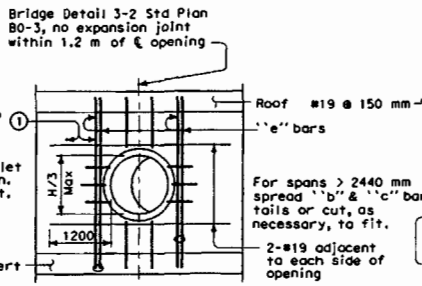
Special reinforcement coverage:
Box standard plans are not to be used for culverts in a corrosive environment or where there is a severe abrasive flow condition or in freeze-thaw locations.

Special design:
Required for culverts with conditions, loads, design bearing pressures or sizes greater than those given on this plan or Standard Plans D80 & D81. Also required for multiple cell culverts with unequal spans. For culverts with railroad loading, see the current AREA design specification.

3 or more cells:
For culverts with more than two cells, use dimensions and reinforcement for the standard "double box culvert" and adjust quantities accordingly.



PART PLAN-SECTION

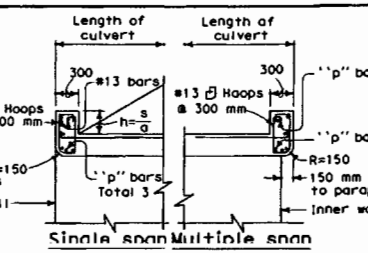


LONGITUDINAL SECTION

UTILITY OPENING-WALL

H= Height of box

① Adjacent to each side of the opening, place additional bars equivalent to half the interrupted main reinforcement.



PARAPET DETAIL

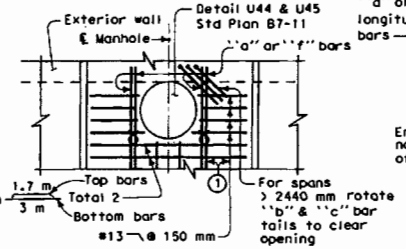
s = Clear span (mm)
a = 12 cosine skew angle

Span	Parapet "p" bars Skew Angle 0° TO 15°	16° TO 30°	31° TO 45°
1220 mm	#13	#13	#13
1830 mm	#13	#13	#16
2440 mm	#13	#16	#19
3050 mm	#16	#19	#22
3660 mm	#19	#22	#25
4270 mm	#22	#25	#29

PARAPET REINFORCEMENT

Height of Cover	3 m	6 m
1830 mm	95	150
2440 mm	105	160
3050 mm	115	170
3660 mm	125	180
4270 mm	135	190

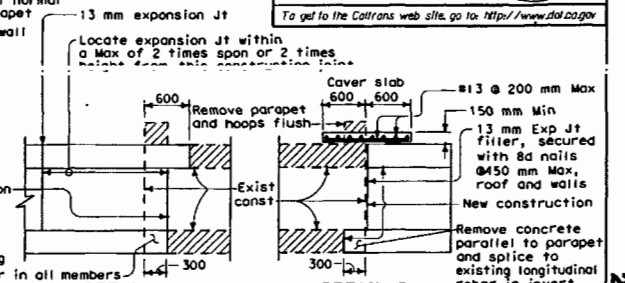
DESIGN BEARING PRESSURE (kPa)



PART PLAN

PART LONGITUDINAL SECTION

MANHOLE



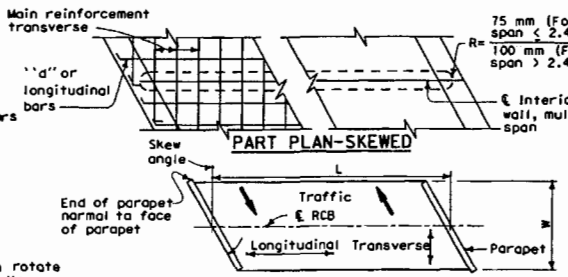
DETAIL A

(20° maximun skew as shown. If existing longitudinal and transverse reinforcing bars in top slab are lap spliced with new longitudinal and transverse reinforcing bars, the 20° skew may be exceeded. Lap splicing may require removal of top slab in excess of 600 mm shown.

DETAIL B

(Single cell only, no skew allowed, 300 mm minimum cover.)

CULVERT EXTENSION



PART PLAN-SKEWED

RCB TERMINOLOGY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CAST-IN-PLACE REINFORCED CONCRETE BOX CULVERT MISCELLANEOUS DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D82

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

REGISTERED CIVIL ENGINEER
July 1, 2004
PLANS APPROVAL DATE
Dallas Forester No. C37765 Exp. 12-31-04 CIVIL STATE OF CALIFORNIA

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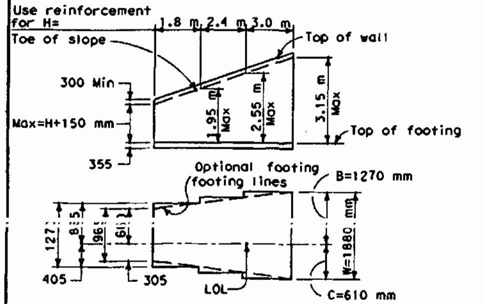
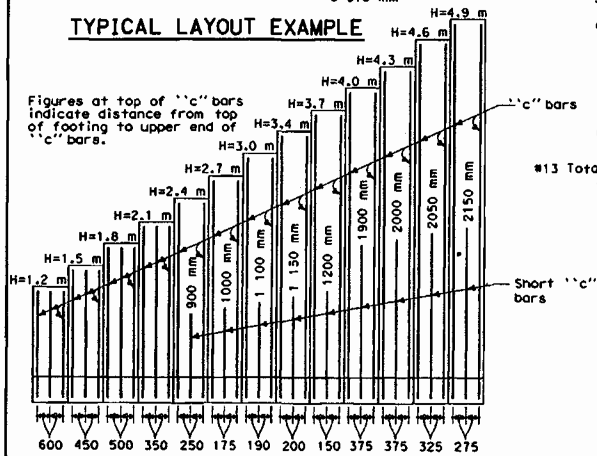
2004 Std PLAN D82

164

05-27-04

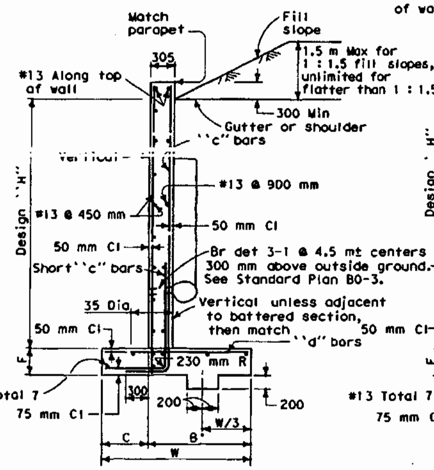


TYPICAL LAYOUT EXAMPLE

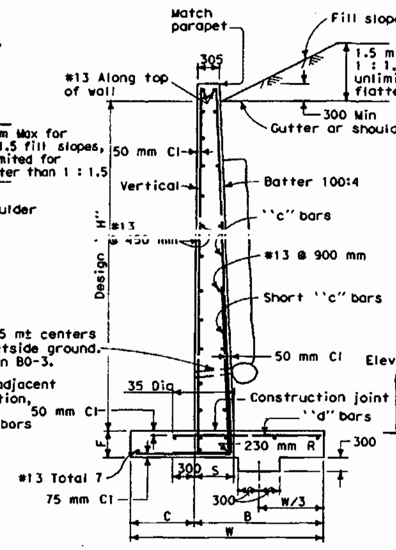


NOTE

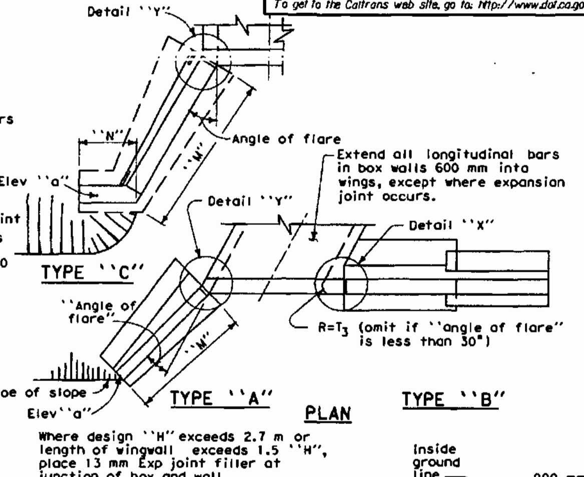
Where 1 : 1.5 surcharge exceeds 1.5 m, use Type 2 retaining wall.

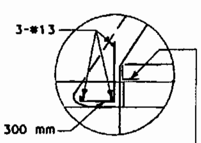


TYPICAL SECTION
H=1.2 m THRU 3.7 m

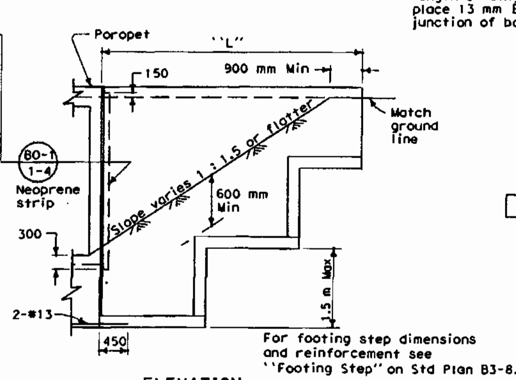


TYPICAL SECTION
H=4.0 m THRU 4.9 m

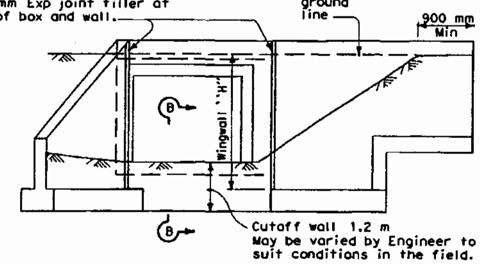




DETAIL ``X''



ELEVATION



STRAIGHT WINGWALLS

REINFORCED CONCRETE WINGWALLS

``H'' (m)	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.4	3.7	4.0	4.3	4.6	4.9
W (mm)	965	1120	1270	1420	1575	1730	1880	2030	2185	2335	2490	2640	2795
C (mm)	305	355	405	455	510	560	610	660	710	760	815	865	915
B (mm)	660	765	865	965	1065	1170	1270	1370	1475	1575	1675	1775	1880
F (mm)	355												
Batter	None									4:100			
S (mm)	305	305	305	305	305	305	305	305	305	465	475	490	500
``c'' Bars	#13@600	#13@450	#16@500	#16@350	#16@250	#16@175	#19@190	#22@200	#22@150	#29@375	#32@375	#32@325	#32@275
``d'' Bars	#13@600	#13@450	#16@500	#16@350	#16@250	#19@350	#22@380	#25@400	#22@300	#25@375	#29@375	#29@325	#29@275
Conc m^3/m	0.80	0.95	1.10	1.23	1.38	1.53	1.68	1.83	1.98	2.56	2.76	2.96	3.16
Reinf kg/m	19	24	28	37	45	55	73	92	113	109	134	155	186

Quantities do not include that portion above the design ``H'' limit.

NOTES

Unit Stresses: f_s =165 MPa, f_c =9 MPa, n=10

Maximum Toe Pressure = 140 kPa

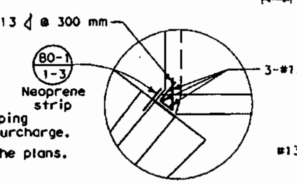
Elevations, length and angle of flare of wings may be varied by the Engineer to suit conditions encountered in the field. Walls designed for 600 mm liveload surcharge, 1 : 1.5 sloping surcharge not to exceed 1.5 m in elevation plus 600 mm liveload surcharge, or unlimited 1:2 surcharge.

Dimensions ``H'', ``L'', ``W'', ``N'', Elevation ``a'' and ``Angle of flare'' (as apply) are shown on the plans.

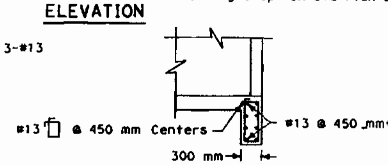
Wall height may be exceeded by 150 mm before going to next greater ``H''.

Eliminate cutoff wall if adjacent channel is paved and skew is 20 maximum.

For wall offset values, see Standard Plan B3-8.



DETAIL ``Y''



SECTION B-B

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BOX CULVERT WINGWALLS
TYPES A, B AND C

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D84

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

REGISTERED CIVIL ENGINEER — Dallas Forester, No. C37765, Exp. 12-31-04, CIVIL, STATE OF CALIFORNIA

July 1, 2004
PLANS APPROVAL DATE

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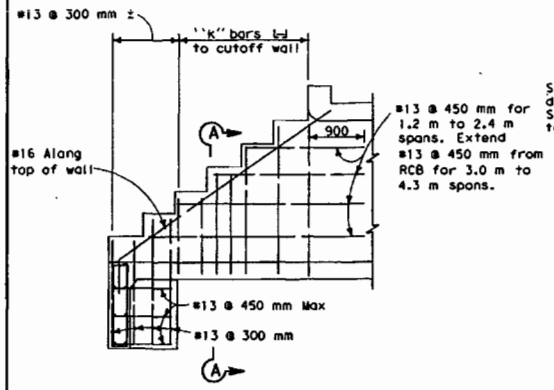
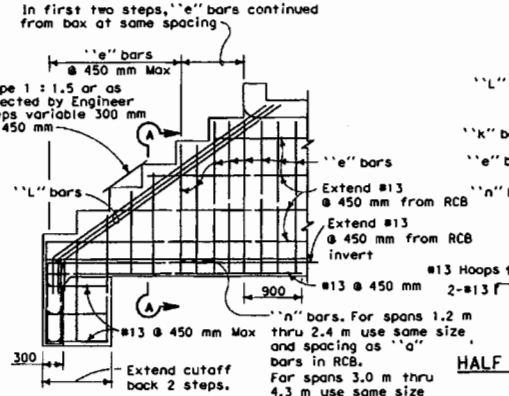
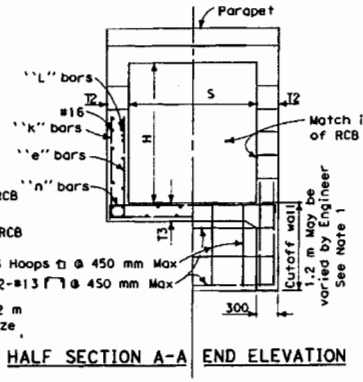


LONGITUDINAL SECTION
Showing reinforcement in outside face

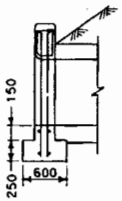


LONGITUDINAL SECTION
Showing reinforcement in inside face

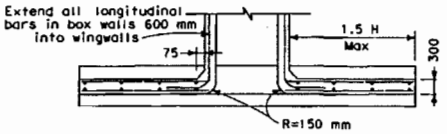


HALF SECTION A-A END ELEVATION

Dimensions S and T_3 to be same as adjacent RCB.
T_2 = Same as adjacent RCB (200 mm Min).

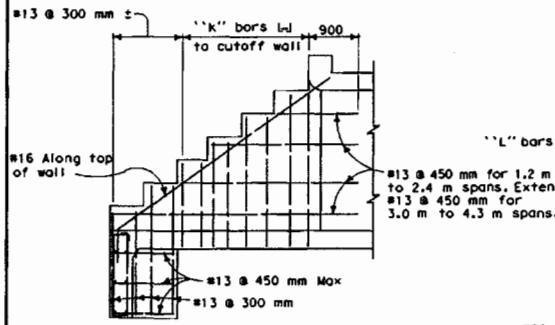


SECTION B-B

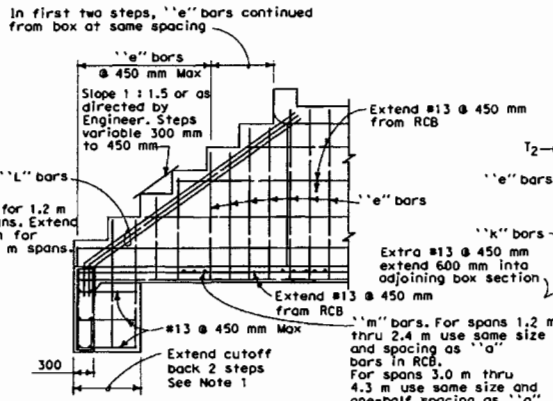


SECTION C-C

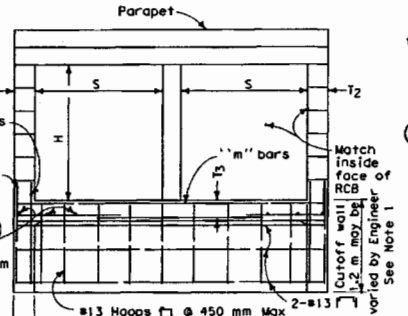
TYPE "E" STEPPED WINGWALL (SINGLE BOX CULVERT)



LONGITUDINAL SECTION
Showing reinforcement in outside face

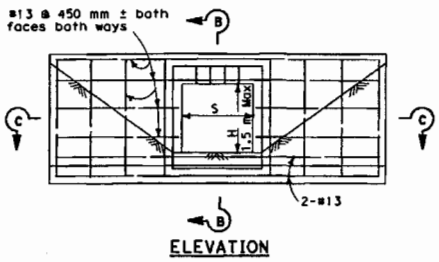


LONGITUDINAL SECTION
Showing reinforcement in inside face



END ELEVATION

Dimensions S and T_3 to be same as adjacent RCB.
T_2 = Same as adjacent RCB (200 mm Min).



ELEVATION

TYPE "D" STRAIGHT WINGWALL

Details similar for multiple span boxes.
For Parapet Details not shown see Standard Plan D82.

TYPE "E" STEPPED WINGWALL (MULTIPLE BOX CULVERT)

NOTES

1. Eliminate cutoff walls if adjacent channel is paved.
2. For "H" not shown use reinforcement for next greater height.

TABLE OF REINFORCEMENT FOR TYPE "E" WINGWALLS										
H (m)	(See Note 2)	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.7	4.3
"K" Bars	Bar No.	13	13	16	16	16	16	16	16	16
	Spacing(mm)	300	300	300	250	225	200	175	125	100
"L" Bars	Bar No.	16	16	19	19	22	22	22	22	22
	Number each wall	2	2	3	3	3	3	3	3	3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

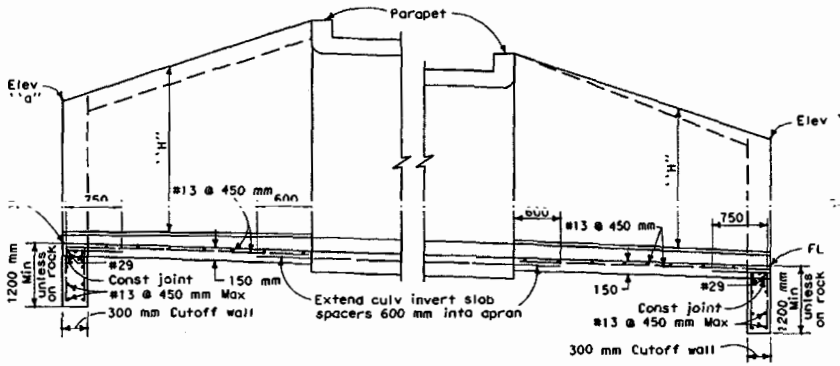
BOX CULVERT WINGWALLS TYPES D AND E

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

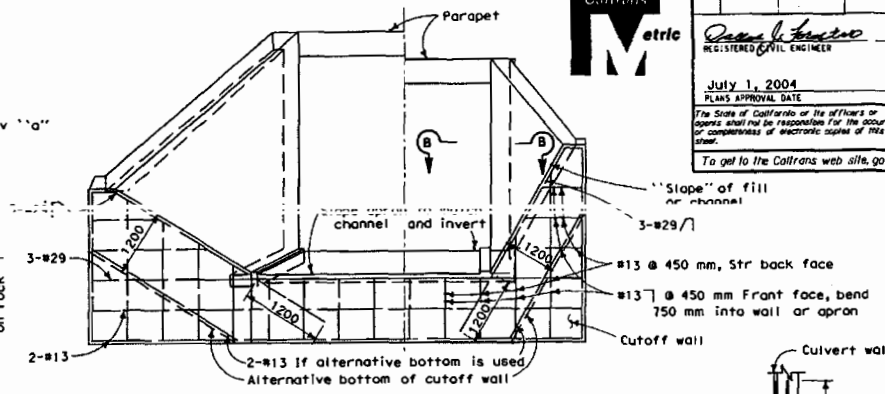
D85

04-01-04



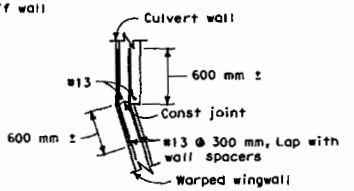
TYPICAL WITH STIFFENING BEAM TYPICAL WITHOUT STIFFENING BEAM

PART LONGITUDAL SECTION

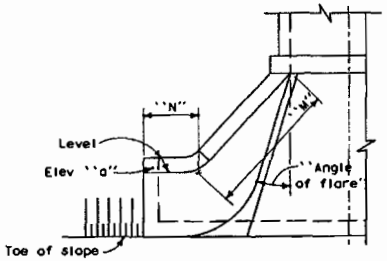


END ELEVATION

WITHOUT STIFFENING BEAM

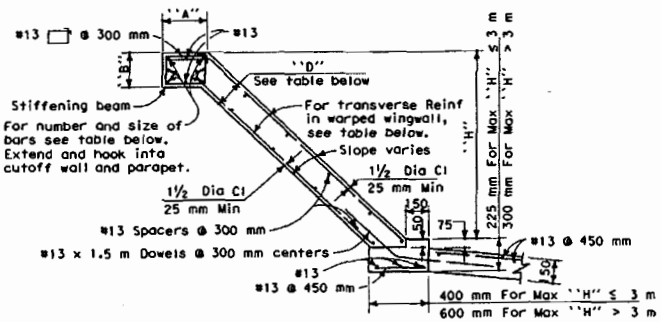


SECTION B-B

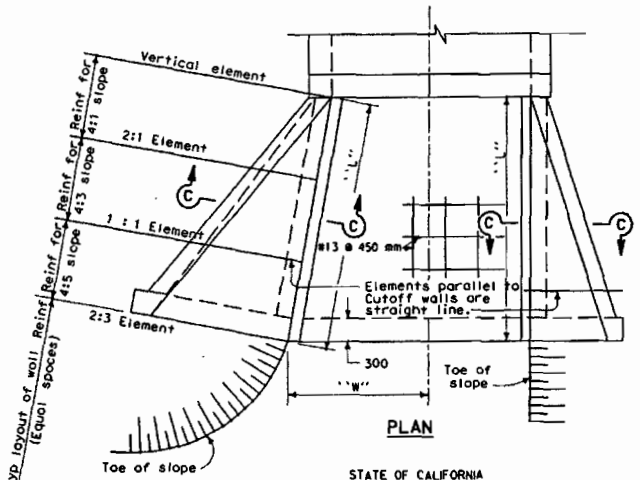


ALTERNATIVE WARPED WINGWALL

Use where additional protection to toe of embankment is required.



SECTION C-C



PLAN

WARPED WINGWALLS																		
WALL DIMENSIONS AND REINFORCING									STIFFENING BEAM DIMENSIONS AND REINFORCING									
Element Slope	"H"	2.4 m or less	3.0 m	3.7 m	4.3 m	4.9 m	5.5 m	6.1 m	"H" Max \ "L"	3.7 m	4.3 m	4.9 m	5.5 m	6.1 m	7.6 m	9.1 m	10.7 m	12.2 m or more
4:1	Front face Reinf	#13@300	#13@300	#16@175	#16@125	#19@150	#22@175	#22@150	1.8 m	No beam. Place 2-#19 in each face along top of wall.								
	Rear face Reinf	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300	2.4 m									
4:3	Front face Reinf	#13@300	#13@300	#13@300	#13@300	#13@250	#13@200	#13@150	3.0 m		"A"= 300							
	Rear face Reinf	#13@300	#13@300	#13@300	#13@250	#13@175	#13@150	#16@200	3.7 m		"B"= 225		"A"= 450					
4:5	Front face Reinf	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300	4.3 m	Total 6-#19		"B"= 300		"A"= 560				
	Rear face Reinf	#13@200	#13@200	#13@125	#16@150	#19@175	#19@150	#22@150	4.9 m		Total 6-#22		"B"= 300		"A"= 600			
"D" at Cutoff Wall (mm)		150	150	150	190	200	240	280	5.5 m			Total 6-#25		"B"= 450				
"D" at Culvert (mm)		150	150	150	200	240	280	330	6.1 m				Total 8-#29					

NOTES Walls designed for 600 mm surcharge; earth density = 1900 kg/m³; equivalent fluid pressure = 5.66 KPa/m.
Vary "D" of warped wall uniformly from that at cutoff wall to that at culvert, for maximum "H" > 3.7m.
Where abrasion is anticipated increase apron thickness to 175 mm minimum to provide 50 mm minimum reinforcement coverage.
Dimensions "L", "W", "H", "N", Elevation "a", Angle of flare", and end "Slope" (as apply) are shown on the plans.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BOX CULVERT WARPED WINGWALLS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D86A

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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Dallas Forester No. C37765 Exp. 12-31-04 CIVIL STATE OF CALIFORNIA

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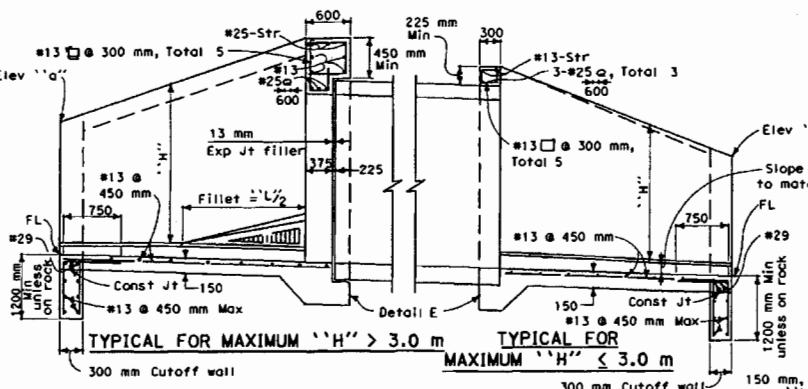
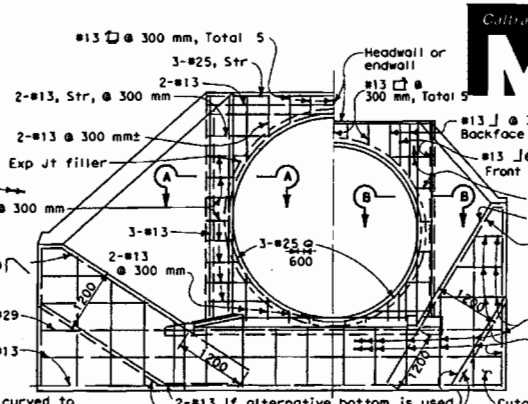
04-01-04



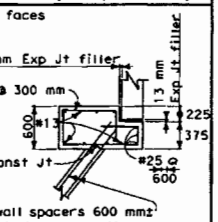
PART LONGITUDINAL SECTION

NOTE

RCP shown. Metal pipe similar except eliminate the expansion joint and use hook bolts @ 480 mm± spacing. Size and length provided by manufacturer.



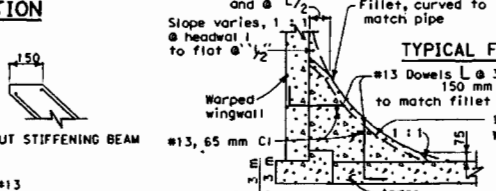
TYPICAL FOR MAXIMUM "H" > 3 m



TYPICAL FOR MAXIMUM "H" ≤ 3 m

SECTION A-A

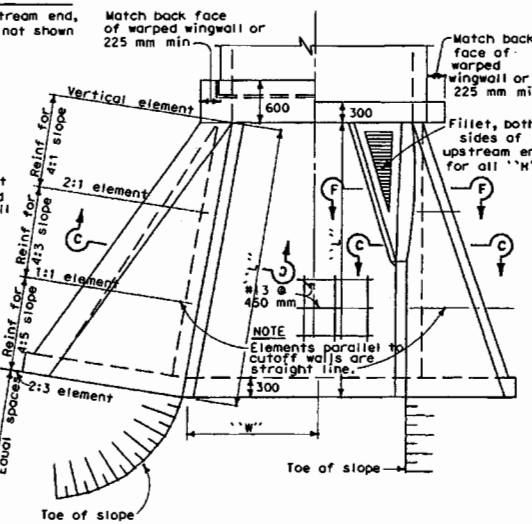
Extend wall spacers 600 mm± into headwall or endwall



SECTION F-F

END ELEVATION

If at upstream end, fillet is not shown

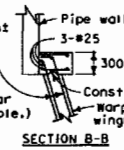


ALTERNATIVE WARPED WINGWALL

Use where additional protection to toe of embankment is required. If at upstream end, fillet is not shown.

SECTION C-C

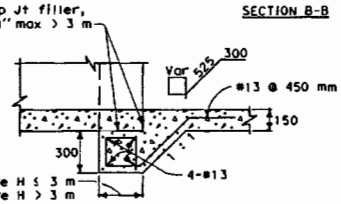
Where abrasion is anticipated, increase apron thickness to 175 mm minimum to provide 50 mm minimum reinforcement coverage.



SECTION B-B

(Near spring-line, eliminate face extension and hook rear extension outward, if possible.)

Extend wall spacers 600 mm± into headwall or endwall. Rotate if necessary.



Dim is 300 mm where H ≤ 3 m
Dim is 600 mm where H > 3 m

DETAIL E

WARPED WINGWALLS

Element Slope	"H"	WALL DIMENSIONS AND REINFORCING 2.4 m or less	3.0 m	3.7 m	4.3 m	4.9 m	5.5 m	6.1 m
4:1	Front face Reinf	#13@300	#13@175	#16@175	#16@125	#19@150	#22@175	#22@150
	Rear face Reinf	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300
4:3	Front face Reinf	#13@300	#13@300	#13@300	#13@300	#13@250	#13@200	#13@150
	Rear face Reinf	#13@300	#13@300	#13@300	#13@250	#13@175	#13@150	#16@200
4:5	Front face Reinf	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300	#13@300
	Rear face Reinf	#13@200	#13@200	#13@125	#16@150	#19@175	#19@150	#22@150
"D" at Cutoff Wall (mm)		150	150	150	190	200	240	280
"D" at Culvert (mm)		150	150	150	200	240	280	330

"L" Max	STIFFENING BEAM DIMENSIONS AND REINFORCING 3.7 m	4.3 m	4.9 m	5.5 m	6.1 m	7.6 m	9.1 m	10.7 m	12.2 m or more
1.8 m	No beam. Place 2-#19 in each face along top of wall.								
2.4 m									
3.0 m						"A"= 300			
3.7 m						"B"= 225		"A"= 450	
4.3 m	Total 6-#19						"B"= 300		"A"= 560
4.9 m								"B"= 300	"A"= 600
5.5 m				Total 6-#22		Total 6-#25		"B"= 450	
6.1 m							Total 8-#29		

NOTES Walls designed for 600 mm surcharge; earth density = 1900 kg/m³; equivalent fluid pressure = 5.66 kPa/m.
Vary "D" of warped wall uniformly from that at cutoff wall to that at headwall or endwall, for maximum "H" > 3.7m.
Dimensions "L", "W", "H", "M", "N", Elevation "a", Angle of flare", and end "Slope" (as apply) are shown on the plans.

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

Caltrans Metric

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PIPE CULVERT HEADWALLS, ENDWALLS AND WARPED WINGWALLS

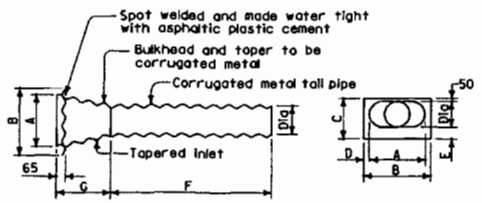
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D86B

04-01-04

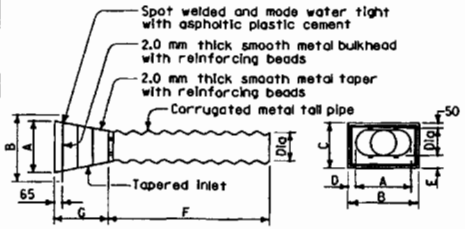
2004 Std PLAN D86B



PLAN END VIEW

Bulkhead and taper of same thickness as tail pipe with 2.0 mm maximum. Tail pipe of same thickness as downdrain pipe.

ENTRANCE TAPER - TYPE 1 ALTERNATIVE A



PLAN END VIEW

Tail pipe of same thickness as downdrain pipe.

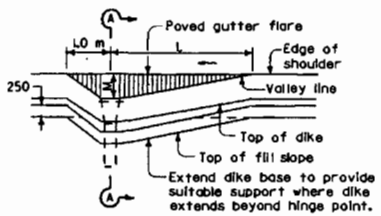
ENTRANCE TAPER - TYPE 1 ALTERNATIVE B

CMP dimensions as tabulated below

P (mm)	250	375	450	525	675
O (mm)	200	300	375	450	600

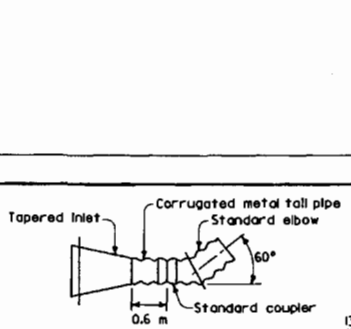
DIA (mm)	MIN L	M (mm)	N (mm)
200	3 m	450	200
300	5 m	500	300
375	8 m	600	375
450	9 m	750	400
600	12 m	900	450

Slip joint to be same thickness as downdrain pipe.



PLAN

MOUNTABLE DIKE TYPE 1



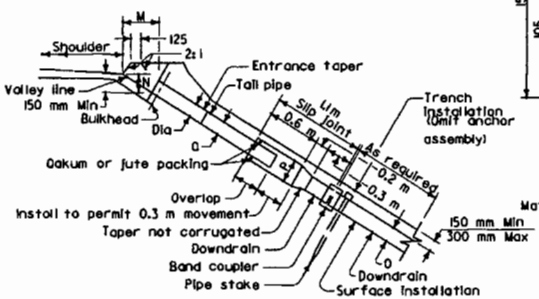
Tapered inlet of same construction and dimensions as Type 1- Alternative A or B except tail pipe length will be 0.6 m.

ENTRANCE TAPER - TYPE 2

Taper joints may be welded or riveted. Dimensions to be as tabulated below for Type 1 Alternatives A and B.

DIA (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (m)	G (m)
200	410	650	380	120	130	1.8	0.6
300	460	650	485	95	135	1.8	0.6
375	540	770	585	115	160	1.8	0.6
450	610	860	685	125	185	1.8	0.6
600	870	1170	890	150	240	1.2	1.2

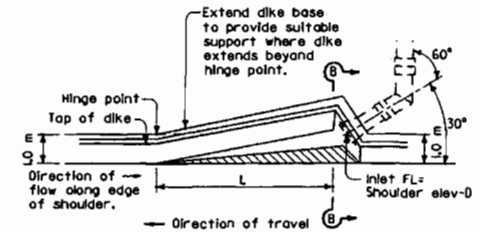
ENTRANCE TAPER - TYPE 1 ALTERNATIVE A AND B



SECTION A-A (TYPE 1)

NOTE

1. Cable, slip joint or anchor assembly to be used when specified.
2. Slip joint to be omitted when completely buried.
3. Slip joint for Type 1 entrance taper shown. Type 2 similar.

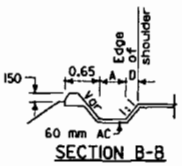


PLAN

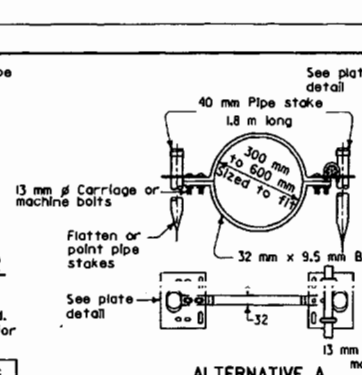
MOUNTABLE DIKE TYPE 2

(For use on full freeway sections ONLY with grades of 2% or greater)

DIA D	MIN L
200 mm	5 m
300 mm	6 m
375 mm	9 m
450 mm	11 m
600 mm	14 m



SECTION B-B



CORRUGATED METAL PIPE DOWNDRAIN ANCHOR ASSEMBLY

Cable and cable clamps to be used when required by the Special Provisions.

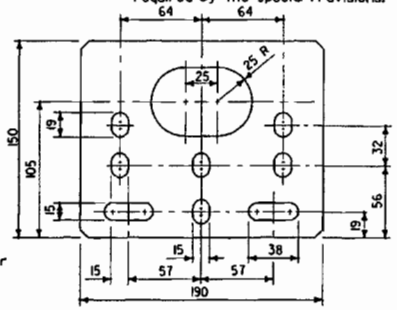


PLATE DETAIL

Material to be 6.4 mm plate galvanized after fabrication.

NOTES

1. All hardware to be galvanized after fabrication. All pipe stakes to be either galvanized after fabrication, or be fabricated from pre-galvanized pipe. If pre-galvanized pipe is used, weld areas shall be cleaned, and painted with zinc-rich primer.
2. Either Alternative A or Alternative B anchor assemblies and pipe stakes may be used at Contractor's option for corrugated steel pipe or corrugated aluminum pipe. Alternative A anchor assembly only to be placed in annular corrugation. Alternative A anchor assembly may be placed on annular coupling band if securely fastened on downstream side of joint. Alternative B anchor assembly to be fastened to pipe sections and not to a band coupler used to join sections.
3. For cable anchorage system details, see Standard Plan D87C.

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeGay No. C34547 Exp. 9-30-05 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE DOWNDRAIN DETAILS

NO SCALE

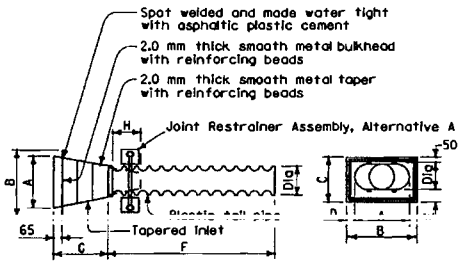
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D87A

ENTRANCE TAPER AND PIPE DOWNDRAIN

2004 Std PLAN D87A

05-04-04



PLAN END VIEW

ENTRANCE TAPER - TYPE I

Plastic Pipe dimensions as tabulated below

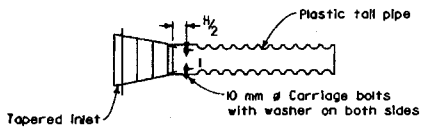
P (mm)	250	375	450	525	675
O (mm)	200	300	375	450	600

DIA (mm)	MIN L	M (mm)	N (mm)
200	3 m	450	200
300	5 m	500	300
375	8 m	600	375
450	9 m	750	400
600	12 m	900	450

Taper joints may be welded or riveted.
Dimensions to be as tabulated below.

DIA (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (m)	G (m)	H (mm)
200	410	650	380	120	130	1.8	0.6	300
300	460	650	485	95	135	1.8	0.6	300
375	540	770	585	115	160	1.8	0.6	350
450	610	860	685	125	185	1.8	0.6	400
600	870	1170	890	150	240	1.2	1.2	450

ENTRANCE TAPER - TYPE I

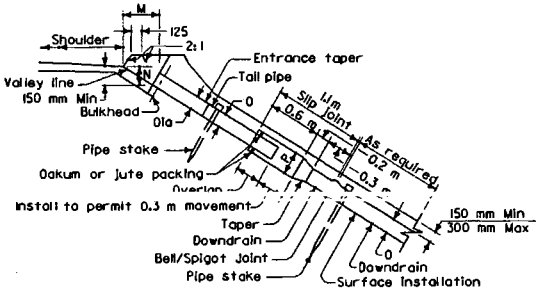


PLAN

Alternative tail pipe to entrance pipe connection

DETAIL A

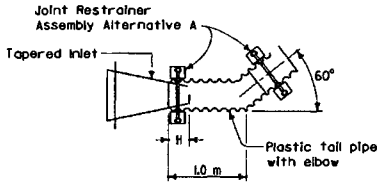
(See Note 7)



SECTION (TYPE I)

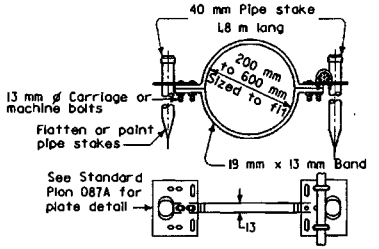
NOTE

1. Cable or slip joint to be used when specified.
2. Slip joint to be omitted when completely buried.

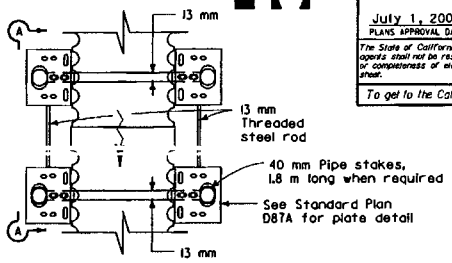


Tapered Inlet of same construction and dimensions as Type I.

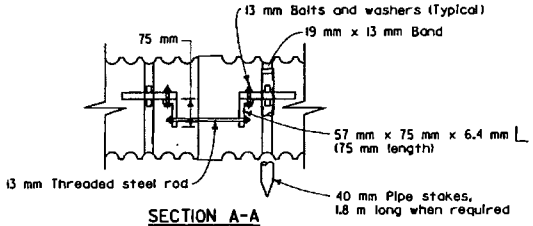
ENTRANCE TAPER - TYPE 2



PLASTIC PIPE
JOINT RESTRAINER ASSEMBLY
Alternative A



PLAN



SECTION A-A
PLASTIC PIPE
JOINT RESTRAINER ASSEMBLY
Alternative B

NOTES

1. All hardware to be galvanized after fabrication. All pipe stakes to be either galvanized after fabrication, or be fabricated from pre-galvanized pipe. If pre-galvanized pipe is used, weld areas shall be cleaned, and painted with zinc-rich primer.
2. See Standard Plan D87A for details of entrance taper placement at dike.
3. Pipe stakes to be used with joint restrainer when specified.
4. Plastic pipe and fittings used for averside drains shall be from one manufacturer for each installation.
5. Entrance taper "H" dimension is length of insertion of metal taper into plastic pipe.
6. For cable anchorage system details, see Standard Plan D87C.
7. At contractors option, tail pipe and tapered inlet may be supplied from manufacturer as a pre-connected unit as shown in Detail A.

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
C34547
Exp. 9-30-05
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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA
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PLASTIC PIPE DOWNDRAIN DETAILS

NO SCALE

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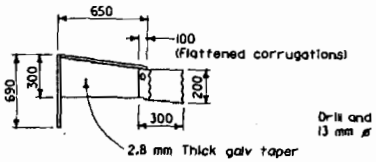
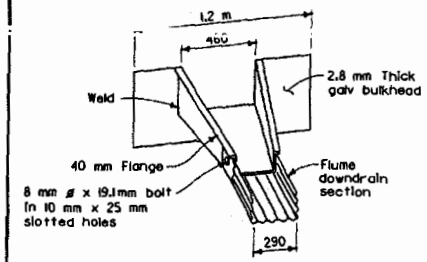
D87B

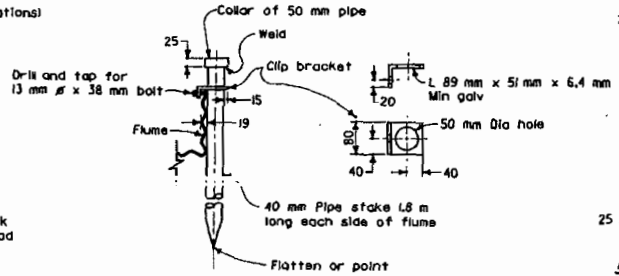
05-04-04

2004 Std PLAN D87B

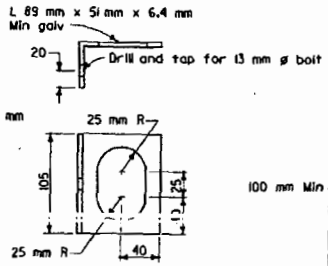




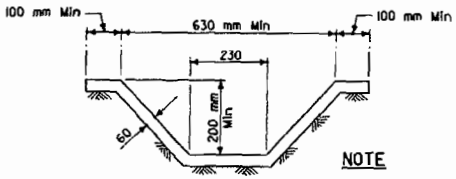
TAPERED INLET



PIPE STAKE ANCHOR DETAIL



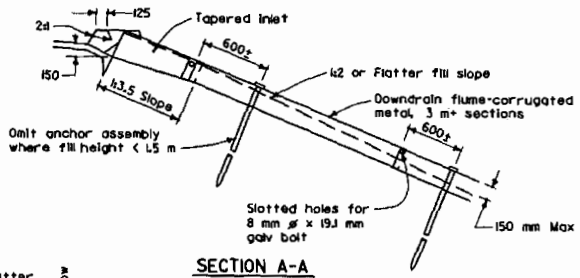
ALTERNATIVE CLIP BRACKET DETAIL



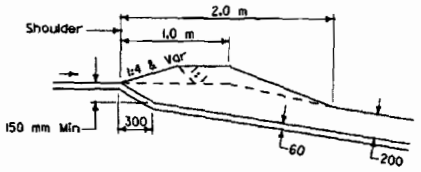
SECTION C-C
See Note 1

NOTE

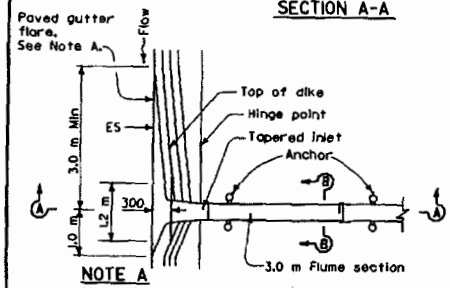
1. Cross section of slope ditch may be semicircular, vee or trapezoidal.



