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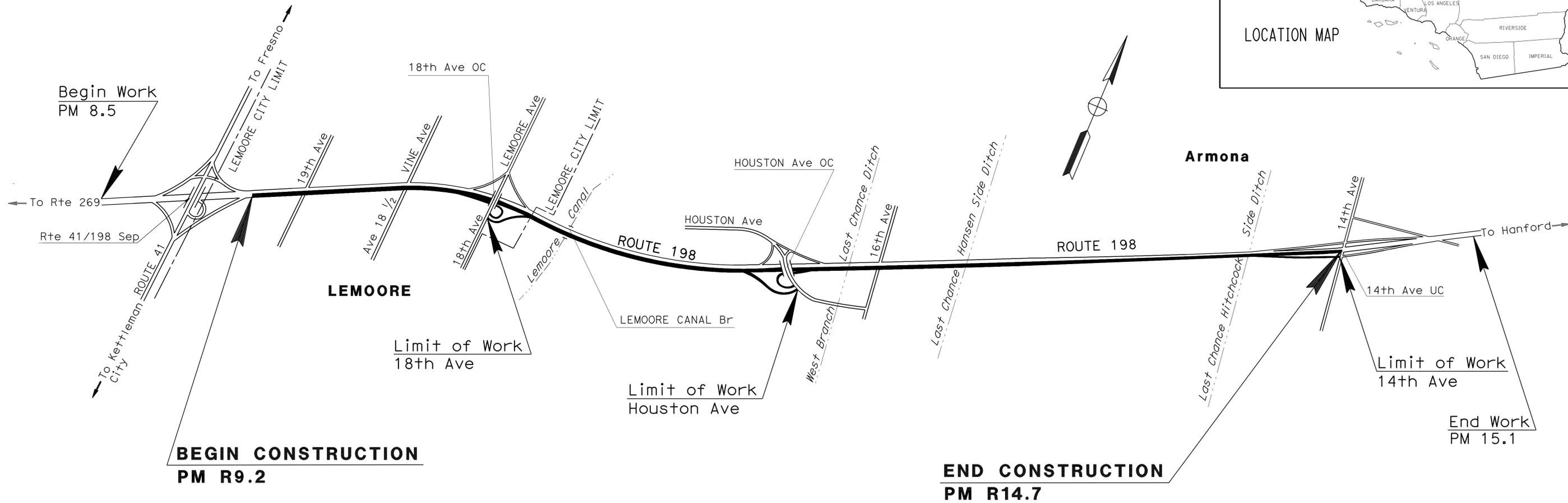
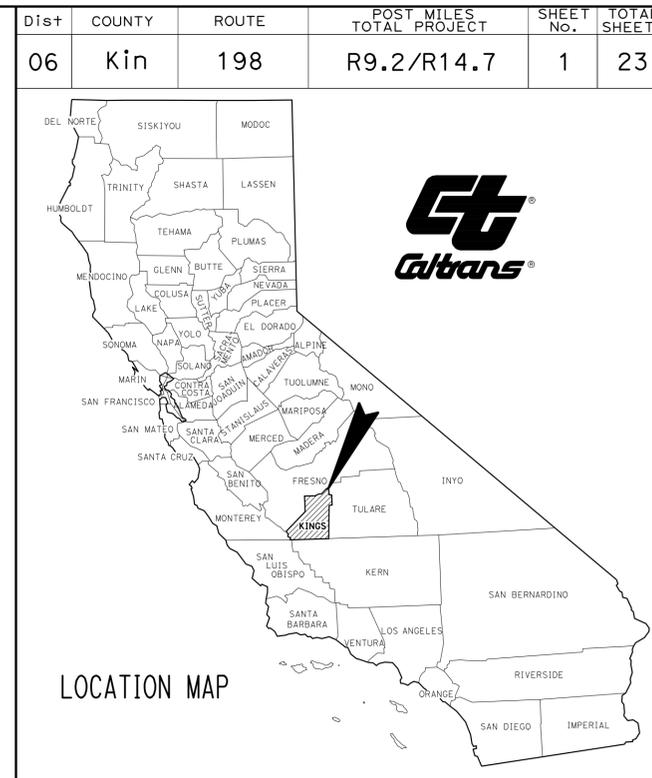
THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

ACNH-P198(052)E

PROJECT PLANS FOR CONSTRUCTION ON  
STATE HIGHWAY  
IN KINGS COUNTY  
IN AND NEAR LEMOORE  
FROM 0.3 MILE EAST OF ROUTE 41/198 SEPARATION  
TO 14TH AVENUE UNDERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