SECTION A-A



SECTION G-G

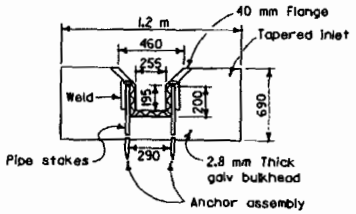


NOTE A

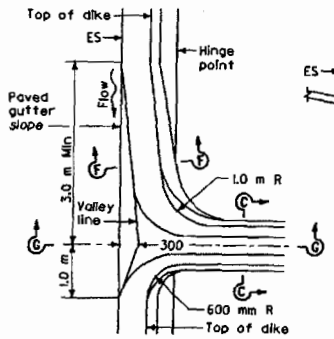
In sag location, use 3.0 m length of paved gutter flare on both sides of inlet.

PLAN

TAPERED INLET AND FLUME DOWNDRAIN

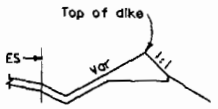


SECTION B-B



PLAN

MOUNTABLE DIKE



SECTION F-F

ASPHALT CONCRETE OVERSIDE DRAINS

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

REGISTERED CIVIL ENGINEER

July 1, 2004
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OVERSIDE DRAINS

NO SCALE

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D87D

05-04-04

2004 Std PLAN D87D

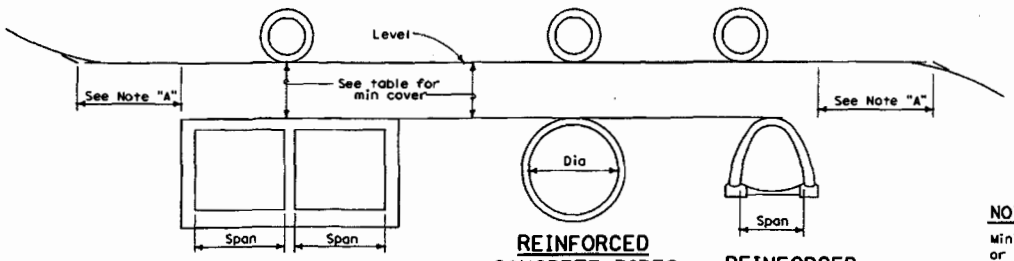
TABLE OF MINIMUM COVER AND STRUTTING REQUIREMENTS FOR CONSTRUCTION LOADS

TYPE					80-222 kN AXLE		222-334 kN AXLE		334-489 kN AXLE		489-667 kN AXLE	
	MAXIMUM DESIGN FILL	SPAN	CELLS	MIN COVER	STRUTS REQUIRED	STRUT SIZE AND SPACING	STRUTS REQUIRED	STRUT SIZE AND SPACING	STRUTS REQUIRED	STRUT SIZE AND SPACING	STRUTS REQUIRED	STRUT SIZE AND SPACING
BOX CULVERTS	3.0 m and 6.0 m	1.2 m to 2.4 m	Single and Multiple	1.5 m	———	———	———	———	———	———	———	———
	3.0 m	3.0 m to 4.3 m	Single and Multiple	1.5 m	———	———	1/3 Points	Struts 140x140 mm @ 1.0 m Sills 140x184 mm	1/3 Points	Struts 140x184 mm @ 1.0 m Sills 140x184 mm	1/3 Points	Struts 140x184 mm @ 1.0 m Sills 140x184 mm
	6.0 m	3.0 m to 4.3 m	Single and Multiple	1.5 m	———	———	———	———	———	———	———	———

TABLE OF MINIMUM COVER FOR CONSTRUCTION LOADS

TYPE		DIA OR SPAN	80-222kN AXLE	222-334 kN AXLE	334-489 kN AXLE	489-667 kN AXLE
REINFORCED CONCRETE CULVERTS	Pipes	Dia 300 mm to 1000 mm	600 mm	900 mm	900 mm	900 mm
		Dia 1050 mm to 2700 mm	$\frac{Dia}{1.75}$ or 900 mm	$\frac{Dia}{1.75}$ or 900 mm	$\frac{Dia}{1.75}$ or 900 mm	$\frac{Dia}{1.75}$ or 900 mm
	Arches	Spans to 4.3 m	$\frac{Span}{2.5}$ or 1.2 m	$\frac{Span}{2.5}$ or 1.2 m	$\frac{Span}{2.5}$ or 1.2 m	$\frac{Span}{2.5}$ or 1.2 m
		Spans 4.6 m to 6.7 m	$\frac{Span}{3.5}$ or 1.8 m	$\frac{Span}{3.5}$ or 1.8 m	$\frac{Span}{3.5}$ or 1.8 m	$\frac{Span}{3.5}$ or 1.8 m
METAL CULVERTS	Pipes	Dia to 3000 mm	$\frac{Dia}{1.75}$ or 1.2 m	$\frac{Dia}{1.75}$ or 1.2 m	$\frac{Dia}{1.75}$ or 1.2 m	$\frac{Dia}{1.75}$ or 1.2 m
		Dia over 3000 mm	$\frac{Dia}{3}$ or 1.8 m	$\frac{Dia}{3}$ or 1.8 m	$\frac{Dia}{3}$ or 1.8 m	$\frac{Dia}{3}$ or 1.8 m
	Pipe Arches	All Spans	$\frac{Span}{3}$ or 1.2 m	$\frac{Span}{3}$ or 1.2 m	$\frac{Span}{3}$ or 1.2 m	$\frac{Span}{3}$ or 1.2 m
	Structural Plate Pipe, Arches and Vehicular Undercrossings	All Spans	$\frac{Span}{3}$ or 1.5 m	$\frac{Span}{3}$ or 1.5 m	$\frac{Span}{3}$ or 1.5 m	$\frac{Span}{3}$ or 1.5 m
Plastic Pipe		Dia 300 mm to 1200 mm	$\frac{Dia}{1.75}$ or 1.2 m	$\frac{Dia}{1.75}$ or 1.2 m	$\frac{Dia}{1.75}$ or 1.2 m	$\frac{Dia}{1.75}$ or 1.2 m

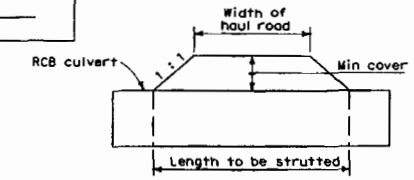
NOTE Minimum cover shall be the greater value of alternatives shown. The diameter and spans shown in the table to calculate the minimum cover (Example: $\frac{Dia}{1.75}$) are the diameter or span of the facility expressed in number of meters.



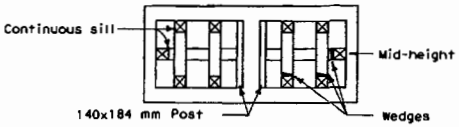
BOX CULVERTS

REINFORCED CONCRETE PIPES, PLASTIC PIPES AND METAL CULVERTS

REINFORCED CONCRETE ARCH CULVERTS



MINIMUM LENGTH OF STRUTTING



RCB STRUTTING DETAILS

NOTES

Length of strutting to be determined by the Engineer, but shall not be less than as shown in the sketch above.

Assumed tire patterns:

222 kN axle	610x460 mm
334 kN axle	910x610 mm
489 kN axle	910x760 mm
667 kN axle	910x910 mm

Impact = 10%

Sills to be glue-laminated or solid timber.

For strutting requirements of Structural Steel Plate Vehicular Undercrossing, Structural Steel Plate Arches and Structural Steel Plate Pipes during construction, see Standard Plans D88A.

NOTE "A"

Minimum distance equals 3 times the span or 3 times the diameter.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION LOADS ON CULVERTS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D88

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Dalton Forrester
No. C37765
Exp 12-31-04
CIVIL
STATE OF CALIFORNIA

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2004 Std PLAN D88

04-01-04

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Debra Forester — No. C37765 — Exp 12-31-04 CIVIL — STATE OF CALIFORNIA

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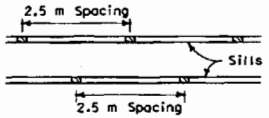
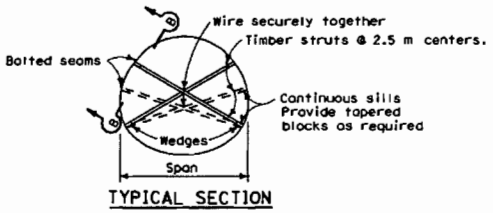
TABLE B

TIMBER STRUTS FOR STRUCTURAL STEEL PLATE VEHICULAR UNDERCROSSING		
SPAN (mm)	STRUT SIZE (mm)	SILL SIZE (mm)
4013 - 4724	89x89	89x140
4800 -5258	89x89	89x184
Over 5258	140x140	140x184

Tabular data in Table B based on 152x51 mm corrugations, (Structural steel plate)



SECTION B-B

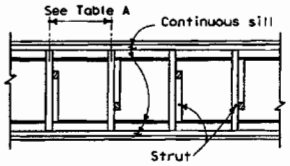


TYPICAL SECTION

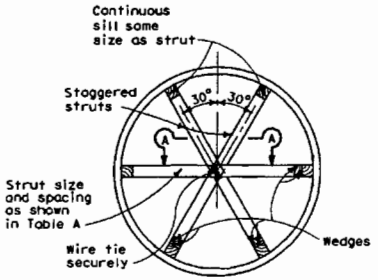
STRUCTURAL STEEL PLATE VEHICULAR UNDERCROSSING

TABLE A

TIMBER STRUTS FOR STRUCTURAL STEEL PLATE PIPE			
PIPE DIA (mm)	STRUT SIZE (mm)	HEIGHT OF FILL	
		0 to 6.1 m	GREATER THAN 6.1 m
6100 Thru 6400	184x184	1.5 m SPACING	1.0 m SPACING
	235x235	2.5 m SPACING	1.4 m SPACING

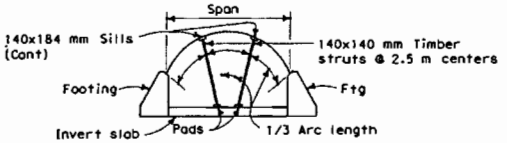


SECTION A-A



TYPICAL SECTION

STRUCTURAL STEEL PLATE PIPES



TYPICAL SECTION

STRUCTURAL STEEL PLATE ARCHES

Struts required when span of structural steel plate arch exceeds 5.5 m. Pad size as directed by Engineer.

NOTES

1. Struts shown are minimum required during construction and are for earth loads only.
2. Backfill shall be brought up uniformly on both sides of the structure.
3. For minimum cover over structure for construction loads, see Standard Plan D88.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

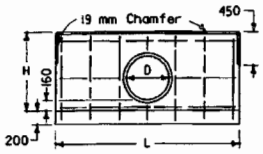
STRUT DETAILS FOR STRUCTURAL STEEL PIPES, ARCHES AND VEHICULAR UNDERCROSSING

NO SCALE

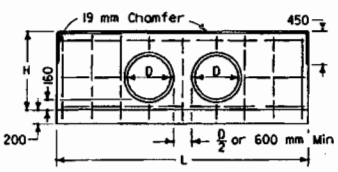
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D88A

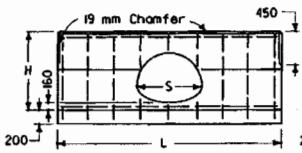
04-01-04



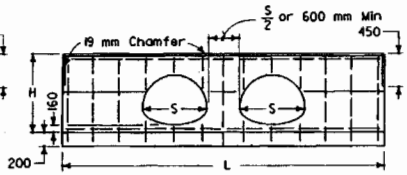
FRONT ELEVATION
SINGLE HEADWALL



FRONT ELEVATION
DOUBLE HEADWALL



FRONT ELEVATION
SINGLE HEADWALL



FRONT ELEVATION
DOUBLE HEADWALL

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-05
CIVIL
STATE OF CALIFORNIA

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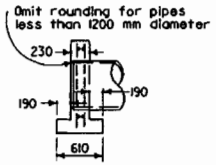
D	H	SINGLE			DOUBLE		
		L	Steel	Conc	L	Steel	Conc
mm	mm	mm	kg	m^3	mm	kg	m^3
300	810	1500	16	0.45	2500	24	0.74
375	885	1800	18	0.56	2950	28	0.91
450	960	2100	22	0.68	3250	34	1.04
525	1035	2250	26	0.76	3550	40	1.18
600	1110	2550	34	0.90	3850	46	1.32
675	1185	2850	38	1.04	4300	52	1.53
750	1260	3000	40	1.13	4600	54	1.69
825	1335	3300	44	1.29	4900	58	1.86
900	1410	3600	46	1.46	5200	66	2.03
975	1485	3750	58	1.57	5500	78	2.21
1050	1560	4050	62	1.75	5800	84	2.39
1125	1635	4350	66	1.94	6100	88	2.58
1200	1710	4500	70	2.06	6400	90	2.78
1275	1785	4800	80	2.26	6850	102	3.06
1350	1860	5100	84	2.47	7150	108	3.27

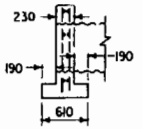
STRAIGHT HEADWALLS



SECTION, SINGLE & DOUBLE HEADWALLS

CMP ARCH SIZE	H	SINGLE			DOUBLE		
		L	Steel	Conc	L	Steel	Conc
mm	mm	mm	kg	m^3	mm	kg	m^3
530x380	885	2000	20	0.61	3000	28	0.91
610x460	960	2300	22	0.74	3500	32	1.10
710x510	1010	2600	28	0.85	4100	40	1.32
885x610	1110	3200	38	1.11	4700	54	1.58
1060x740	1235	3800	50	1.40	5500	66	1.95
1240x840	1335	4400	58	1.70	6400	78	2.37
1440x970	1460	5200	70	2.13	7450	96	2.91
1620x1100	1585	5800	80	2.50	8200	104	3.36
1800x1200	1685	6400	88	2.89	9100	116	3.88

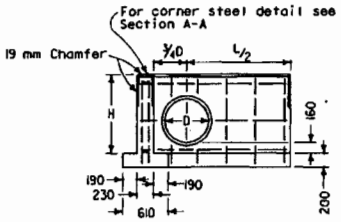
STRAIGHT HEADWALLS



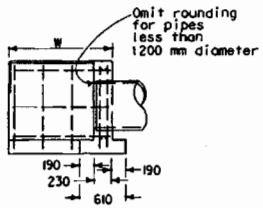
SECTION, SINGLE & DOUBLE HEADWALLS

NOTES

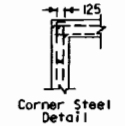
1. No deduction made in quantities for thickness of pipe walls.
2. All reinforcing steel #13 bars. All vertical and horizontal tie bars 450 mm maximum spacing.
3. Length of wall "W" may be varied to suit conditions encountered in the field, and straight line interpolation may be used to calculate quantities.
4. Quantities are for design purposes only.
5. Cable railing to be installed on top of headwall when shown on Project Plans. See Standard Plan B11-47 for cable railing details.



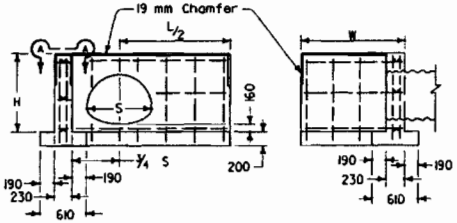
FRONT ELEVATION "L" HEADWALL



SECTION "L" HEADWALL



SECTION A-A



FRONT ELEVATION "L" HEADWALL

SECTION "L" HEADWALL

D	H	L_2	LENGTH OF W									
			1000		1450		1900		2350		2800	
			Steel	Conc	Steel	Conc	Steel	Conc	Steel	Conc	Steel	Conc
mm	mm	mm	kg	m^3	kg	m^3	kg	m^3	kg	m^3	kg	m^3
300	810	750	22	0.59	26	0.73	—	—	—	—	—	—
375	885	900	24	0.68	28	0.83	—	—	—	—	—	—
450	960	1050	28	0.78	32	0.94	—	—	—	—	—	—
525	1035	1125	32	0.86	40	1.02	—	—	—	—	—	—
600	1110	1275	38	0.96	44	1.13	48	1.30	—	—	—	—
675	1185	1425	40	1.07	46	1.25	50	1.43	—	—	—	—
750	1260	1500	42	1.16	48	1.34	52	1.53	60	1.72	—	—
825	1335	1650	46	1.28	52	1.47	60	1.67	66	1.86	—	—
900	1410	1800	48	1.40	54	1.61	62	1.81	68	2.01	74	2.21
975	1485	1875	—	—	66	1.71	74	1.92	80	2.13	88	2.33
1050	1560	2025	—	—	68	1.85	76	2.07	84	2.28	92	2.50
1125	1635	2175	—	—	—	—	78	2.22	88	2.45	94	2.67
1200	1710	2250	—	—	—	—	84	2.34	94	2.57	100	2.81
1275	1785	2400	—	—	—	—	—	—	96	2.75	102	2.98
1350	1860	2550	—	—	—	—	—	—	102	2.92	110	3.17

"L" HEADWALLS
CIRCULAR PIPE CULVERT HEADWALLS

CMP ARCH SIZE	H	L_2	LENGTH OF W									
			1000		1450		1900		2350		2800	
			Steel	Conc	Steel	Conc	Steel	Conc	Steel	Conc	Steel	Conc
mm	mm	mm	kg	m^3	kg	m^3	kg	m^3	kg	m^3	kg	m^3
530x380	885	1000	26	0.74	30	0.89	34	1.04	40	1.18	44	1.33
610x460	960	1150	28	0.84	32	1.00	36	1.15	42	1.30	50	1.46
710x510	1010	1300	32	0.93	36	1.09	40	1.25	44	1.41	52	1.57
885x610	1110	1600	44	1.13	50	1.30	54	1.47	62	1.64	70	1.81
1060x740	1235	1900	52	1.36	58	1.54	62	1.72	70	1.90	76	2.09
1240x840	1335	2200	58	1.58	64	1.77	70	1.96	76	2.16	82	2.35
1440x970	1460	2600	64	1.89	72	2.09	78	2.30	84	2.51	92	2.71
1620x1100	1585	2900	84	2.16	90	2.38	96	2.60	104	2.82	112	3.04
1800x1200	1685	3200	90	2.44	96	2.66	104	2.89	112	3.12	120	3.35

"L" HEADWALLS
CORRUGATED METAL PIPE ARCH CULVERT HEADWALLS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

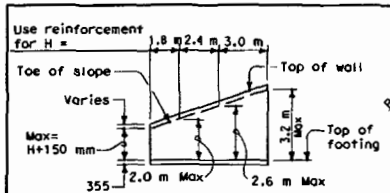
PIPE HEADWALLS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

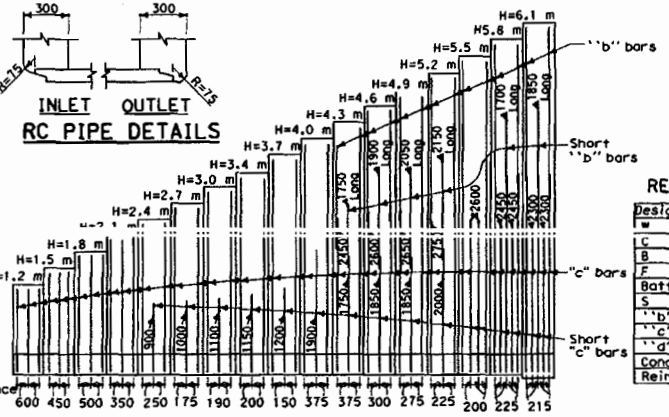
D89

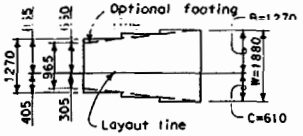
04-22-04



INLET OUTLET

RC PIPE DETAILS





TYPICAL LAYOUT EXAMPLE

Number above "b" and "c" bars indicates distance from top of footing to upper end of bars. Bar cutoffs may be varied in increments of 150 mm.

REINFORCED CONCRETE WINGWALLS

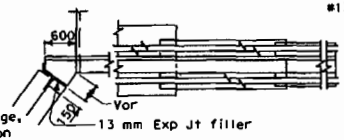
Design "H"	1.2 m	1.5 m	1.8 m	2.1 m	2.4 m	2.7 m	3.0 m	3.4 m	3.7 m	4.0 m	4.3 m	4.6 m	4.9 m	5.2 m	5.5 m	5.8 m	6.1 m
W (mm)	965	1120	1270	1420	1575	1730	1880	2030	2185	2335	2440	2640	2845	3050	3250	3455	3660
C (mm)	305	355	405	455	510	560	610	660	710	760	815	915	1015	1120	1220	1320	1425
B (mm)	660	765	865	965	1065	1170	1270	1370	1475	1575	1625	1725	1830	1930	2030	2135	2235
F (mm)	355																405
Batter	None									4:100							
S (mm)	305									470	480	490	500	520	530	550	560
"b" bars	None									#16@375	#16@300	#16@275	#16@225	#19@600	#19@450	#22@430	
"c" bars	#13@600	#13@450	#16@500	#16@350	#16@250	#16@175	#19@190	#22@200	#22@150	#29@375	#32@375	#32@300	#32@275	#32@225	#32@200	#36@225	#36@215
"d" bars	#13@600	#13@450	#16@500	#16@350	#16@250	#19@150	#22@380	#25@400	#22@300	#25@375	#29@375	#29@300	#29@275	#29@225	#29@200	#32@225	#32@215
Conc m^3/m	0.80	0.95	1.10	1.23	1.38	1.53	1.68	1.83	1.98	2.56	2.76	2.96	3.16	3.41	3.64	3.89	4.31
Reinf kg/m	19	24	28	37	45	55	73	92	113	109	134	155	183	210	253	281	307

NOTES

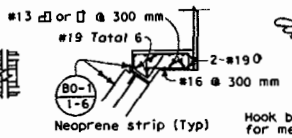
Unit Stresses: f_s = 165 MPa, f_c = 9 MPa, n = 10

Maximum Toe Pressure = 144 kPa.

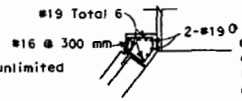
Elevation, length and angle of flare of wings may be varied by the Engineer to suit conditions encountered in the field. Walls designed for 600 mm live load surcharge, 1 : 1.5 sloping surcharge not to exceed 1.5 m in elevation plus 600 mm live load surcharge, or unlimited 1:2 surcharge. If 1 : 1.5 slope exceeds 1.5 m, use Type 2 retaining wall. Wall height may be exceeded by 150 mm before going to the next greater "H".



PART PLAN A-A

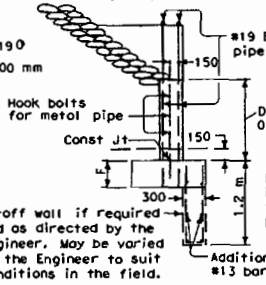


SECTION B-B

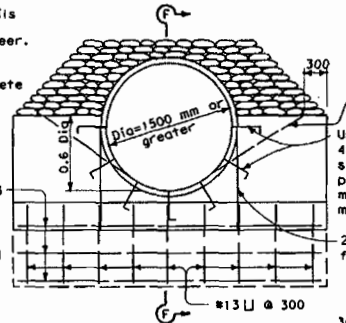


SECTION C-C

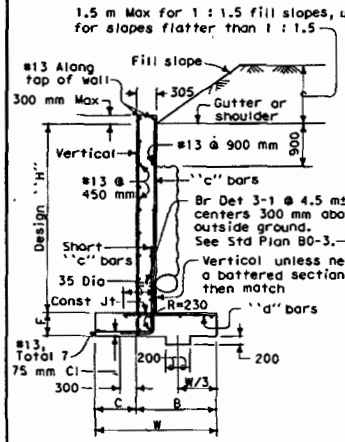
If required, slope protection details are shown elsewhere in the road plans, or as directed by the Engineer.



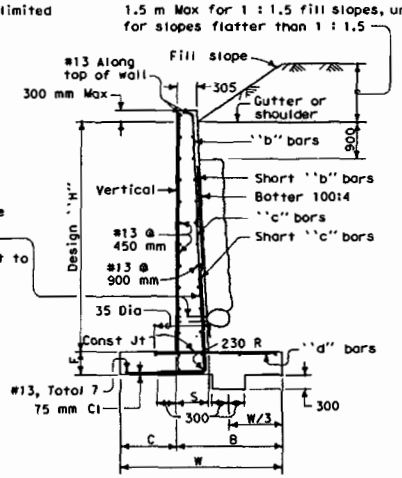
SECTION F-F



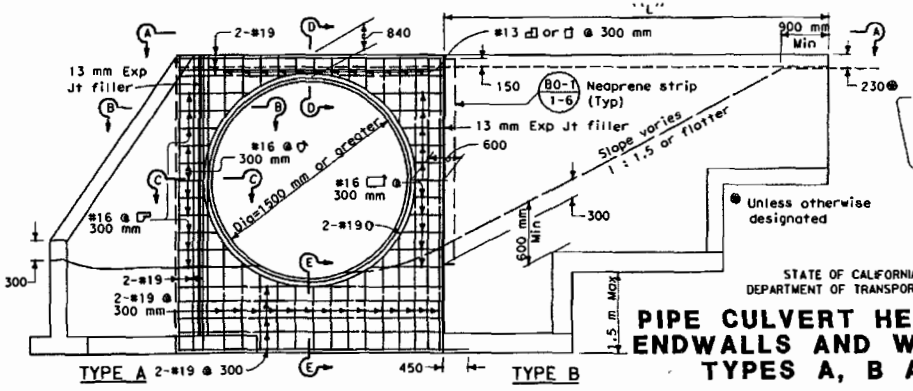
TYPE C WALL



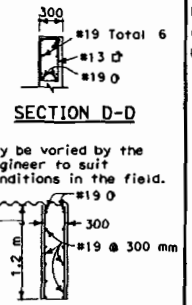
TYPICAL SECTION
H=1.2 m THRU 3.7 m



TYPICAL SECTION
H=4.0 m THRU 6.1 m



For footing step dimensions and reinforcement see "Footing Step" on Std Plan B3-8.



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PIPE CULVERT HEADWALLS, ENDWALLS AND WINGWALLS TYPES A, B AND C

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D90

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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Dalton Forrester No. C31765 Exp 12-31-04 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

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2004 Std PLAN D90

177

04-01-04

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-05
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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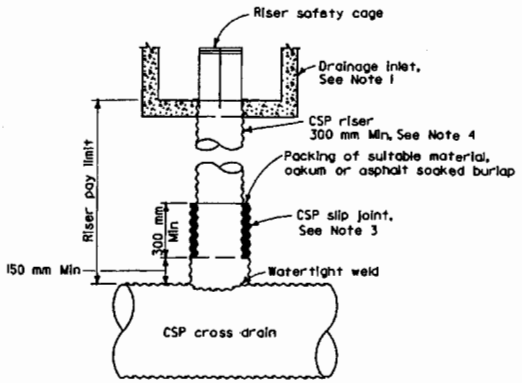
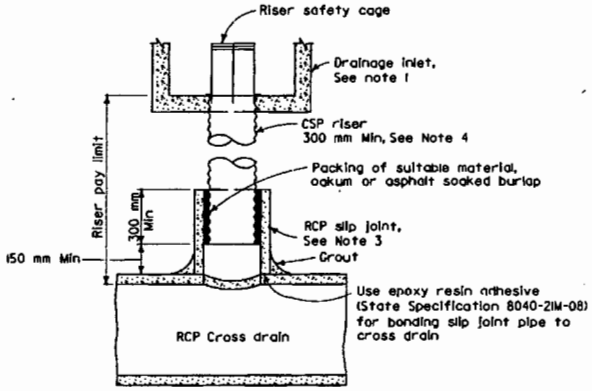
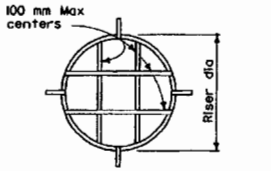


CSP RISER FOR DRAINAGE INLET

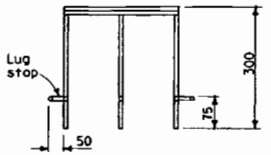


CSP RISER FOR DRAINAGE INLET



PLAN

*10 Bars throughout with welded joints



ELEVATION

RISER SAFETY CAGE DETAIL

NOTES

1. Structure at top of riser may be any standard drainage inlet or pipe inlet.
2. Galvanizing: See Standard Specifications or Special Provision.
3. Diameter of slip joint to be 75 mm greater than diameter of riser.
4. Plastic pipe riser may be substituted for CSP riser shown. Slip joint *diameter to be as necessary to accommodate plastic pipe outside diameter.*
5. For plastic pipe cross drain, use fabricated reducing tee of same material as cross drain as appropriate to provide watertight connection.

STATE OF CALIFORNIA
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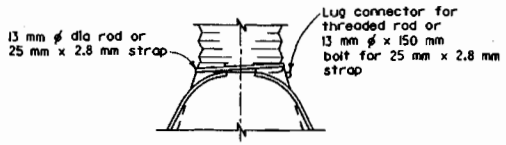
DRAINAGE INLET RISER CONNECTIONS

NO SCALE

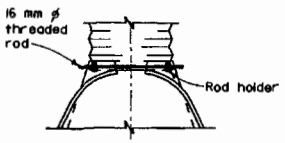
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D93B

08-12-04



TYPE I



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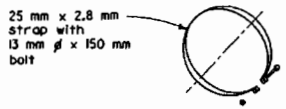
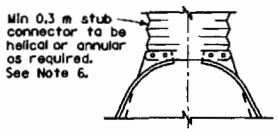
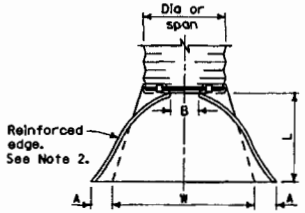


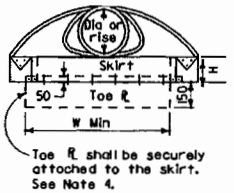
CONNECTOR STRAP DETAIL



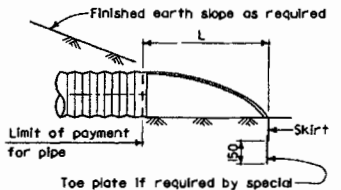
TYPE III



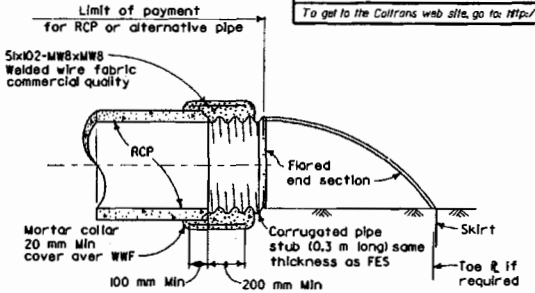
PLAN



ELEVATION



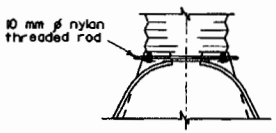
TYPICAL CROSS-SECTION



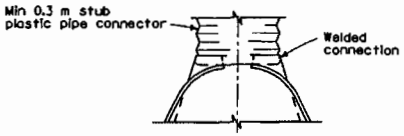
FLARED END SECTION CONNECTION TO RCP

ALTERNATIVE CONNECTIONS FOR PIPE TO METAL FLARED END SECTIONS

See Note 7



TYPE A
300 mm - 600 mm



TYPE B
750 mm - 900 mm

ALTERNATIVE CONNECTIONS FOR PIPE TO PLASTIC FLARED END SECTIONS

CIRCULAR PIPES							
PIPE DIA (mm)	END SECTION THICKNESS (mm)	DIMENSION-MILLIMETERS A 25 mm±	B Max	H 25 mm±	L 40 mm±	W 50 mm±	
300*	1.6	150	150	150	530	610	
375*	1.6	180	200	150	660	760	
450*	1.6	200	250	150	790	910	
525	1.6	230	300	150	910	1070	
600*	1.6	250	330	150	1040	1220	
750*	2.0	300	410	200	1300	1520	
900*	2.0	360	480	230	1520	1830	
1050	2.8	410	560	280	1750	2130	
1200	2.8	460	690	300	1980	2290	
1350	2.8	460	760	300	2130	2590	
1500	2.8	460	840	300	2210	2900	
1650	2.8	460	910	300	2210	3050	
1800	2.8	460	990	300	2210	3200	
1950	2.8	460	1070	300	2210	3350	
2100	2.8	460	1140	300	2210	3510	

*Equivalent plastic FES to meet AASHTO M-294 and ASTM D-1248 Specifications, and shall conform to all dimensions shown above except for end section thickness, which may be 0.1mm thinner.

PIPE-ARCHES								
DESIGNATION (mm)		END SECTION THICKNESS (mm)	DIMENSION-MILLIMETERS A	B	H	L	W	
SPAN	RISE		25 mm±	Max	25 mm±	40 mm±	50 mm±	
525	375	1.6	180	250	150	580	910	
600	450	1.6	200	300	150	710	1070	
700	500	1.6	230	360	150	810	1220	
875	600	2.0	250	410	150	990	1520	
1050	725	2.0	300	460	200	1170	1910	
1225	825	2.8	330	530	230	1350	2160	
1425	950	2.8	460	660	300	1600	2290	
1600	1075	2.8	460	760	300	1780	2590	
1775	1175	2.8	460	840	300	1960	2900	
1925	1300	2.8	460	910	300	1960	3200	
2075	1425	2.8	460	990	300	1960	3510	

FLARED END SECTIONS FOR CORRUGATED METAL AND PLASTIC PIPE CULVERTS

NOTES

1. All 3-piece bodies to have 2.8 mm thick sides and 3.5 mm thick center panels. Width of center panels to be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams which are to be tightly joined by rivets or bolts.
2. Reinforced edges to be supplemented with stiffener angles for the 1500 mm thru 2100 mm round, 1925 mm x 1300 mm and 2075 mm x 1425 mm pipe-arch sizes. The angles will be 51mm x 51mm x 6.4 mm for the 1500 mm thru 1800 mm round, 1925 mm x 1300 mm and 2075 mm x 1425 mm pipe-arch sizes and 64 mm x 64 mm x 6.4 mm for 1950 mm and 2100 mm round. The angles to be attached by 10 mm ϕ nuts and bolts.
3. Angle reinforcement shall be placed under the center panel seams on the 1925 mm x 1300 mm and 2075 mm x 1425 mm pipe-arch sizes.
4. Toe plate to be available as an accessory when specified.
5. End of pipe to be finished with annular corrugations to conform flared end section so that minimal leakage results from the connection. Other designs may be used with approval of the Engineer.
6. For 300 mm thru 600 mm helical end section connection, a universal coupling band attached to the metal end section by rivets, bolts or 25 mm long shop tack welds spaced at same intervals as dimples may be used in place of the 0.3 m stub. See Standard Plan D97C.
7. The types of alternative connections for pipe to metal flared end sections shall conform to the following:

CIRCULAR PIPES -
300 mm thru 600 mm Type I or III
750 mm thru 2100 mm Type II or III

PIPE-ARCHES -
525 mm x 375 mm thru 1425 mm x 950 mm Type II or III
1600 mm x 1075 mm thru 2075 mm x 1425 mm Type III

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-05
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

METAL AND PLASTIC FLARED END SECTIONS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D94A

03-26-04

2004 Std PLAN D94A

Caltrans Metric

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REGISTERED CIVIL ENGINEER

July 1, 2004
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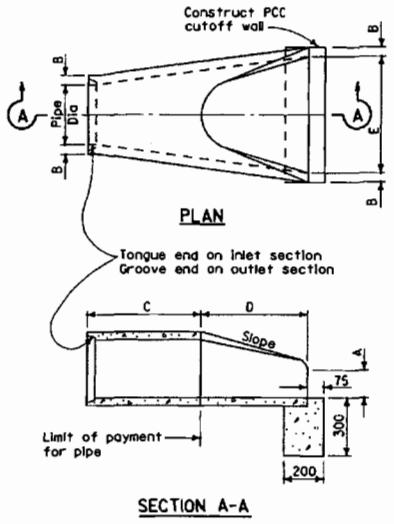
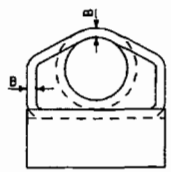
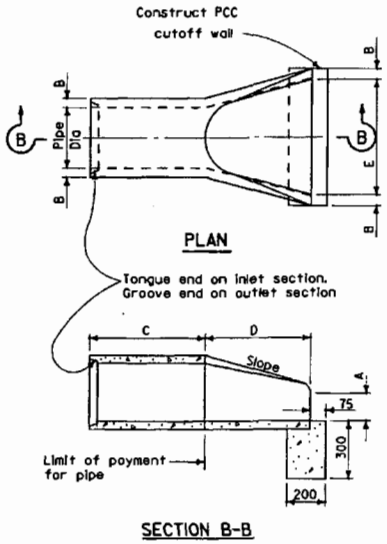
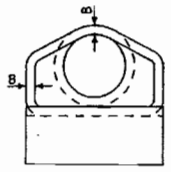




MINIMUM DIMENSIONS						
PIPE DIA	A	B	C	D	E	SLOAPE
300	100	45	See Note 2	600	600	1:2 or flatter
450	225	58		675	910	
600	240	70		1100	1210	
750	300	83		1370	1520	
900	375	95		1600	1820	
1050	525	107		1600	1980	
1200	600	119		1820	2130	
1350	675	131		1650	2280	

PRECAST CONCRETE FLARED END SECTION TYPE A





MINIMUM DIMENSIONS						
PIPE DIA	A	B	C	D	E	SLOAPE
300	100	39	See Note 2	550	600	1:2 or flatter
450	225	45		630	910	
600	240	58		1060	1210	
750	300	71		1340	1520	
900	375	81		1570	1820	
1050	525	90		1600	1980	
1200	600	103		1820	2130	
1350	675	112		1670	2080	

PRECAST CONCRETE FLARED END SECTION TYPE B

NOTES

1. Contractor has the option of using either Type A or B precast concrete flared end section.
2. C dimension varies by manufacturer and will be paid for as concrete pipe.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONCRETE FLARED END SECTIONS

NO SCALE

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D94B

05-04-04

Caltrans Metric

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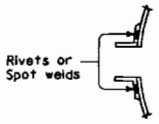
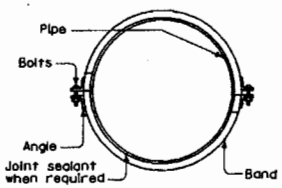
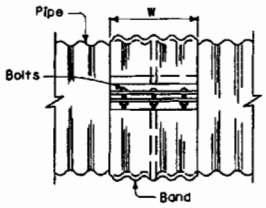


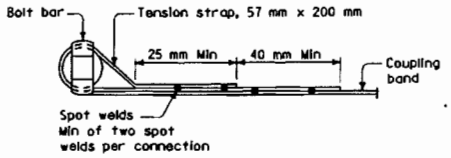


END VIEW

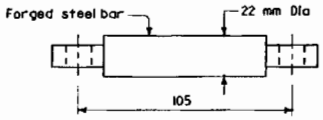


SIDE VIEW

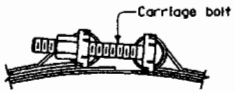
ANNULAR BAND



STRAP DETAIL

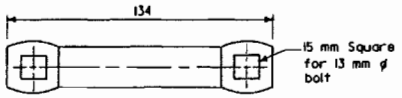


TOP VIEW



BOLT DETAIL

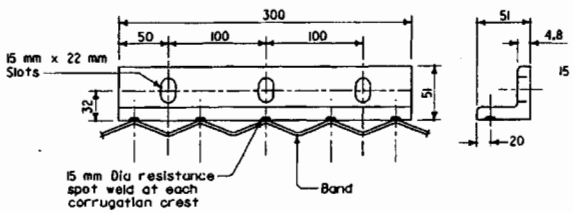
LEFT SIDE VIEW



FRONT VIEW

BAR DETAIL

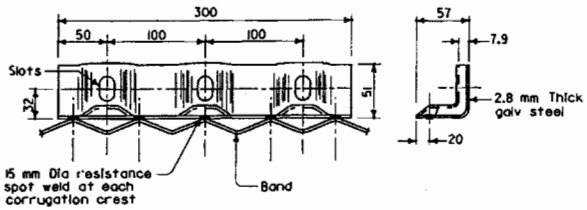
BAR AND STRAP CONNECTOR



SIDE VIEW END VIEW

51mm X 51mm X 4.8 mm ANGLE

See tables on Standard Plans D97E, D97F and D97G for width, W=305 mm shown



SIDE VIEW END VIEW

DIE-FORMED ANGLE

See tables on Standard Plans D97E and D97G for width, W=305 mm shown.

Alternate only for standard joints on pipes through 1800 mm diameter and downdrains through 600 mm diameter.

ANGLE CONNECTORS

NOTES

1. All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
2. Dimensions and thicknesses shown are minimum.
3. Spot welds shall develop minimum required strength of strap.
4. Fillet welds of equivalent strength may be substituted for spot welds or rivets.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 1 ANNULAR COUPLING BAND BAR AND STRAP AND ANGLE CONNECTIONS

NO SCALE

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D97A

02-26-04

Caltrans Metric

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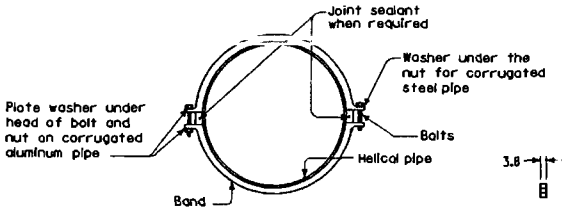


END VIEW

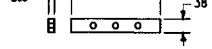
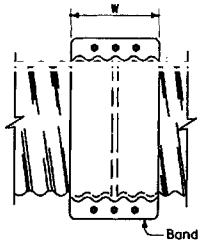
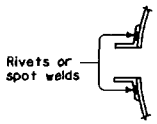


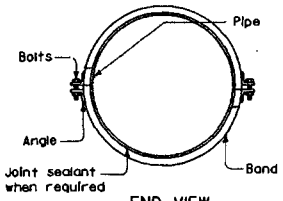
PLATE WASHER



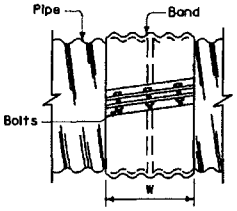
TOP VIEW

TWO PIECE INTEGRAL FLANGE DIE FORMED BAND





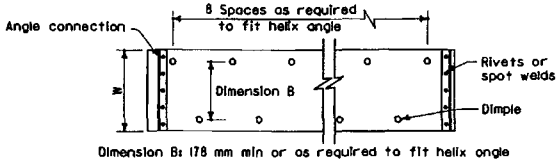
END VIEW



SIDE VIEW

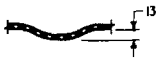
HELICAL COUPLING BANDS

HELICAL BAND

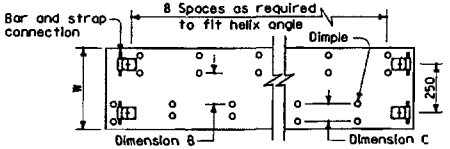


Dimension B: 178 mm min or as required to fit helix angle

PLAN



SECTION THRU DIMPLES

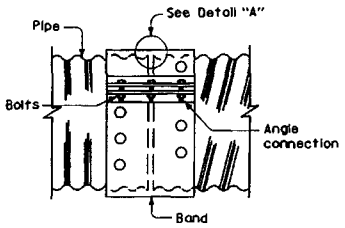


Dimension B: 178 mm min or as required to fit helix angle.
Dimension C: 68 mm min or as required to fit helix angle.
(Double dimple shown for use with 413 mm bands)

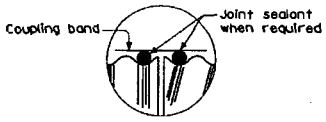
PLAN

NOTES

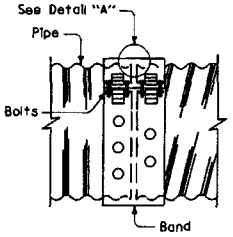
1. All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard specifications.
2. Dimensions and thicknesses shown are minimum.
3. Spot welds shall develop minimum required strength of strap.
4. Fillet welds of equivalent strength may be substituted for spot welds or rivets.