PROJECT MANAGER  
JIM HEINEN

DESIGN ENGINEER  
KAL DAHER

**BEGIN CONSTRUCTION  
PM R9.2**

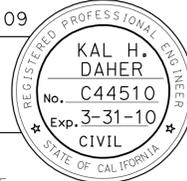
**END CONSTRUCTION  
PM R14.7**

NO SCALE

*K. Daher* 8-13-09  
PROJECT ENGINEER DATE  
REGISTERED CIVIL ENGINEER

November 30, 2009  
PLANS APPROVAL DATE

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



THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	2	23

K. Daher		8-13-09
REGISTERED CIVIL ENGINEER	DATE	
11-30-09		
PLANS APPROVAL DATE		

REGISTERED PROFESSIONAL ENGINEER	KAL H. DAHER
No. C44510	
Exp 3-31-10	
CIVIL	

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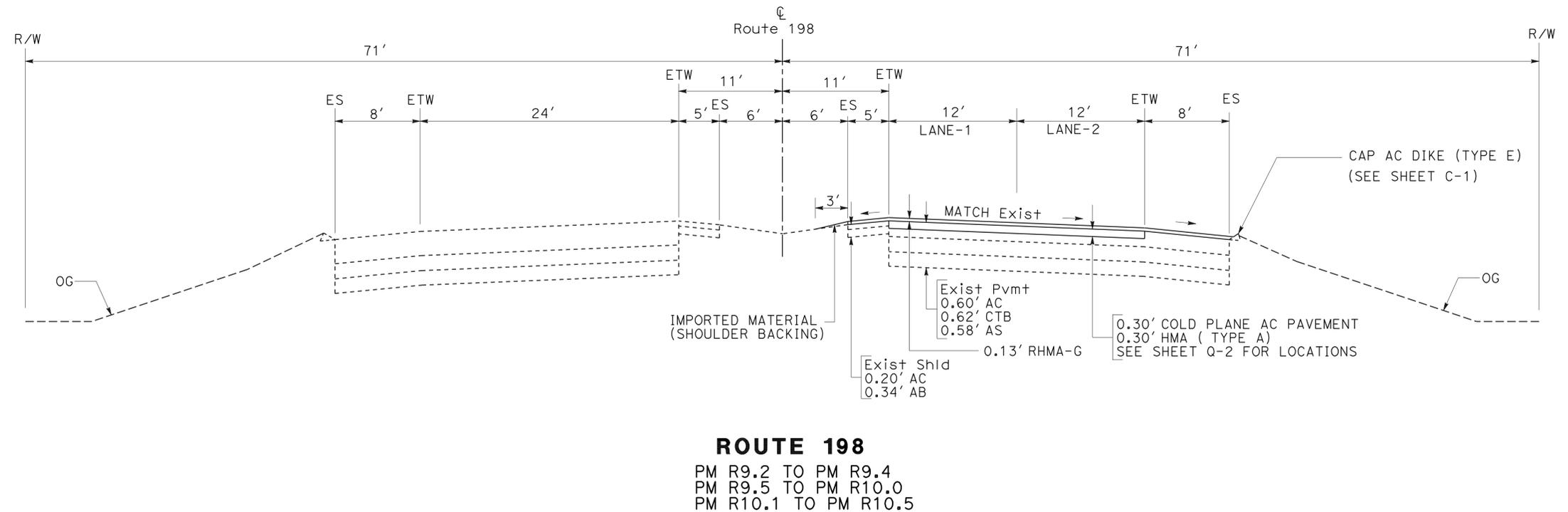
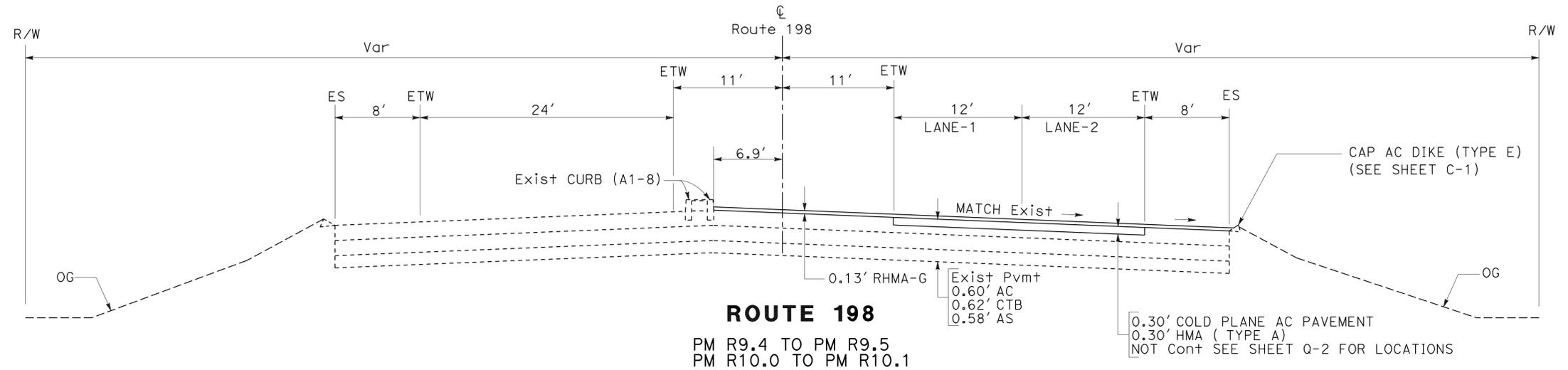
**ABBREVIATIONS:**

RHMA-G RUBBERIZED HOT MIX ASPHALT (GAP-GRADED)

**NOTES:**

- DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
- SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
- FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

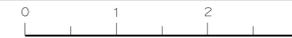
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 KAL DAHER  
 MANAL ELBOGOADY  
 KAL DAHER  
 REVISIONS: (None shown)  
 REVISOR: (None shown)  
 DATE: (None shown)

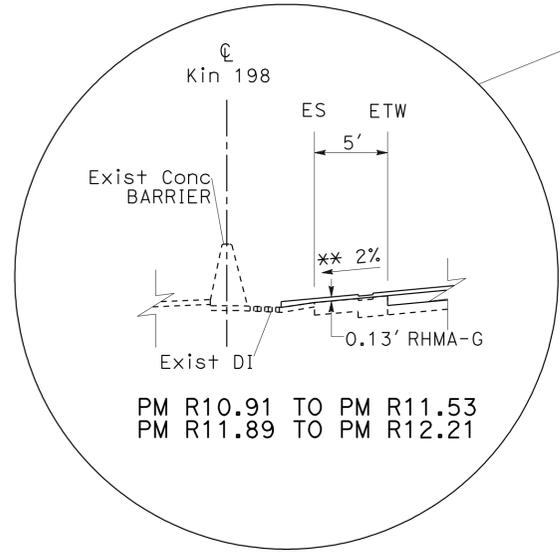
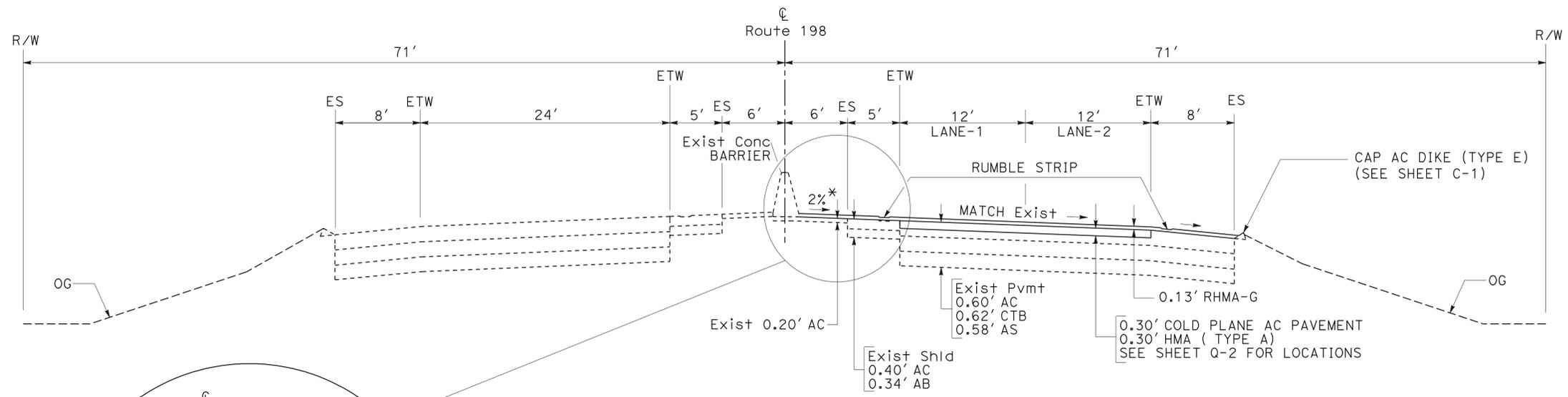


**TYPICAL CROSS SECTIONS**

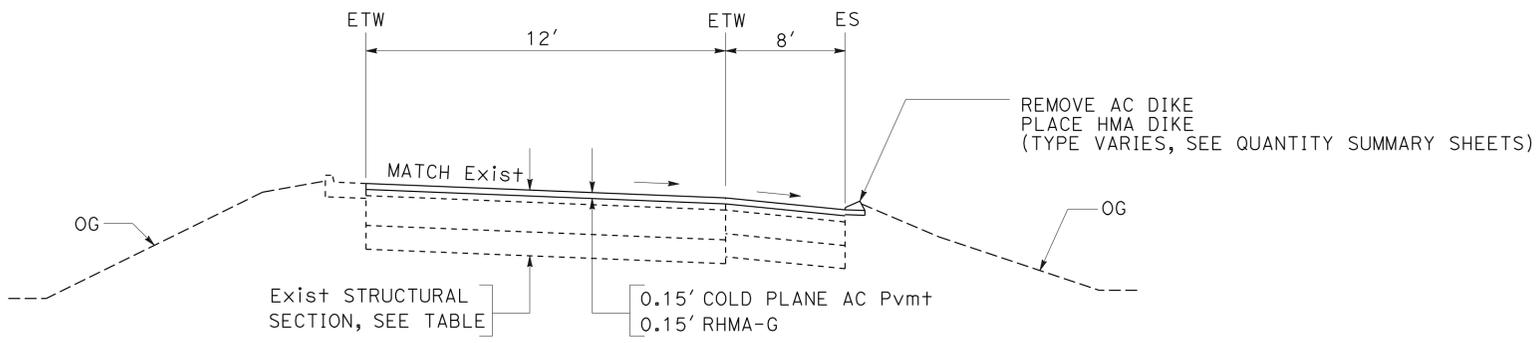
NO SCALE

**X-1**





**ROUTE 198**  
PM R10.5 TO PM R14.7



**RAMPS R-1, R-2, R-3, R-4, & R-5**

**EXISTING RAMP STRUCTURAL SECTION**

RAMPS	LOCATION	THICKNESS					
		TRAVELED WAY			SHOULDER		
		AC	AB	AS	AC	AB	AS
R-1	18th Ave / EB / OFF-RAMP	0.36	0.83	0.58	0.36	0.59	0.58
R-2	18th Ave / EB / ON-RAMP	0.32	0.67	0.42	0.32	0.43	0.42
R-3	HOUSTON Ave / EB / OFF-RAMP	0.32	0.67	0.42	0.32	0.43	0.42
R-4	HOUSTON Ave / EB / ON-RAMP	0.36	0.83	0.58	0.36	0.59	0.58
R-5	14th Ave / EB / OFF-RAMP	0.41	0.83	0.58	0.41	0.59	0.58

\* VARIES 2% TO -2% AT SUPERELEVATION FROM PM R10.91 TO PM R11.53 AND FROM PM R11.89 TO PM R12.21  
 \*\* 3% AT PM R14.64 TO PM R14.69

**TYPICAL CROSS SECTIONS**

NO SCALE

**X-2**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 DESIGN  
 Et Caltrans  
 FUNCTIONAL SUPERVISOR: KAL DAHER  
 CHECKED BY: KAL DAHER  
 CALCULATED/DESIGNED BY: KAL DAHER  
 REVISED BY: KAL DAHER  
 DATE REVISED:

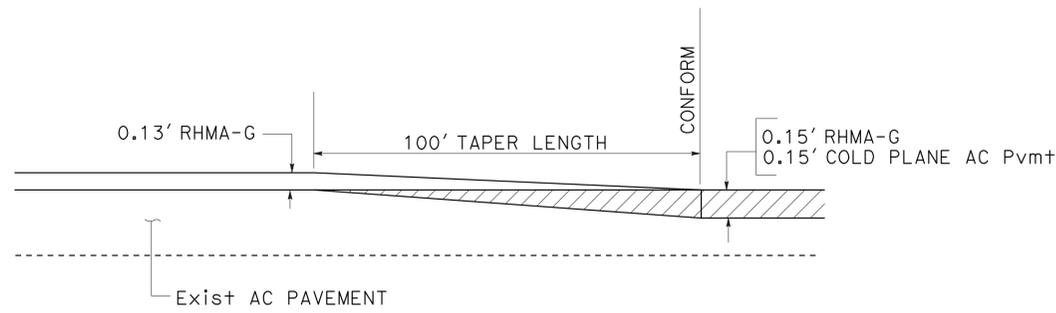
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	4	23
			8-13-09	DATE	
REGISTERED CIVIL ENGINEER			PLANS APPROVAL DATE		
11-30-09			11-30-09		
KAL H. DAHER No. C44510 Exp. 3-31-10 CIVIL			REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					

**LEGEND:**

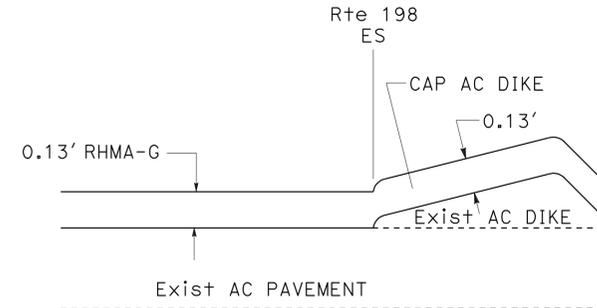
 COLD PLANE AC PAVEMENT

**ABBREVIATIONS:**

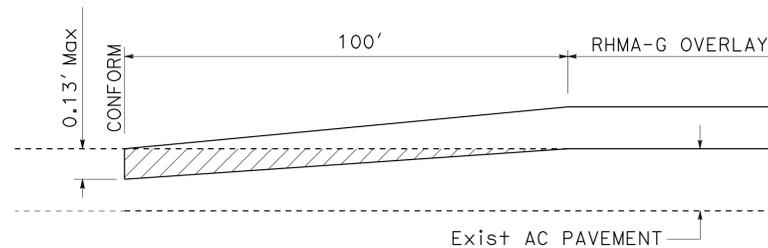
RHMA-G RUBBERIZED HOT MIX ASPHALT (GAP-GRADED)