SIDE VIEW



DETAIL "A"



SIDE VIEW

UNIVERSAL COUPLING BANDS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

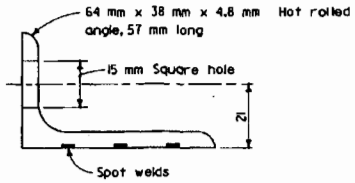
CORRUGATED METAL PIPE COUPLING DETAILS No. 3 HELICAL AND UNIVERSAL COUPLERS

NO SCALE

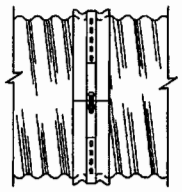
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D97C

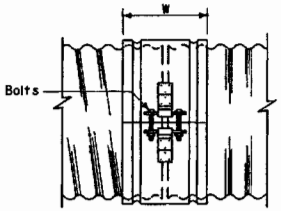
02-26-04



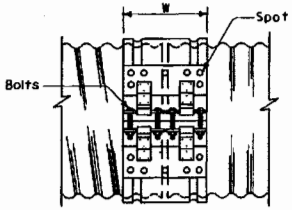
ANGLE



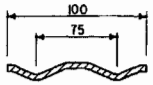
SIDE VIEW
ANGLE



SIDE VIEW
SINGLE BAR AND STRAP

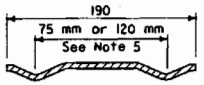


SIDE VIEW
DOUBLE BAR AND STRAP



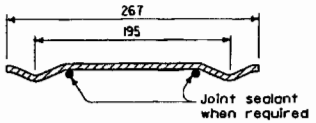
SECTION

H-100 HUGGER BAND



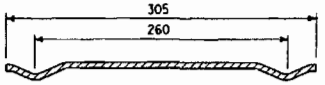
SECTION

H-190 HUGGER BAND



SECTION

H-267 HUGGER BAND



SECTION

H-305 HUGGER BAND

NOTES

1. All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
2. Dimensions and thicknesses shown are minimum.
3. Spot welds shall develop minimum required strength of strap.
4. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
5. Dimension depends upon whether end condition is lips up or lips dawn.

HUGGER COUPLING BANDS

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-05
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 4 HUGGER COUPLING BANDS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D97D

03-26-04

To accompany plans dated _____

Caltrans Metric

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

Raymond Don Tezroo
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Raymond Don Tezroo No. C37332 Exp. 6-30-08 STATE OF CALIFORNIA

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ANNULAR AND HELICAL PROFILE

COUPLING TYPE	PIPE CORRUGATION (mm)	PIPE SIZE (mm)	W OR A (mm)	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (CSP ONLY)			ANGLE						
											DIMENSIONS		BOLTS (No.-mm ø)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				CSP (mm)	CAP (mm)	CSP (mm)	CAP (mm)	STRAP THICKNESS (mm)	BOLTS (mm ø)	BAR Dia (mm)	CSP (mm)	CAP (mm)	CSP	CAP	CSP	CAP	CSP
TWO PIECE INTEGRAL FLANGE	38 x 6.5	150	178	1.63 - 4.27		1.32							3-10				
	38 x 6.5	200 - 250	178	1.63 - 4.27	1.52 - 4.17	1.63	1.52						3-10	3-10			
ANNULAR	68 x 13	THROUGH 600	305	1.63 - 4.27	1.52 - 4.17	1.63	1.52				51 x 51 x 4.8	51 x 51 x 4.8	3-13	3-13	3-9.5 mm	3-9.5 mm	3-15 mm
HUGGER	68 x 13 REROLLED END	THROUGH 600	267	1.63 - 4.27		1.63		2.01	13	22	51 x 51 x 4.8	51 x 51 x 4.8	3-13	3-13	3-9.5 mm	3-9.5 mm	3-15 mm

SPIRAL RIB PROFILE

COUPLING TYPE	PIPE CORRUGATION (mm)	PIPE SIZE (mm)	W (mm)	PIPE WALL THICKNESS		BAND THICKNESS		BAR AND STRAP (SSRP ONLY)			ANGLE						
											DIMENSIONS		BOLTS (No.- mm ø)		RIVETS ANGLE TO BAND		SPOT WELDS ANGLE TO BAND
				SSRP (mm)	ASRP (mm)	SSRP (mm)	ASRP (mm)	STRAP THICKNESS (mm)	BOLTS (mm ø)	BAR Dia (mm)	SSRP (mm)	ASRP (mm)	SSRP	ASRP	SSRP	ASRP	SSRP
ANNULAR	68 x 13 * REROLLED END	600	305	1.63 - 4.27	1.52 - 4.17	1.63	1.52				51 x 51 x 4.8	51 x 51 x 4.8	3-13	3-13	3-9.5 mm	3-9.5 mm	3-15 mm
HUGGER	68 x 13 * REROLLED END	600	267	1.63 - 4.27		1.63		2.01	13	22							

* See Note 12.

NOTES

1. All ferrous metal coupling band connection hardware shall be galvanized or electroplated in accordance with the Standard Specifications.
2. For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
3. Tension straps may be connected to band with either spot welds or fillet welds that develop minimum required strength of strap.
4. Use 32 mm gage line dimension on attached angle leg for rivets and spot welds.
5. Band thickness shall not be less than:
   a. 3 standard thickness lighter than the thickness of the pipe for corrugated steel pipe.
   b. 2 standard thickness lighter than the thickness of the pipe and in no case lighter than 1.5 mm for corrugated aluminum pipe.
6. Dimensions, thickness and strengths shown are minimum.
7. For pipe arches use same width band as for round pipe of equal periphery.
8. Fillet welds of equivalent strength may be substituted for spot welds or rivets.
9. Spot welds shall develop minimum required strength of strap.
10. Pipe with rerolled ends having at least two 68 mm x 13 mm annular corrugations at each end with or without an upturned flange may be connected with any of the annular coupling bands shown for pipe of the same diameter and wall thickness and having 68 mm x 13 mm corrugations.
11. For downdrain applications, two piece integral flange couplers shall have factory applied sleeve type rubber gaskets with a minimum length of 175 mm measured along the length of the pipe.
12. All profiles of Spiral Rib Pipe (19 mm x 19 mm ribs at 151 mm pitch and 19 mm x 25 mm ribs at 292 mm pitch in both steel and aluminum and 19 mm x 25 mm ribs at 216 mm pitch in steel only) shall be manufactured with rerolled ends. Corrugation profile of the rerolled ends shall be 68 mm x 13 mm annual corrugations with a minimum of two full corrugations at each end.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CORRUGATED METAL PIPE COUPLING DETAILS No. 7 DOWNDRAIN

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP D97G DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN D97G DATED July 1, 2004 - PAGE 189 OF THE STANDARD PLANS BOOK DATED July 2004.

REVISED STANDARD PLAN RSP D97G

05-19-08

2004 REVISED Std PLAN RSP D97G

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Glenn DeCou
No. C34547
Exp. 9-30-05
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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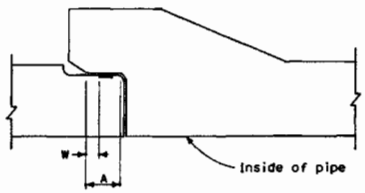
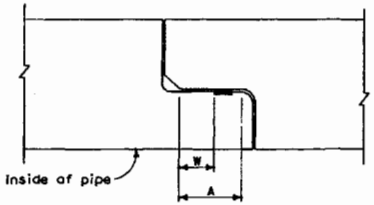
LEGEND

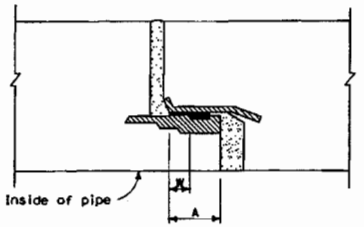
- Cement Mortar
- Rubber Gasket
- Steel



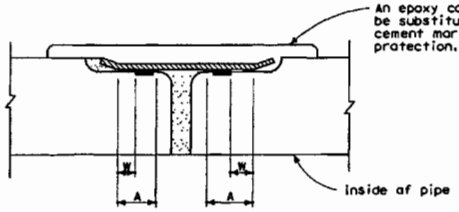
CONCRETE JOINT-FLARED BELL DESIGN



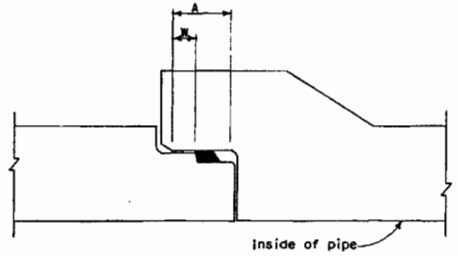
CONCRETE JOINT-FLUSH BELL DESIGN



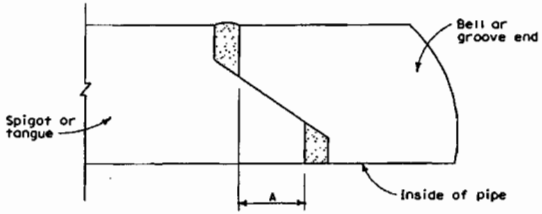
STEEL JOINT-FLUSH BELL DESIGN



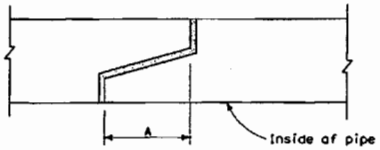
CONCRETE JOINT-DOUBLE GASKET DESIGN



CONCRETE JOINT-SINGLE OR DOUBLE OFFSET DESIGN
(Flared or Flush Bell)



SELF-CENTERING TONGUE & GROOVE
(See Note 4)



TONGUE & GROOVE DESIGN

NOTES

1. For pipe sections installed on straight alignment, the pipe sections shall be joined to provide maximum joint overlap at all points on the joint periphery, but in no case less than the values shown in Table A for "W" if the installation is required to be watertight or "A" for all other installations.
2. For pipe sections installed on curved alignment, the pipe sections shall be joined to provide maximum joint overlap on one side of the joint and not less than 6 mm overlap on the other. The 6 mm overlap shall be the "W" dimension for installations required to be watertight, or the "A" dimension for all other installations.
3. Watertight joint requirement shall typically be met with the use of rubber gaskets as shown (See Standard Specifications 61-1.02 and 65-1.06). Pipe installed with rubber gaskets shall have a minimum overlap meeting or exceeding the indicated "W" dimension shown in Table A or indicated in Note 2. Joints shown with rubber gaskets may be installed without gaskets in non-watertight applications, in which case the joint shall be sealed with sealing materials described in Standard Specifications 65-1.06, and the minimum joint overlap shall meet or exceed the "A" dimension shown in Table A or indicated in Note 2.
4. For Self-Centering Tongue and Groove Joints, the mortar shall be applied after the pipe ends are pushed together. The mortar shall be applied to the joint gap on the inside of the pipe for pipe diameters of 600 mm or more, or to the gap on the outside of the pipe for pipe smaller than 600 mm in diameter.
5. When watertight joints are required (See Note 3) and cement mortar joints are not allowed, the taper on surfaces within the "W" dimension at full joint closure and the apposing sealing surfaces of the bells and spigots on which the rubber gaskets may bear during closure of the joint and at any degree of partial closure shall form an angle of not more than 2 degrees with the longitudinal axis of the pipe.

TABLE A

PIPE DIAMETER LIMITS	MINIMUM JOINT OVERLAP			
	Standard "A"	Positive "A"	Standard "W"	Positive "W"
150 mm through 300 mm	6 mm	13 mm	6 mm	9 mm
375 mm through 825 mm	13 mm	19 mm	6 mm	13 mm
Greater than 825 mm	19 mm	25 mm	9 mm	16 mm

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

REINFORCED CONCRETE PIPE OR NON-REINFORCED CONCRETE PIPE STANDARD AND POSITIVE JOINTS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D97H

05-04-04

Caltrans Metric

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

William K. Formsen
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — William K. Formsen — No. 49662 — Exp. 09-30-04 — CIVIL — STATE OF CALIFORNIA

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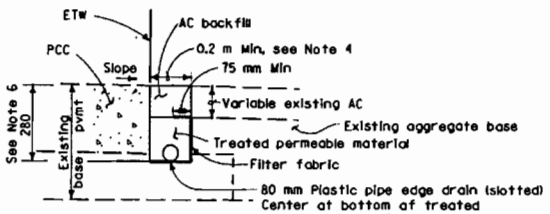
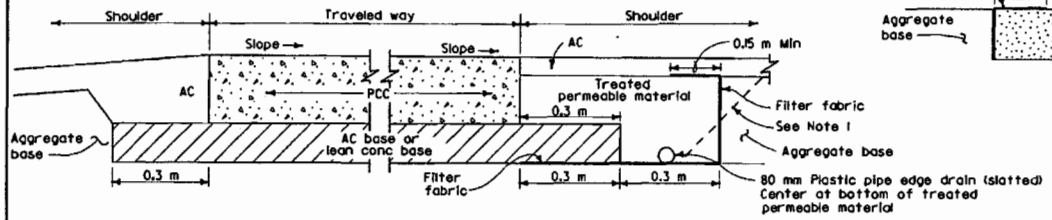


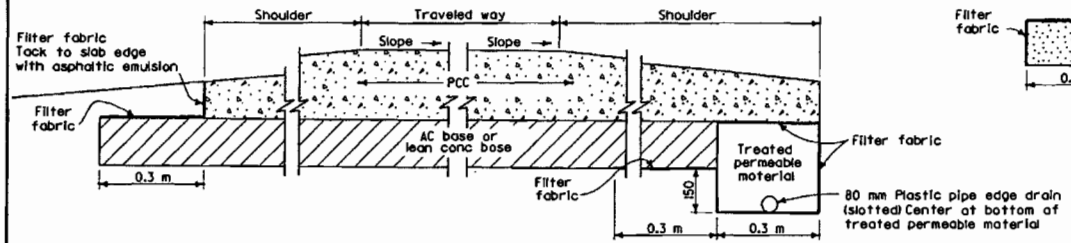
TYPE 1 STRUCTURAL SECTION DRAINAGE SYSTEM

(For existing highway facility)



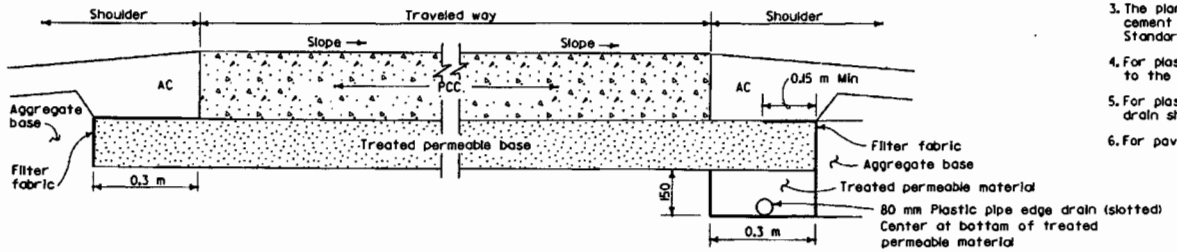
TYPE 2 STRUCTURAL SECTION DRAINAGE SYSTEM

(New construction)



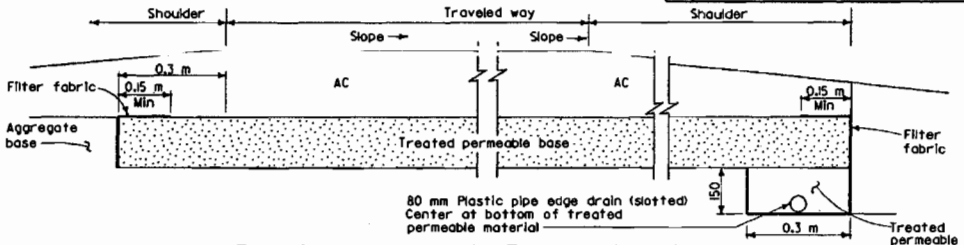
TYPE 3 STRUCTURAL SECTION DRAINAGE SYSTEM

(New construction)



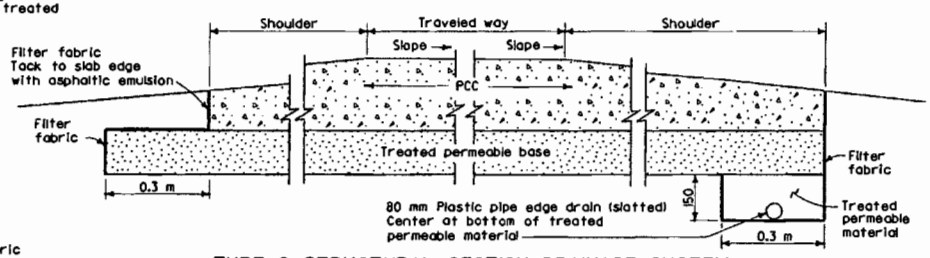
TYPE 4 STRUCTURAL SECTION DRAINAGE SYSTEM

(New construction)



TYPE 5 STRUCTURAL SECTION DRAINAGE SYSTEM

(New construction)



TYPE 6 STRUCTURAL SECTION DRAINAGE SYSTEM

(New construction)

NOTES

1. At the Contractor's option, on new construction, the vertical jointline (including the filter fabric) between the treated permeable material and the shoulder base/subgrade material may be rotated about its midpoint to a slope not flatter than 1:1 as shown by the dashed lines.
2. See the project plans and typical cross sections for pavement structural section details.
3. The plan layout for structural section drainage collector and outlet systems for new portland cement concrete pavement and new asphalt concrete pavement is the some as that shown on Standard Plan D99B.
4. For plastic pipe edge drain diameter larger than 80 mm, the minimum trench width shall be equal to the outside diameter of the plastic pipe plus 100 mm.
5. For plastic pipe edge drain diameters larger than 80 mm, all details for 80 mm plastic pipe edge drain shall apply.
6. For pavements thicker than 230 mm, the minimum trench depth is 0.3 m.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

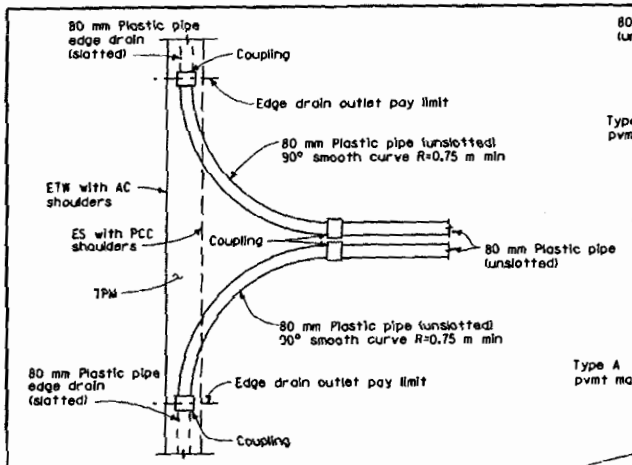
STRUCTURAL SECTION DRAINAGE SYSTEM DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D99A

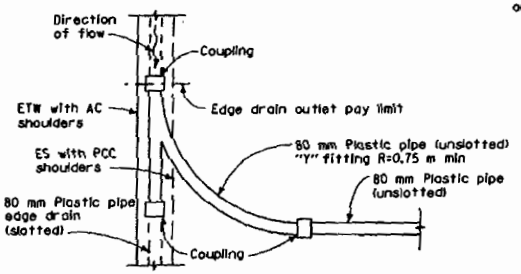
05-06-04



PLAN

DUAL OUTLET AND/OR VENT

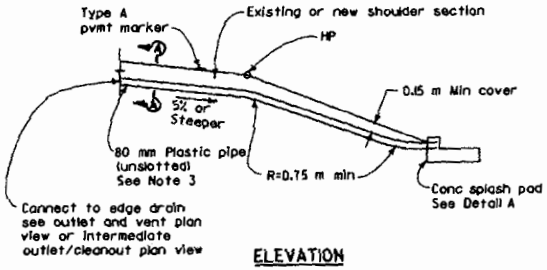
See Note 2



PLAN

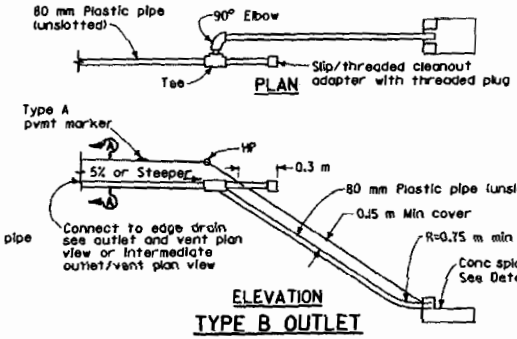
INTERMEDIATE OUTLET

See Note 2



ELEVATION

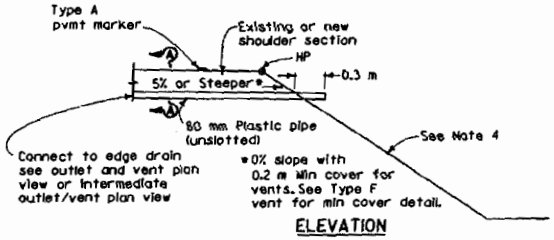
TYPE A OUTLET



PLAN

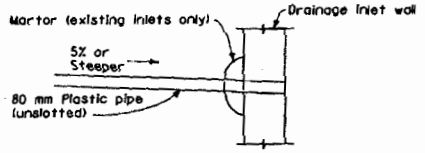
ELEVATION

TYPE B OUTLET



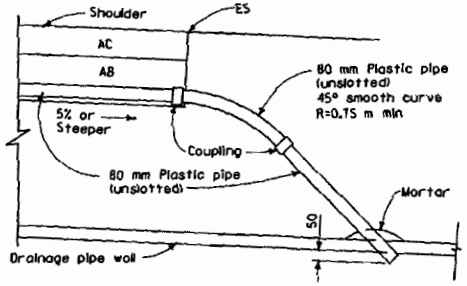
ELEVATION

TYPE C OUTLET AND/OR VENT



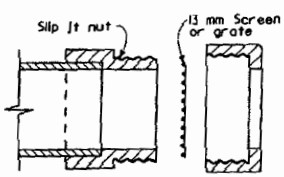
ELEVATION

TYPE D OUTLET CONNECTION TO DRAINAGE INLET

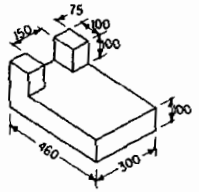


ELEVATION

TYPE E OUTLET CONNECTION TO DRAINAGE PIPE

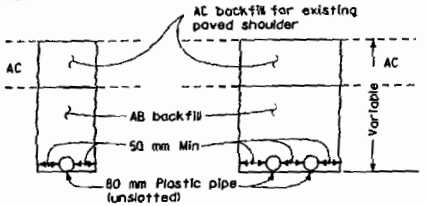


EDGE DRAIN OUTLET AND VENT COVER



DETAIL A

CONCRETE SPLASH PAD

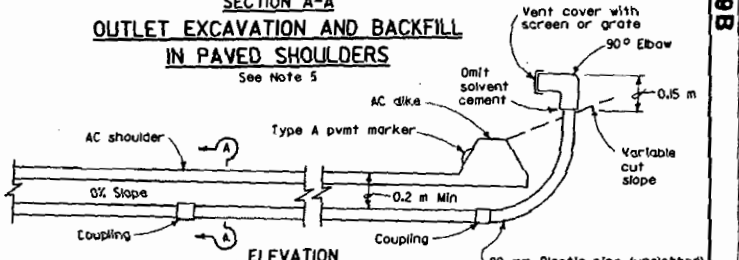


INTERMEDIATE OUTLET OR CLEANOUT DUAL VENT AND/OR OUTLET

SECTION A-A

OUTLET EXCAVATION AND BACKFILL IN PAVED SHOULDERS

See Note 5



ELEVATION

TYPE F VENT

NOTES

1. See project plans for location and type of outlet and/or vent installations.
2. The position of slotted plastic pipe and limits of treated permeable material shown are for the Type I structural section drainage system shown on Standard Plan D99A.
3. The maximum length of plastic pipe outlet shall be 15 m (s) measured from the longitudinal centerline of the collector trench to the pipe outlet. For pipe lengths greater than 15 m use Type B outlets.
4. See project plans for slope protection details at Type C pipe outlets.
5. Backfill with aggregate base from outside edge paved shoulder to hinge point, and backfill with native material in slope area.
6. See Standard Plan D99C for Type G vent detail used with portland cement concrete shoulders.

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

William K. Forsbach
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EDGE DRAIN OUTLET AND VENT DETAILS

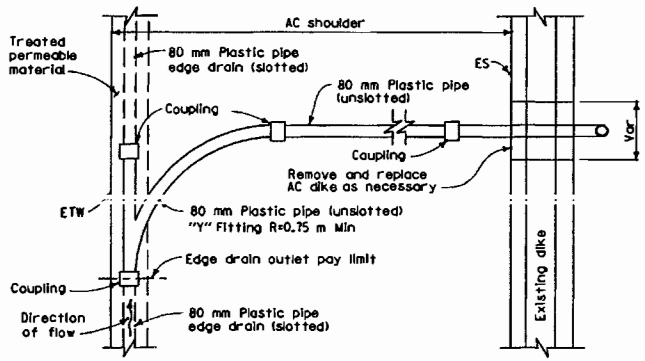
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D99B

04-15-04

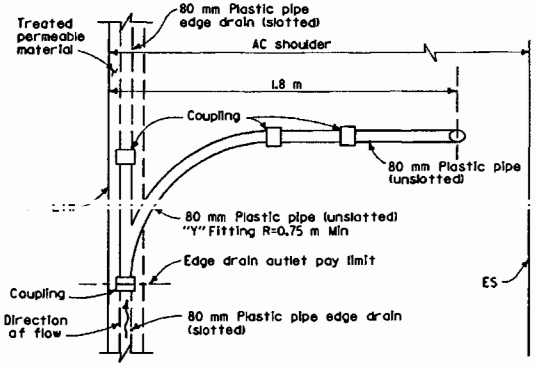
2004 Std PLAN D99B



PLAN

TYPE 1 CLEANOUT

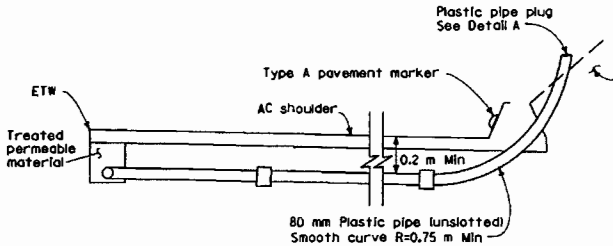
See Note 2



PLAN

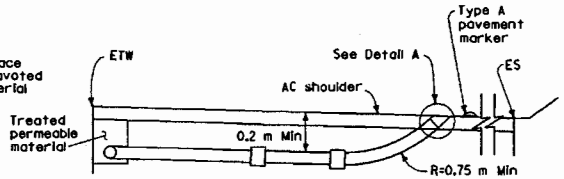
TYPE 2 CLEANOUT

See Note 2



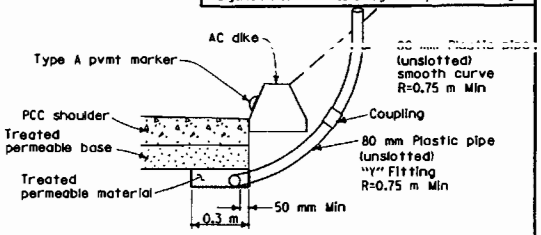
ELEVATION

TYPE 1 CLEANOUT



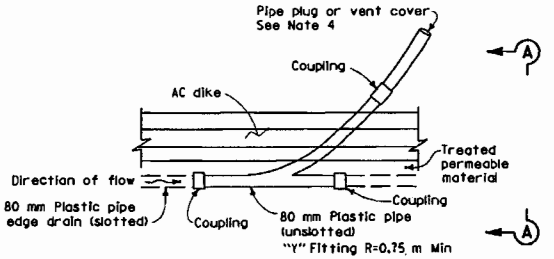
ELEVATION

TYPE 2 CLEANOUT



SECTION A-A

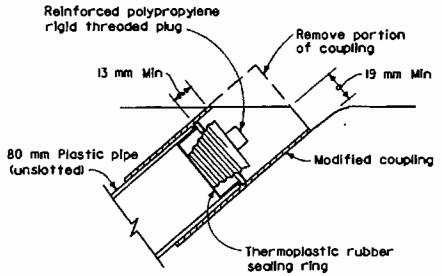
TYPE 3 CLEANOUT/TYPE G VENT



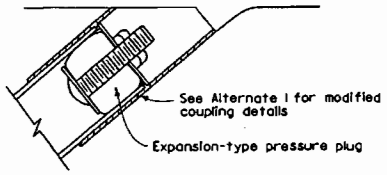
PLAN

TYPE 3 CLEANOUT/TYPE G VENT

See Note 4



ALTERNATIVE 1



ALTERNATIVE 2

DETAIL A

PLASTIC PIPE PLUG

See Note 3

NOTES

1. See project plans for location and type of cleanout or vent installations.
2. The position of slotted plastic pipe and limits of treated permeable material shown are for the Type 1 structural section drainage system shown on Standard Plan D99A.
3. Other types of plugs may be substituted with the Engineer's approval.
4. The Type 3 cleanout and Type G vent is for use with portland cement concrete shoulders. The Type 6 structural section drainage system from Standard Plan D99A is shown. Use plastic pipe plug shown in Detail A with Type 3 cleanouts. Use vent cover shown on Standard Plan D99B with Type G vents.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EDGE DRAIN CLEANOUT AND VENT DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D99C

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

William X. Farnbach
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — William X. Farnbach — No. 49047 — Exp. 06-30-04 — CIVIL — STATE OF CALIFORNIA

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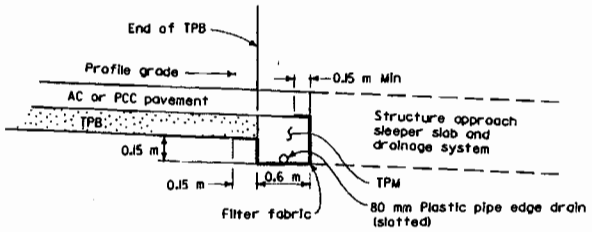
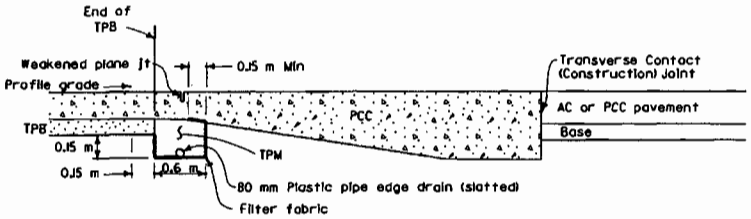
04-16-04



LONGITUDINAL SECTION

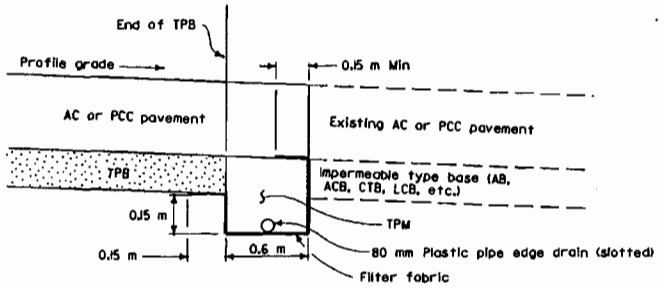
CROSS DRAIN INTERCEPTOR AT STRUCTURE APPROACH



LONGITUDINAL SECTION

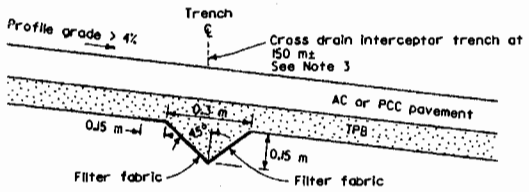
CROSS DRAIN INTERCEPTOR AT END ANCHOR

See Note 2



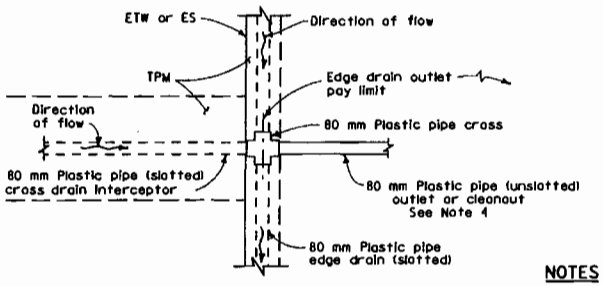
LONGITUDINAL SECTION

TERMINAL CROSS DRAIN INTERCEPTOR



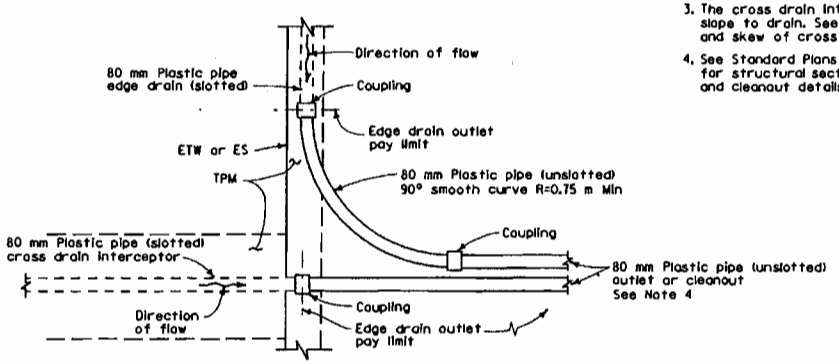
LONGITUDINAL SECTION

INTERMEDIATE CROSS DRAIN INTERCEPTOR



PLAN

CROSS DRAIN INTERCEPTOR OUTLET CONNECTION DETAILS



PLAN

COMBINED CROSS DRAIN INTERCEPTOR/EDGE DRAIN OUTLET DETAILS

NOTES

1. Cross drain interceptors are for use with treated permeable bases.
2. See Standard Plan A35C for Pavement End Anchor details. A typical pavement end anchor is shown.
3. The cross drain interceptor trench shall slope to drain. See project plans for location and skew of cross drains.
4. See Standard Plans D99B and D99C, for structural section drainage system outlet and cleanout details, respectively.

Caltrans Metric

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

William K. Fanslau
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

William K. Fanslau, No. 43042, Exp. 06-30-04, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CROSS DRAIN INTERCEPTOR DETAILS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D99D

05-05-04

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Registered Professional Engineer — Glenn DeCou — No. C34547 — Exp. 9-30-05 — CIVIL — State of California

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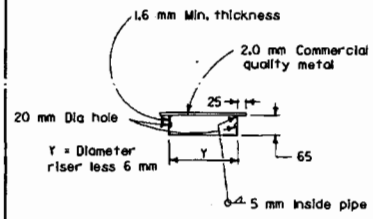
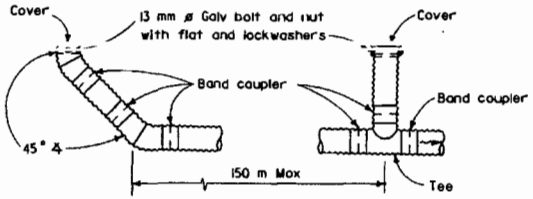
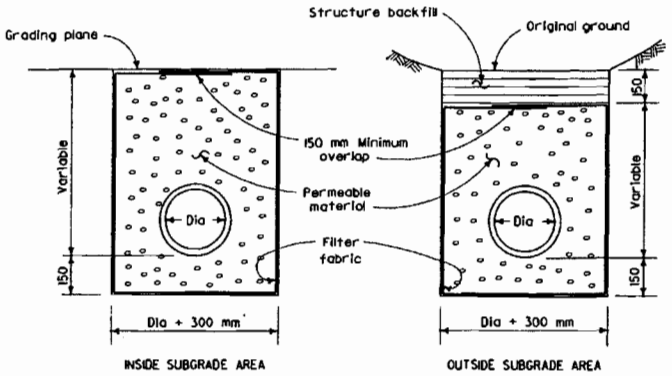


WELDED METAL COVER

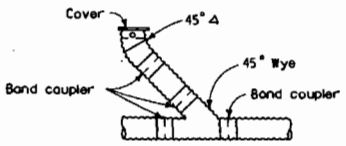


TERMINAL RISER VERTICAL RISER

Metal pipe risers and perforated metal pipe underdrain shown. Use type of pipe specified.

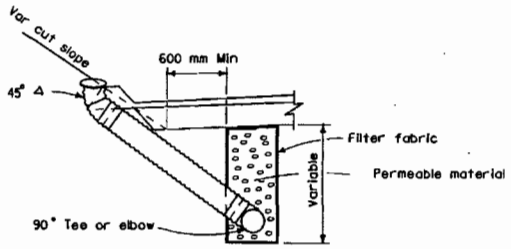


EXCAVATION AND BACKFILL



45° RISER

UNDERDRAIN RISERS



UNDERDRAIN LOCATION AND RISERS ANGLED TO CUT SLOPE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

UNDERDRAINS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

D102

03-26-04

ELECTROLIERS

STANDARD TYPES
15, 15D
15 STRUCTURE
21, 21D STRUCTURE
30
31
32
35
36-20A

High mast lighting standard

Double arm lighting standard

Existing electrolier

Electrolier foundation (Future installation)

NOTES

1. Luminaires shall be 310 W HPS when installed on Type 21, 21D, 30, 31, 32, 35 and 36-20A Standards, unless otherwise specified. Luminaires shall be 200 W HPS when installed on other type standards or poles, unless otherwise specified.
2. Luminaires shall be the cutoff type, ANSI Type III medium cutoff lighting distribution, unless otherwise specified.
3. Variations noted adjacent to symbol on project plans.

Electrolier (see project notes or project plans)

Luminaire on wood pole

STANDARD NOTES

- 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 wire or rope.
- 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.
- SF Standard to remain for future use. Remove luminaire, pole conductors, fuses and ballast. Tape disconnects.
- TSP Telephone service point.

ABBREVIATIONS AND EQUIPMENT DESIGNATIONS

PROPOSED	EXISTING	
BBS	bbs	Battery backup system
BC	bc	Bolt circle
C	C	Conduit
CCTV	cctv	Closed circuit television
CKT	ckt	Circuit
CMS	cms	Changeable message sign
DLC	dlc	Loop detector lead-in cable
EMS	ems	Extinguishable message sign
EVC	evc	Emergency vehicle cable
EVD	evd	Emergency vehicle detector
FB	fb	Flashing beacon
FBCA	fbca	Flashing beacon control assembly
FBS	fbs	Flashing beacon with slip base
FO	fo	Fiber optic
G	G	Ground (Equipment Grounding Conductor)
GFCI	GFCI	Ground fault circuit interrupt
HAR	har	Highway advisory radio
HEX	hex	Hexagonal
HPS	hps	High pressure sodium
IISNS	iisns	Internally illuminated street name sign
ISL	isl	Induction sign lighting
LED	led	Light emitting diode
LMA	lma	Luminaire mast arm
LPS	lps	Low pressure sodium
LTG	ltg	Lighting
LUM	lum	Luminaire
MAT	mat	Mast arm mounted vehicle signal faces, top attachment
MAS	mas	Mast arm mounted vehicle signal faces, side attachment
MAS-4A	mas-4A	Mast arm mounted vehicle signal faces,
MAS-4B	mas-4B	side attachment - 4 signal section
MAS-4C	mas-4C	
MAS-5A	mas-5A	Mast arm mounted vehicle signal faces,
MAS-5B	mas-5B	side attachment - 5 signal section
MC	mc	Mercury contactor
M/M	m/m	Multiple to multiple transformer
MT	mt	Conduit with pull wire or rope only
MTG	mtg	Mounting
	mv	Mercury vapor lighting fixture
N	N	Neutral (Grounded Conductor)
NC	NC	Normally closed
NO	NO	Normally open
PB	pb	Pull box
PEC	pec	Photoelectric control (Type I, II, III, IV or V as shown)
PED	ped	Pedestrian
PEU	peu	Photoelectric unit
PPB	ppb	Pedestrian push button
RL	RL	Relocated equipment
RM	rm	Ramp metering
SB	sb	Slip base
SIC	sic	Signal interconnect cable
SIG	sig	Signal
SMA	sma	Signal mast arm
SNS	sns	Street name sign
SP	sp	Service point
TDC	tdc	Telephone demarcation cabinet
TMS	tms	Traffic monitoring station
TOS	tos	Traffic Operations System
VEH	veh	Vehicle
XFMR	xfmr	Transformer
COMM	comm	Communication
RWIS	rwis	Roadway weather information system

Caltrans Metric

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

Jeffrey G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

Jeffrey G. McRae No. E14512 Exp. 6-30-08 ELECTRICAL REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

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To accompany plans dated _____

SOFFIT AND WALL MOUNTED LUMINAIRES

- Pendant, 70 W HPS unless otherwise specified.
- Flush, 70 W HPS unless otherwise specified.
- Wall surface, 70 W HPS unless otherwise specified.
- Existing soffit or wall luminaire to remain unmodified.
- (M) Existing soffit or wall luminaire to be modified as specified.

NOTE

Arrow indicates "street side" of luminaire.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP ES-1A DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-1A DATED JULY 1, 2004-PAGE 413 OF THE STANDARD PLANS BOOK DATED JULY 2004.

REVISED STANDARD PLAN RSP ES-1A

6-27-07

2004 REVISED Std PLAN RSP ES-1A

CONDUIT

PROPOSED	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—	—fa—	Fiber optic conduit
—]—	—]—	Conduit termination (RSP ES-9A C)
R	r	Conduit riser in/on structure or Service pole

SERVICE EQUIPMENT

PROPOSED	EXISTING	
—OH—	—oh—	Overhead lines
U	u	Wood pole "U" indicates utility owned
		Pole guy-with anchor
		Utility transformer-ground mounted
III		Service equipment enclosure type
		Service equipment enclosure door indicates front of enclosure
T	t	Telephone demarcation cabinet

POLE-MOUNTED SERVICE DESIGNATION

TYPE H SERVICE - 8.8 m ← Pole height above grade

← Type of installation

ILLUMINATED OVERHEAD SIGN

PROPOSED	EXISTING	
H		Overhead sign - Single post
		Overhead sign - Two post
		Overhead sign - Mounted on structure
		Overhead sign with electrolier

SIGNAL EQUIPMENT

PROPOSED	EXISTING	
		Pedestrian signal face
		Pedestrian push button post
		Pedestrian barricade
		Vehicle signal face (with backplate, 3-Section: red, yellow and green)
		Vehicle signal face with angle visors
PV	PV	Modifications of basic symbols: "L" Indicates all non-arrow sections louvered "LG" Indicates louvered green section only "PV" Indicates 300 mm programmed visibility sections "200" indicates all 200 mm sections (only when specified)
		Type 15TS and Vehicle signal face
		Vehicle signal face with red, yellow and green left arrow sections
		Vehicle signal face with red and yellow sections and up green arrow
		Vehicle signal face (5 Section) with red, yellow and green sections and yellow and green right arrows
		Type 1 Standard and attached vehicle signal faces
		Standard with signal mast arm only and attached vehicle signal faces and internally illuminated street name sign
		Type 33 Standard, Left-turn vehicle signal face and sign
		Standard with luminaire and signal mast arms and attached vehicle signal faces
		Cantilever flashing beacon Type 9 Frame, with a sign unless otherwise specified or indicated
Y Y Y	Y Y Y	Type 15-FBS Standard with two vehicle signal face sections with lens, backplate and visor with a sign
R	Y	Flashing beacon. One vehicle signal face section with lens, backplate and visor. "R" indicates red indication, "Y" indicates yellow indication
		Controller assembly. Door indicates front of cabinet
●	○	Guard post
		Type 1 Standard with "Meter On" sign
		Emergency vehicle detector

Caltrans Metric

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

Jeffrey G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Jeffrey G. McRae — No. E14512 — Exp. 6-30-08 — ELECTRICAL — STATE OF CALIFORNIA

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To accompany plans dated _____

NOTES

1. All signal sections shall be 300 mm unless shown otherwise.
2. Signal heads shall be provided with backplates unless shown otherwise.
3. Signal indication shall be LED.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP ES-1B DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-1B DATED JULY 1, 2004-PAGE 414 OF THE STANDARD PLANS BOOK DATED JULY 2004.