**PAVING TRANSITION TAPER (RAMPS)**

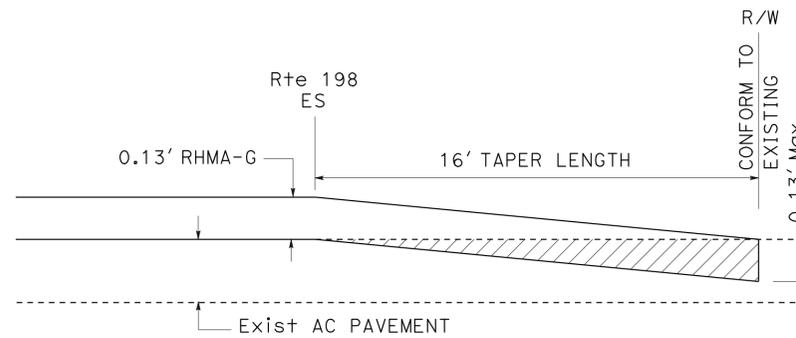


**CAP AC DIKE**



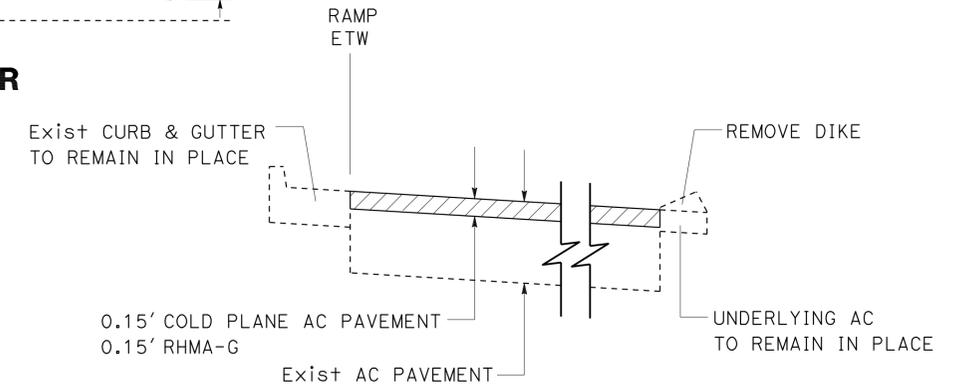
**TYPICAL TRANSITION TO CONFORM RHMA-G PAVEMENT**

AT Beg OF PROJECT  
AT END OF PROJECT

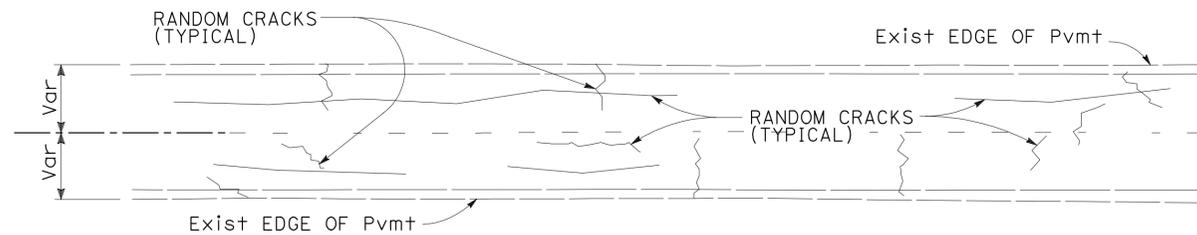


**PAVING TRANSITION TAPER**

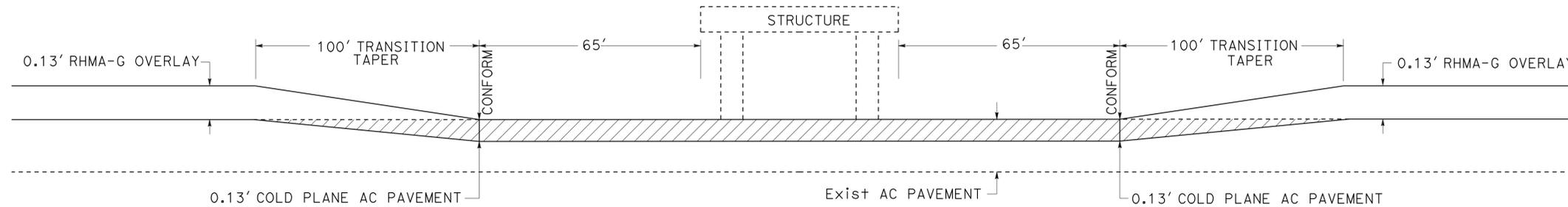
AT 19th Ave  
AT 18 1/2 Ave  
AT 16th Ave



**COLD PLANE ON RAMPS**



**CRACK TREATMENT DETAIL**



**TYPICAL LONGITUDINAL CONFORM AT OVERCROSSINGS  
AT 18th Ave AND HOUSTON Ave**

**CONSTRUCTION DETAILS**

NO SCALE

**C-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
  
 DESIGN  
 KAL DAHER  
 MANAL ELBOGDADY  
 KAL DAHER  
 REVISIONS BY  
 DATE  
 REVISIONS BY  
 DATE



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN

FUNCTIONAL SUPERVISOR  
 KAL DAHER

CALCULATED-DESIGNED BY  
 CHECKED BY

MANAL ELBOGDADY  
 KAL DAHER

REVISED BY  
 DATE REVISED

NOTE:  
 UTILITY LOCATIONS ARE APPROXIMATE, AND HAVE NOT BEEN POSITIVELY LOCATED EXACT LOCATIONS TO BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

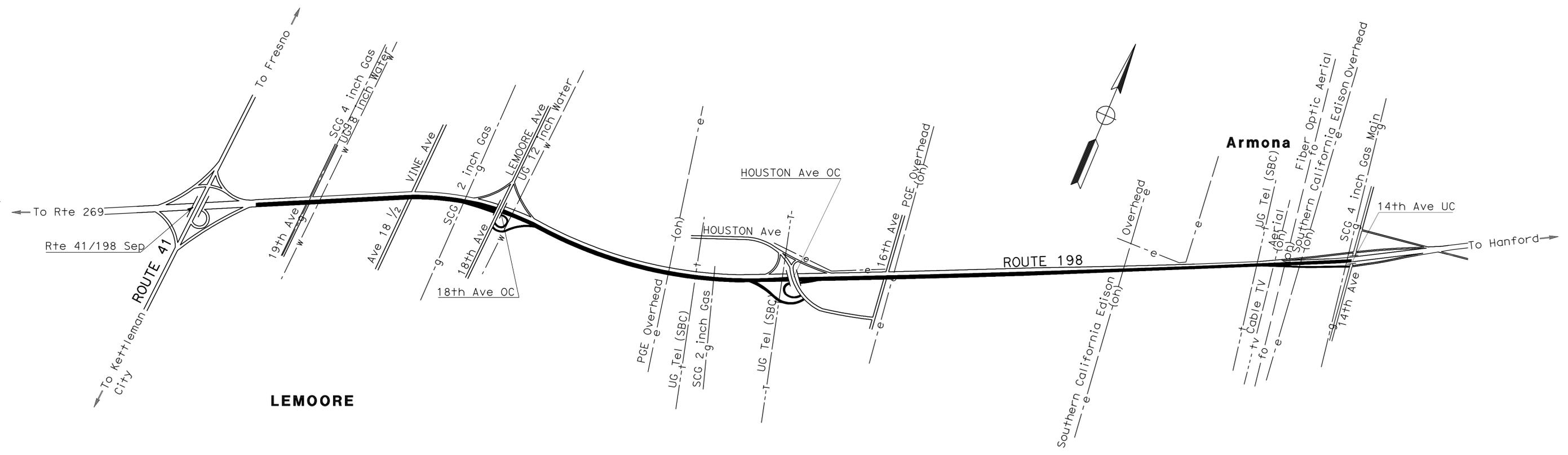
ABBREVIATIONS:  
 PGE PACIFIC GAS AND ELECTRIC  
 SCG SOUTHERN CALIFORNIA GAS COMPANY  
 SBC SOUTHERN BELL COMPANY

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	6	23

K. Daher  
 REGISTERED CIVIL ENGINEER DATE 8-13-09  
 11-30-09  
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER  
 KAL H. DAHER  
 No. C44510  
 Exp. 3-31-10  
 CIVIL  
 STATE OF CALIFORNIA

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LEMOORE

Armona

ROUTE 198

**UTILITY PLAN**  
 NO SCALE **U-1**

THIS PLAN IS ACCURATE FOR UTILITIES ONLY



# PAVEMENT DELINEATION QUANTITIES

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	8	23

*Hassan M. Taha* 5-06-09  
 REGISTERED CIVIL ENGINEER DATE

**HASSAN M. TAHA**  
 No. 60130  
 Exp. 06/30/10  
 CIVIL  
STATE OF CALIFORNIA

11-30-09  
 PLANS APPROVAL DATE

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ROUTE	LOCATION PM TO PM		DETAIL No.	PAVEMENT MARKERS (RETROREFLECTIVE)			REMOVE PAVEMENT MARKERS (N)	REMOVE THERMO- PLASTIC TRAFFIC STRIPE LF	THERMOPLASTIC TRAFFIC STRIPE					THERMOPLASTIC PAVEMENT MARKING Description SQFT SQFT			
				TYPE G Clear (One-way)	TYPE H Yellow (One-Way)	TYPE C Red (One-Way)			8" SOLID	4" SOLID	4" BROKEN (12-3)	4" BROKEN (36-12)	4" BROKEN (17-7)				
				EA	EA	EA			EA	LF	LF	LF	LF			LF	
ROUTE 198/EB	9.20	14.70	25		606				29,040								
	9.20	14.70	12	606			606					29,040					
	9.20	9.42	27B						1,162								
	9.42	9.50	27C								423			2 TYPE III ARROW	84	84	
	9.42	9.46	38	10			10	422	211					4 TYPE V ARROW	132	132	
	10.00	10.08	27C								423						
	10.08	10.51	27B							2,270							
	10.51	10.57	36	30			30	1268	634					2 TYPE III ARROW	84	84	
	10.57	10.81	27B							1,267				4 TYPE V ARROW	132	132	
	10.81	10.84	27C								159						
	10.84	11.84	27B							5,280							
	11.84	11.90	36	30			30	1268	634								
	11.90	12.15	27B							1,320							
	12.15	12.19	27C								212						
	12.19	12.66	27B							2,482							
	12.66	12.75	27C								476						
	12.75	14.49	27B							9,187							
	14.49	14.55	36	30			30	1268	634								
	14.55	14.70	27B							792							
	9.38		14A														
9.58		14A															
10.38		14A															
10.73		14A															
11.23		14A															
11.73		14A															
13.40		14A															
13.92		14A															
14.24		14A															
R-1 18th Ave/EB/ OFF RAMP			25A		45		45		1,056					1 "SCHOOL"	35	35	
			27B						1,109					1 "AHEAD"	31	31	
R-2 18th Ave/EB/ ON RAMP			25A		58		58		1,373					1 - LIMIT LINE (35')	35	35	
			27B						1,373					2 TYPE IV(L) ARROW	30	30	
			36A	14			14	634	317					2 TYPE IV(R) ARROW	30	30	
			8									159		1 CROSSWALK (60')	120	120	
														1 - TYPE I ARROW	31	31	
R-3 HOUSTON Ave/EB/ OFF RAMP			25A		49		49		1,162					1 "STOP"	22	22	
			27B						1,162					1 "AHEAD"	31	31	
														1 TYPE V ARROW	33	33	
R-4 HOUSTON Ave/EB/ ON RAMP			25A		34		34		792					1 "STOP"	22	22	
			27B						950					1 CROSSWALK (24')	48	48	
			36A	14			14	634	317					1 TYPE I ARROW	31	31	
			8									159		1 CROSSWALK (30')	60	60	
16th Ave			21						60					4 TYPE V ARROW	132	132	
														1 "STOP"	22	22	
R-5 14th Ave/EB/ OFF RAMP			25A		47		47		1,109					1 - LIMIT LINE (24')	24	24	
			27B						1,109					3 TYPE V ARROW	99	99	
														3 "STOP"	66	66	
														1 "AHEAD"	31	31	
													1 CROSSWALK (30')	60	60		
SUBTOTAL				734	839	36	1573	5494	2747	64,055	1693	29,040	318				
TOTAL					1609		1573	5494	2747	64,055	1693	29,040	318			1485	1485

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

## PAVEMENT DELINEATION QUANTITIES AND DETAILS

**PDQ-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN  
 FUNCTIONAL SUPERVISOR  
 KAL DAHER  
 CALCULATED-DESIGNED BY  
 CHECKED BY  
 MANAL ELBOGDADY  
 KAL DAHER  
 REVISED BY  
 DATE REVISED  
 x  
 x  
 x  
 x  
 x

ABBREVIATION:  
LNMI - LINEAR MILE

**ROADWAY QUANTITIES**

LOCATION	SHEET No.	RUBBERIZED HOT MIX ASPHALT (GAP-GRADED)	HOT MIX ASPHALT (TYPE A)	TACK COAT	COLD PLANE AC PAVEMENT	CRACK TREATMENT
		TON	TON	TON	SQYD	LNMI
Rte 198	PM R9.2 TO PM R14.7	11,428	2986	31	14,745	13
	@ Beg OF PROJECT (PM R9.2)	C-1			143	
	@ END OF PROJECT (PM R14.7)	C-1			143	
	UNDER 18th Ave OC	C-1			1,306	
	UNDER HOUSTON Ave OC	C-1			1,306	
	CAP AC DIKE	C-1		527		
	HMA DIKE (ALL TYPES)			183		
RAMPS	18th Ave/OFF-RAMP/R-1	X-2	214	0.5	2,111	
	18th Ave/ON-RAMP/R-2	X-2	303	0.7	2,984	
	HOUSTON Ave/OFF-RAMP/R-3	X-2	405	0.9	4,002	
	HOUSTON Ave/ON-RAMP/R-4	X-2	262	0.6	2,587	
	14th Ave/OFF-RAMP/R-5	X-2	349	0.8	3,447	
<b>TOTAL</b>		12,961	3696	34.5	32,774	13

**DIKE QUANTITIES**

LOCATION	PLACE HMA DIKE			HMA (TYPE A) TON	REMOVE AC DIKE LF
	(TYPE C) LF	(TYPE E) LF	(TYPE F) LF		
	18th Ave/OFF-RAMP/R-1	62	950		
18th Ave/ON-RAMP/R-2	62	1343	82	36.5	1487
HOUSTON Ave/OFF-RAMP/R-3		1801		47	1801
HOUSTON Ave/ON-RAMP/R-4		1164		31	1164
14th Ave/OFF-RAMP/R-5		1551		41	1551
<b>TOTAL</b>	124	6809	164	*183	7097

\* - INCLUDED IN ROADWAY QUANTITY TABLE

**CAP AC DIKE**

LOCATION	LENGTH	HMA (TYPE A)
	LF	TON
PM R9.2 TO PM R9.4	1,260	33
PM R9.5 TO PM R10.0	2,752	73
PM R10.1 TO PM R10.5	2,195	58
PM R10.6 TO PM R10.8	1,027	27
PM R10.9 TO PM R11.0	577	15
PM R11.5 TO PM R11.8	1,352	36
PM R11.9 TO PM R12.1	988	26
PM R12.3 TO PM R12.6	2,195	58
PM R12.7 TO PM R14.0	6,657	175
PM R14.6 TO PM R14.7	997	26
<b>TOTAL</b>	20,000	*527

**IMPORTED MATERIAL (SHOULDER BACKING)**

LOCATION	TON
PM R9.2 TO PM R9.4 - MEDIAN	15
PM R9.5 TO PM R10.0 - MEDIAN	37
PM R10.1 TO PM R10.5 - MEDIAN	30
<b>TOTAL</b>	82

**RUMBLE STRIP**

LOCATION	OUTSIDE Shld	INSIDE Shld
	Sta	Sta
PM R10.5 To PM R10.7	12.8	
PM R10.8 To PM R11.7	51.1	
PM R11.8 To PM R12.0	11.9	
PM R12.1 To PM R12.6	30.1	
PM R12.7 To PM R14.4	92.0	
PM R14.5 To PM R14.7	13.6	
PM R10.5 To PM R14.7		221.5
<b>SUBTOTAL</b>	211.5	221.5
<b>TOTAL</b>	433	

**METAL BEAM GUARD RAILING**

LOCATION	RECONSTRUCT MBGR (STEEL POST)	ALTERNATIVE FLARED TERMINAL SYSTEM	END ANCHOR ASSEMBLY (TYPE SFT)	REMOVE TERMINAL SECTION	MBGR LAYOUT (N)
	LF	EA	EA	EA	TYPE
	UNDER 18th Ave OC R+	87.5	1	1	1
UNDER HOUSTON Ave OC R+	112.5	1	1	1	16B
<b>TOTAL</b>	200.0	2	2	2	

(N) - NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY.