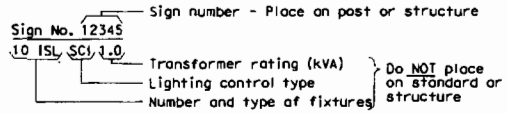
REVISED STANDARD PLAN RSP ES-1B

2004 REVISED Std PLAN RSP ES-1B

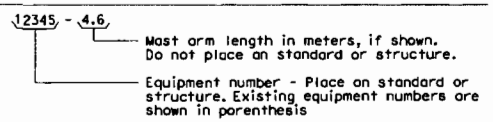
9-5-07

EQUIPMENT IDENTIFICATION

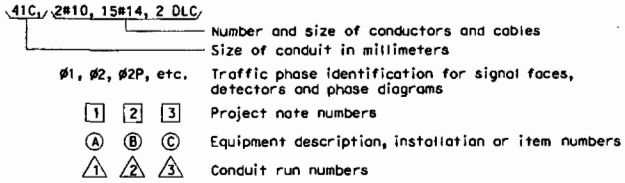
ILLUMINATED SIGN IDENTIFICATION NUMBER:



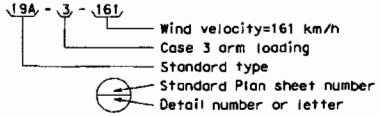
ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



CONDUIT AND CONDUCTOR IDENTIFICATION:



SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):

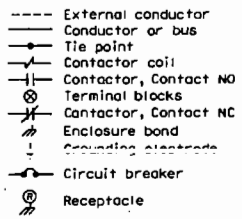


MISCELLANEOUS EQUIPMENT

PROPOSED	EXISTING	
CMS	cms	Changeable message sign
		Closed circuit television camera
		Highway advisory radio pole and antenna
EMS	ems	Extinguishable message sign
M V	m v	Detection device M = Microwave sensor V = Video image sensor

WIRING DIAGRAM LEGEND

P	Pole
CB	Circuit breaker
A	Ampere
V	Volt
M	Metered
UM	Unmetered
NB	Neutral bus
GB	Ground bus
G	Equipment grounding conductor
N	Grounded conductor (Neutral)



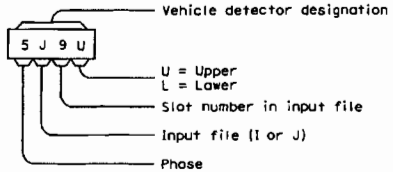
PULL BOXES

PROPOSED	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 (Ceiling pull box)
8 = No. 8 (Pendant soffit pull box)
9 = No. 9 pull box
9A = No. 9A pull box

(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



PROPOSED	EXISTING	
		Type A detector loop. Outline of sawcut shown.
		Type B detector loop. Outline of sawcut shown.
		Type C detector loop. Outline of sawcut shown.
		Type D detector loop. Outline of sawcut shown.
		Type E detector loop. Outline of sawcut shown.
		Type O detector loop. Outline of sawcut shown.
		Mognetic detector
DH	dh	Detector handhole
		Microwave or video detection zone

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

Caltrans Metric

REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

Jeffery G. McRae No. E14512 EXP. 6-30-08 ELECTRICAL STATE OF CALIFORNIA

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To accompany plans dated _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

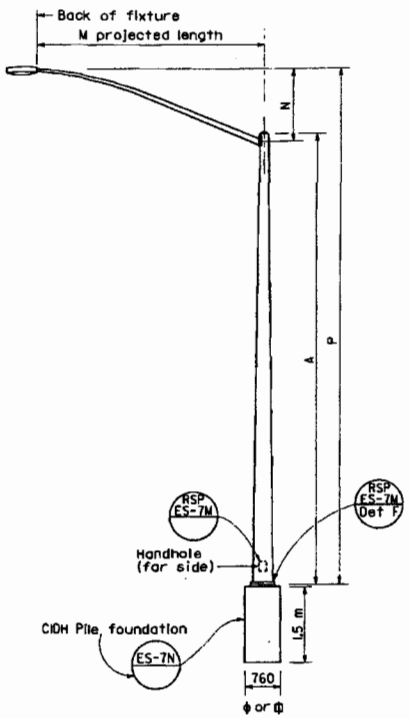
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP ES-1C DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-1C DATED JULY 1, 2004-PAGE 415 OF THE STANDARD PLANS BOOK DATED JULY 2004.

REVISED STANDARD PLAN RSP ES-1C

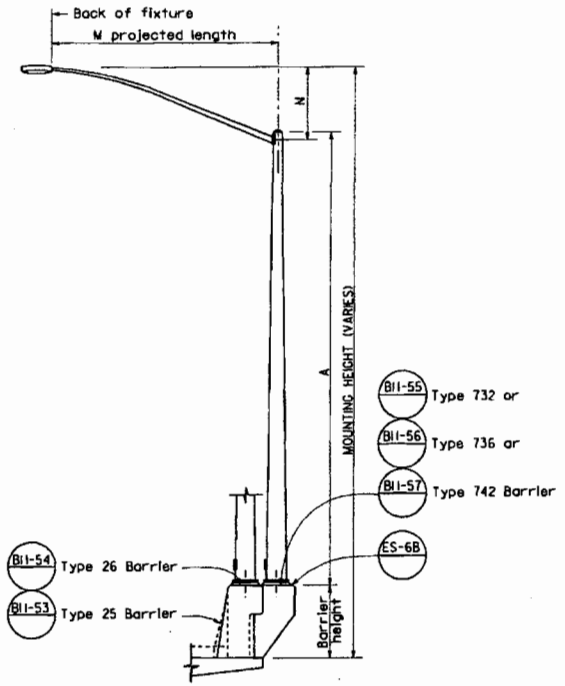
2004 REVISED Std PLAN RSP ES-1C

10-1-07



ELEVATION

TYPE 15 AND TYPE 21



ELEVATION

TYPE 15 AND TYPE 21 BARRIER RAIL MOUNTED

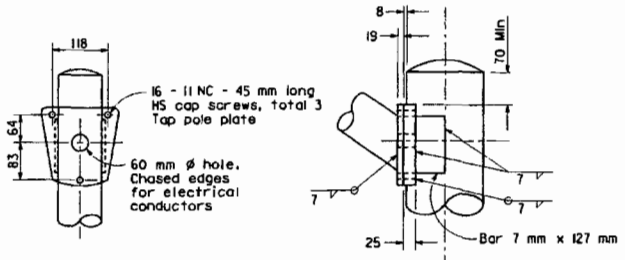
POLE TYPE	POLE DATA				BASE PLATE DATA				LUMINAIRE ARM
	A Height	Min OD		Wall Thickness	C	DI Bolt Circle	Thick-ness	Anchor Bolts Size	
		Base	Top						
	m	mm	mm	mm	mm				m
15	9.1	203	98	3.04	305	305	25	25 ø x 915 x 102*	1.8-4.6 [3.7]
21	10.7	219	98	3.04	305	305	25	See ES-6B	1.8-4.6 [3.7]

*For barrier rail bolts, see Standard Plan ES-6B.

LUMINAIRE ARM DATA					
M Projected Length	N Rise	Min OD At Pole	Nominal Thickness	P	
				Type 15	Type 21
m	mm	mm	mm	m	m
1.8	610±	83	3.04	9.5±	11.2±
2.4	760±	89	3.04	9.7±	11.3±
3.1	990±	98	3.04	9.9±	11.5±
3.7	1290±	98	3.04	10.2±	11.8±
4.6	1450±	108	3.04	10.3±	11.9±

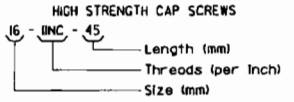
NOTES:

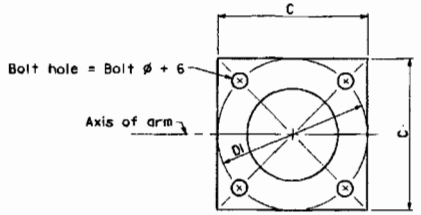
1. ☐ Indicates arm length to be used unless otherwise noted on the plans.
2. For Type 15-SB, use Type 15 standard with Type 30 base plate details, see Standard Plan ES-6F.
3. For additional notes, see Revised Standard Plan RSP ES-7M and ES-7N.



DETAIL R

LUMINAIRE ARM CONNECTION





BASE PLATE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARD TYPES 15 AND 21)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP ES-6A DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-6A DATED JULY 1, 2004-PAGE 440 OF THE STANDARD PLANS BOOK DATED JULY 2004.

REVISED STANDARD PLAN RSP ES-6A

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

Caltrans Metric

REGISTERED CIVIL ENGINEER

October 5, 2007

PLANS APPROVAL DATE

Stanley P. Johnson No. C57793 Exp. 03-31-08 CIVIL

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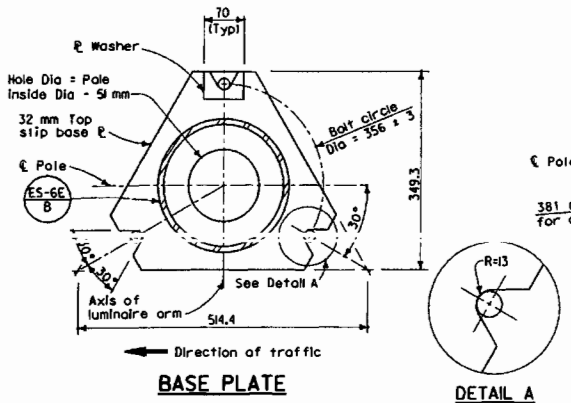
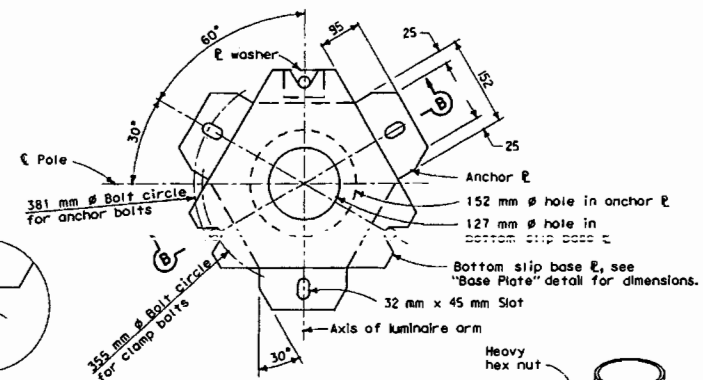
To accompany plans dated _____

6-20-07

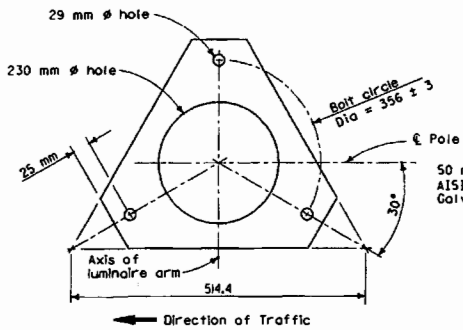


BASE PLATE

DETAIL A



BOTTOM PLATES



KEEPER PLATE

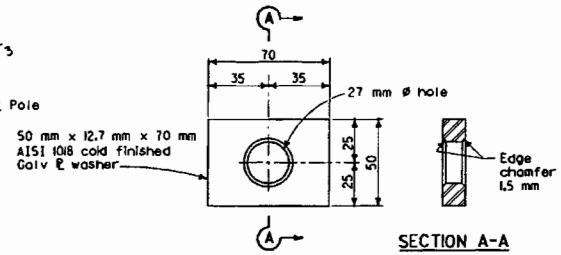
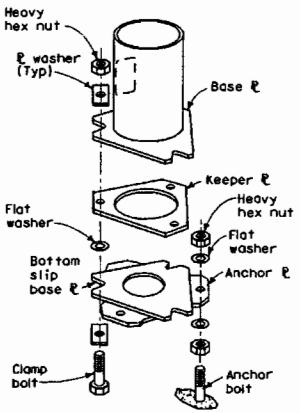
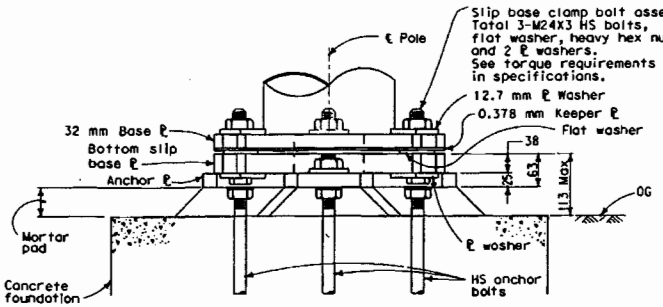


PLATE WASHER

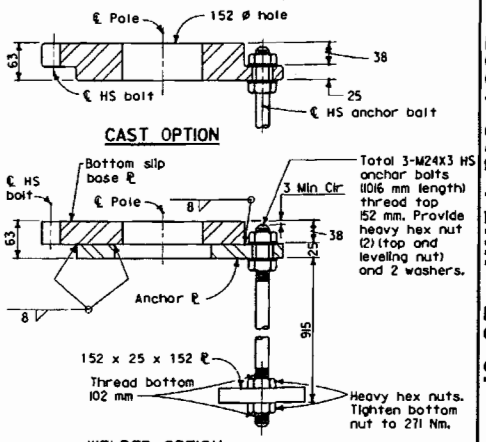
SECTION A-A



SLIP BASE DETAIL



ELEVATION - SLIP BASE



SECTION B-B

NOTES

1. M24 x 3 HS anchor bolts, snug tighten. For clamp bolts, see specifications.
2. Conduit shall not protrude more than 50 mm above top of foundation.
3. Locate handhole on downstream side of traffic.
4. For Type 30 fixed base and for Type 31 fixed base, see Notes 3 and 4 on Standard Plan ES-6E.

Caltrans Metric

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

REGISTERED CIVIL ENGINEER — Elliot Sattar — No. C42852 — Exp. 03-31-05 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

July 1, 2004
PLANS APPROVAL DATE

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (LIGHTING STANDARDS TYPES 30 AND 31 BASE PLATE DETAILS)

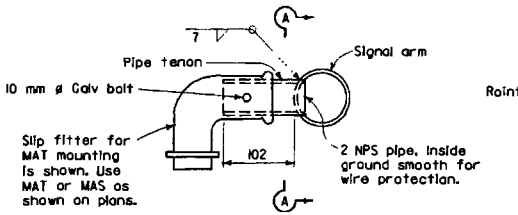
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

ES-6F

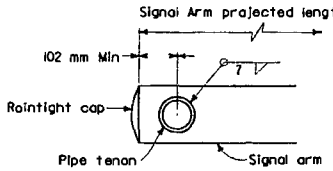
07-28-04

2004 Std PLAN ES-6F



ES-4D

DETAIL S-SIDE TENON



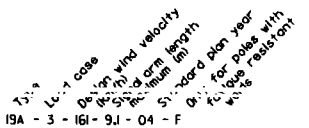
SECTION A-A

IDENTIFICATION NUMBER

Attach a stamped metal tag with each pole's indentification number to shaft above handhole. 7 mm high number minimum.

A similar tag shall be attached to the top of the signal mast arm near the pole plate.

Sample Identification Number



19A - 3 - 161 - 9.1 - 04 - F

Use SL for special load case

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

April 28, 2005

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — Elliot Sattar — No. C42882 — Exp. 03-31-2006 — CIVIL — STATE OF CALIFORNIA

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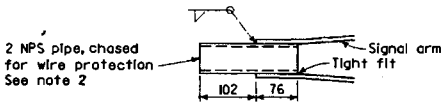
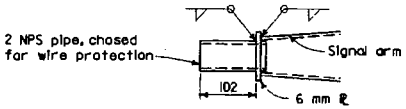
To accompany plans dated _____

PIPE TENONS

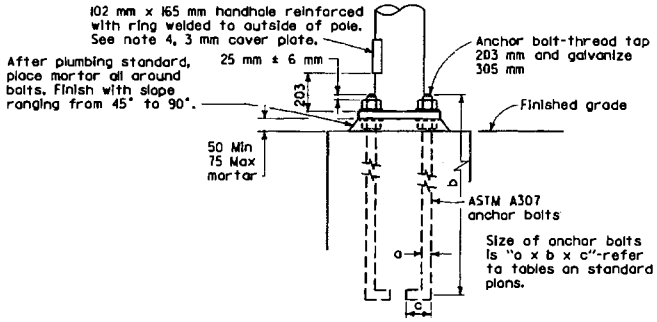


DETAIL TS-TIP TENON

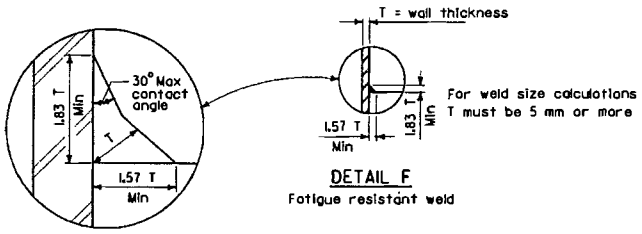


DETAIL TL-TIP TENON

This detail supersedes Detail S when so designated

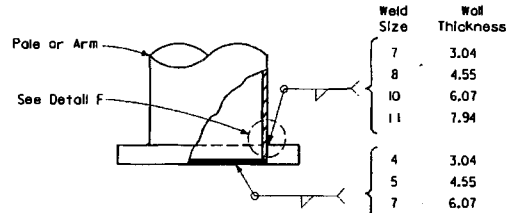


HANDHOLE AND ANCHORAGE DETAILS



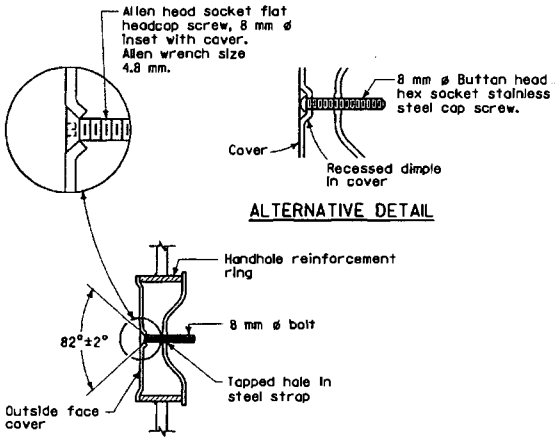
DETAIL F

Fatigue resistant weld



ELEVATION A

Weld Size	Wall Thickness
7	3.04
8	4.55
10	6.07
11	7.94
4	3.04
5	4.55
7	6.07
8	7.94



ALTERNATIVE DETAIL

TAMPER RESISTANT HANDHOLE COVER

GENERAL NOTES

SPECIFICATIONS

DESIGN : AASHTO Standard specifications for structural supports for highway signs, luminaires and traffic signals dated 2001.

Loading

WIND LOADINGS : 161 km/h

Unit Stresses

STRUCTURAL STEEL : fy = 330 MPa tapered steel tube
fy = 250 MPa unless otherwise noted

CONSTRUCTION : Standard Specifications and the Special Provisions

NOTES

1. ASTM A307 anchor bolts are required for each pole. Provide a hex nut, leveling nut and 2 washers for each bolt.
2. Luminaire arms shall be round, tapered steel tubes, taper of 11.45 mm/m to 11.66 mm/m with an end section 60 mm OD for mounting hardware. Extensions of 2 NPS Standard pipe and 178 mm long may be used at the option of the manufacturer. When low pressure sodium luminaires are required, the extension shall be 381 mm.
3. Signal arms shall be round, tapered steel tubes, maximum taper 11.66 mm/m.
4. Handhole reinforcement ring shall be 6 mm x 51 mm for 3.04 mm to 6.07 mm poles, 10 mm x 51 mm for 7.94 mm.
5. Handholes for lighting standards shall be located on the downstream side of the pole unless otherwise noted on the plans.
6. Detail F, fatigue resistant weld, is required at signal arm plate and pole base plate.
7. Cap screws shall be tightened by the turn-of-nut method 1/3 turn to form a snug tight condition. No washer will be required.
8. During pole erection, the post shall be raked as necessary with the use of leveling nuts to provide a plumb pole axis.
9. When Project Plans show a lesser number of signs and signals, the Project Plans shall prevail.
10. Outside diameter, wall thickness, and corresponding section properties at the base of traffic signal poles and arms as shown in the Standard Plans are minimums. Unless otherwise specified, alternative sections require approval by the Engineer.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (SIGNAL AND LIGHTING STANDARDS DETAILS No. 1)

NO SCALE

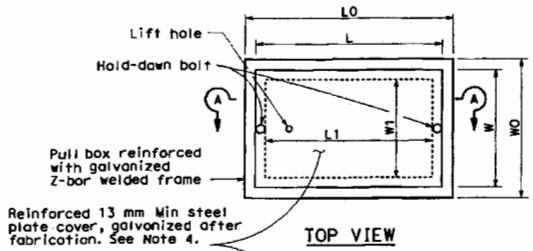
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP ES-7M DATED APRIL 28, 2005 SUPERSEDES RSP ES-7M DATED JANUARY 24,2005 AND STANDARD PLAN ES-7M DATED JULY 1, 2004-PAGE 463 OF THE STANDARD PLANS BOOK DATED JULY 2004.

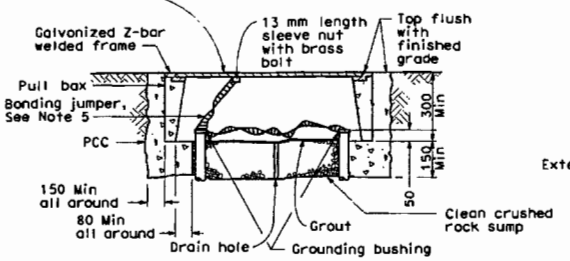
REVISED STANDARD PLAN RSP ES-7M

04-28-05

2004 REVISED Std PLAN RSP ES-7M

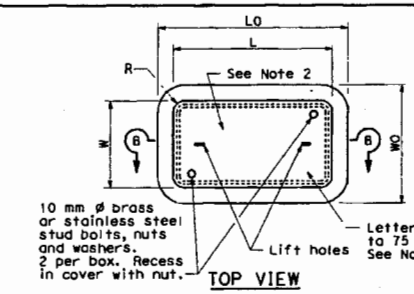


TOP VIEW

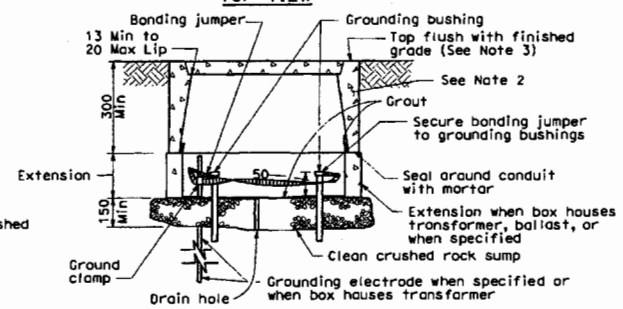


SECTION A-A

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



TOP VIEW



SECTION B-B

INSTALLATION DETAILS

DIMENSION TABLE

PULL BOX	CONCRETE BOX				NON-PCC BOX		CONCRETE OR NON-PCC COVERS				
	Minimum * Thickness	Minimum Depth Box and Extension	LO (mm)	WO (mm)	Minimum ** Thickness	Minimum Depth Box and Extension	L ** (mm)	W ** (mm)	R (mm)	Edge Thickness	Edge Taper
No. 3½	25 mm	No Extension	457	330	8 mm	No Extension	390	260	27	45 mm	3 mm
No. 5	25 mm	560 mm	666	425	8 mm	510 mm	590	350	32	50 mm	3 mm
No. 6	40 mm	610 mm	854	524	10 mm	510 mm	775	444	32	50 mm	3 mm

* Excluding conduit web ** Top dimension

DIMENSION TABLE

PULL BOX	CONCRETE BOX						NON-PCC BOX		CONCRETE OR NON-PCC COVERS				
	Minimum * Thickness	Minimum Depth Box and Extension	LO (mm)	WO (mm)	L1 (mm)	W1 (mm)	Minimum ** Thickness	Minimum Depth Box and Extension	L ** (mm)	W ** (mm)	R (mm)	Edge Thickness	Edge Taper
No. 3½(T)	40 mm	305 mm	530 ±	430 ± 25	370 ±	270 ± 25	Does Not Apply		510 ±	350 ±	0	13 mm	None
No. 5(T)	45 mm	305 mm	750 ±	600 ± 25	480 ±	330 ± 25	Does Not Apply		690 ±	410 ±	0	13 mm	None
No. 6(T)	50 mm	305 mm	900 ±	760 ± 25	600 ±	430 ± 25	Does Not Apply		840 ±	510 ±	0	13 mm	None

* Excluding conduit web ** Top dimension

NOTES ON PULL BOXES:

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. Top of pull boxes shall be flush with surrounding grade or top of adjacent curb, except that in unpaved areas where pull box is not immediately adjacent to and protected by a concrete foundation, pole or other protective construction, the box shall be placed with its top 30 mm above surrounding grade. Where practicable, pull boxes shown in the vicinity of curbs shall be placed adjacent to the back of curb, and pull boxes shown adjacent to standards shall be placed on side of foundation facing away from traffic, unless otherwise noted. When pull box is installed in sidewalk area, the depth of the pull box shall be adjusted so that the top of the pull box is flush with the sidewalk.
4. Pull box covers shall be marked as follows: "SERVICE" Service circuits between service point and service disconnect; "SPRINKLER-CONTROL" Sprinkler control circuits, 50 V or less; "CALTRANS" On all pull boxes, except pull boxes marked "SPRINKLER-CONTROL"; and "TELEPHONE" Telephone service.

   a) No. 3½ pull box.

      1) "SIGNAL" Traffic signal circuits with or without street or sign lighting circuits.

      2) "ST LIGHTING" Street or sign lighting circuits where voltage is under 600 V.

   b) No. 5, 6, 9 or 9A pull box.

      1) "TRAFFIC SIGNAL" Traffic signal circuits with or without street or sign lighting circuits.

      2) "STREET LIGHTING" Street or sign lighting circuits where voltage is under 600 V.

      3) "STREET LIGHTING-HIGH VOLTAGE" Street or sign lighting circuits where voltage is above 600 V.

      4) "IRRIGATION" Circuits to irrigation controller 120 V or more.

      5) "RAMP METER" Ramp meter circuits.

      6) "COUNT STATION" Count or speed monitor circuits.

      7) "COMMUNICATION" Communication circuits.

      8) "TOS COMMUNICATIONS" TOS communications line.

      9) "TOS POWER" TOS power.

      10) "TDC POWER" Telephone demarcation cabinet power.

      11) "CCTV" Closed circuit television circuits.

      12) "TMS" Traffic monitoring station circuits.

      13) "CMS" Changeable message sign circuits.

      14) "HAR" Highway advisory radio circuits.

5. Bonding jumper for metal covers shall be 1 m long, minimum.
6. 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 3 mm greater.
7. 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 3 mm. Top outside edge of concrete covers and pull boxes shall have a 6 mm minimum radius.
8. Pull box shall not be installed within the boundaries of new or existing curb ramps.
9. Pull boxes for electroliers, post and signal standards shall be located ± 1.5 m from the station of the adjacent electrolier, post or signal standard. Pull boxes shall be placed adjacent to back of curb or edge of shoulder except where this is impractical, a box may be placed in another suitable protected and accessible location.

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

Caltrans Metric

Jeffrey G. McRae
REGISTERED ELECTRICAL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Jeffrey G. McRae No. E14512 Exp. 6-30-08 ELECTRICAL STATE OF CALIFORNIA

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To accompany plans dated _____

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (PULL BOX DETAILS)

NO SCALE

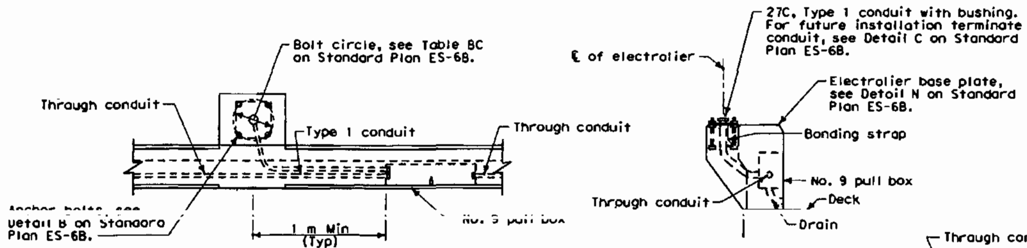
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP ES-8 DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-8 DATED JULY 1, 2004-PAGE 467 OF THE STANDARD PLANS BOOK DATED JULY 2004.

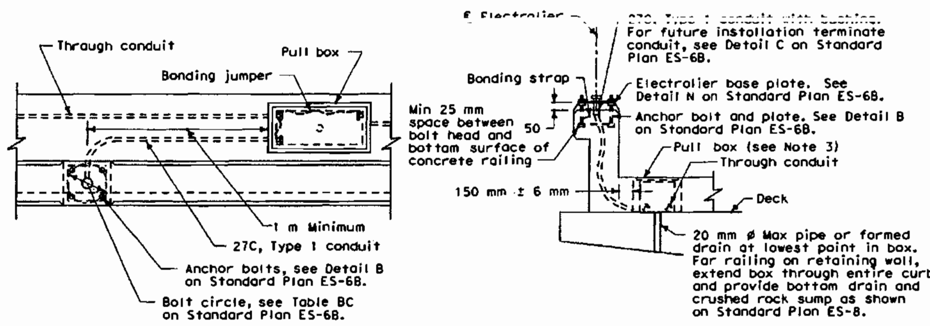
REVISED STANDARD PLAN RSP ES-8

1-3-07

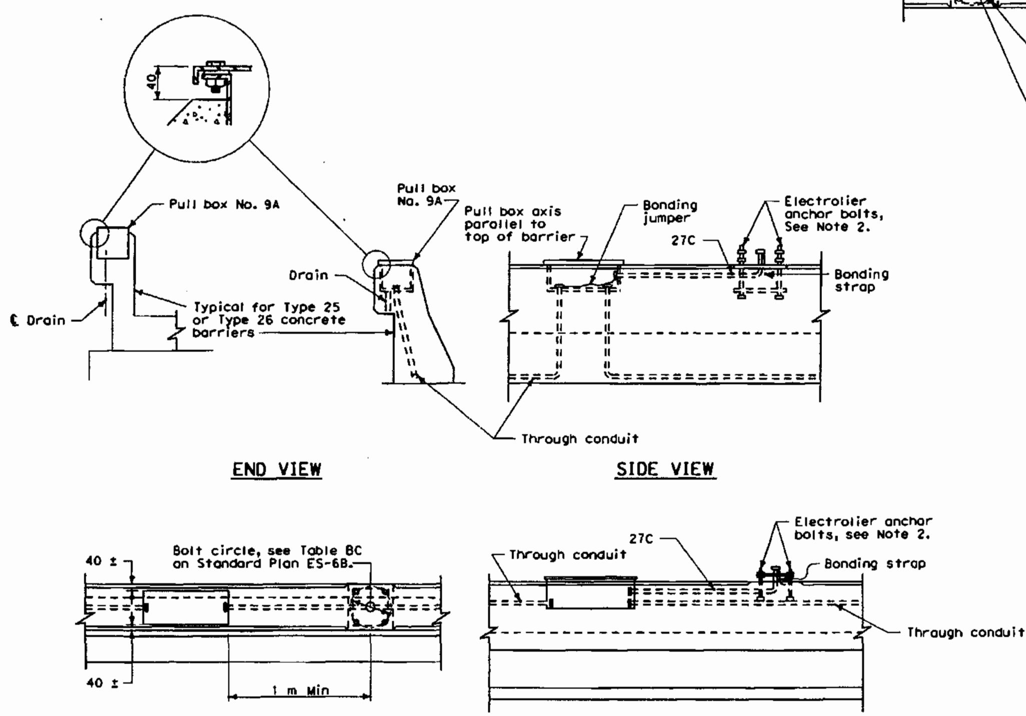
2004 REVISED Std PLAN RSP ES-8



No. 9 PULL BOX INSTALLATION



No. 3½, 5 OR 6 PULL BOX INSTALLATION



No. 9A PULL BOX INSTALLATION

NOTES

1. Axis of pull box shall be parallel to top of barrier, sidewalk or railing.
2. See railing sheet for reinforcement and structural details at electroliers and pull boxes.
3. Top of pull boxes in sidewalk areas shall be flush with sidewalk. Modify base of pull box as required.
4. Boxes inside of vertical barrier or railing shall be closed during pouring of PCC with 6 mm plywood of sufficient size to provide 1:1 chamfer on 3 sides of cover. Upper edge of plywood shall fit against lower edge of raintight hood.
5. Use drain in center if box is horizontal, or at low end if box is inclined. When box is mounted in sloping parapet 12 mm elongated drain hole inside at center or near end as required for drainage.
6. For electrolier anchor bolts, see Standard Plan ES-6B.
7. See Standard Plan B14-3 for conduit bridge railing.

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

Caltrans Metric

REGISTERED ELECTRICAL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Martha V. Styer — No. E13738 — Exp. 6-30-07 — ELECTRICAL — STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (ELECTRICAL DETAILS STRUCTURE INSTALLATIONS)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

ES-9D

07-24-04

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

October 5, 2007
PLANS APPROVAL DATE

Stanley P. Johnson
No. C57793
Exp. 03-31-08
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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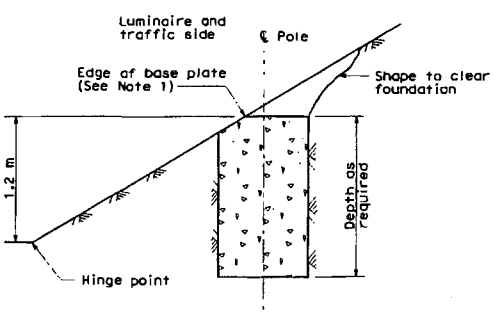
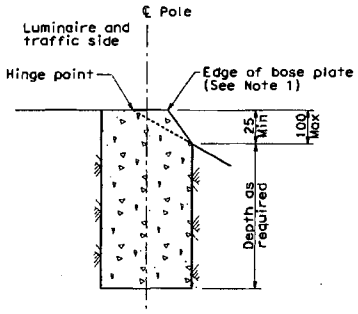
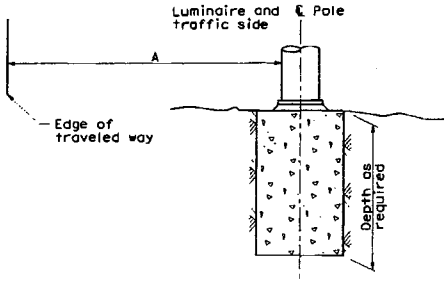
To accompany plans dated _____



CUT SLOPES
STEEPER THAN 1:4
See Note 2



FILL SLOPES
STEEPER THAN 1:4
See Note 2



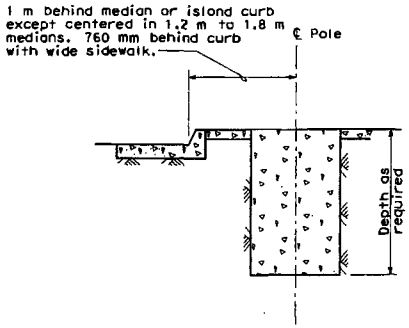
FLAT SECTIONS, CUT OR FILL SLOPES
1:4 OR FLATTER

STANDARD TYPE	SETBACK (DIMENSION A)
32	9 m Min
31, 36-20A	6 m Min
15, 150, 15-5B, 21, 21D, 30	Mast Arm Length (Min)

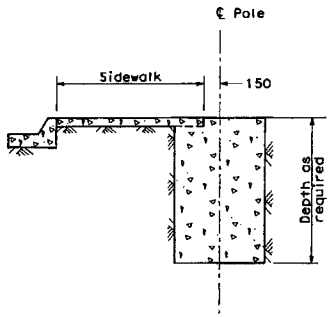
FOUNDATIONS ADJACENT TO ALL ROADWAYS EXCEPT IN SIDEWALK, MEDIAN AND ISLAND AREAS

NOTES:

1. Where a portion of the foundation is above grade, the top edges shall have a 25 mm chamfer.
2. Horizontal setbacks on cut and fill slopes steeper than 1:4 shall not exceed the distance shown for flat sections.



MEDIAN, ISLAND
OR WIDE SIDEWALK
(2 m wide and wider)



NARROW SIDEWALK
(Less than 2 m wide)

FOUNDATIONS IN SIDEWALK, MEDIAN AND ISLAND AREAS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ELECTRICAL SYSTEMS (FOUNDATION INSTALLATIONS)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP ES-11 DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-11 DATED JULY 1, 2004-PAGE 475 OF THE STANDARD PLANS BOOK DATED JULY 2004.

REVISED STANDARD PLAN RSP ES-11

10-11-07

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

Caltrans Metric

LICENSED LANDSCAPE ARCHITECT

December 1, 2006
PLANS APPROVAL DATE

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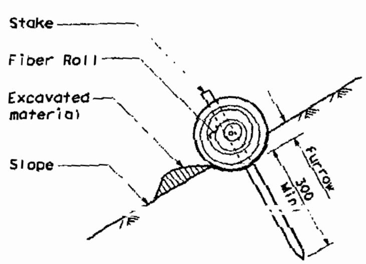
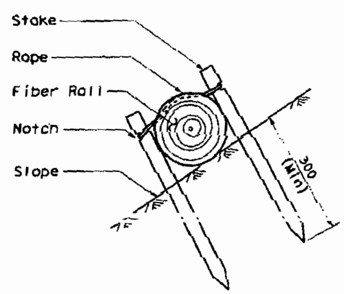
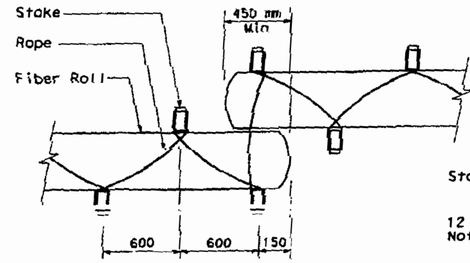


SECTION

FIBER ROLL (TYPE 1)

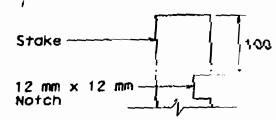


SECTION



PLAN

FIBER ROLL (TYPE 2)

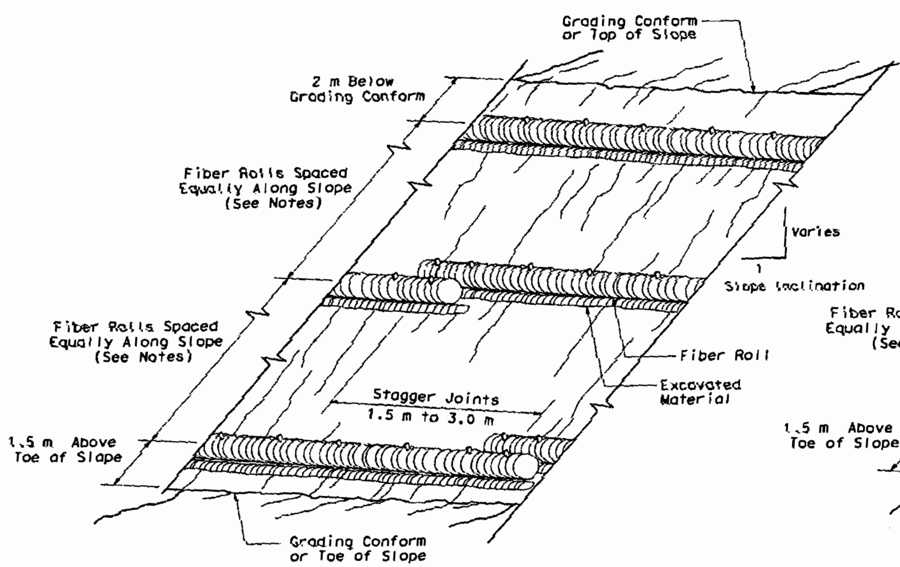


ELEVATION

STAKE NOTCH DETAIL

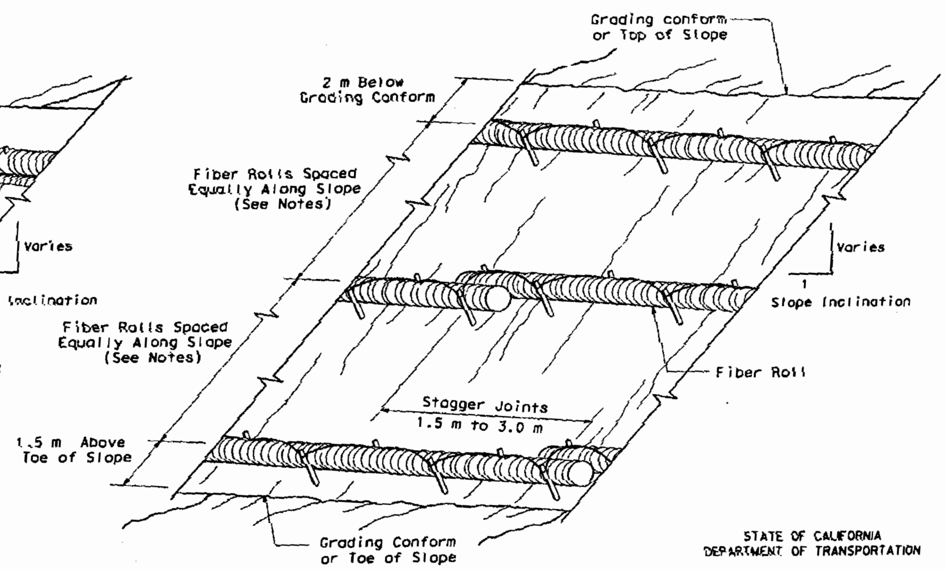
NOTE

1. Fiber roll spacing varies depending upon slope inclination.
2. Installations shown in the perspectives are for slope inclination of 1:10 and steeper.



PERSPECTIVE

FIBER ROLL (TYPE 1)



PERSPECTIVE

FIBER ROLL (TYPE 2)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EROSION CONTROL DETAILS (FIBER ROLL)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

NSP H51 DATED DECEMBER 1, 2006 SUPPLEMENTS THE STANDARD PLANS BOOK DATED JULY 2004.

NEW STANDARD PLAN NSP H51

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

Caltrans Metric

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

Greg W. Edwards No. C36386 Exp. 6-30-06 CIVIL STATE OF CALIFORNIA

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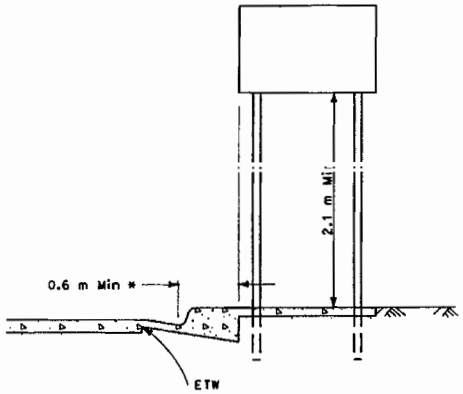
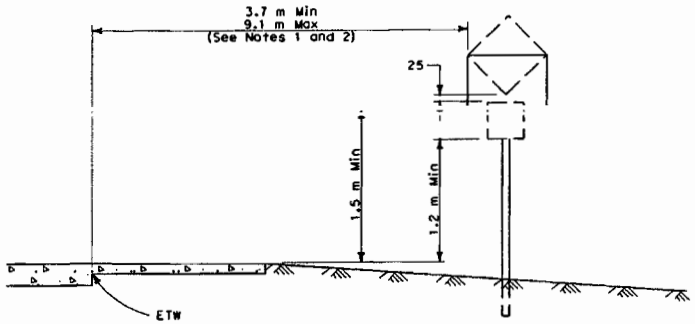


* 0.3 m Min where lateral clearance limited

URBAN LOCATIONS



RURAL LOCATIONS

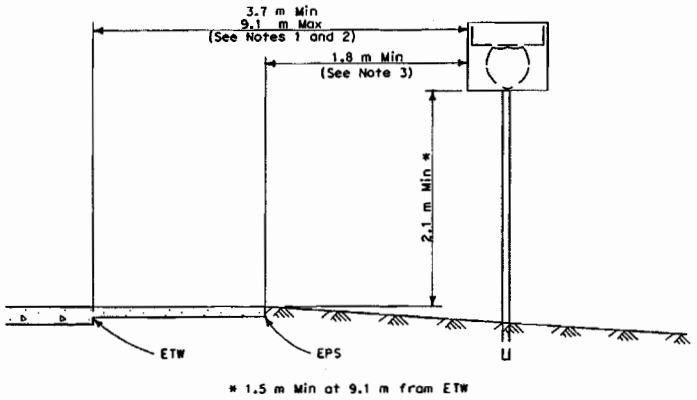
CONVENTIONAL HIGHWAYS AND INTERCHANGE AREAS

NOTES

1. When clear roadside recovery areas are provided, signs shall be placed as far from the edge of traveled way as possible, up to a maximum of 9.1 m. When possible, they shall be placed in protected locations.
2. Signs in medians shall be placed at midpoint of median up to a maximum distance of 9.1 m from edge of traveled way. When appropriate, signs for opposing directions shall be placed back to back.
3. Does not apply at locatiaons where minimum horizontal distance is not reasonable due to terrain characteristics, steep slopes, roadway features, or when signs are installed on structures or signal or lighting standards.