**SUMMARY OF QUANTITIES**

**Q-1**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	9	23

K. Daher  
 REGISTERED CIVIL ENGINEER  
 8-13-09 DATE  
 11-30-09 PLANS APPROVAL DATE  
 KAL H. DAHER  
 No. C44510  
 Exp. 3-31-10  
 CIVIL  
 STATE OF CALIFORNIA

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**ROUTE 198 (EASTBOUND)  
 COLD PLANE AC PAVEMENT**

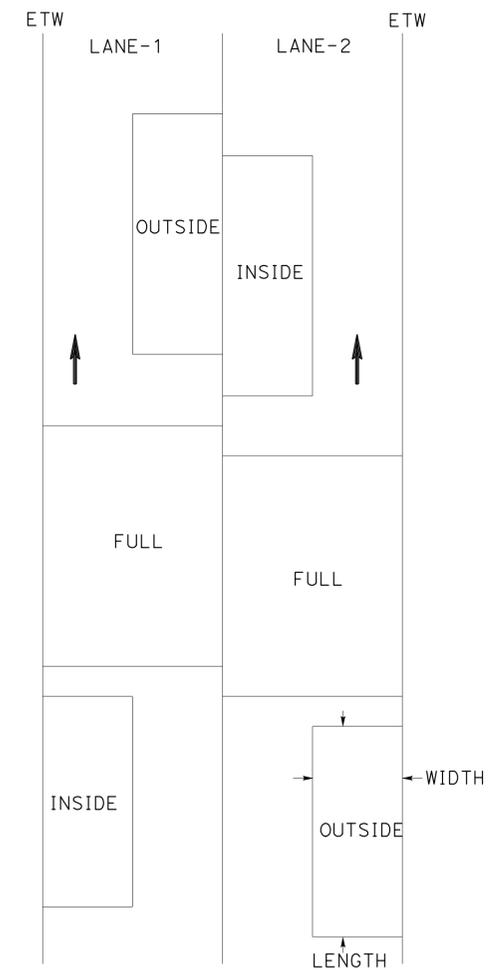
FROM PM	TO PM	LENGTH	WIDTH	LOCATION	AREA (SQYD)
9.419	9.430	58.08'	6'	R2-OUTSIDE	39
9.472	9.500	147.84'	6'	R2-OUTSIDE	99
9.508	9.518	52.80'	12'	R2-FULL	70
9.553	9.564	58.08'	6'	R2-INSIDE	39
9.583	9.618	184.8'	12'	R2-FULL	246
9.672	9.730	306.24'	12'	R2-FULL	408
9.730	9.757	142.56'	6'	R2-OUTSIDE	95
9.779	9.815	190.08'	6'	R2-OUTSIDE	127
9.890	9.904	73.92'	12'	R2-FULL	99
9.904	9.948	232.32'	6'	R2-OUTSIDE	155
10.383	10.396	36.96'	6'	R2-INSIDE	25
10.415	10.432	89.76'	12'	R2-FULL	120
10.432	10.450	95.04'	6'	R2-OUTSIDE	63
10.466	10.498	168.96'	6'	R2-OUTSIDE	113
10.512	10.524	63.36'	6'	R2-OUTSIDE	42
10.524	10.576	274.56'	6'	R2-OUTSIDE	183
10.576	10.682	559.68'	6'	R2-OUTSIDE	373
10.682	10.703	110.88'	12'	R2-FULL	148
10.719	10.742	121.44'	6'	R2-OUTSIDE	81
10.742	10.758	84.48'	12'	R2-FULL	113
10.890	10.902	63.36'	6'	R2-OUTSIDE	42
10.976	10.990	73.92'	6'	R2-OUTSIDE	49
11.051	11.058	36.96'	12'	R2-FULL	49
11.210	11.239	153.12'	6'	R2-OUTSIDE	102
11.239	11.301	327.36'	12'	R2-FULL	436
11.301	11.404	543.84'	6'	R2-OUTSIDE	363
11.404	11.415	58.08'	12'	R2-FULL	77
11.491	11.538	248.16'	6'	R2-OUTSIDE	165
11.568	11.625	300.96'	12'	R2-FULL	401
11.625	11.733	570.24'	6'	R2-OUTSIDE	380
11.733	11.747	73.92'	12'	R2-FULL	99
11.747	11.760	68.64'	6'	R2-OUTSIDE	46
11.841	11.897	295.68'	6'	R2-OUTSIDE	197
11.914	11.945	163.68'	12'	R2-FULL	218
11.978	12.000	116.16'	6'	R2-OUTSIDE	77
12.038	12.060	116.16'	12'	R2-FULL	155
12.060	12.081	110.88'	12'	R2-FULL	148
12.060	12.081	110.88'	12'	R1-FULL	148
12.081	12.092	58.08'	6'	R2-OUTSIDE	39
12.129	12.141	63.36'	12'	R2-FULL	84
12.169	12.178	47.52'	12'	R2-FULL	63
SUBTOTAL					5977

**ROUTE 198 (EASTBOUND)  
 COLD PLANE AC PAVEMENT Cont**

FROM PM	TO PM	LENGTH	WIDTH	LOCATION	AREA (SQYD)
12.192	12.252	316.80'	6'	R2-OUTSIDE	211
12.274	12.288	73.92'	12'	R2-FULL	99
12.301	12.325	126.72'	12'	R2-FULL	169
12.325	12.363	200.64'	6'	R2-OUTSIDE	134
12.363	12.425	327.36'	12'	R2-FULL	436
12.425	12.500	396.00'	6'	R2-INSIDE	264
12.500	12.527	142.56'	12'	R2-FULL	190
12.545	12.595	264.00'	12'	R2-FULL	352
12.615	12.632	89.76'	12'	R2-FULL	120
12.642	12.726	443.52'	6'	R2-OUTSIDE	296
12.726	12.784	306.24'	12'	R2-FULL	408
12.784	12.797	68.64'	6'	R2-INSIDE	46
12.822	12.834	63.36'	6'	R2-OUTSIDE	42
12.842	12.936	496.32'	12'	R2-FULL	662
12.936	12.955	100.32'	6'	R2-INSIDE	67
13.018	13.029	58.08'	12'	R2-FULL	77
13.029	13.053	126.72'	6'	R2-OUTSIDE	84
13.053	13.092	205.96'	6'	R2-INSIDE	137
13.092	13.112	105.60'	12'	R2-FULL	141
13.122	13.172	264.00'	12'	R2-FULL	352
13.172	13.210	200.64'	6'	R2-INSIDE	134
13.278	13.309	163.68'	12'	R2-FULL	218
13.370	13.417	248.16'	6'	R2-OUTSIDE	165
13.429	13.447	95.04'	6'	R2-INSIDE	63
13.447	13.467	105.60'	12'	R2-FULL	141
13.523	13.535	63.36'	12'	R2-FULL	84
13.697	13.721	126.72'	6'	R2-OUTSIDE	84
13.721	13.738	89.76'	12'	R2-FULL	120
13.750	13.770	105.60'	6'	R2-OUTSIDE	70
13.770	13.863	491.04'	12'	R2-FULL	655
13.863	13.937	390.72'	6'	R2-OUTSIDE	260
13.959	13.968	47.52'	6'	R2-OUTSIDE	32
13.981	14.018	195.36'	6'	R2-OUTSIDE	130
14.143	14.157	73.92'	12'	R2-FULL	99
14.204	14.258	285.12'	6'	R2-INSIDE	190
14.295	14.312	89.76'	12'	R2-FULL	120
14.312	14.324	63.36'	6'	R2-OUTSIDE	42
14.365	14.377	63.36'	6'	R2-OUTSIDE	42
14.447	14.543	506.88'	6'	R2-OUTSIDE	338
14.543	14.731	992.64'	12'	R1-FULL	1,324
14.731	14.755	126.72'	12'	R2-FULL	169
SUBTOTAL					8,768
TOTAL					*14,745

**LEGEND**

➔ DIRECTION OF TRAVEL



LOCATION OF COLD PLANE AC PAVEMENT  
 ROUTE 198

\* QUANTITIES INCLUDED IN THE ROADWAY QUANTITIES TABLE

**SUMMARY OF QUANTITIES  
 Q-2**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	10	23

K. Daher  
 REGISTERED CIVIL ENGINEER  
 8-13-09 DATE  
 11-30-09 PLANS APPROVAL DATE

**KAL H. DAHER**  
 No. C44510  
 Exp. 3-31-10  
 CIVIL

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	11	23

<i>Daniel Vo</i>	8-12-09
REGISTERED ELECTRICAL ENGINEER DATE	
11-30-09	
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER
DANIEL THANH VO
No. 17408
Exp. 9/30/10
ELECTRICAL
STATE OF CALIFORNIA