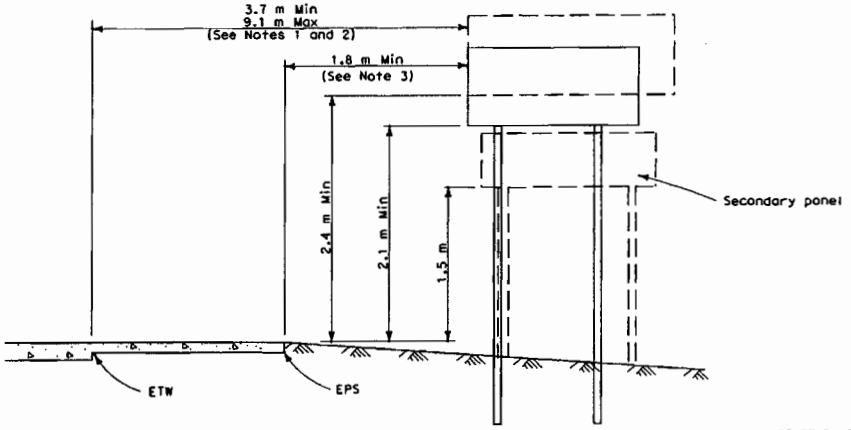
ETW = Edge of Traveled Way

EPS = Edge of Paved Shoulder



* 1.5 m Min at 9.1 m from ETW

REGULATORY AND WARNING SIGNS AND ROUTE SHIELDS



GUIDE SIGNS

FREEWAY AND EXPRESSWAY LOCATIONS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ROADSIDE SIGNS TYPICAL INSTALLATION DETAILS No. 1

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RS1

06-18-04

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

REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

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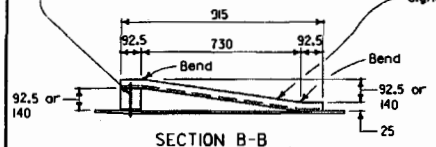
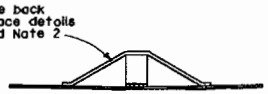
8 mm ø Hex head bolt with flat washers, fiber washer, nut and jam nut.

∠ 25 mm x 25 mm x 3.2 mm Brace. Required for unbalanced signs greater than 915 mm width.



SECTION B-B

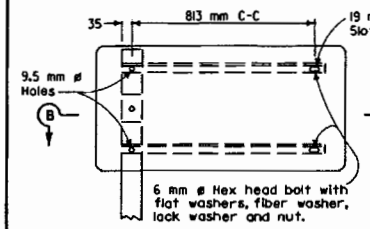


SECTION C-C

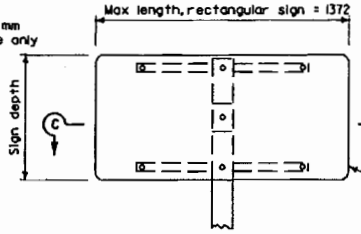
Wood block spacer -
19 mm x 89 mm x 150 mm for 610 mm - 882 mm width signs
38 mm x 89 mm x 150 mm for 940 mm - 1372 mm width signs
} 457 mm or more sign depth

No blocks required on signs less than 457 mm in depth. See Note 2.

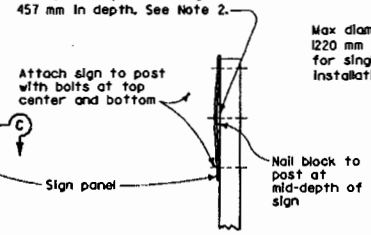
SECTION D-D



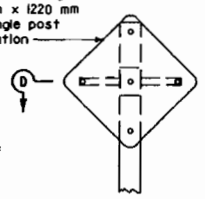
UNBALANCED



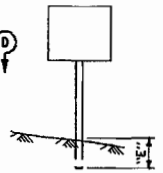
BALANCED



END VIEW



BALANCED



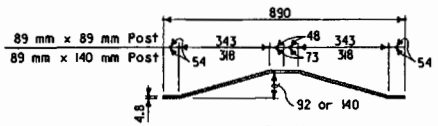
"E" Post Embedment

SINGLE POST INSTALLATION

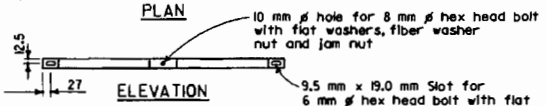
See Note 5 regarding breakaway feature for single post installations.

POST EMBEDMENT	
POST SIZE (mm)	"E" (mm)
89x89	1100
89x140	1400
140x140	1550
140x184	1850

POST SPACING TABLE		
SIGN PANEL LENGTH	SIGN PANEL OVERHANG	POST SPACING
"A"	"B"	"C"
(m)	(mm)	(mm)
1.420 - 1.670	175 - 300	1070
1.830 & 1.980	300 & 375	1230
2.135 & 2.285	375 & 450	1385
2.440	450	1540
2.590	500	1590
2.740	550	1640
2.890	575	1740
2.540	610	1320
3.200	610	1980
3.350, 3.500, 3.660	610, 685, 765	2130
3.810	765	2280
3.960	765	2430
4.110, 4.420	765, 920	2580
4.270, 4.420	840, 915	2590
4.720, 4.870	915, 990	2890
5.030	990	3050
5.180, 5.330	990, 1065	3200
5.490, 5.640	1065, 1140	3360
5.790	1140	3510
5.940, 6.100	1140, 1220	3660
6.250, 6.400	1140, 1215	3970
6.550	1215	4120
6.700, 6.850	1215, 1290	4270
7.010	1290	4430
7.160, 7.310	1290, 1365	4580



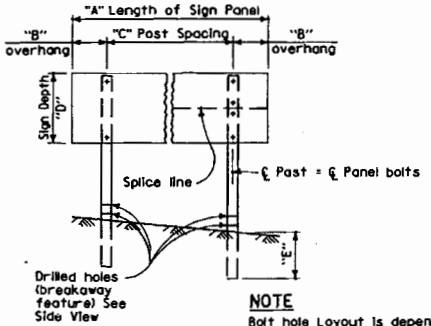
PLAN



ELEVATION

BACK BRACE DETAILS

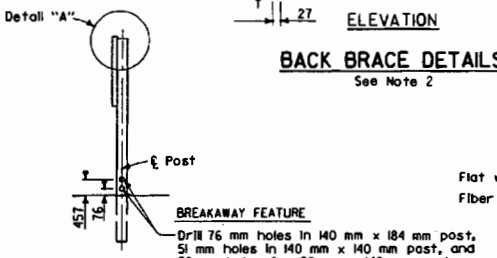
See Note 2



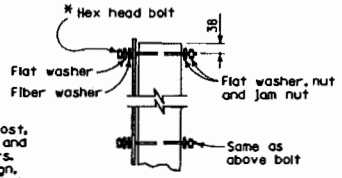
ELEVATION

NOTE

Bolt hole Layout is dependent on type of panel. Drill holes in post to match panel.



SIDE VIEW



DETAIL A

TWO POST INSTALLATION

* 7.9 mm Diameter for single sheet aluminum panel signs.

9.5 mm Diameter for laminated panel signs or framed single sheet aluminum panel signs

NOTES

1. Place long dimension of post cross section normal to sign axis. See Section C-C.
2. Balanced single post installations of unframed single sheet aluminum panel signs shall have block spacers if 457 mm or more in depth and a combination of block spacers and back braces if 457 mm or more in depth and 864 mm or more in width. Sign panels less than 457 mm in depth and 864 mm or more in width shall have back braces only.
3. For post size see sign layout, format or quantity sheets.
4. Balanced single post installations of Laminated Panel and Framed single sheet panel signs require back braces when 864 mm or more in length.
5. Breakaway feature for single post installation shall be the same as the breakaway feature shown for the two post installation.
6. Tolerance for diameter of drilled holes in breakaway feature is ±3 mm.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

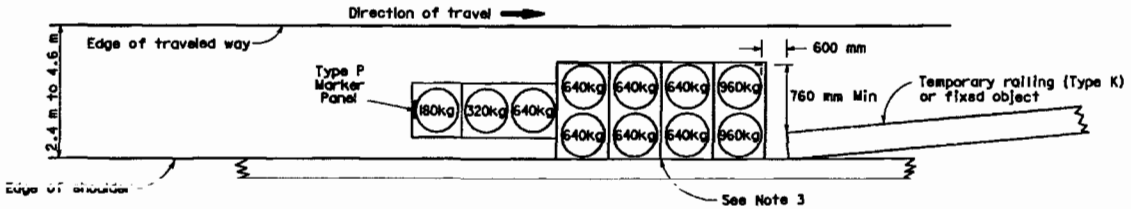
ROADSIDE SIGNS-WOOD POST TYPICAL INSTALLATION DETAILS No. 2

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

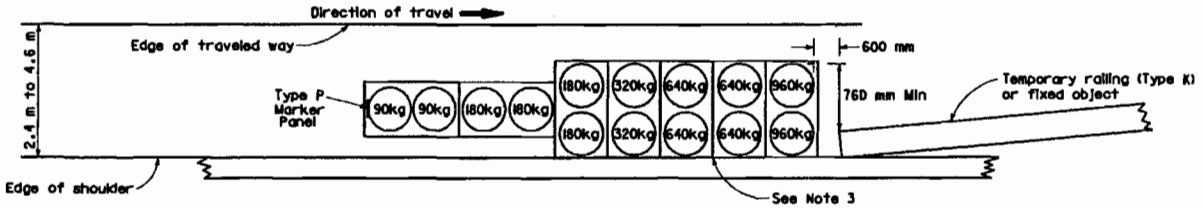
RS2

06-27-04



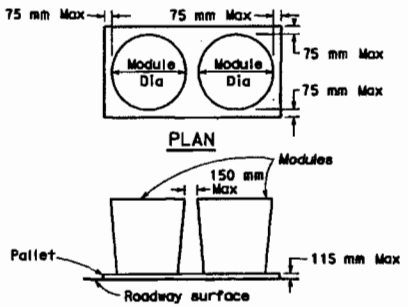
ARRAY 'TSII'

Approach speed less than 70 km/h
See Note 9



ARRAY 'TSI4'

Approach speed 70 km/h or more
See Note 9



CRASH CUSHION PALLET DETAIL

See Note 11

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

Randell D. Hidt
REGISTERED CIVIL ENGINEER

June 6, 2008
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER — Randell D. Hidt — No. C56200 — Exp. 6-30-09 — CIVIL — STATE OF CALIFORNIA

To get to the Caltrans web site, go to: http://www.dot.ca.gov

To accompany plans dated _____

NOTES

1. (XXX) Indicates sand filled module location and mass of sand in kilograms for each module. Module spacing is based on the greater diameter of the module.
2. All sand masses are nominal.
3. The temporary crash cushion arrays shown on this plan shall be used only in locations where there will be traffic on one side of the temporary crash cushion array.
4. If the fixed object or approach end of the temporary railing is less than 4.60 meters from the edge of traveled way, a temporary crash cushion is required.
5. Temporary crash cushion arrays shall not encroach on the traveled way.
6. Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
7. Place the Type P marker panel so that the bottom of the panel rest upon the pallet and faces traffic.
8. Refer to Standard Plan A73B for marker details.
9. For shoulder widths less than 2.4 m, appropriate approved crash cushion protection, other than sand filled modules, shall be provided at fixed objects and at approach ends of temporary railing. The specific type of crash cushion shall be as shown on the project plans or as specified in the Special Provisions, or if not shown on the project plans or specified in the Special Provisions, shall be as approved by the Engineer.
10. Approach speeds indicated conform to NCHRP 350 Report criteria.
11. Use of Pallets is optional.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY CRASH CUSHION, SAND FILLED (SHOULDER INSTALLATIONS)

NO SCALE

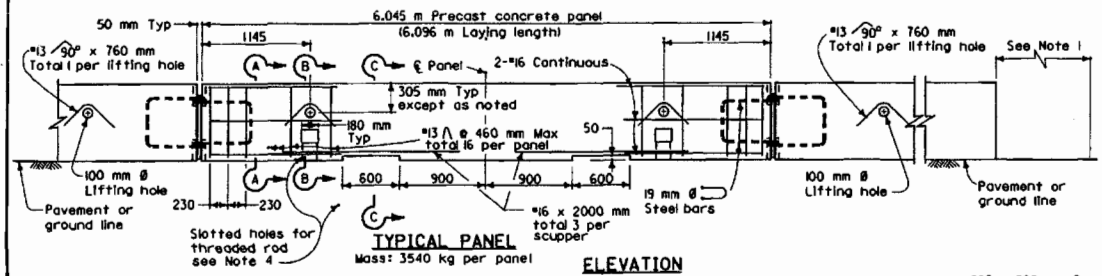
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP T2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T2
DATED July 1, 2004 - PAGE 213 OF THE STANDARD PLANS BOOK DATED July 2004.

REVISED STANDARD PLAN RSP T2

5-16-08

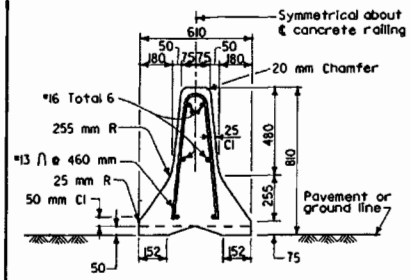
2004 REVISED Std PLAN RSP T2



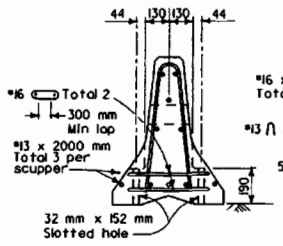
TYPICAL PANEL
Mass: 3540 kg per panel

ELEVATION

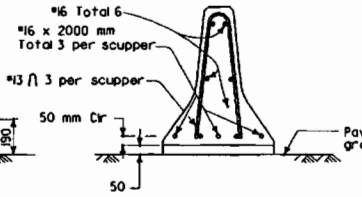
MINIMUM EDGE DISTANCE
See Note 4



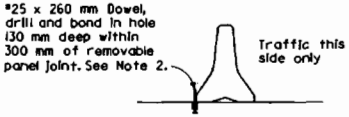
SECTION A-A



SECTION B-B



SECTION C-C

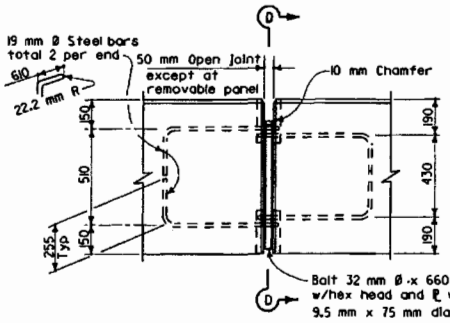


SECTION G-G *

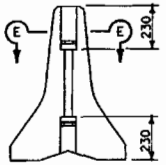
* Section G-G is for PCC pavement. Alternative detail, 25.4 mm ø pins 610 mm long driven in AC or firm soil permitted, minimum 460 mm deep.

NOTES

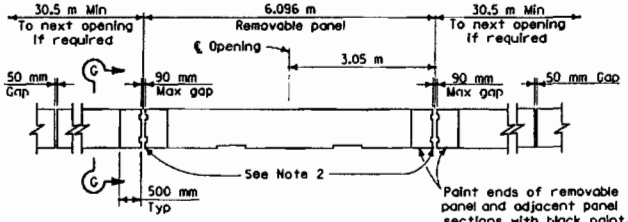
1. For end treatment, layout and crash cushions, where needed, see Project Plans or Special Provisions.
2. All 90 mm gaps at removable panels are to be backed at the base with #25 x 260 mm dowel or 25.4 mm ø pin each side of joint. See Section G-G.
3. Where Temporary Railing (Type K) is placed on curves and radii that are too severe to connect panels with bolted joints, the railing is to be backed continuously with earth fill. See Section F-F.
4. Where the offset distance from the exposed edge of deck to the closest edge of the temporary railing is less than 610 mm, attach each panel to deck slab with 25 mm diameter threaded rods (total four per panel) inserted through the slotted holes of the panel and bond in drilled holes 150 mm deep in the deck slabs. See "Bridge Memo to Designers" Manual.



ELEVATION

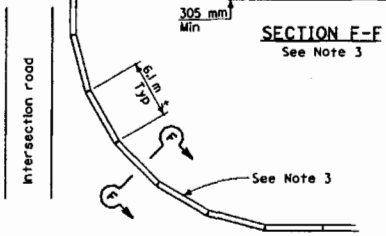


VIEW D-D

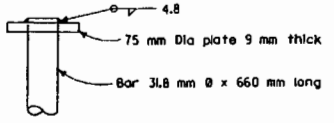


ELEVATION

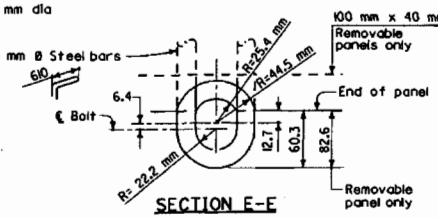
TYPICAL OPENING DETAIL



CURVED LAYOUT

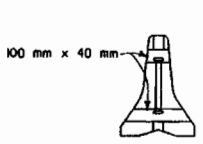


ALTERNATIVE HEAD DETAIL

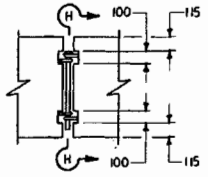


SECTION E-E

BOLT CONNECTION DETAIL



SECTION H-H



ELEVATION

REMOVABLE PANEL GROOVE DETAILS

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

Ellis K. Hirst
REGISTERED CIVIL ENGINEER

July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Ellis K. Hirst
No. C17926
Exp. 6-30-05
CIVIL
STATE OF CALIFORNIA

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY RAILING (TYPE K)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

T3

08-09-04

To accompany plans dated _____

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

November 17, 2006
PLANS APPROVAL DATE

Greg W. Edwards No. C36386 Exp. 6-30-08 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

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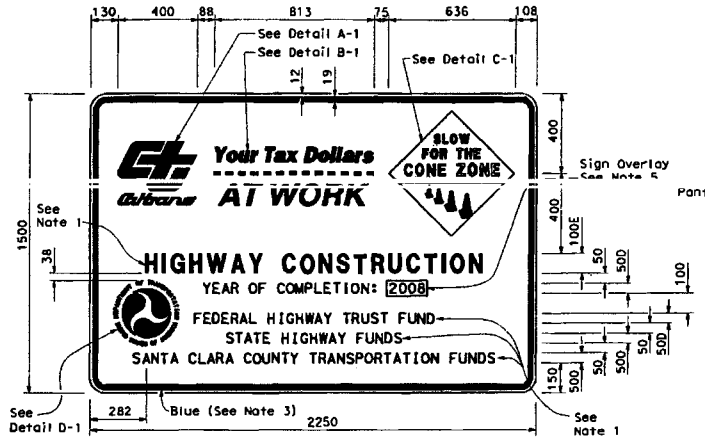
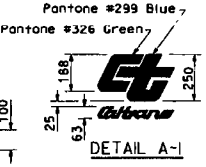
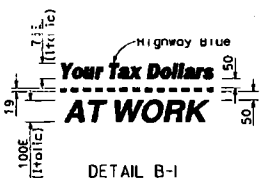


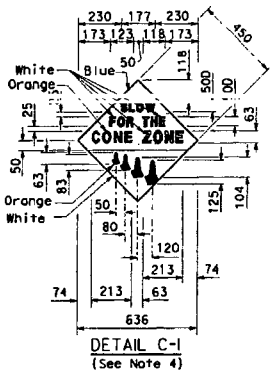
TYPE 1



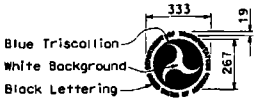
DETAIL A-1



DETAIL B-1
(See Note 3)



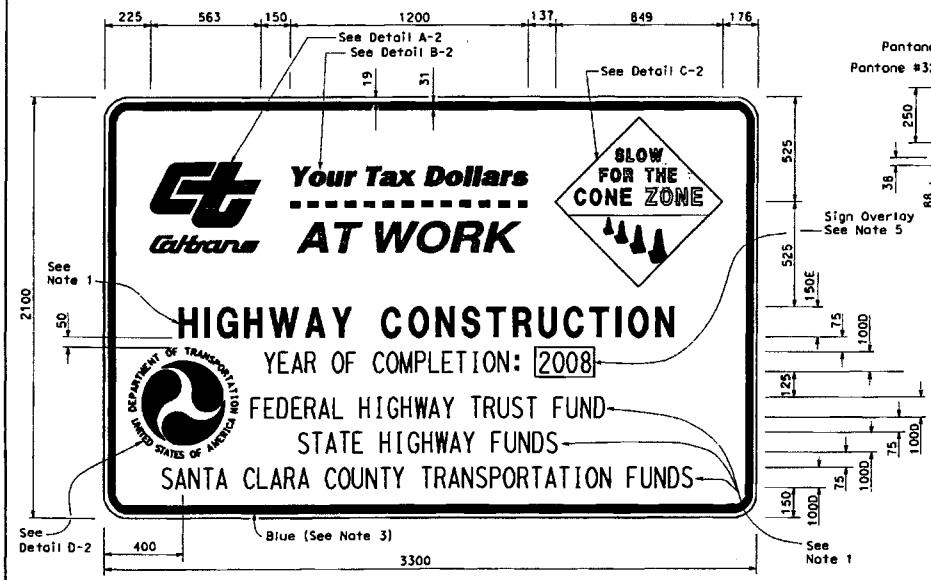
DETAIL C-1
(See Note 4)



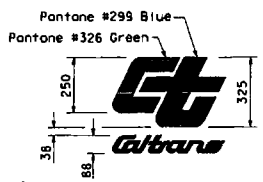
DETAIL D-1
(See Note 6)

NOTES:

1. The sign messages shown for type of project and fund types are examples only. See the Special Provisions for the applicable type of project and fund type messages to be used.
2. Except as otherwise shown, the legend of sign shall be black on a white background (non-reflective).
3. The border of the signs and details "B-1" and "B-2" shall be blue (non-reflective).
4. The diamond in details "C-1" and "C-2" shall be blue for the background of message, " SLOW FOR THE CONE ZONE", and white background for the orange cones. The color and type of font for the "SLOW FOR THE CONE ZONE" message shall be: "SLOW" white D; "FOR THE" white D; "CONE" orange Arial font; "ZONE" white Arial font.
5. Year of completion of project construction shown on the overlay is an example only. See the Special Provisions.
6. Use when the Project involves Federal Highway Trust Fund.

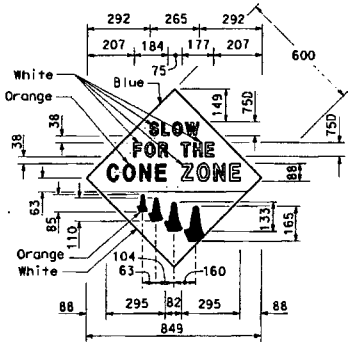


TYPE 2

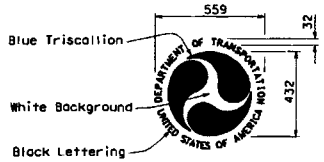


DETAIL A-2

DETAIL B-2
(See Note 3)



DETAIL C-2
(See Note 4)



DETAIL D-2
(See Note 6)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PROJECT FUNDING IDENTIFICATION SIGNS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP T7 DATED NOVEMBER 17, 2006 SUPERSEDES RSP T7 DATED APRIL 28, 2005 AND STANDARD PLAN T7 DATED JULY 1, 2004-PAGE 217 OF THE STANDARD PLANS BOOK DATED JULY 2004.

REVISED STANDARD PLAN RSP T7

8-7-06

NOTES

Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on orange background.

California code are designated by (CA). Otherwise, Federal codes are shown.

To accompany plans dated _____

Caltrans Metric

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

REGISTERED CIVIL ENGINEER

April 28, 2005
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — G.W. Edwards — No. C16386 — Exp. 6-30-06 — CIVIL — STATE OF CALIFORNIA

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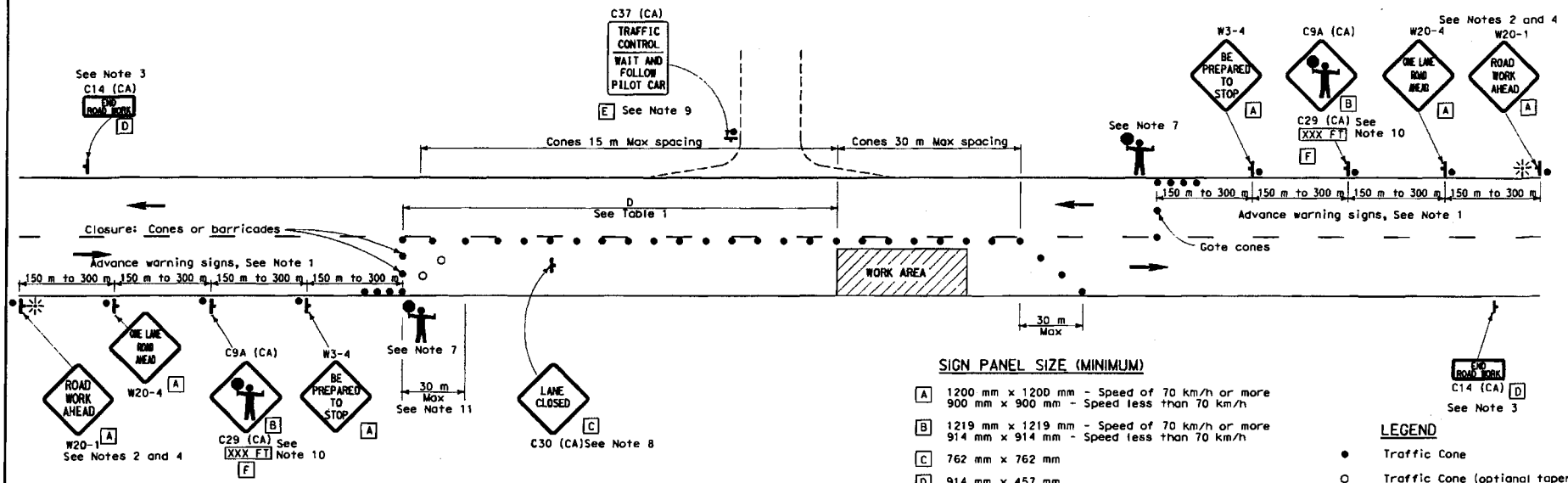
TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL



SIGN PANEL SIZE (MINIMUM)

- A — 1200 mm x 1200 mm - Speed of 70 km/h or more; 900 mm x 900 mm - Speed less than 70 km/h
- B — 1219 mm x 1219 mm - Speed of 70 km/h or more; 914 mm x 914 mm - Speed less than 70 km/h
- C — 762 mm x 762 mm
- D — 914 mm x 457 mm
- E — 914 mm x 1067 mm
- F — 914 mm x 229 mm

LEGEND

- Traffic Cone
- Traffic Cone (optianal taper)
- Temporary Sign
- Direction of Travel
- Portable Flashing Beacon
- Flogger

TABLE I

Approach Speed	Minimum D	Downgrade Minimum D *
km/h	m	m
30	60	72
40	60	72
50	60	72
60	90	108
70	90	108
80	150	180
90	150	180
100	150	180
110	170	204

* Use an substained dawngrade steeper than -3 percent and longer than 1.6 Km.

NOTES

1. Where approach speeds are low, advance warning signs may be placed at 90 m spacing, and closer in urban areas.
2. Each advance warning sign in each direction of travel shall be equipped with at least two flags for daytime closure. Each flag shall be at least 400 mm x 400 mm in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
3. A C14 (CA) "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane control unless the end of work area is obvious, or ends within a larger project's limits.
4. If the W20-1 sign would follow within 600 m of a stationary W20-1 or C11 (CA) "ROAD WORK NEXT_____ MILES", use a C16 (CA) sign for the first advance warning sign.
5. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
6. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime closures only.
7. Additional advance flaggers may be required. Flagger should stand in a conspicuous place, be visible to approaching traffic as well as approaching vehicles after the first vehicle has stopped. During the hours of darkness, the flagging-station and flagger shall be illuminated and clearly visible to approaching traffic. The illumination footprint of the lighting on the ground shall be at least 6 m in diameter. Place a minimum of four cones at 15 m intervals in advance of flagger station as shown.
8. Place C30 (CA) "LANE CLOSED" sign at 150 to 300 m intervals throughout extended work areas. They are optional if the work area is visible from the flagger station.
9. When a pilot car is used, place a C37 (CA) "TRAFFIC CONTROL-WAIT AND FOLLOW PILOT CAR" sign at all intersections within traffic control area. Signs shall be clean and visible at all times.
10. An optional C29 (CA) sign may be placed below the C9A (CA) sign.
11. Traffic cones or barricades may be placed on the optional taper as shown, barricades shall be Type I, II, or III.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

RSP T13 DATED APRIL 28, 2005 SUPERSEDES STANDARD PLAN T13 DATED JULY 1, 2004-PAGE 222 OF THE STANDARD PLANS BOOK DATED JULY 2004.

REVISED STANDARD PLAN RSP T13

04-27-05

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

LICENSED LANDSCAPE ARCHITECT

July 1, 2004
PLANS APPROVAL DATE

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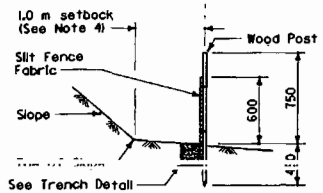
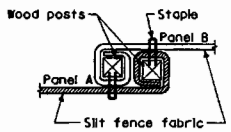
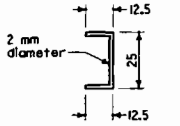


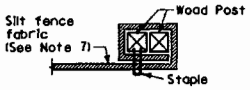
SECTION A-A
TEMPORARY SILT FENCE



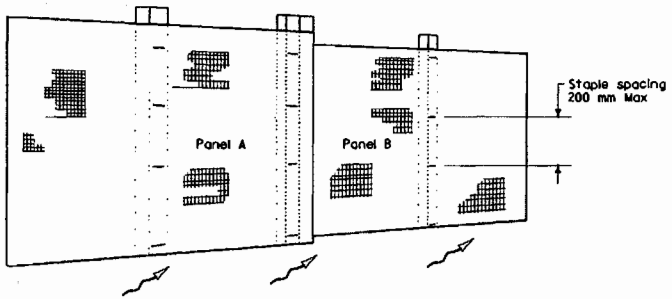
PLAN
POST AT JOINTS



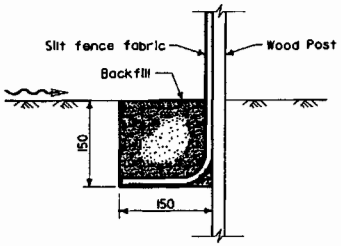
STAPLE DETAIL



PLAN
END POST DETAIL



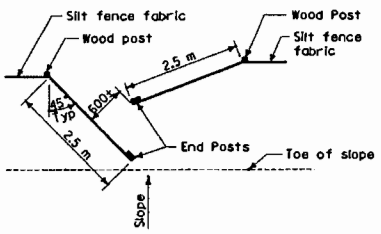
PERSPECTIVE
SILT FENCE PANELS AT JOINTS



SECTION
TRENCH DETAIL

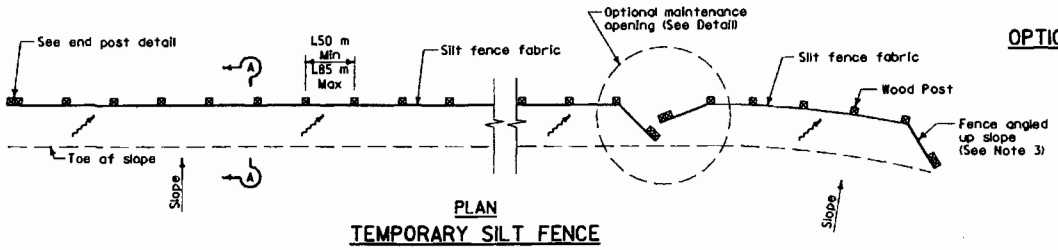
NOTES

1. Install Temporary Silt Fence by first digging trench, driving posts, placing and securing fabric. Then backfill and tamp.
2. Reach length not to exceed 150 meters.
3. The down stream end of the Temporary Silt Fence shall have the last 2.5 meters angled up slope.
4. Setback dimensions may vary to fit field conditions.
5. Posts to overlap and fence fabric to fold around each post one full turn. Secure fabric with 4 staples for each post.
6. Posts shall be driven tightly together to prevent potential flow-through of sediment at the joint. The tops of the posts shall be secured to each other with wire.
7. For each end post, fence fabric shall be folded around two posts one full turn and secured with 4 staples.
8. Minimum of 4 staples shall be installed per post. Dimensions shown are typical.
9. Maintenance openings shall be constructed in a manner to ensure that sediment is retained by the temporary silt fence.
10. Joint sections shall not be placed at sump locations.



PLAN
OPTIONAL MAINTENANCE OPENING DETAIL

LEGEND
- Tamped backfill
- Slope direction
- Direction of flow



PLAN
TEMPORARY SILT FENCE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY SILT FENCE)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

T51

04-23-04

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

Caltrans Metric

LICENSED LANDSCAPE ARCHITECT

July 1, 2004
PLANS APPROVAL DATE

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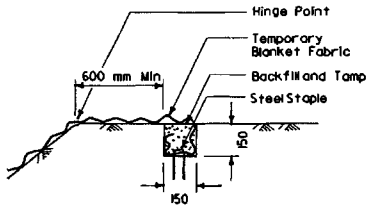
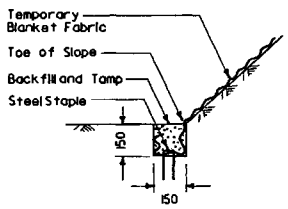


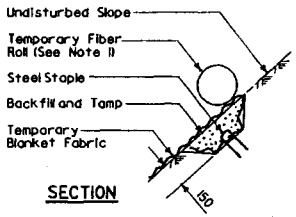
SECTION

DETAIL C
KEY TRENCH AT TOP OF SLOPE



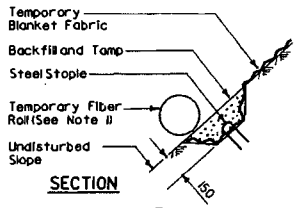
SECTION

DETAIL D
KEY TRENCH AT TOE OF SLOPE



SECTION

DETAIL E
KEY TRENCH AT UPPER CONFORM

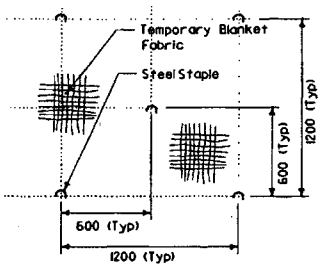


SECTION

DETAIL F
KEY TRENCH AT LOWER CONFORM

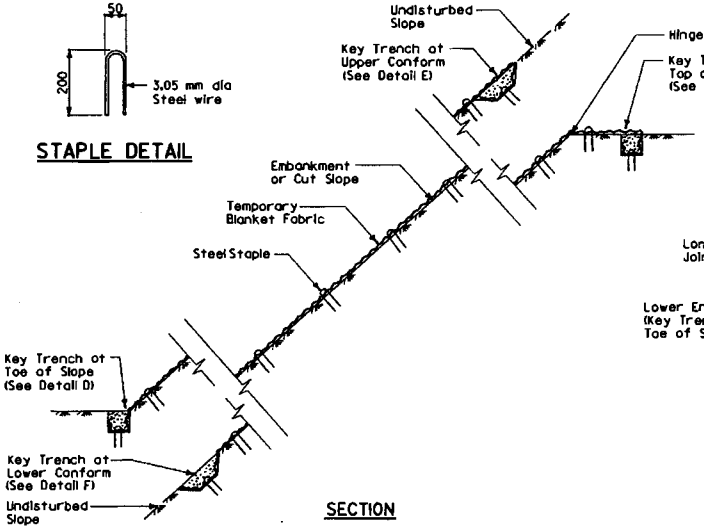
NOTE

1. Temporary fiber roll shown for reference purposes only.



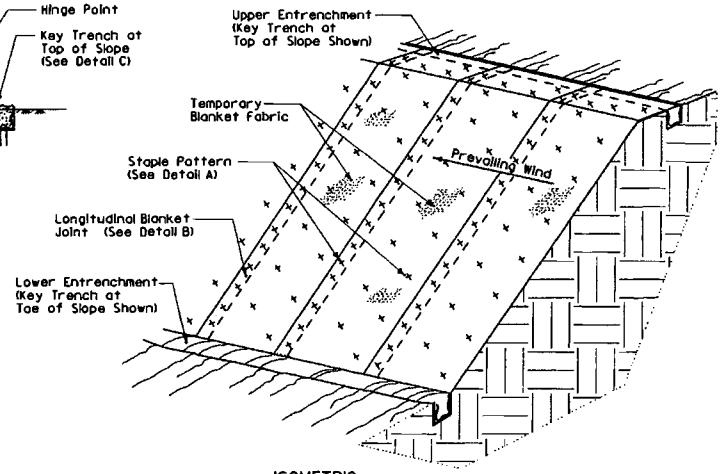
DETAIL A
STAPLE PATTERN

STAPLE DETAIL



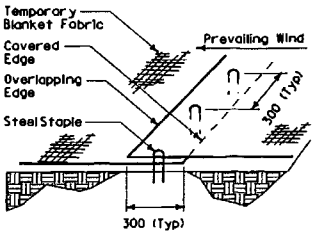
SECTION

TEMPORARY EROSION CONTROL BLANKET
ON SLOPE WITH VARIOUS KEY ENTRENCHMENTS



ISOMETRIC

TEMPORARY EROSION CONTROL BLANKET
ON SLOPE



DETAIL B
LONGITUDINAL BLANKET JOINT

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

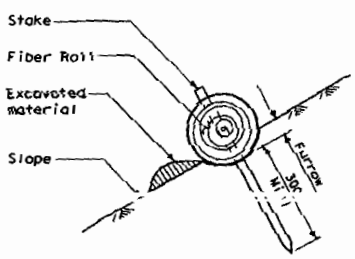
TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY EROSION CONTROL BLANKET)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

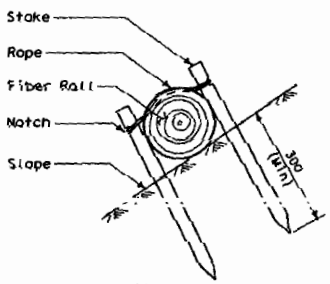
T54

04-23-04

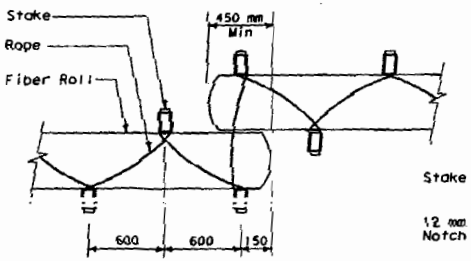


SECTION

TEMPORARY FIBER ROLL (TYPE 1)

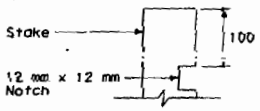


SECTION



PLAN

TEMPORARY FIBER ROLL (TYPE 2)

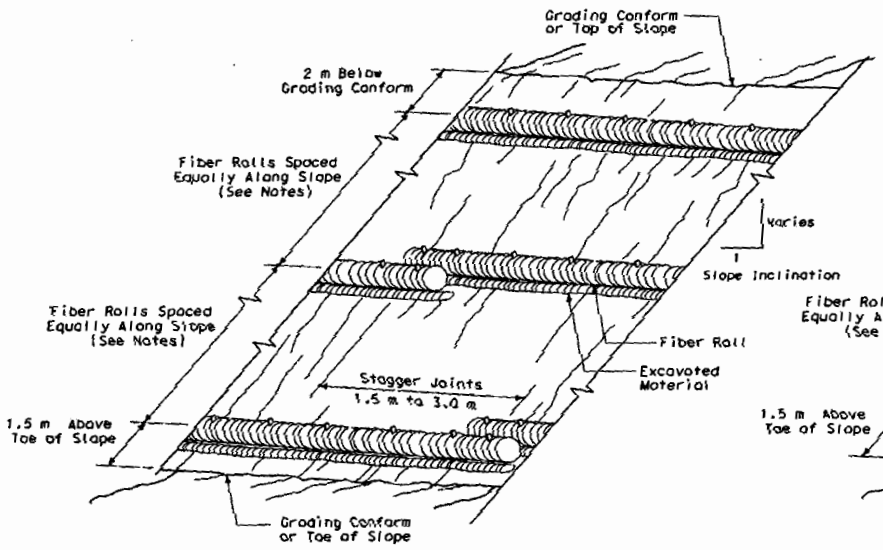


ELEVATION

STAKE NOTCH DETAIL

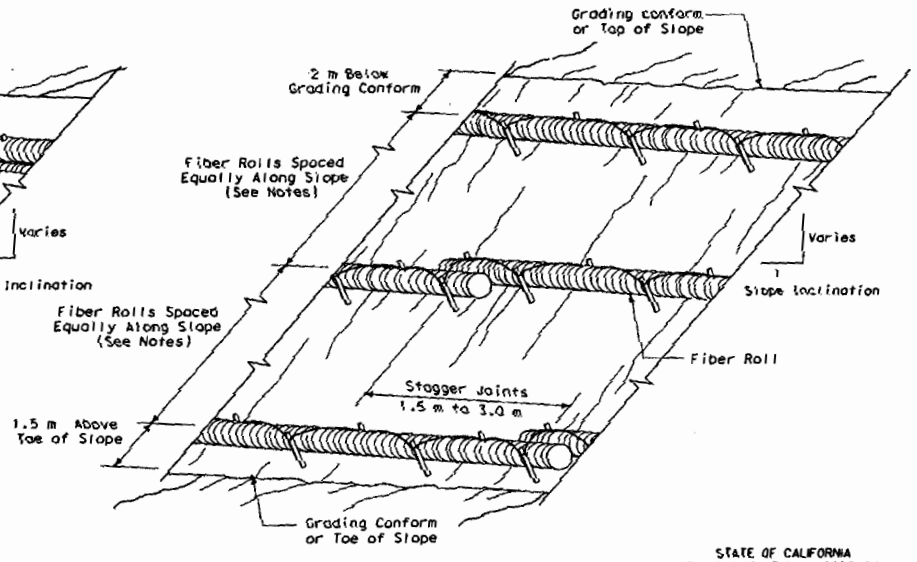
NOTE

1. Temporary fiber roll spacing varies depending upon slope inclination.
2. Installations shown in the perspectives are for slope inclination of 1:0 and steeper.