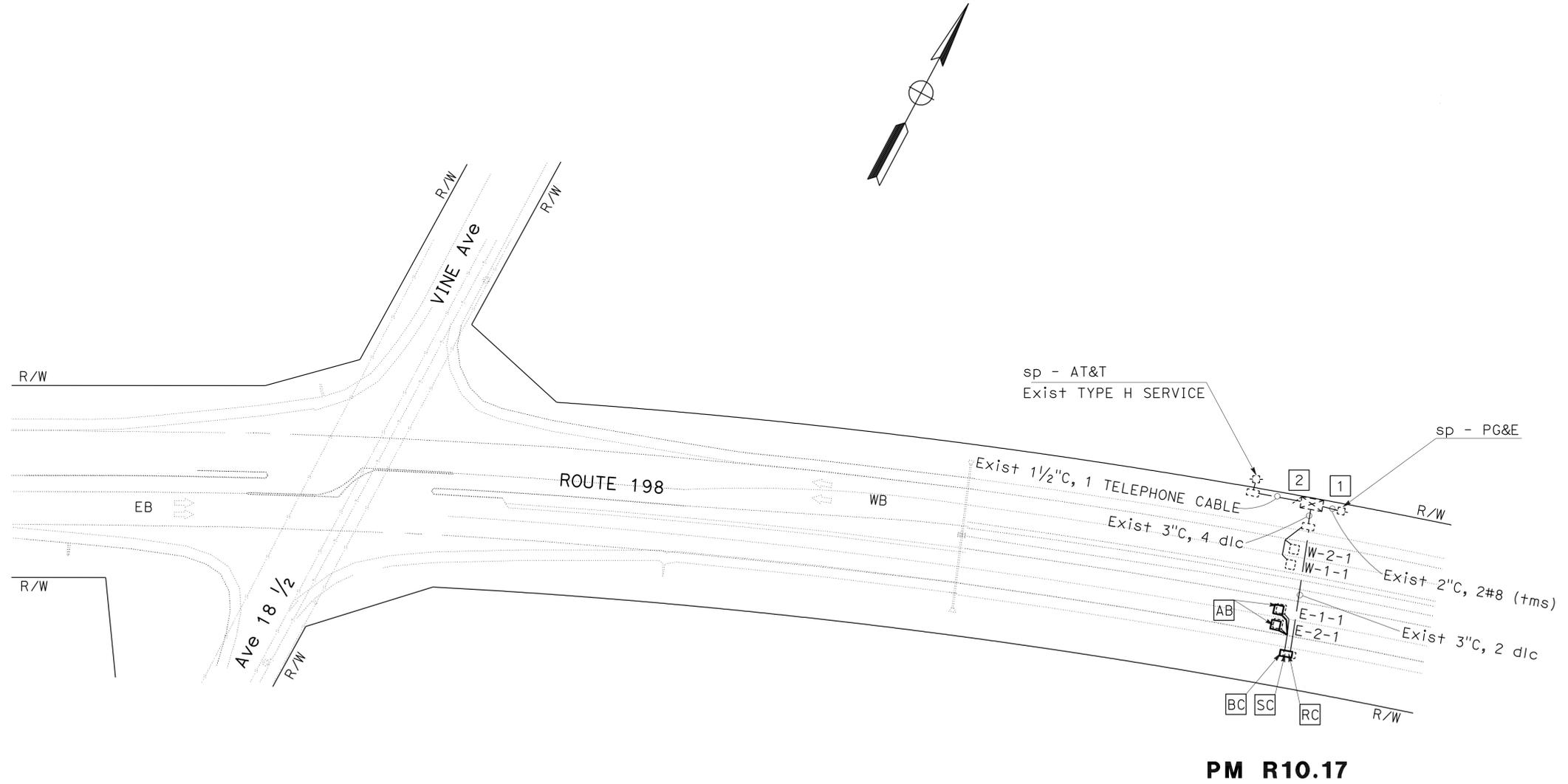
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**NOTES: (FOR SHEET E-1 THROUGH E-3)**

- 1 EXISTING TYPE A SERVICE.
- 2 Exist MODEL 170 CONTROLLER ASSEMBLY WITH MODEL 334 CABINET.
3. ALL PULL BOXES SHALL BE No. 5 WITH EXTENSION UNLESS OTHERWISE NOTED.
4. FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

**ABBREVIATIONS:**

PG&E = PACIFIC GAS AND ELECTRIC  
 AT&T = AMERICAN TELEPHONE AND TELEGRAPH



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	REVISOR	DATE
<b>Electrical DESIGN</b>	ALI BAKHDOOD	KARIM ABDOLLAHIAN	
	CHECKED BY	REVISOR	DATE
		DANIEL VO	

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

**DETECTOR LOOP**  
**E-1**  
 SCALE: 1"=50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans** ELECTRICAL DESIGN

FUNCTIONAL SUPERVISOR  
 ALI BAKHDOD

CALCULATED-DESIGNED BY  
 CHECKED BY

KARIM ABDOLLAHIAN  
 DANIEL VO

REVISED BY  
 DATE REVISED

**NOTE:**

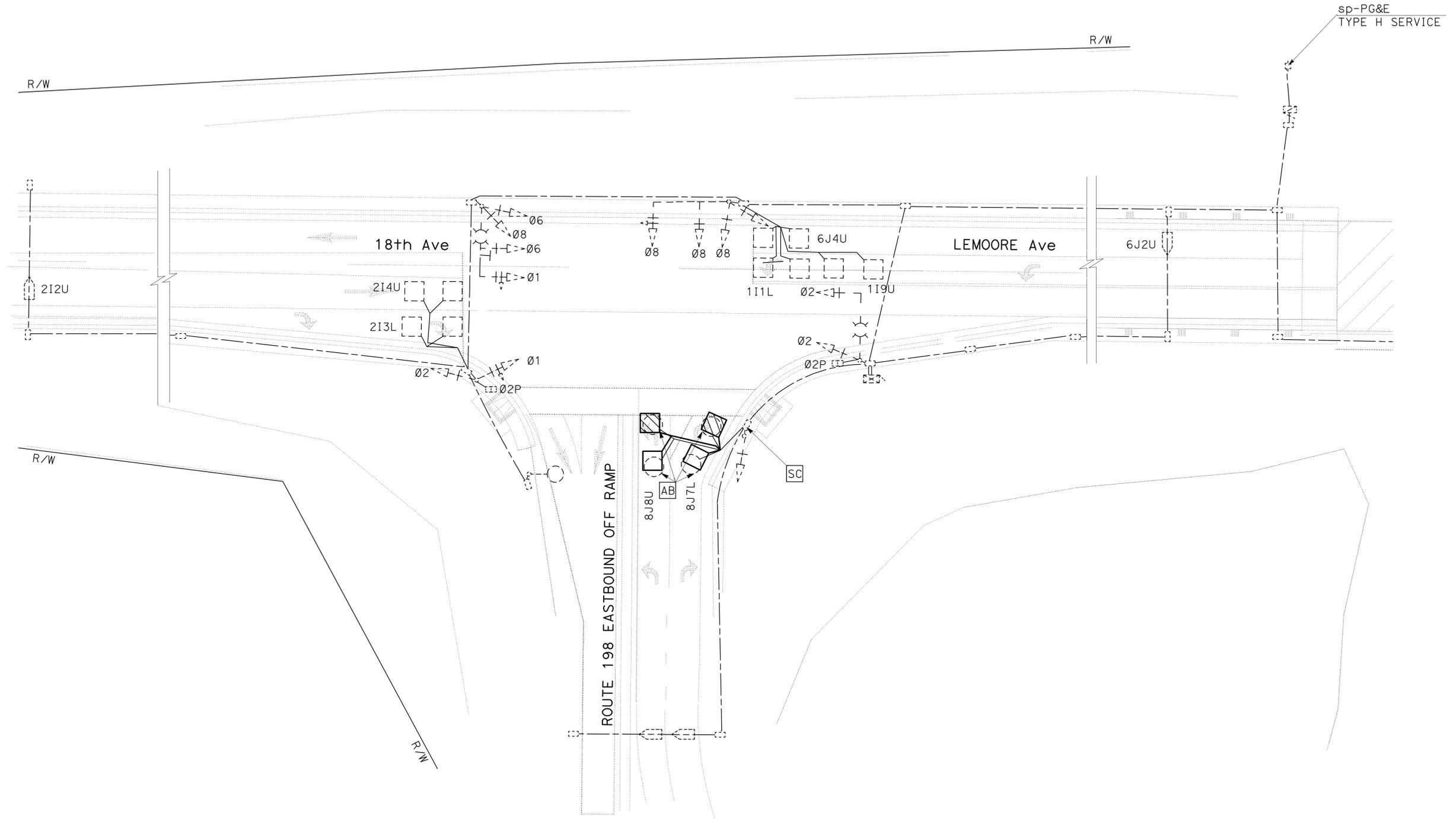
1. FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	12	23