PERSPECTIVE

TEMPORARY FIBER ROLL (TYPE 1)



PERSPECTIVE

TEMPORARY FIBER ROLL (TYPE 2)

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

Robert D. Shutt
LICENSED LANDSCAPE ARCHITECT

July 1, 2004
PLANS APPROVAL DATE

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STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY FIBER ROLL)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

T56

04-23-04

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

Caltrans Metric

LICENSED LANDSCAPE ARCHITECT

July 1, 2004
PLANS APPROVAL DATE

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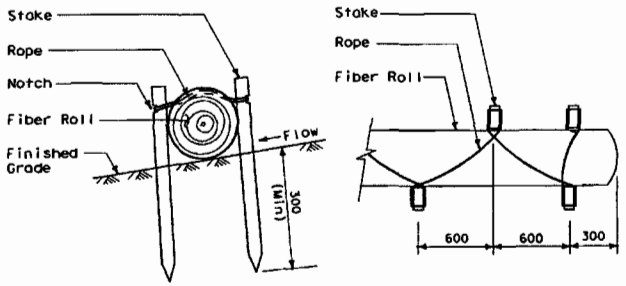
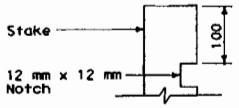


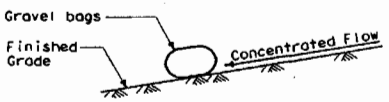
SECTION PLAN

STAKING AND LASHING DETAIL



ELEVATION

STAKE NOTCH DETAIL

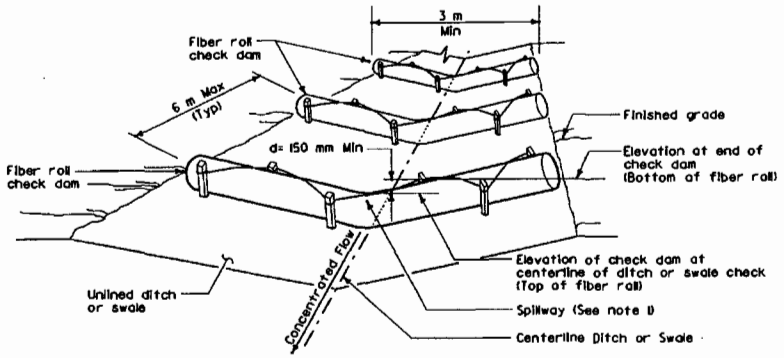


SECTION

TEMPORARY CHECK DAM (TYPE 2)

NOTE

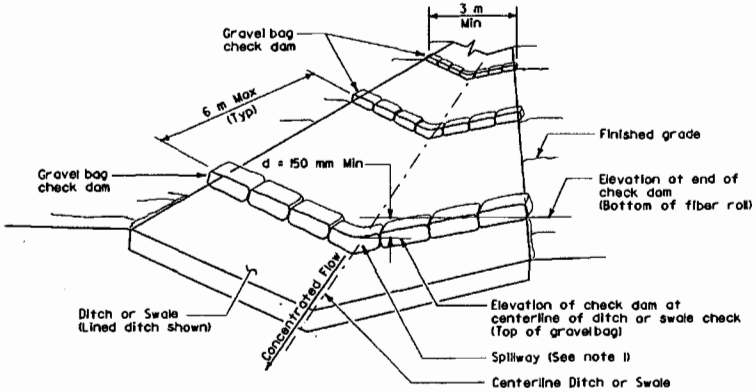
1. Spillway depth 'd' shall be maintained to prevent flanking of concentrated flow around the ends of each check dam.



PERSPECTIVE

TEMPORARY CHECK DAM (TYPE 1)

(Total of 3 check dams shown)



PERSPECTIVE

TEMPORARY CHECK DAM (TYPE 2)

(Total of 3 check dams shown)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY CHECK DAM)

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

T57

04-23-04

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

Caltrans Metric

LICENSED LANDSCAPE ARCHITECT

July 1, 2004
PLANS APPROVAL DATE

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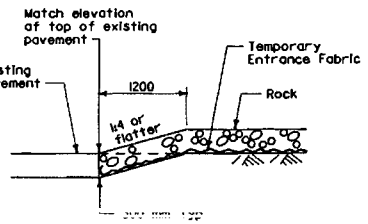
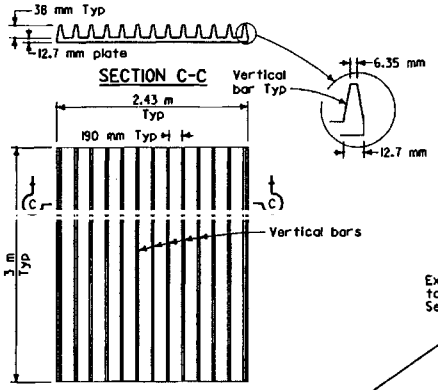
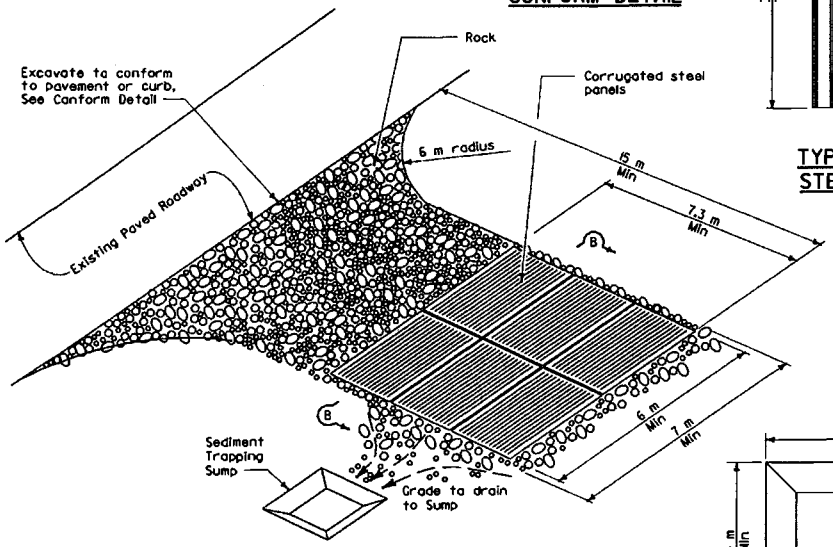


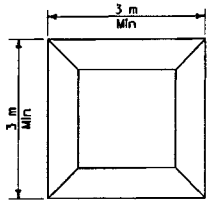
SECTION
CONFORM DETAIL



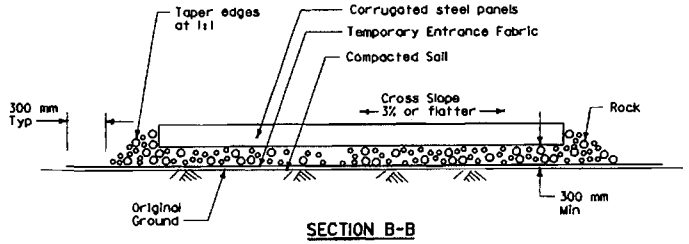
PLAN
TYPICAL CORRUGATED STEEL PANEL DETAIL



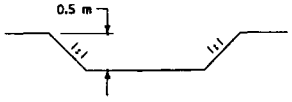
PERSPECTIVE
TEMPORARY CONSTRUCTION ENTRANCE (TYPE 2)



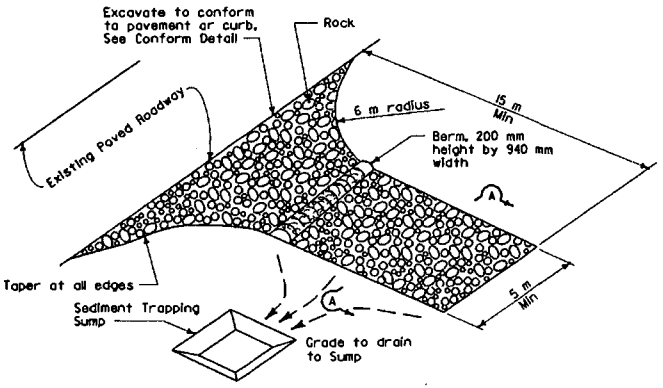
PLAN



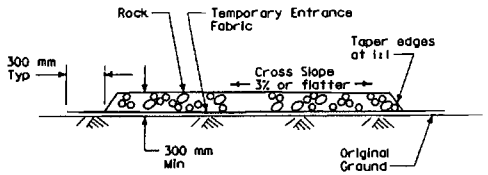
SECTION B-B



ELEVATION
SEDIMENT TRAPPING SUMP



PERSPECTIVE
TEMPORARY CONSTRUCTION ENTRANCE (TYPE 1)



SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

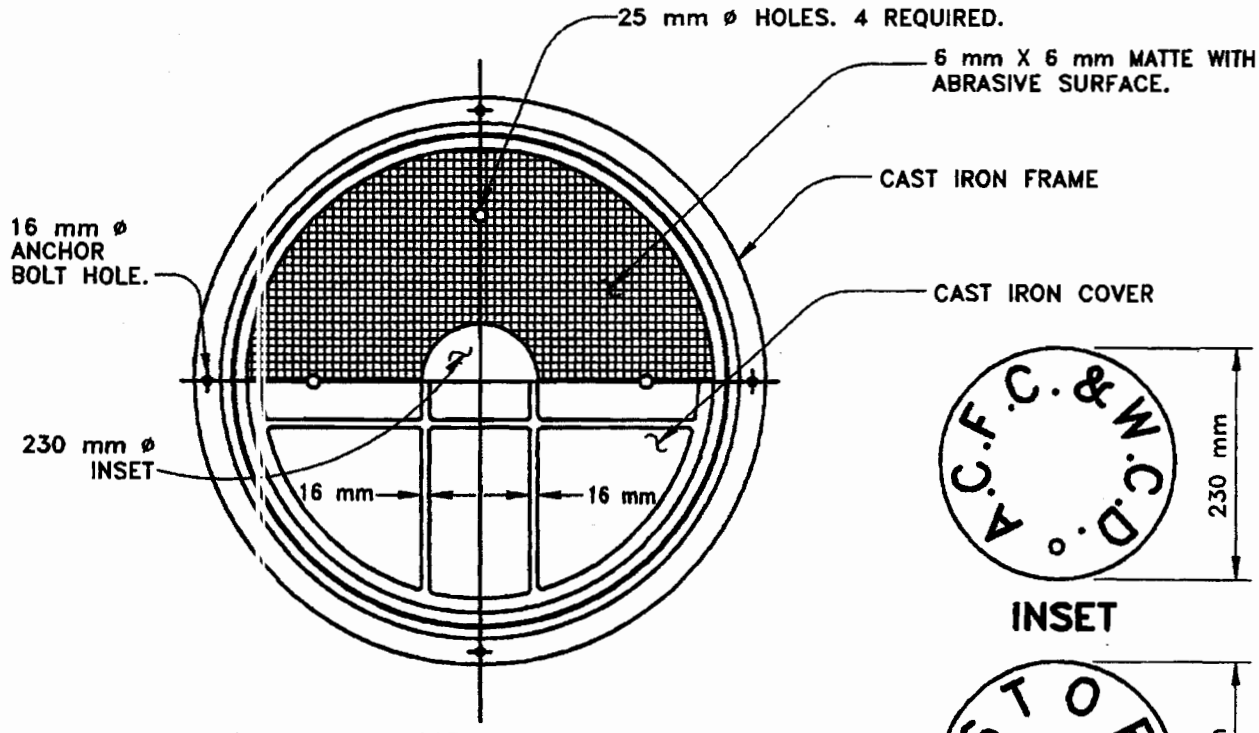
TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY CONSTRUCTION ENTRANCE)

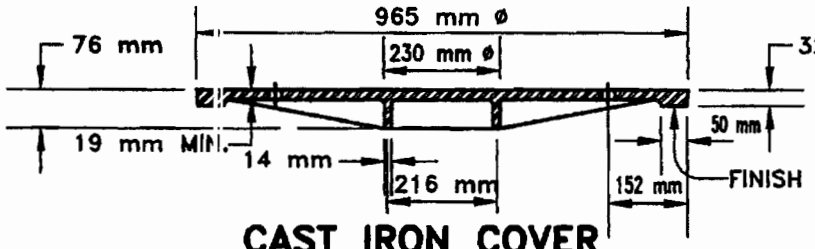
NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

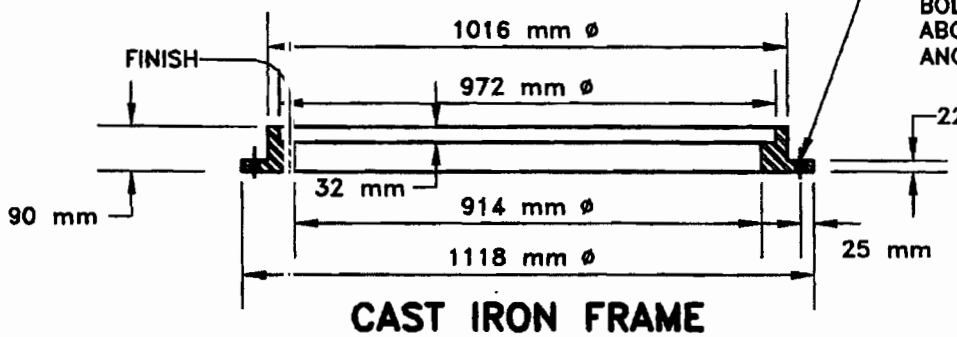
T58

04-23-04





CAST IRON COVER



CAST IRON FRAME

NOTE:
ALL CONTACT END BEARING SURFACES OF BOTH FRAME AND COVER SHALL BE MACHINED TO FIT ACCURATELY SO THAT COVERS WILL NOT ROCK AND SHALL BE MATCH-MARKED IN PAIRS BEFORE DELIVERY. INSET TO BE DETERMINED BY ENGINEER.

ALAMEDA COUNTY Metric
UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

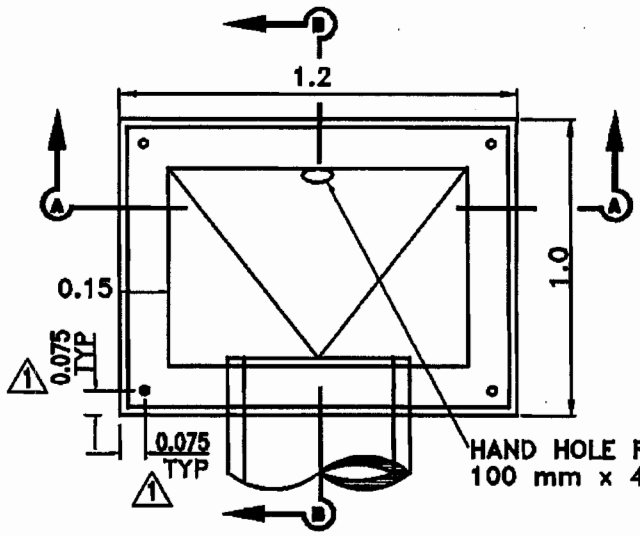
MANHOLE FRAME AND COVER TYPE 1

APPROVAL REC.
APPROVED
APPROVED
COUNTY ENGINEER

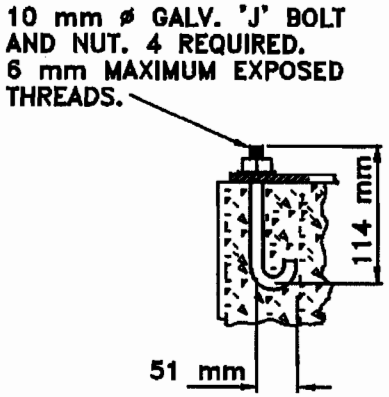
REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-305	1 of 1

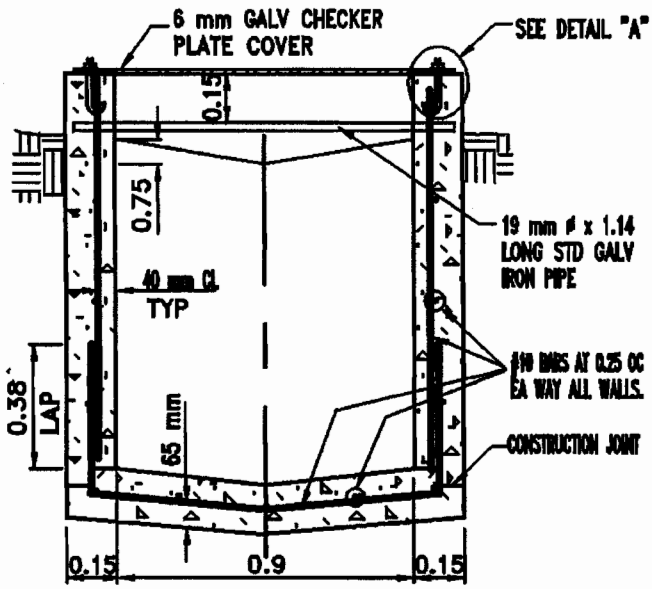
PLOT SCALE: 1 = 14



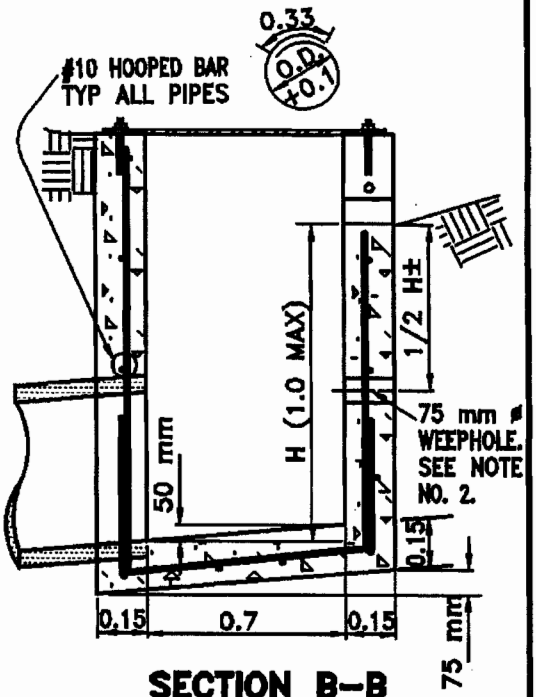
PLAN



DETAIL "A"



SECTION A–A



SECTION B–B

NOTES:

1. REINFORCING STEEL MAY BE BENT, CUT OR SPREAD AS DIRECTED BY THE ENGINEER TO PERMIT PIPE CONNECTION.
2. PLACE 0.03 CUBIC METER OF CRUSHED ROCK OR GRAVEL IN A BURLAP SACK BEHIND WEEPHOLE.

ALAMEDA COUNTY Metric

UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

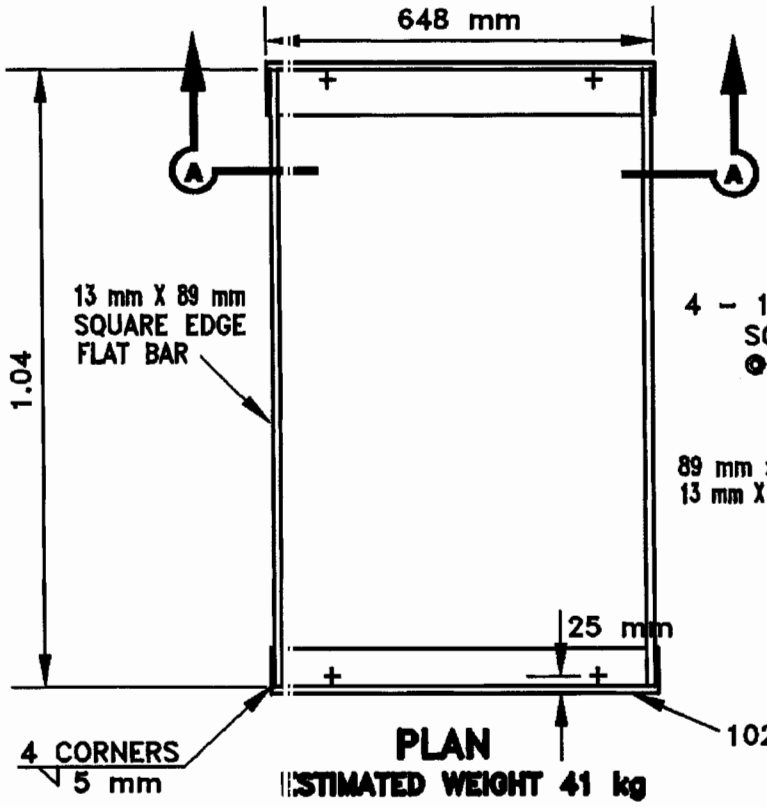
COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

			APPROVAL REC.
			APPROVED
			APPROVED
1	TYPO	JC	
REVISIONS			COUNTY ENGINEER

FIELD INLET TYPE 3

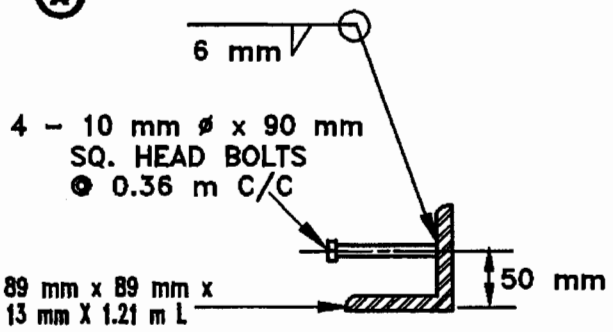
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1996	NONE	DG-315A	1 of 1

PLOT SCALE: 1 = 22



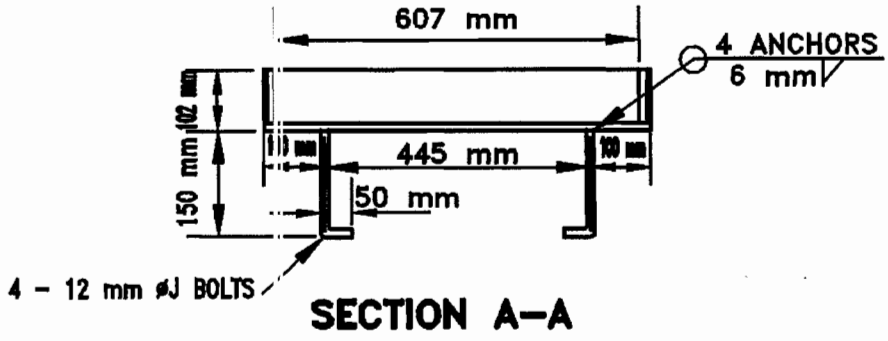
PLAN

ESTIMATED WEIGHT 41 kg



CURB OPENING ANGLE

ESTIMATED WEIGHT 20.5 kg



SECTION A–A

NOTES:

1. ALL METAL SHALL BE STRUCTURAL GRADE STEEL OR BETTER.
2. GRATINGS AND FRAMES ARE TO BE ASSEMBLED AND MADE TO FIT BEFORE DELIVERY TO THE JOB SITE.
3. ALL STEEL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION. GALVANIZED SURFACES THAT ARE ABRADED SHALL BE REPAIRED AS SPECIFIED IN SECTION 75–1.05, "GALVANIZING" OF THE STANDARD SPECIFICATIONS
4. CURB OPENING ANGLE IS PART OF THE FRAME FOR CURB INLETS.

ALAMEDA COUNTY Metric

UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

FRAME AND GRATE

REVISIONS			

APPROVAL REC.

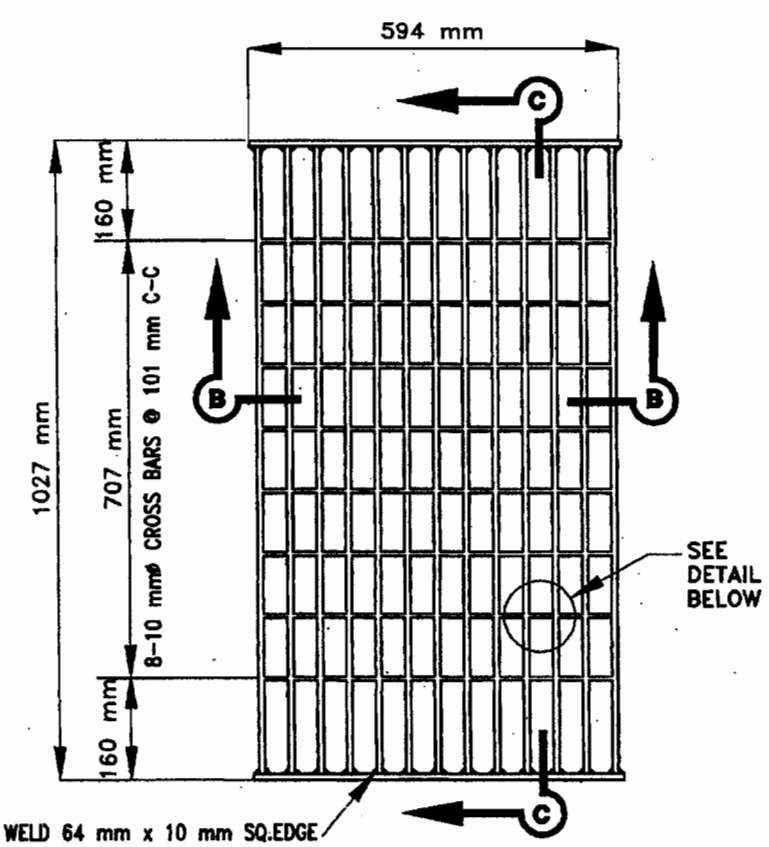
APPROVED

APPROVED

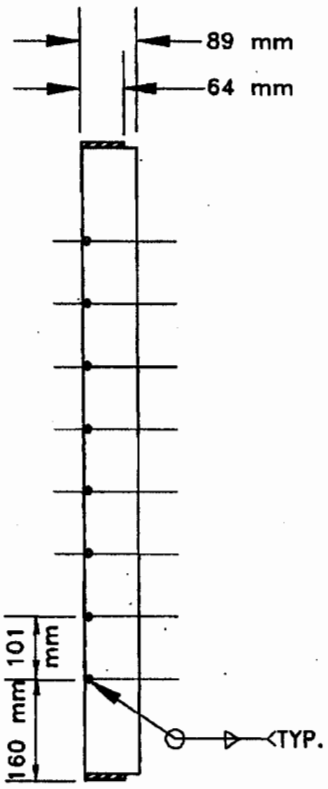
COUNTY ENGINEER

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1996	NONE	DG–317A	1 of 2

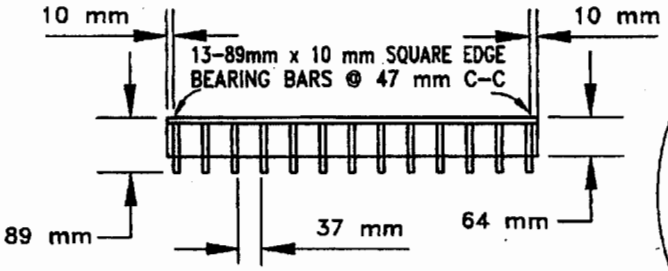
PLOT SCALE: 1 = 12



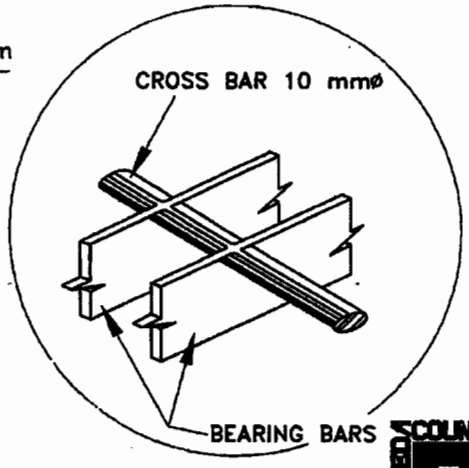
PLAN



SECTION C-C



SECTION B-B



DETAIL

NOTES:

1. 10 mm CROSS BARS MAY BE FILLET WELDED, RESISTANCE WELDED, OR ELECTROFORGED TO BEARING BARS.
2. ESTIMATED WEIGHT 95 kg.

ALAMEDA COUNTY Metric
UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

FRAME AND GRATE

APPROVAL REC.

APPROVED

APPROVED

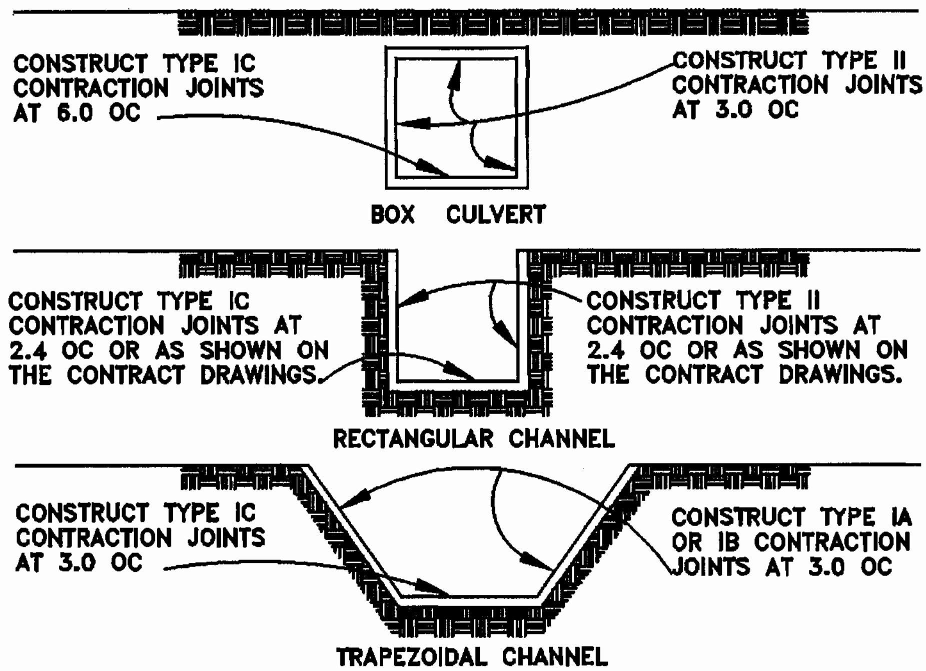
COUNTY ENGINEER

REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-317	2 of 2

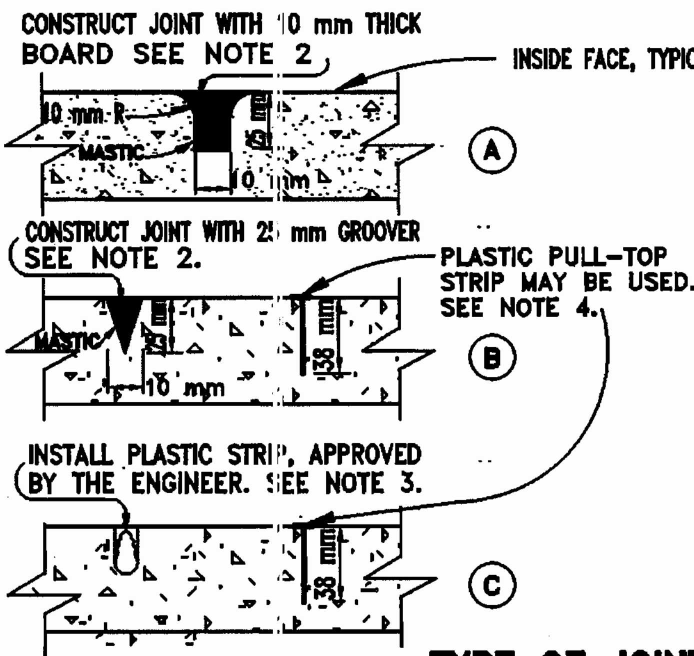
PLOT SCALE: 1 = 12

UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

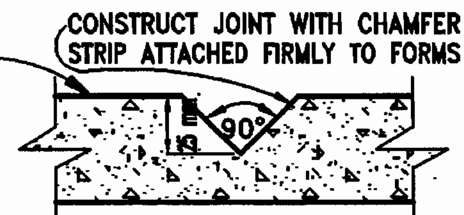


LOCATION AND SPACING OF JOINTS

TYPE I



TYPE II



NOTES:

1. ALIGN TOP AND BOTTOM JOINTS WITH WALL JOINTS.
2. CLEAN JOINT AND FILL WITH MASTIC, CONCRETE- JOINT SEALER CONFORMING TO ASTM DESIGNATION: D1850.
3. PLASTIC STRIP SHALL BE TYPE KSRC-150-38-58 AS MANUFACTURED BY KOLD-SEAL OR TYPE. KSF-150-38-58 AS MANUFACTURED BY WESTERN TEXTILE CO. OR APPROVED EQUAL.
4. PLASTIC PULL-TOP STRIP SHALL BE "ZIP STRIP" NO.237 AS FURNISHED BY BURKE CO. OR APPROVED EQUAL.

TYPE OF JOINTS

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

CONTRACTION JOINTS

REVISIONS

APPROVAL REC.

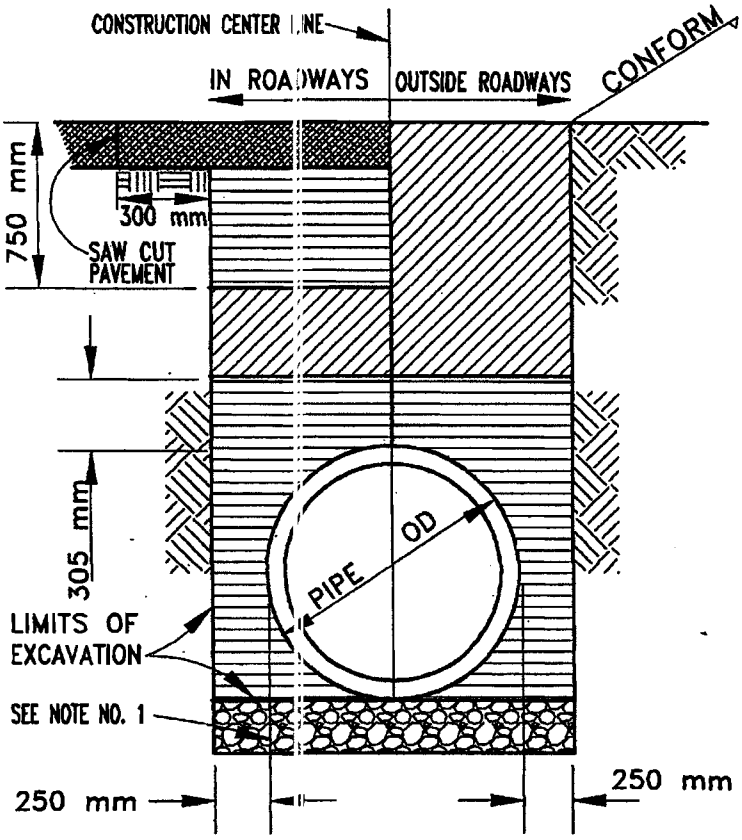
APPROVED

APPROVED

COUNTY ENGINEER

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JAN 1996	NONE	DG-411	1 of 1

PLOT SCALE: 1 = 1



TRENCH CONDITION

LEGEND (SEE NOTE NO.2)

- ROADWAY STRUCTURAL SECTION (SEE PLANS)
- STRUCTURAL BACKFILL (CULVERT) 95% RELATIVE COMPACTION
- STRUCTURAL BACKFILL (CULVERT) 90% RELATIVE COMPACTION
- CULVERT BEDDING (SEE NOTE NO. 1)
- STRUCTURAL EXCAVATION
- ORIGINAL GROUND

NOTES:

1. EXCAVATE UNSUITABLE SUBGRADE BELOW THE LIMIT OF EXCAVATION AND REPLACE WITH CULVERT BEDDING MATERIAL, ONLY IF SO DIRECTED BY THE ENGINEER. OVER EXCAVATION DUE TO FAILURE OF THE CONTRACTOR TO MAINTAIN SUBGRADE SHALL BE REPLACED WITH CULVERT BEDDING AT THE CONTRACTOR'S EXPENSE.

2. MATERIALS SHALL CONFORM TO THE ALAMEDA COUNTY PUBLIC WORKS AGENCY SPECIFICATIONS AND THE CALTRANS STANDARD SPECIFICATIONS AS MODIFIED BY COUNTY SPECIAL PROVISIONS. REINFORCED CONCRETE PIPE SHALL BE CLASS III, MINIMUM.

3. FOR PIPES INSTALLED IN AN EMBANKMENT CONDITION, THE CONTRACTOR SHALL ENSURE THAT MINIMUM EMBANKMENT HEIGHT CRITERIA IS SATISFIED PRIOR TO EXCAVATING THE TRENCH. EMBANKMENT HEIGHT PRIOR TO EXCAVATION FOR PIPE INSTALLATION SHALL BE 2/3 OD (MIN. OF 760 mm) FOR PIPES UP TO 2100 mm ø. FOR PIPES GREATER THAN 2100 mm ø, 1520 mm MINIMUM EMBANKMENT IS REQUIRED. SEE SHEET NO. 2.

4. WHERE PIPE COVER IS LESS THAN 1 m, THE PIPE LOAD CARRYING CAPACITY SHALL BE INCREASED AND OTHER MODIFICATIONS MADE AS APPROVED BY THE ENGINEER.

ALAMEDA COUNTY Metric

UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

TYPICAL PIPE SECTION

APPROVAL REC.

APPROVED

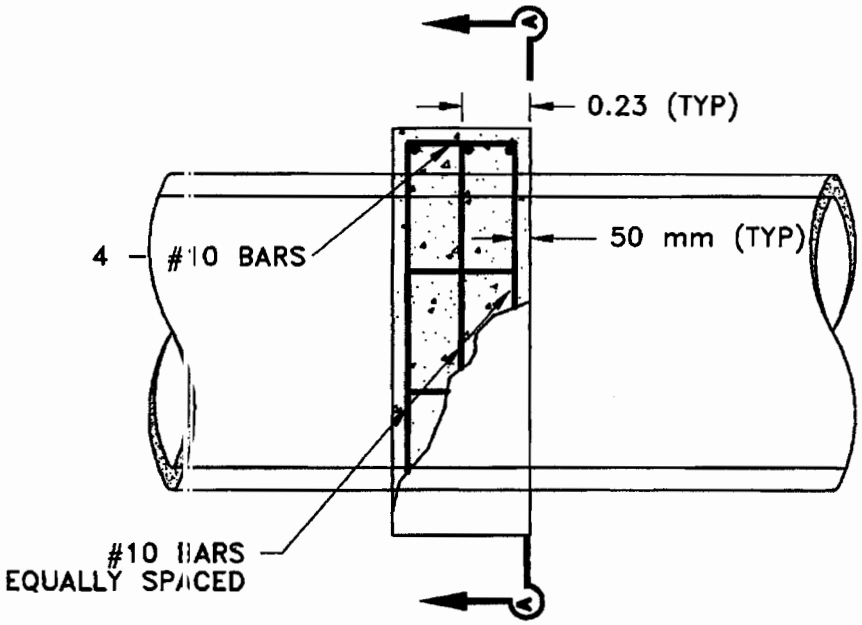
APPROVED

COUNTY ENGINEER

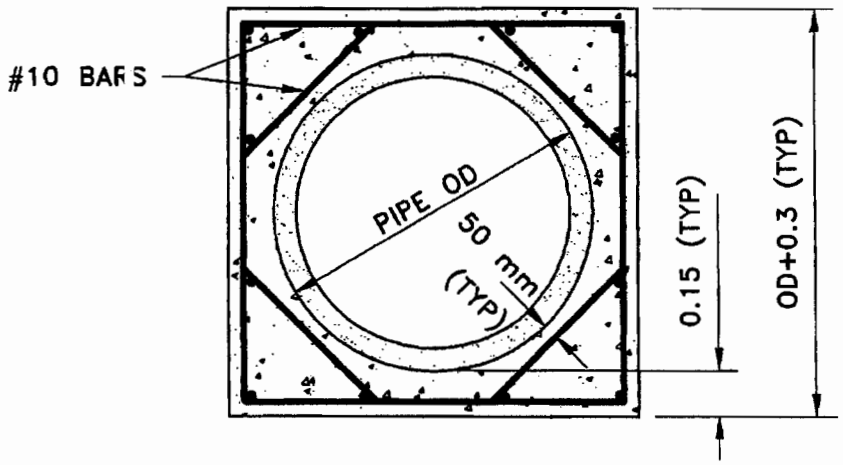
REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-501	1 of 2

PLOT SCALE: 1 = 1



PLAN



SECTION A–A

ALAMEDA COUNTY Metric

UNITS ARE IN METERS
UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

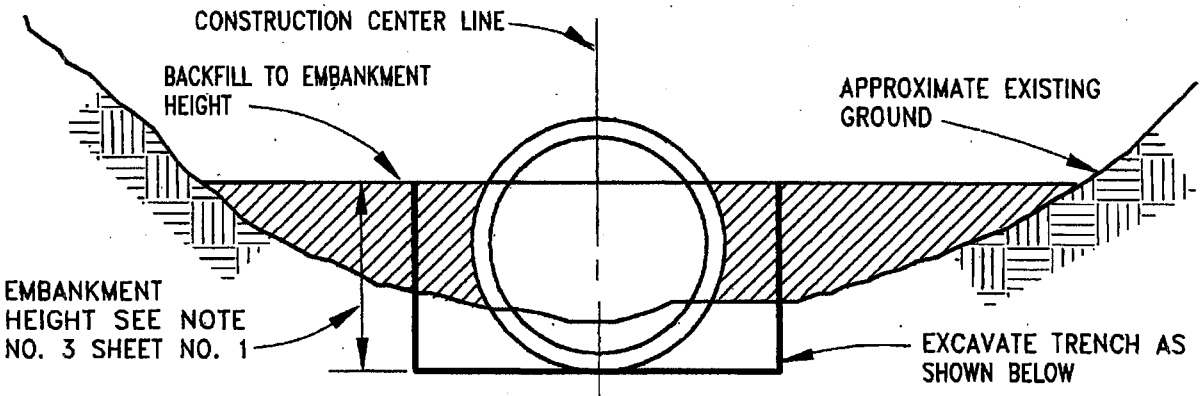
REINFORCED CONCRETE PIPE COLLAR

APPROVAL REC.
APPROVED
APPROVED
COUNTY ENGINEER

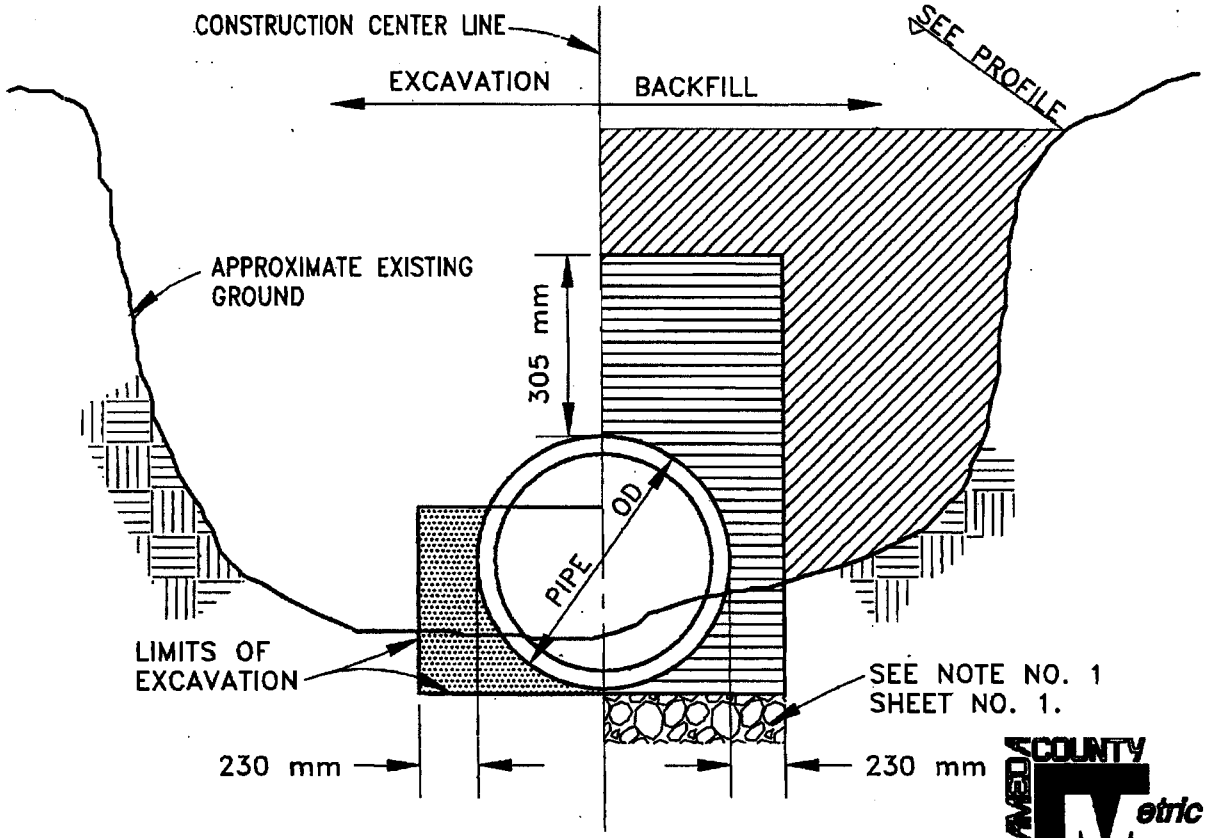
REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG–504	1 of 1

PLOT SCALE: 1 = 2



EMBANKMENT REQUIREMENT PRIOR TO EXCAVATION



EXCAVATION AND BACKFILL REQUIREMENTS

EMBANKMENT CONDITION

ALAMEDA COUNTY Metric

UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

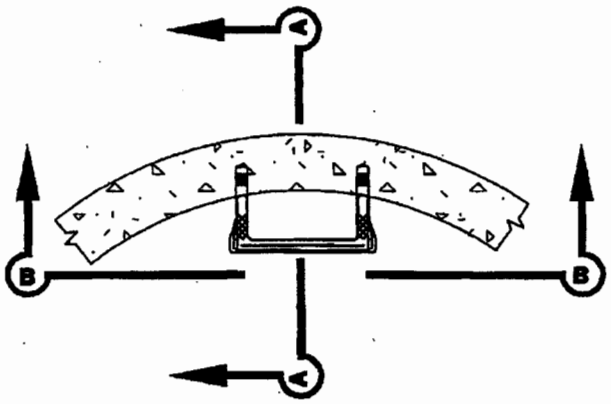
COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

REVISIONS	TYPICAL PIPE SECTION	APPROVAL REC. / APPROVED / APPROVED COUNTY ENGINEER

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-501	2 of 2

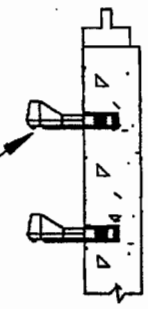
PLOT SCALE: 1 = 1

NOTES:
1. SEE PLANS FOR LOCATION OF STEPS.
2. OMIT STEP IN CHANNELIZATION OF ANY CHANNELIZED MANHOLE AND PROVIDE A NOTCH STEP AS DIRECTED BY THE ENGINEER.
3. STEPS SHALL CONFORM TO THE LATEST REVISION OF ASTM C-478M.

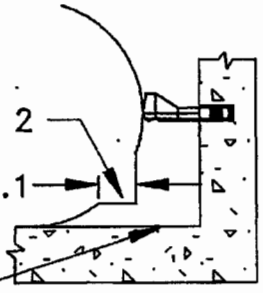


PLAN

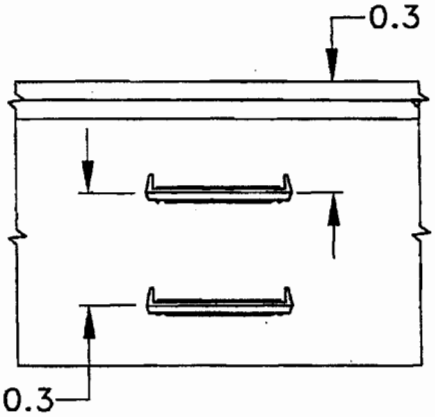
STEEL REINFORCED COPOLYMER POLY-PROPYLENE PLASTIC MANHOLE STEP TO BE CAST IN PLACE OR PRESS FITTED INTO PROVIDED HOLES PER MANUFACTURER.

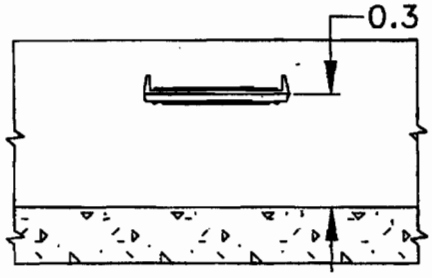


ALAMEDA COUNTY Metric
UNITS ARE IN METERS UNLESS OTHERWISE NOTED.



SECTION A-A





SECTION B-B

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

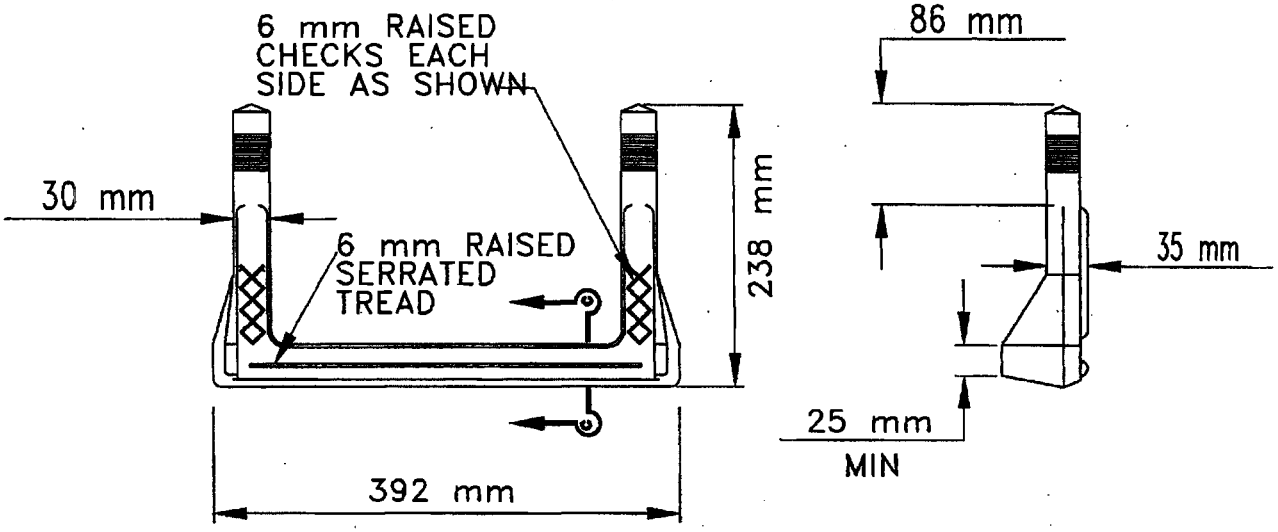
PLASTIC STEP DETAIL

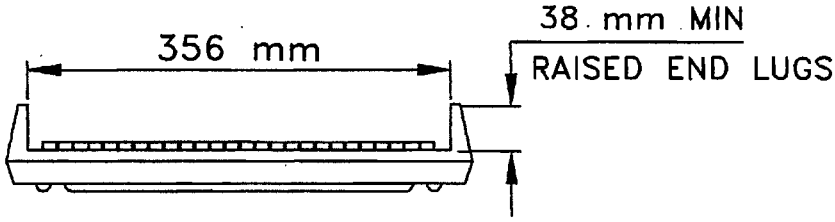
APPROVAL REC.
APPROVED
APPROVED
COUNTY ENGINEER

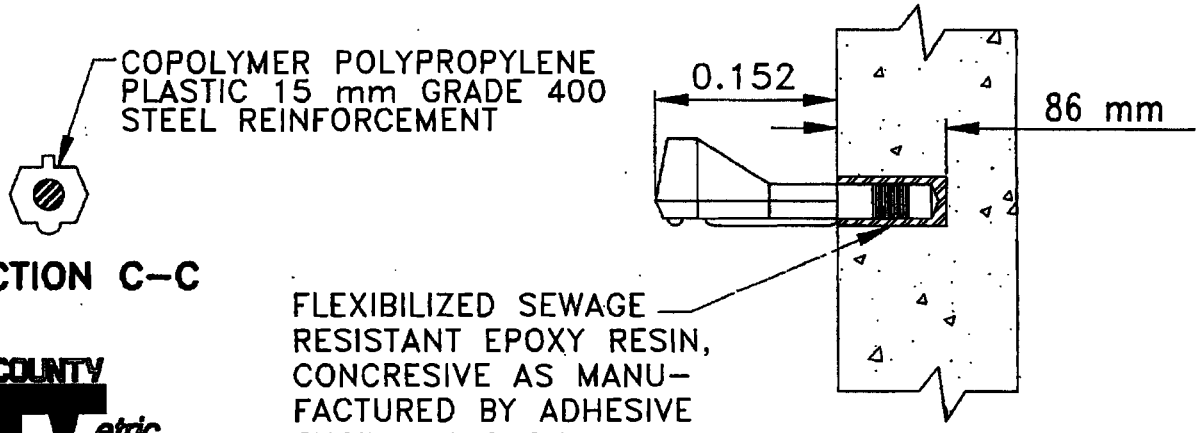
REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-505	1 of 2

PLOT SCALE: 1 = 2







SECTION C–C

ALAMEDA COUNTY Metric

UNITS ARE IN METERS
UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

PLASTIC STEP DETAIL

APPROVAL REC.

APPROVED

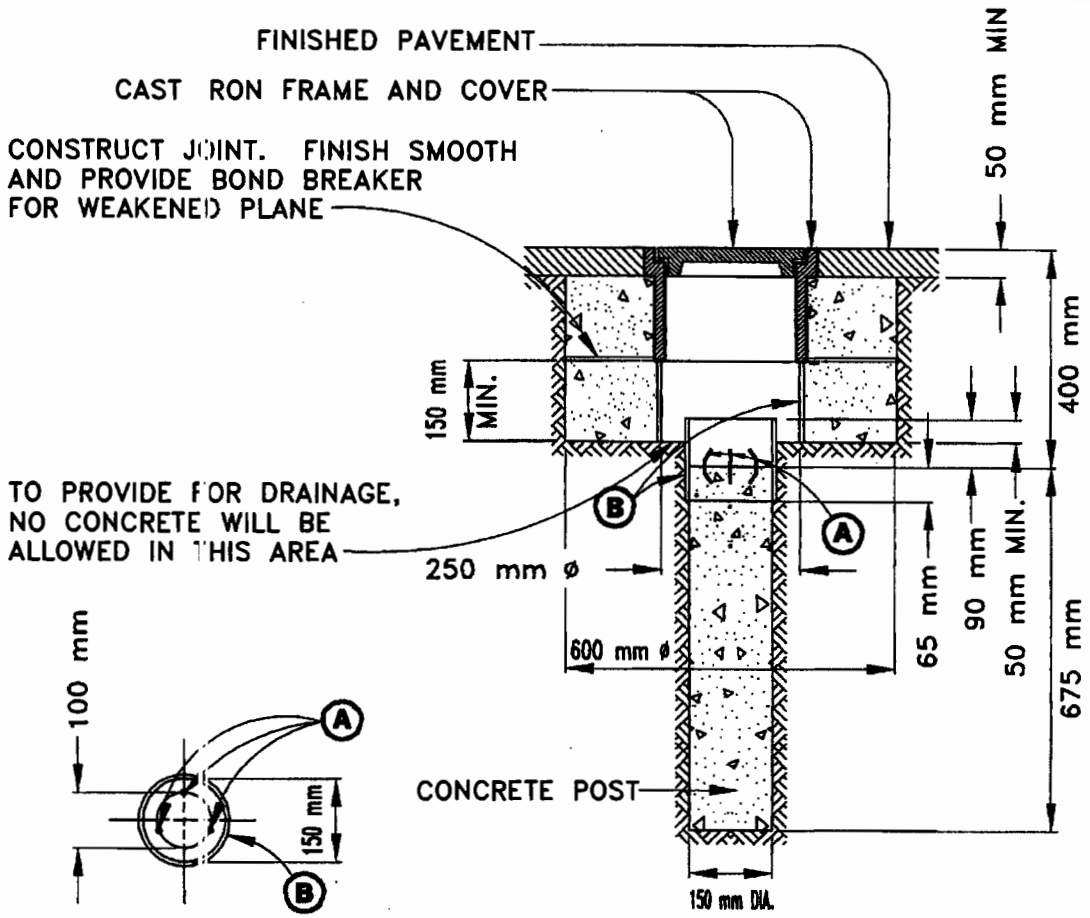
APPROVED

COUNTY ENGINEER

REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG–505	2 of 2

PLOT SCALE: 1 = 0.5



PLAN SECTION OF POST ELEVATION

NOTES:

MONUMENT FRAMES AND COVERS SHALL BE:

1. NEENAH FOUNDRY COMPANY, CATALOG NO. R-1975-B, LID TYPE C WITH "MONUMENT" ON THE LID.
2. CHRISP CASTING PART NO. 9279, 9277M.
3. OTHER MANUFACTURERES MODELS APPROVED BY THE ALAMEDA COUNTY ROAD DEPARTMENT SHALL BE EQUAL IN SERVICE AND FUNCTION. EACH COVER SHALL BE GROUND OR OTHERWISE FINISHED SO THAT IT WILL FIT IN ITS FRAME WITHOUT ROCKING. CONCRETE SHALL BE EITHER CLASS 2 OR CLASS 3, POURED IN PLACE AGAINST THE EXISTING GROUND.
   - (A) INSTALL 3 OR MORE 6 mm X 76 mm METAL DOWELS EXTENDING 25 mm ABOVE SURFACE OF CONCRETE. BEND AS SHOWN.
   - (B) PROVIDE A FORM OF SHEET METAL OR 3 mm THICK WAX-IMPREGNATED PAPER.
4. SEE DG-601 FOR CONCRETE MONUMENT SECTION WITH DISC.

ALAMEDA COUNTY Metric

UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

CONCRETE MONUMENT SECTION WITHOUT DISC

APPROVED

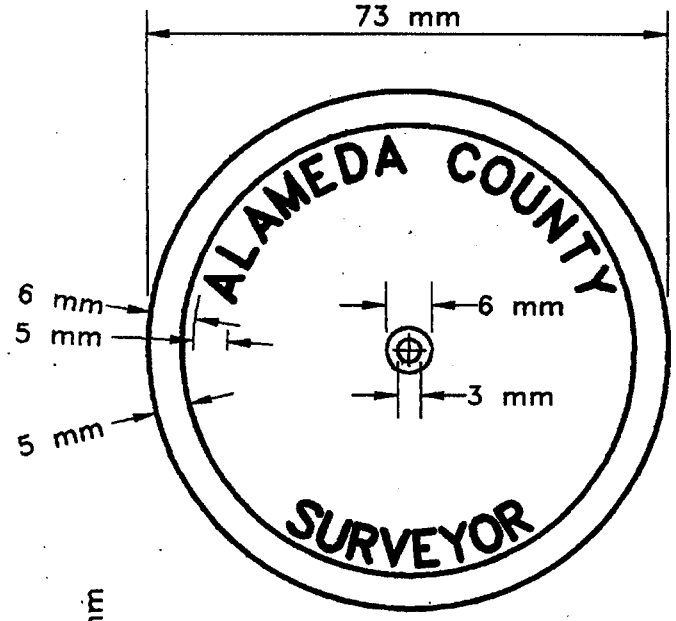
APPROVED

COUNTY ENGINEER

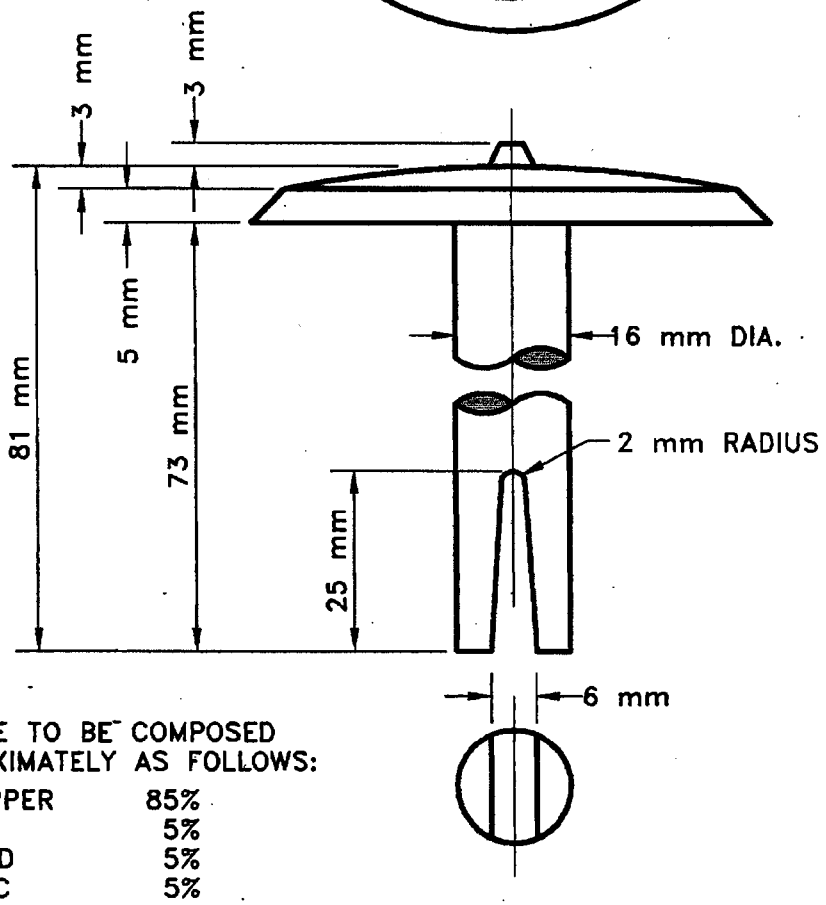
REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC	D PILKINTON	JULY 1995	NONE	DG-602	1 of 1

PLOT SCALE: 1 = 13.2



LETTERS TO BE STAMPED OR CAST AS DEEP AS POSSIBLE



NOTE:

BRONZE TO BE COMPOSED APPROXIMATELY AS FOLLOWS:

COPPER	85%
TIN	5%
LEAD	5%
ZINC	5%

ALAMEDA COUNTY Metric
UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

MONUMENT DISC

APPROVAL REC.
APPROVED

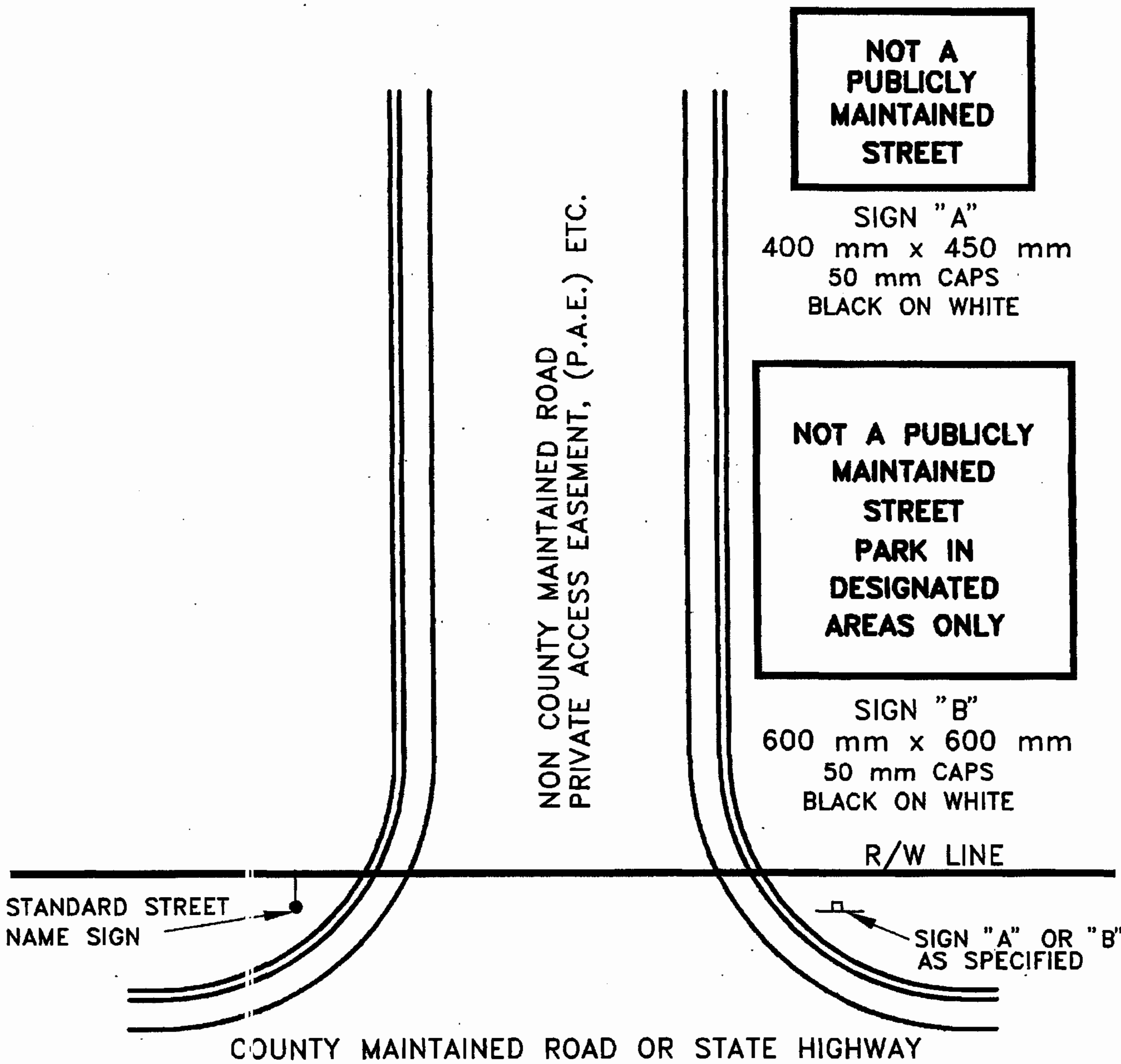
APPROVED

COUNTY ENGINEER AND COUNTY SURVEYOR

REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC	D PILKINTON	JULY 1995	NONE	DG-603	1 of 1

PLOT SCALE: 1 = 1



NOTES:
1. REFER TO DG-607 FOR SIGN MOUNTING DETAILS.
2. IF STOP SIGN IS REQUIRED, MOUNT ON STREET SIGN POST.
3. IF "NOT A THROUGH STREET" SIGN IS REQUIRED, MOUNT ON POST WITH "A" OR "B".

ALAMEDA COUNTY Metric
UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

SIGNING

NON-COUNTY MAINTAINED ROAD

STREET TYPE ENTRANCE

REVISIONS

APPROVAL REC.

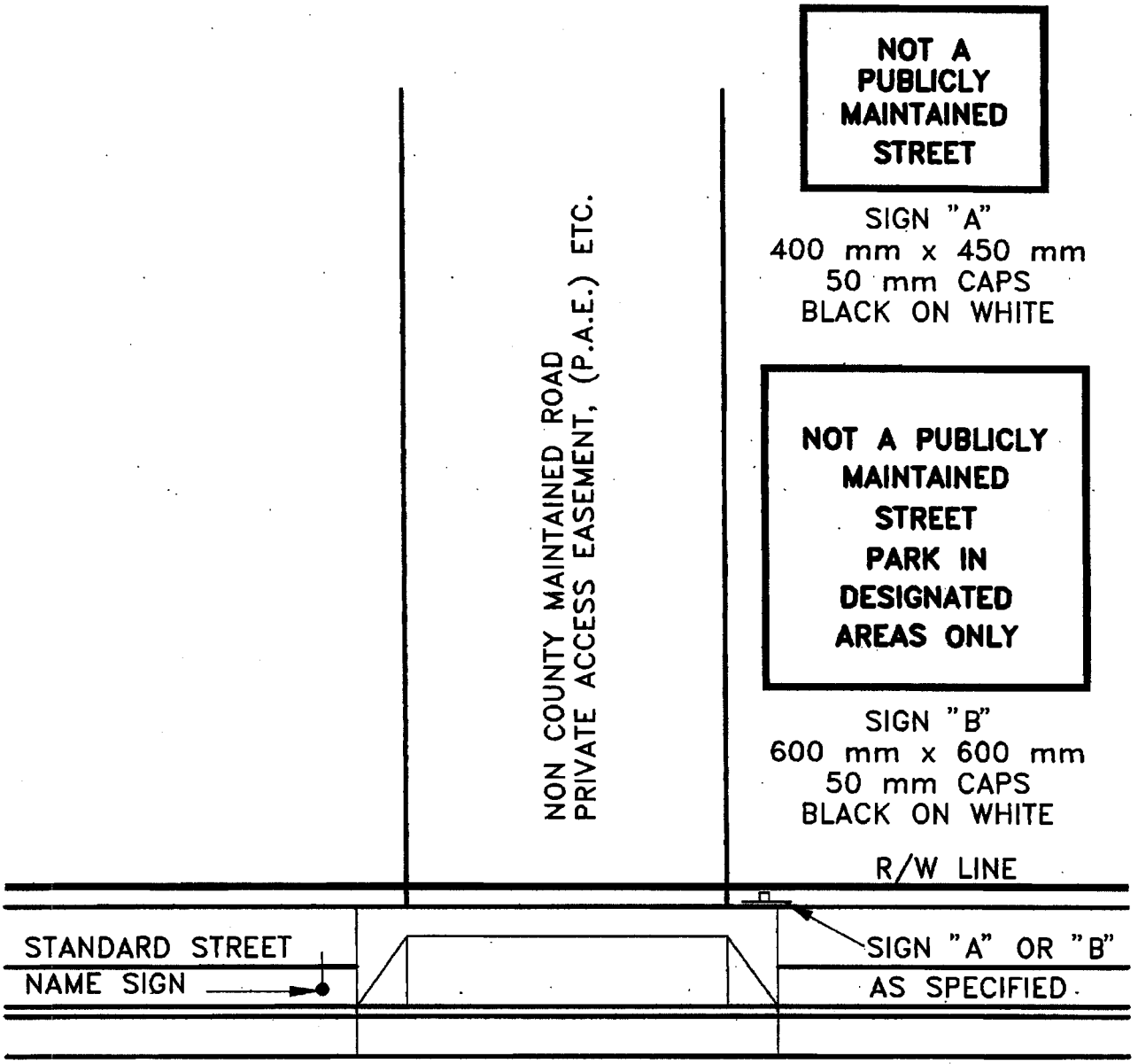
APPROVED

APPROVED

COUNTY ENGINEER

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-608	1 of 2

PLOT SCALE: 1 = 1



COUNTY MAINTAINED ROAD OR STATE HIGHWAY

NOTE: REFER TO DG-607. FOR SIGN MOUNTING DETAILS

ALAMEDA COUNTY Metric
UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

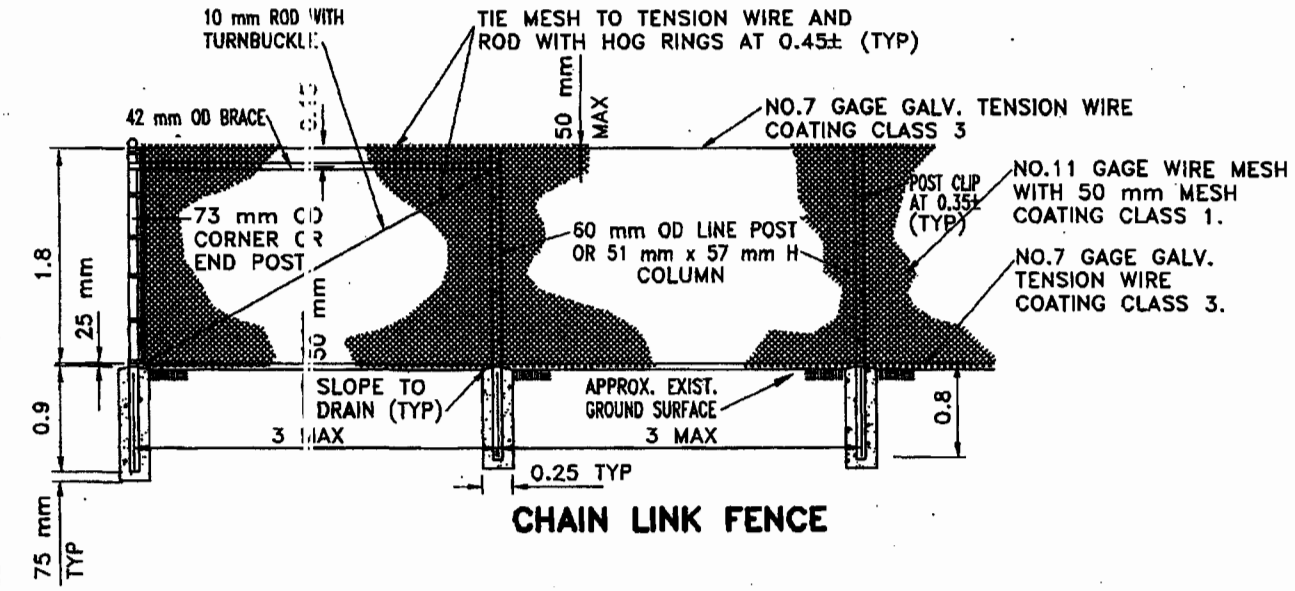
REVISIONS			

SIGNING
NON-COUNTY MAINTAINED ROAD
DRIVEWAY TYPE ENTRANCE

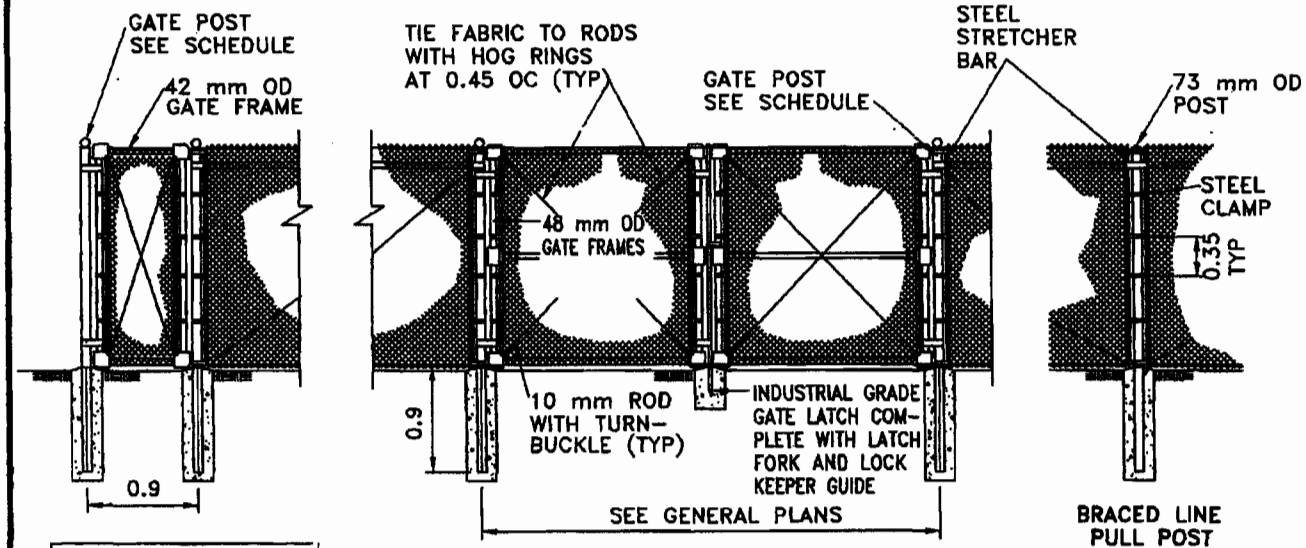
APPROVAL REC.
APPROVED
APPROVED
COUNTY ENGINEER

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-608	2 of 2

PLOT SCALE: 1 = 1



CHAIN LINK FENCE



CHAIN LINK GATES

BRACED LINE PULL POST 300 m INTERVALS ON TANGENT

GATE POST	
GATE WIDTH	O.D.
≤1.8	0.073
>1.8 & ≤4.0	0.102
>4.0 & ≤5.5	0.168

NOTES:
1. CENTER LINE OF CHAIN LINK FENCE SHALL BE 150 mm INSIDE RIGHT OF WAY UNLESS OTHERWISE INDICATED.
2. ALL HARDWARE SHALL BE INDUSTRIAL HARDWARE GRADE.
3. BRACING IS THE SAME ON BOTH SIDES OF CORNER POSTS.
4. INSTALL INDUSTRIAL GRADE GATE STOPS AS DIRECTED BY THE ENGINEER.
5. TIE WIRE AND HOG RINGS SHALL BE NO. 9 GAGE GALVANIZED STEEL, CLASS A.

ALAMEDA COUNTY Metric
UNITS ARE IN METERS UNLESS OTHERWISE NOTED.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

1.8 METER HIGH CHAIN-LINK FENCE AND CHAIN-LINK GATES

APPROVAL REC
APPROVED
APPROVED
COUNTY ENGINEER

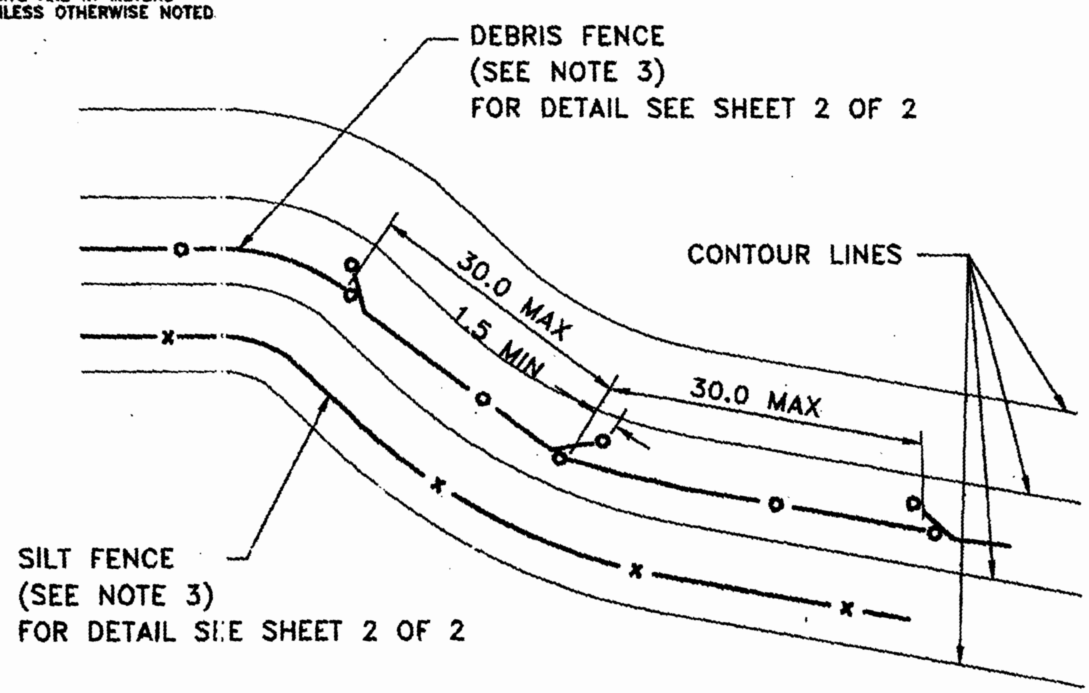
REVISIONS

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG-701	1 of 1

PLOT SCALE: 1 = 5

ALAMEDA COUNTY Metric

UNITS ARE IN METERS
UNLESS OTHERWISE NOTED



PLAN

NOTES:

1. SILT FENCE AND DEBRIS FENCE SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.
2. SILT FENCE TO BE INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
3. SILT FENCE AND DEBRIS FENCE TO BE INSTALLED PARALLEL TO CONTOURS.
4. SILT FENCE SHALL BE CLEANED OUT AFTER EVERY RAINFALL AND WHEN SILT HEIGHT EXCEEDS 200 mm.
5. DAMAGED SILT FENCE FABRIC SHALL BE REMOVED TO ADJACENT POSTS AND REPLACED AS SHOWN IN DETAIL A–A.
6. DEBRIS FENCE SHALL BE CLEANED OUT AFTER EVERY RAINFALL.
7. SILT FENCE FABRIC MAY BE INSTALLED ON DEBRIS FENCE.

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

REVISIONS

SILT FENCE AND DEBRIS FENCE DETAILS

APPROVAL REC.

APPROVED

APPROVED

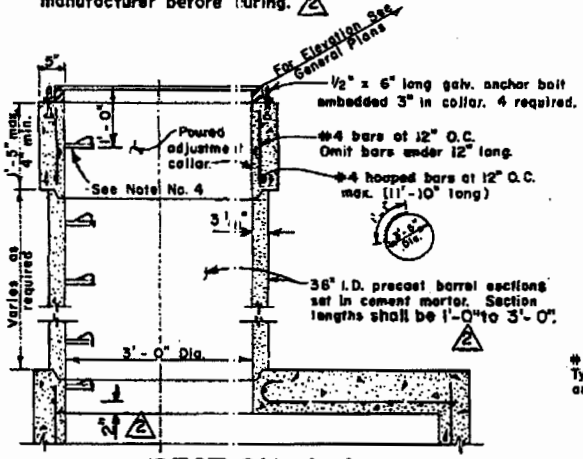
COUNTY ENGINEER

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
JC		JULY 1995	NONE	DG–704	1 of

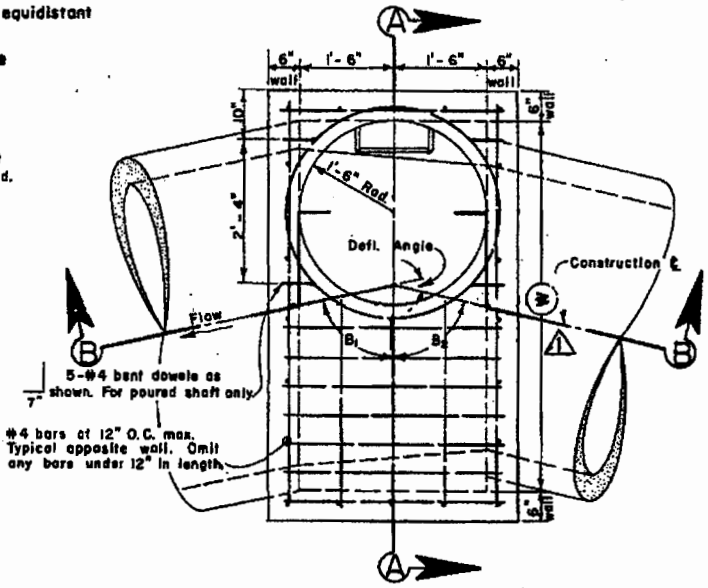
PLOT SCALE: 1 = 1

GENERAL NOTES:

1. Location and direction of conduits entering and leaving manhole are shown on the General Plans.
2. Reinforcing steel may be bent, cut, or spread as directed by the Engineer to permit connection of lateral pipe.
3. See General Plans for information on shaft location, B_1, B_2, W and H.
4. For step details, see Design Guidelines File No. SD-517 (4)
5. On adjustment collars less than 1'-0" in length, install step equidistant between frame rim and next step. (2)
6. Steps shall be fixed into each precast barrel section by the manufacturer before curing. (2)

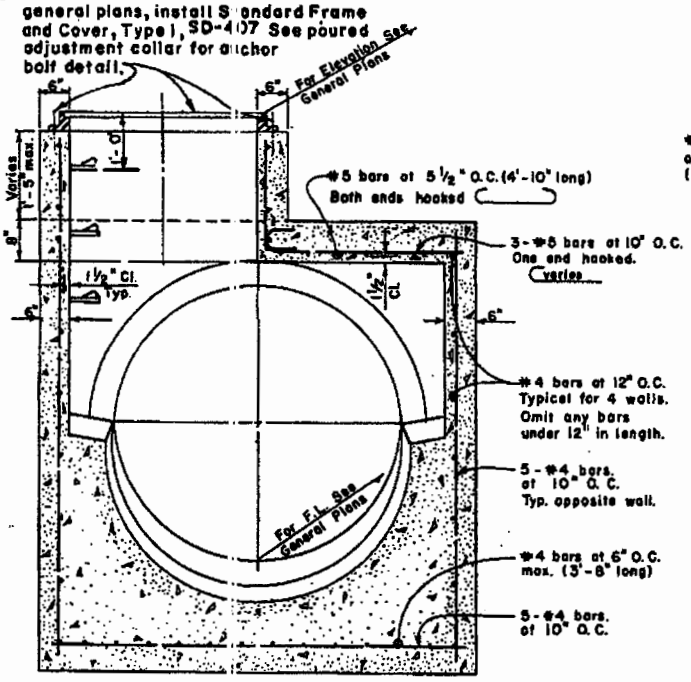


SECTION A-A
(M.H. WITH PRECAST BARREL SECTIONS AND POURED ADJUSTMENT COLLAR)

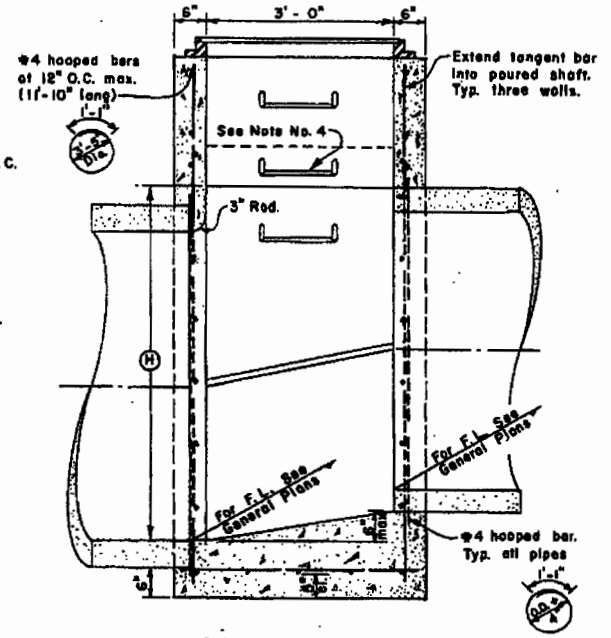


PLAN OF MANHOLE BASE WITH TOP SLAB REINFORCEMENT
(SHAFT REMOVED)

(3) Unless specified otherwise on the general plans, install Standard Frame and Cover, Type I, SD-407 See poured adjustment collar for anchor bolt detail.



SECTION A-A
(M.H. WITH POURED SHAFT)



SECTION B-B
(M.H. WITH POURED SHAFT)

COUNTY OF ALAMEDA * PUBLIC WORKS AGENCY

(4)	Step Detail	7/91
(3)	Frame & Cover	12/82
(2)	Steps & Barrel Sect.	11/73
(1)	Dimension Rev.	10/71
	REVISIONS	

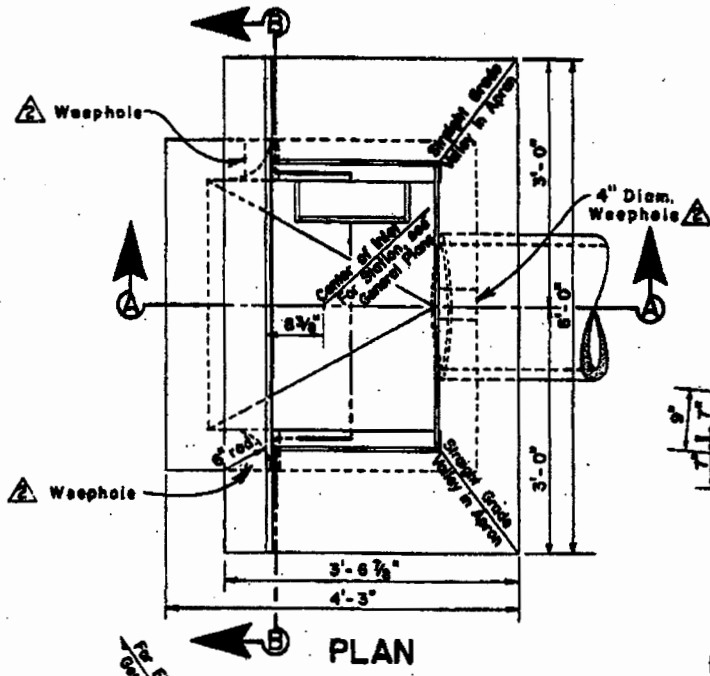
MANHOLE TYPE II

APPROVAL REC. and Lawar
APPROVED
APPROVED
Director of Public Works and Road Commissioner

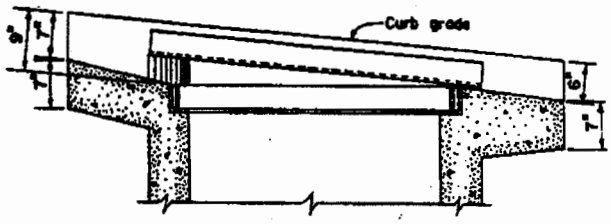
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
FC		Nov. 1970	None	SD-401	1 of 1

GENERAL NOTES:

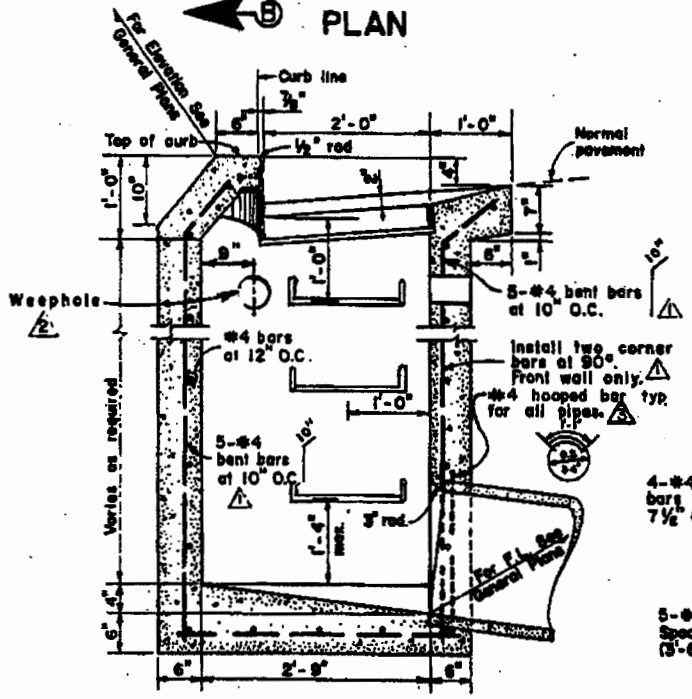
1. Location and direction of conduits entering and leaving inlet are shown on the General Plans.
2. Reinforcing steel may be bent, cut or spread as directed by the Engineer, to permit connection of lateral pipe.
3. Inlets with conduits entering and leaving the inlet shall be channelized to the springline as directed by the Engineer.
4. Where rolled curbs are encountered, transition curbface from vertical at curb opening angle to conform to rolled curb in 3 feet.
5. For step details, see Design Guidelines File No. SD-517. 4
6. Omit steps on inlets less than 4 feet deep.



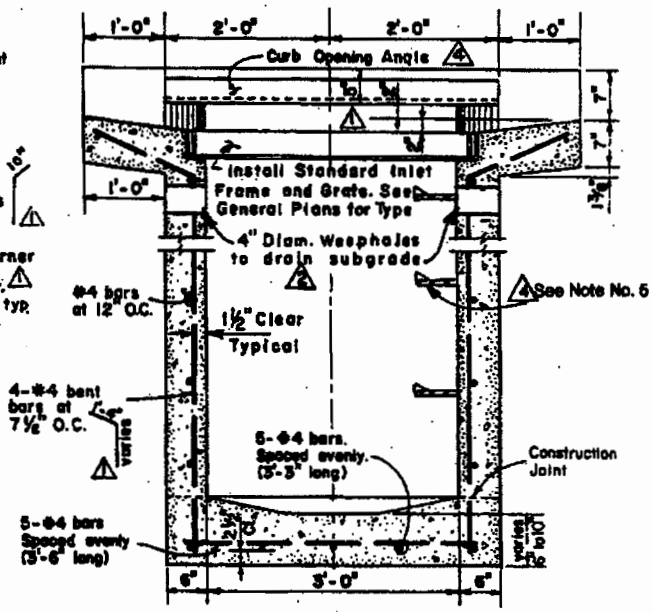
PLAN



POSITION OF FRAME & GRATE
FOR CURB GRADES OF 5% OR STEEPER 1



SECTION A-A



SECTION B-B

COUNTY OF ALAMEDA * PUBLIC WORKS AGENCY

4	Step Detail	7/91
3	Mod. Hooped Bar	7/72
2	Added Weepholes	6/72
1	Note Additions	8/69
REVISIONS		

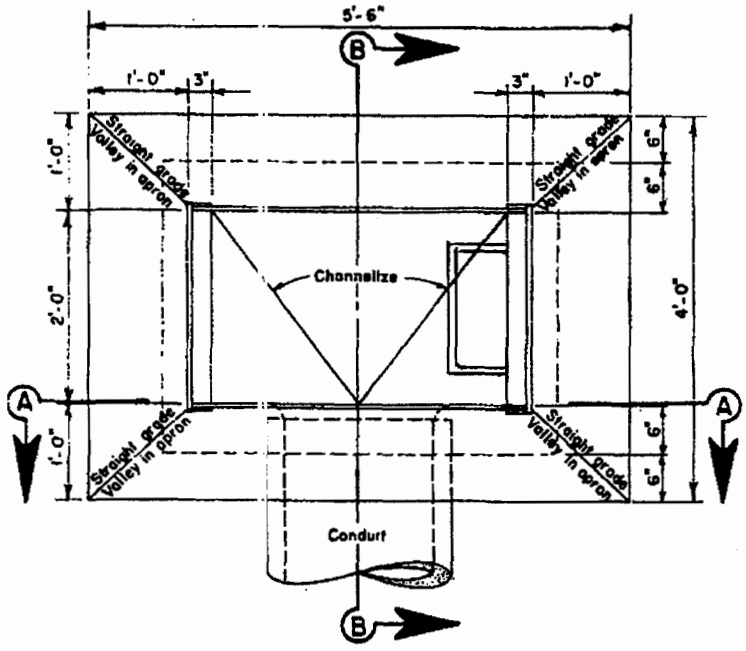
INLET TYPE I

APPROVAL REC. [signature] Lawar
APPROVED [signature]
APPROVED [signature]
Director of Public Works and Road Commissioner

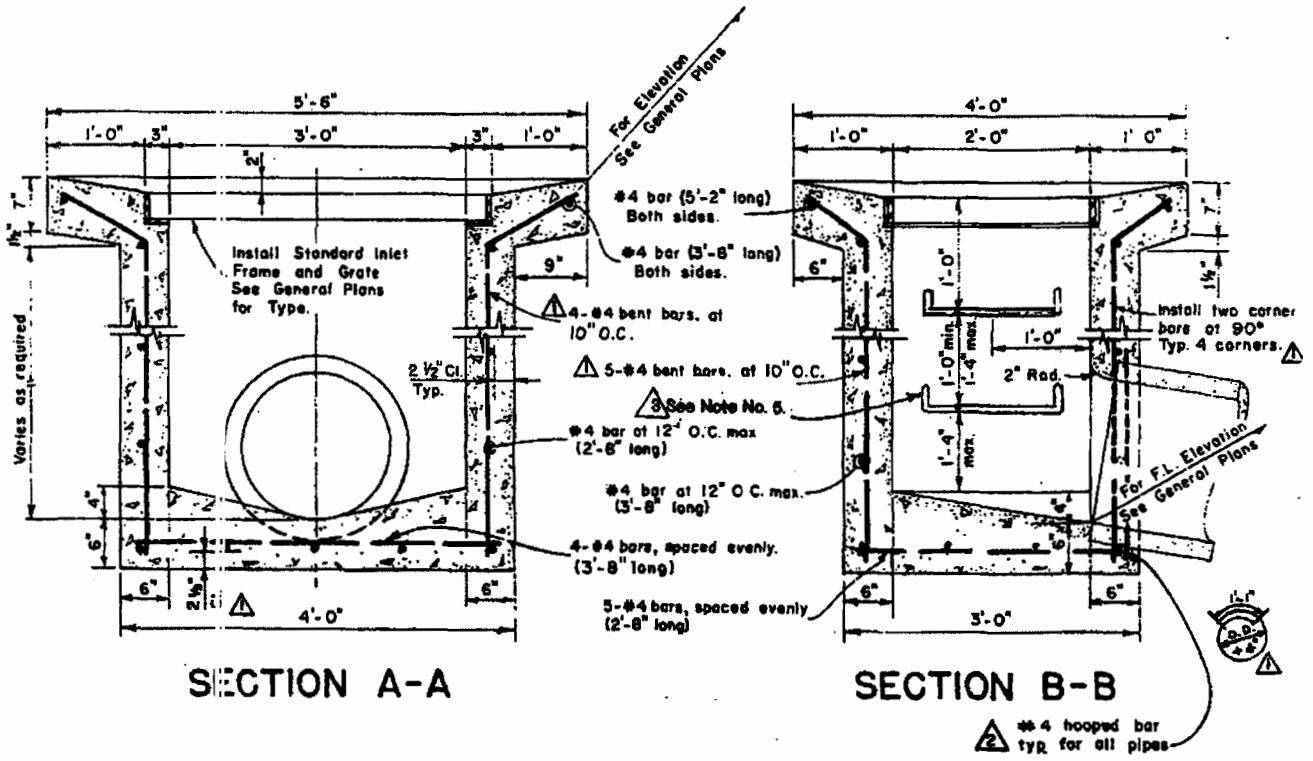
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
RLJ	TMC	July 1969	None	SD-411	1 of 1

GENERAL NOTES:

1. Location and direction of conduits entering and leaving inlet are shown on the General Plans.
2. Reinforcing steel may be bent, cut, or spread as directed by the Engineer, to permit connection of lateral pipe.
3. Inlets with conduits entering and leaving the inlet shall be channelized to the springline as directed by the Engineer.
4. Omit steps on inlets less than 4 feet deep.
5. For step details, see Design Guidelines File No. SD-517. (3)



PLAN



SECTION A-A

SECTION B-B

COUNTY OF ALAMEDA * PUBLIC WORKS AGENCY

3	Step Detail	7/91
2	Note Changes	7/72
1	Note Changes	8/69
	REVISIONS	

INLET TYPE II

APPROVAL REC. [signature]

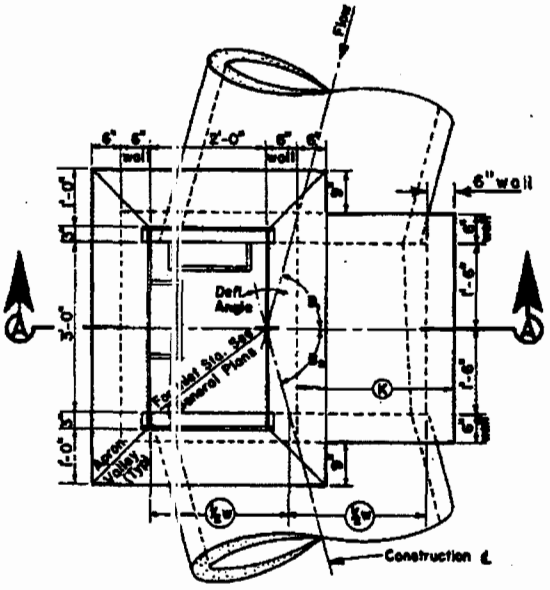
APPROVED [signature]

APPROVED [signature]
Director of Public Works and Road Commissioner

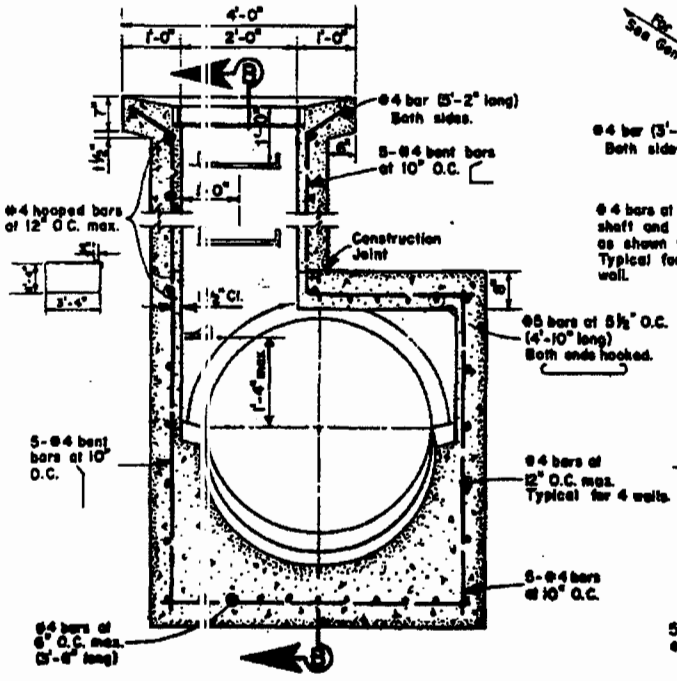
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
FC	[signature]	March 1969	None	SD-412	1 of 1

GENERAL NOTES:

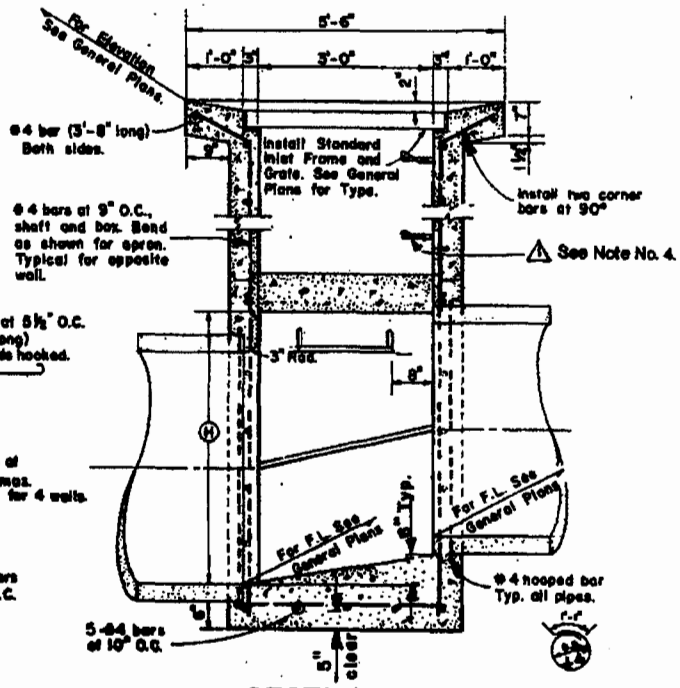
1. Location and direction of conduits entering and leaving inlet are shown on the General Plans.
2. Reinforcing steel may be bent, cut, or spread as directed by the Engineer to permit connection of lateral pipe.
3. See General Plans for information of B_1, B_2, W, H, and K (K determines the location of the shaft.)
4. For step details, see Design Guidelines File No. SD-517. ⚠1



PLAN



SECTION A-A



SECTION B-B

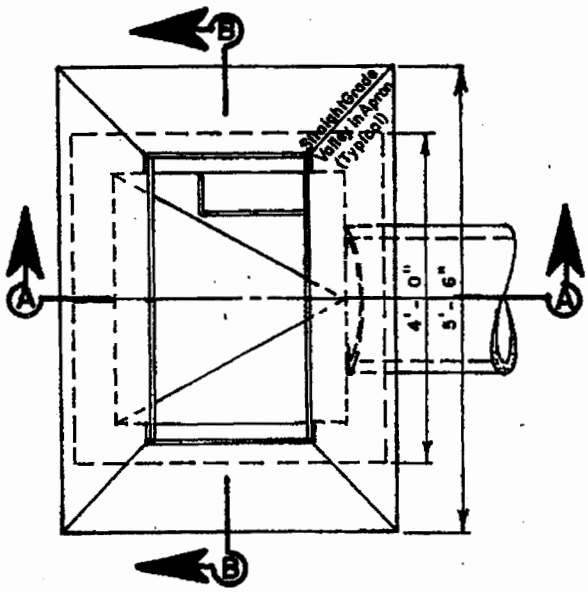
COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

⚠1 Step Detail	7/91	
REVISIONS		

INLET TYPE III

APPROVAL REC. [signature]
APPROVED [signature]
APPROVED [signature]
Director of Public Works and Road Commissioner

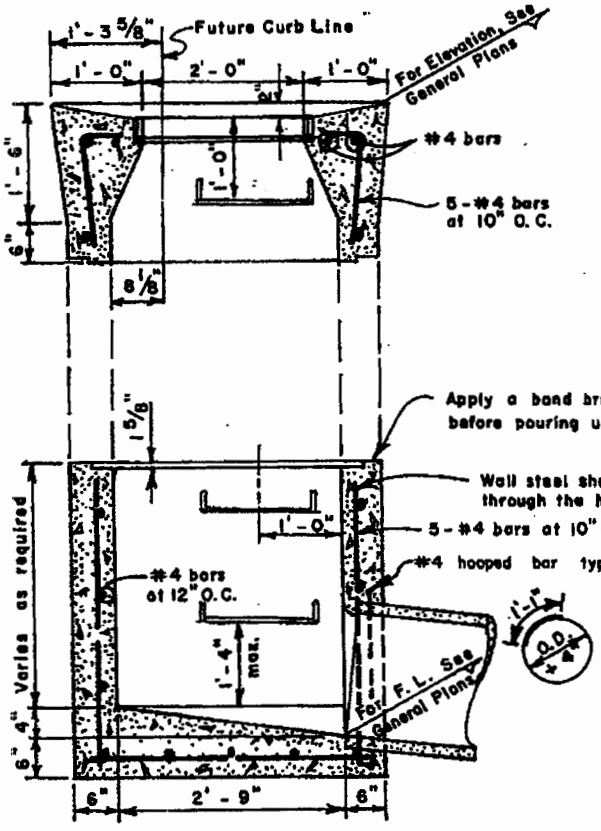
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
RLJ	[signature]	July 1969	None	SD-413	1 of 1



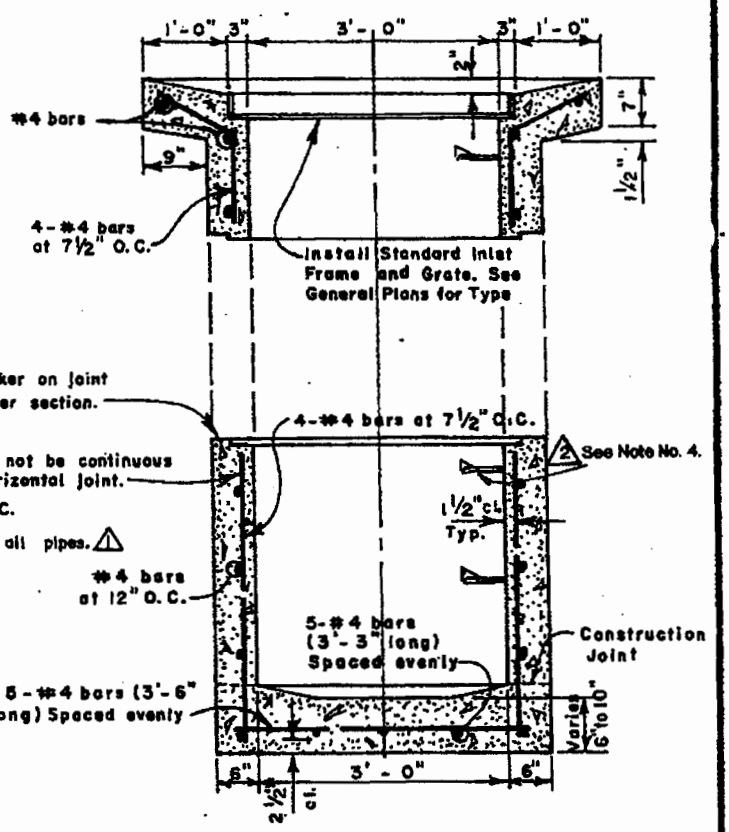
PLAN

GENERAL NOTES:

1. Location and direction of conduits entering and leaving inlet are shown on the General Plans.
2. Reinforcing steel may be cut, bent or spread as directed by the Engineer, to permit connection of lateral pipe.
3. Inlets with conduits entering and leaving the inlet shall be channelized to the springline as directed by the Engineer.
4. For step details, see Design Guidelines File No. SD-517 (2)
5. Omit steps on inlets less than 4 feet deep.



SECTION A-A



SECTION B-B

COUNTY OF ALAMEDA * PUBLIC WORKS AGENCY

2	Step Detail	7/91
1	Modified hooped bar note.	7/72
	REVISIONS	

INLET TYPE IV

APPROVAL REC. [signature]

APPROVED [signature]

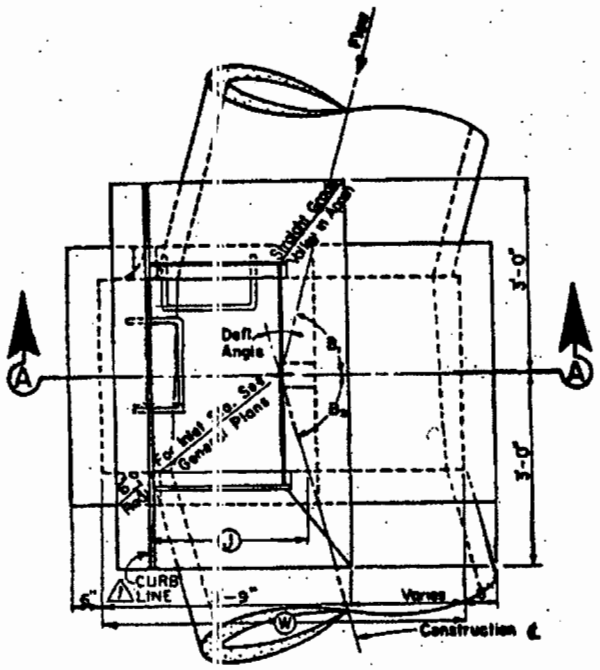
APPROVED [signature]

Director of Public Works and Road Commissioner

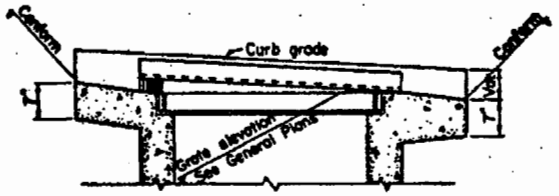
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
FC	[signature]	July 1969	None	SD-414	1 of 1

GENERAL NOTES:

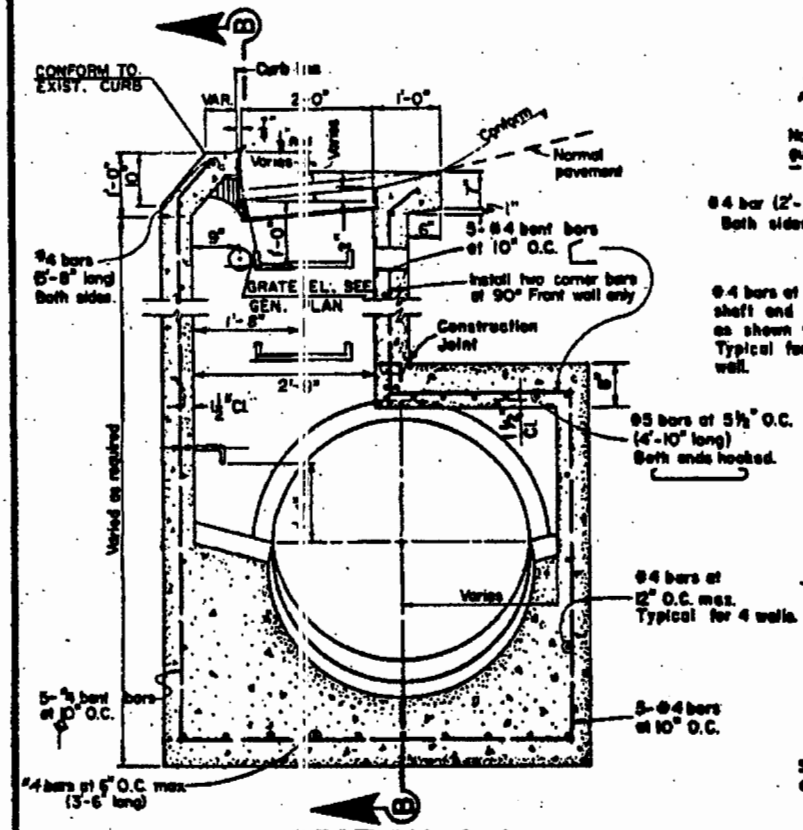
1. Location and direction of conduits entering and leaving inlet are shown on the General Plans.
2. Reinforing steel may be bent, cut, or spread as directed by the Engineer to permit connection of lateral pipe.
3. See General Plans for information on B_1, B_2, W, H, and J (J determines the location of the conduit centerline.)
4. For step details, see Design Guidelines File No. SD-517. (4)
5. Inlets with conduits entering and leaving the inlet shall be channelized to the springline as directed by the Engineer.
6. Omit steps on inlets less than 4 feet deep.



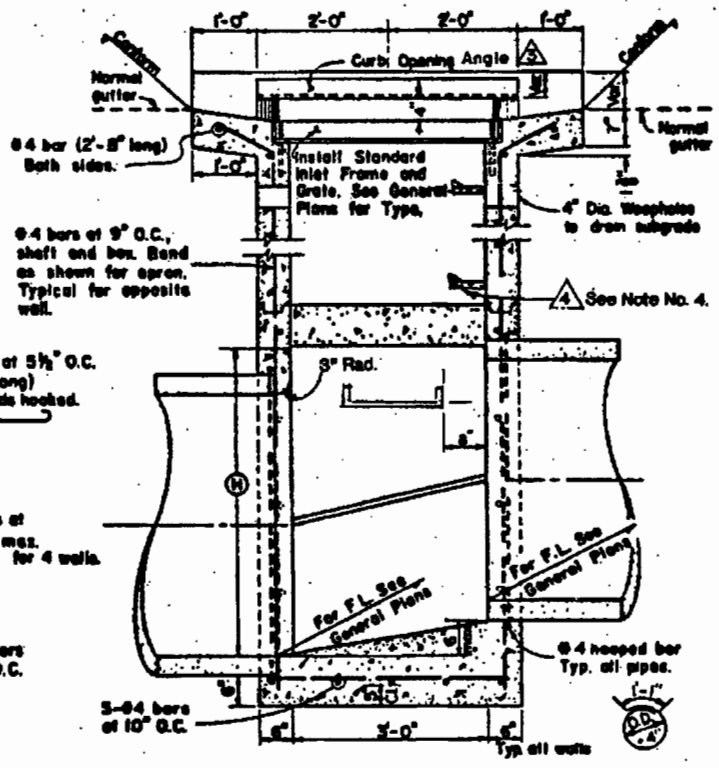
PLAN



POSITION OF FRAME & GRATE
FOR CURB GRADES OF 5% OR STEEPER



SECTION A-A



SECTION B-B

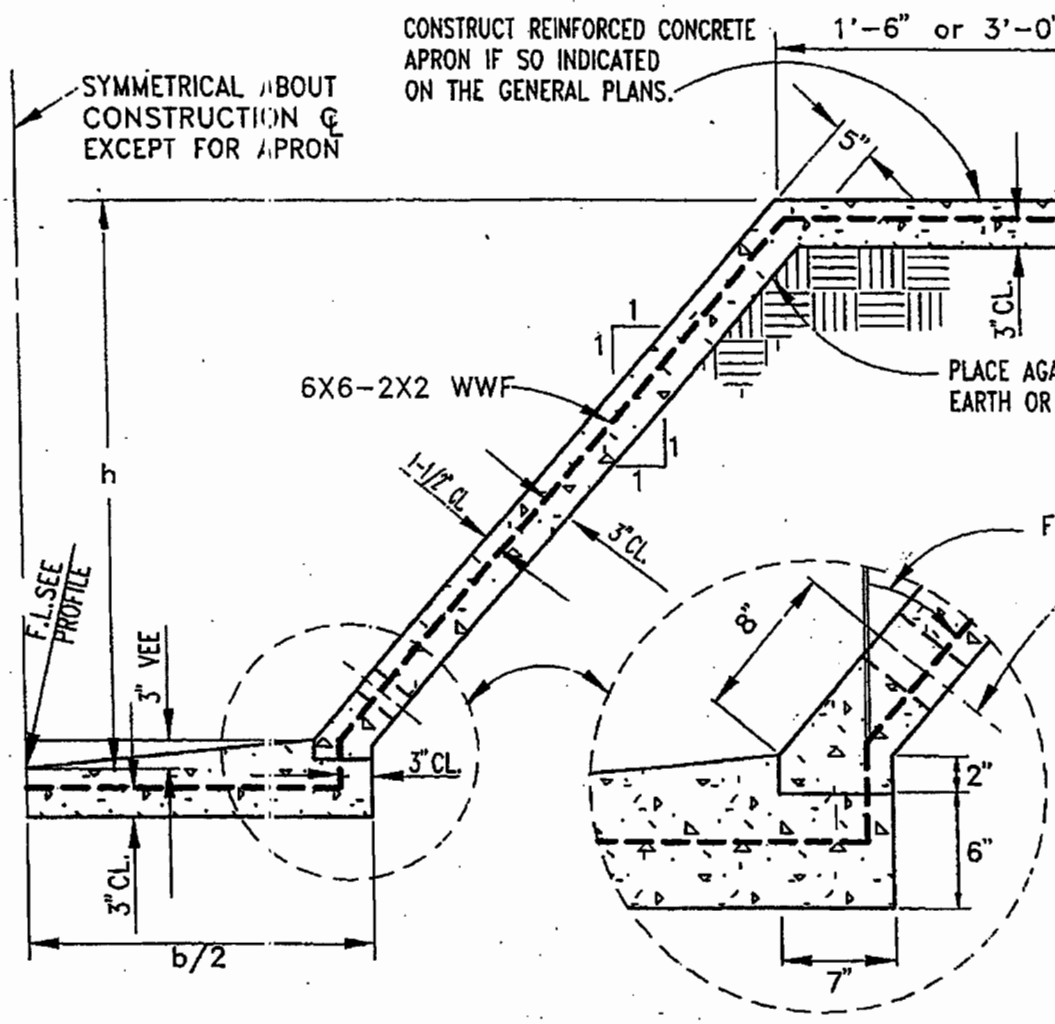
COUNTY OF ALAMEDA * PUBLIC WORKS AGENCY

4	Step Detail	7/91
3	Notes revised.	4/77
2	Mod. steps	7/75
1	Clarify (J) dimensions.	6/75
	REVISIONS	

INLET TYPE VI

APPROVAL REC. [signature] Kawar
APPROVED [signature]
APPROVED [signature]
Director of Public Works and Road Commissioner

DRAWN	CHECKED	DATE	SCALE	FILE NO.	
TAT	[signature] TMC	Feb. 1975	None	SD-416	1 of 1



INSTALL 3" DIAMETER WEEPHOLES AT 10' O.C. PLACE 1 CU.FT. OF STRUCTURE BEDDING MATERIAL IN A BURLAP SACK, OVER 6" WIRE MESH BEHIND EACH WEEPHOLE. SEE SECTION 13.25 OF THE SPECIFICATIONS. CONSTRUCT CONTRACTION JOINTS @ 10' O.C. AND LINE UP WITH WEEPHOLES. SEE SD-522.

TYPICAL HALF SECTION

NOTES:

1. LAP DISTANCE SHALL BE ONE MESH PLUS 2-INCHES FOR WELDED WIRE FABRIC.
2. ALL CONCRETE SHALL BE CLASS "A".
3. POSITION FENCE POSTS IN APRON TO COINCIDE WITH CONTRACTION JOINTS.
4. HEADER BOARDS SHALL BE USED TO FORM EXPOSED EDGES OF APRON OR CHANNEL.

HEIGHT	5'	6'	7'	8'	9'	10'
VOLUME OF BOTH WALLS (CU.FT.PER LINEAR FT.)	5.79	6.97	8.15	9.33	10.51	11.69
VOLUME OF BASE SLAB (CU.FT.PER LINEAR FT.)	1/12(6.5b+7)	←	←	←	→	1/12(6.5b+7)
VOLUME OF 3'-0" APRON	1.09 CU. FT. PER LINEAR FOOT					
VOLUME OF 1'-6" APRON	0.47 CU. FT. PER LINEAR FOOT					

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

REINFORCED CONCRETE CHANNEL 1:1 SIDE SLOPE

APPROVAL REC.

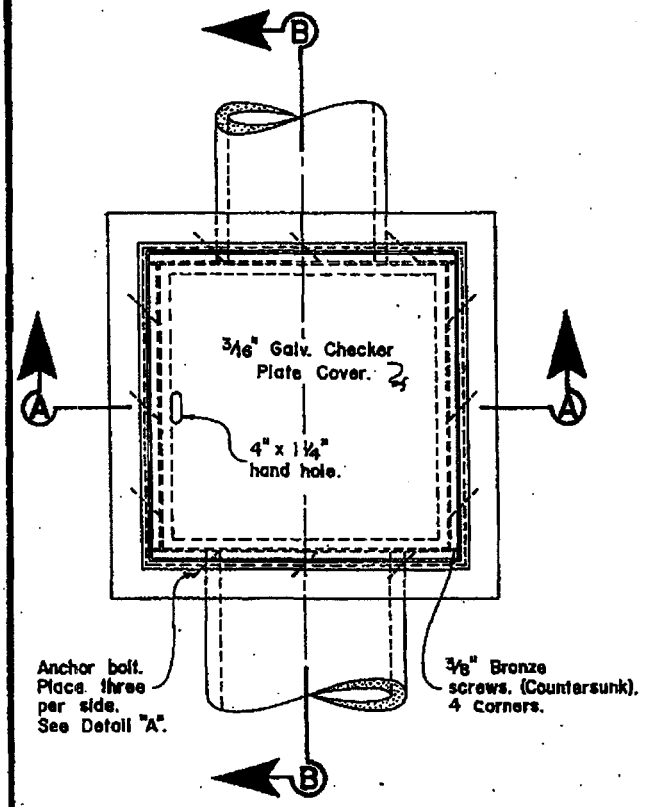
APPROVED

APPROVED

COUNTY ENGINEER AND COUNTY SURVEYOR

REVISIONS

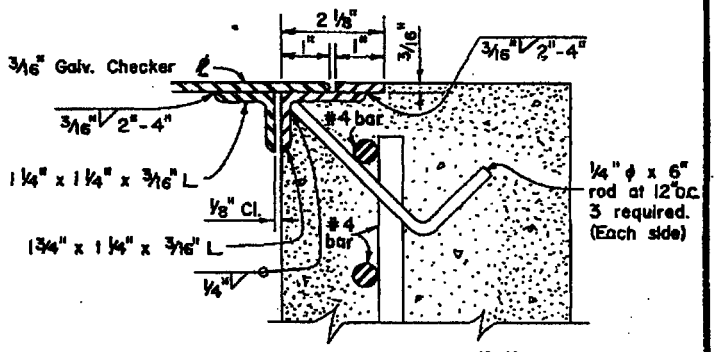
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
EA		JAN. 1995	NONE	SD-503	1 of 1



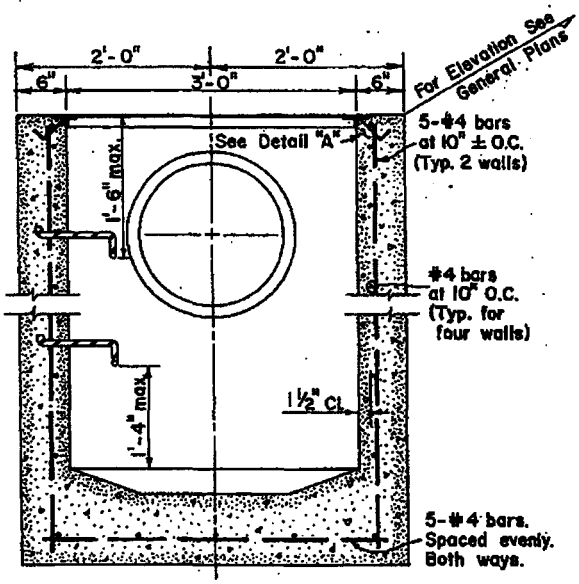
PLAN

GENERAL NOTES:

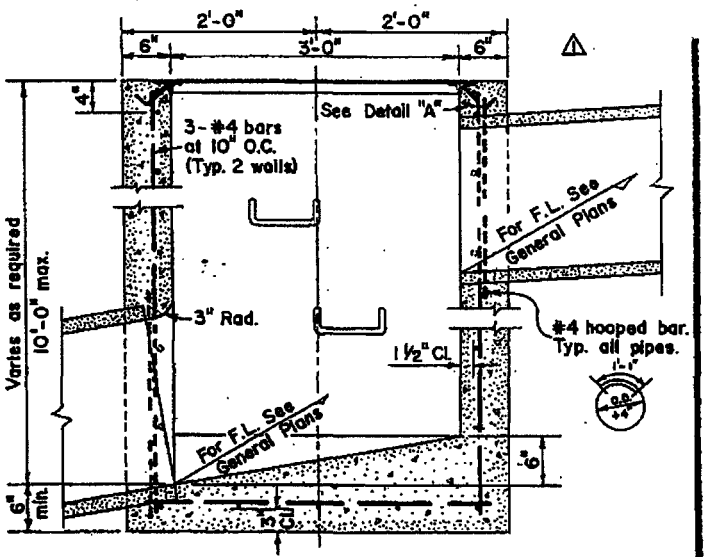
1. Location and direction of conduits entering and leaving the junction box are shown on the General Plans.
2. Omit steps on junction boxes less than 4' deep.
3. For step details, see Standard Drawing File No. SD-516. ⚠1
4. All miscellaneous iron and steel to be galvanized after fabrication.



DETAIL "A"



SECTION A-A



SECTION B-B

COUNTY OF ALAMEDA * PUBLIC WORKS AGENCY

			JUNCTION BOX
⚠1	NOTE CHANGES	8/69	
REVISIONS			

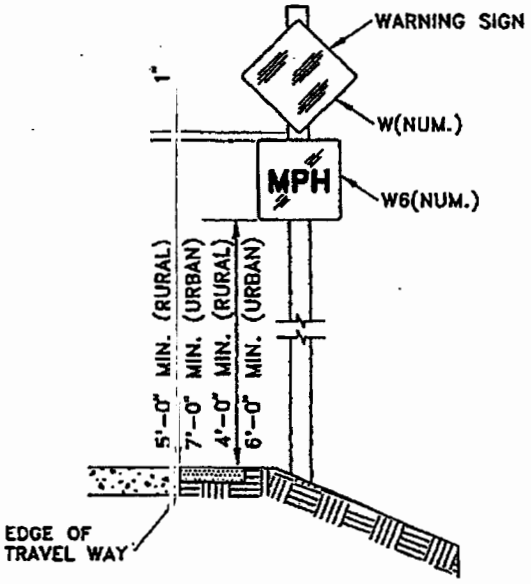
APPROVAL REC. [signature]

APPROVED [signature]

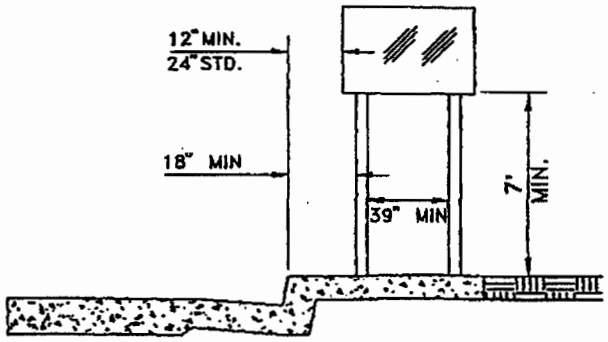
APPROVED [signature]

Director of Public Works and Road Commissioner

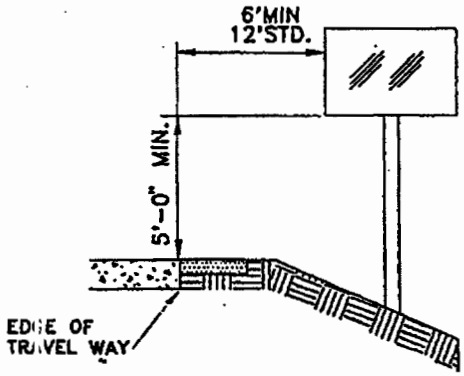
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
RLJ	[signature]	March 1969	None	SD-514	1 of 1

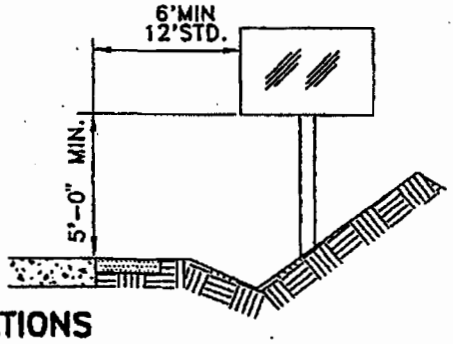


ADVISORY SPEED SIGN INSTALLATION

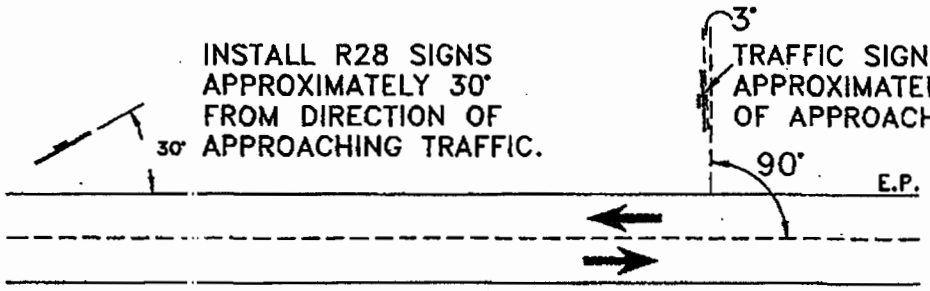


URBAN LOCATIONS





RURAL LOCATIONS



NOTES:

1. ALL SIGN POSTS SHALL BE UNISTRUT TELESPAR 2" X 2" POST WITH YIELDING BREAKAWAY BASE OR EQUIVALENT.
2. ALL OBJECT MARKER AND DELINEATOR POSTS SHALL BE FLEXIBLE.
3. FOR DETAILS SEE CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD PLANS, JULY 1992, A73A, A73B, A73C.

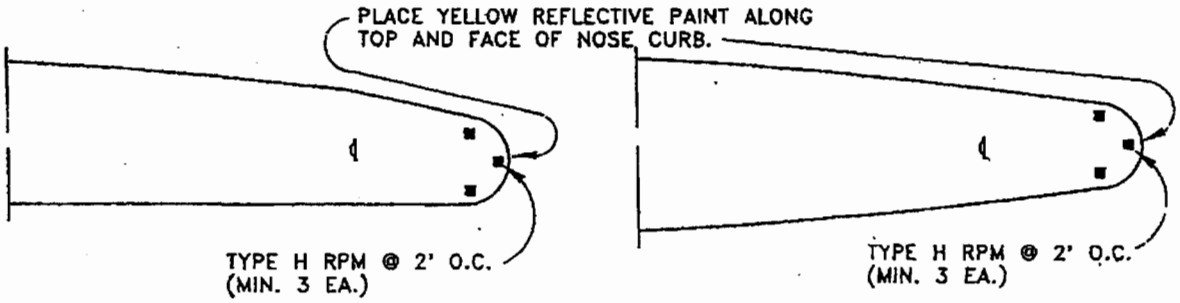
COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

SIGN MOUNTING DETAILS

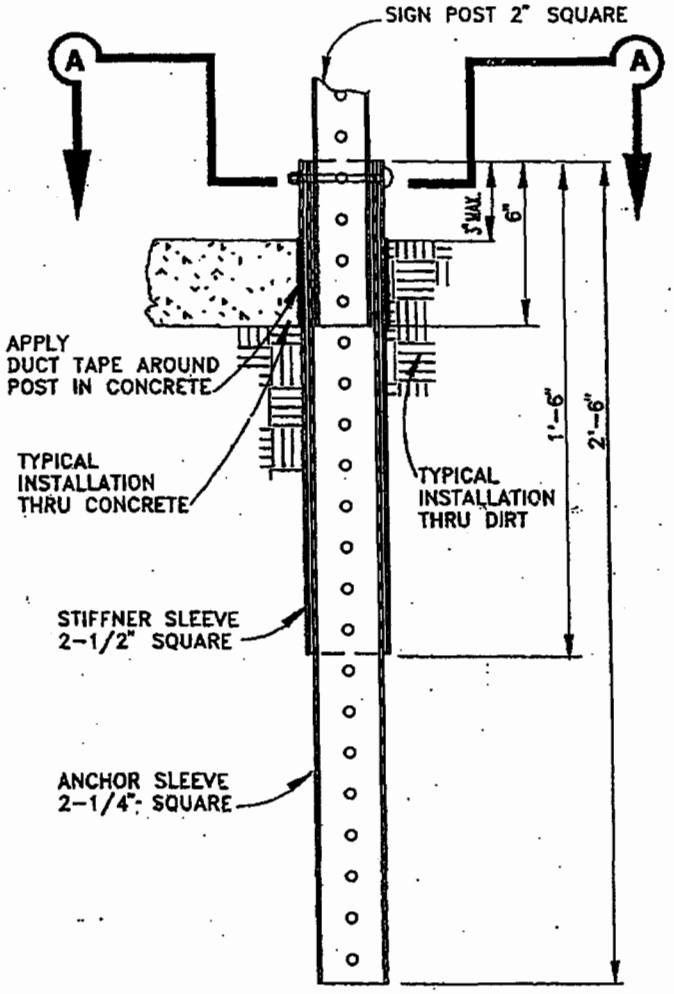
APPROVAL REC.
APPROVED
APPROVED
COUNTY ENGINEER

REVISIONS

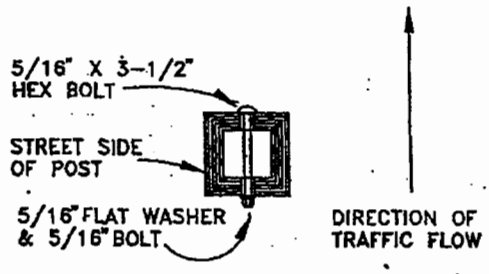
DRAWN	CHECKED	DATE	SCALE	FILE NO.	
EA		DEC 1994	NONE	SD-700	1 of 2



CONCRETE MEDIAN



TYPICAL SECTION



SECTION A-A

NOTE: ANCHOR SLEEVE + STIFFNER SLEEVE = ANCHOR ASSEMBLY

COUNTY OF ALAMEDA ★ PUBLIC WORKS AGENCY

REVISIONS	SIGN MOUNTING DETAILS			APPROVAL REC. Frank Clark APPROVED Scott A. Swanson APPROVED COUNTY ENGINEER	
DRAWN EA	CHECKED SF | RB	DATE AUG. 1994	SCALE NONE	FILE NO. SD-700	2 of 2