Daniel Vo  
 REGISTERED ELECTRICAL ENGINEER DATE 8-12-09  
 11-30-09  
 PLANS APPROVAL DATE  
 No. 17408  
 Exp. 9/30/10  
 ELECTRICAL  
 STATE OF CALIFORNIA

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PM R10.56

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

**DETECTOR LOOP**  
**E-2**  
 SCALE: 1"=20'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	13	23

<i>Daniel Thanh Vo</i>	8-12-09
REGISTERED ELECTRICAL ENGINEER	DATE
11-30-09	
PLANS APPROVAL DATE	

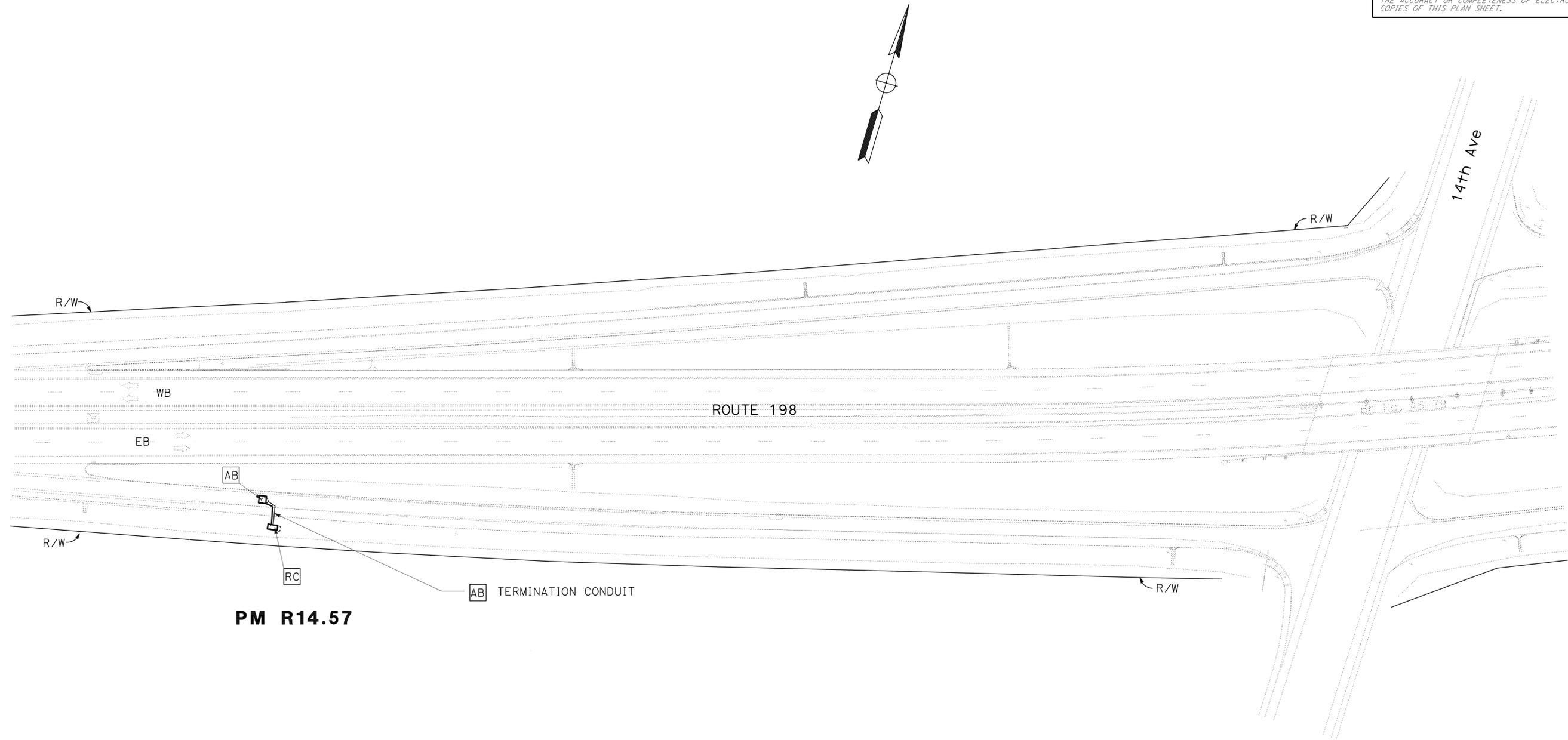
  

REGISTERED PROFESSIONAL ENGINEER
DANIEL THANH VO
No. 17408
Exp. 9/30/10
ELECTRICAL
STATE OF CALIFORNIA

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.

**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
<b>Caltrans</b> ELECTRICAL DESIGN
FUNCTIONAL SUPERVISOR
ALI BAKHDOUD
CALCULATED-DESIGNED BY
CHECKED BY
KARIM ABDOLLAHIAN
DANIEL VO
REVISED BY
DATE REVISED



THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

**DETECTOR LOOP**  
 SCALE: 1" = 20'  
**E-3**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	14	23

*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

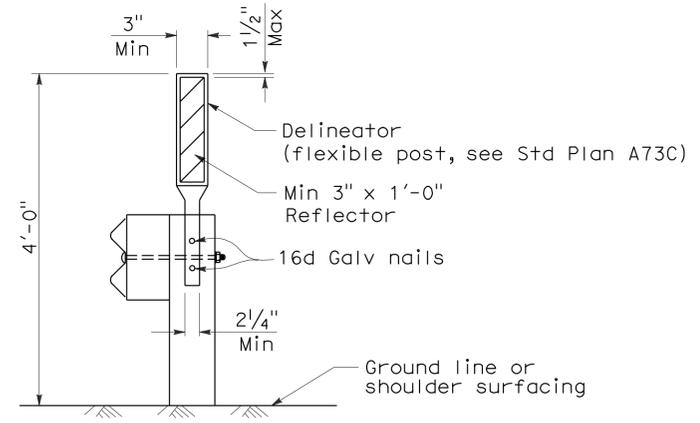
*The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.*

REGISTERED PROFESSIONAL ENGINEER  
Randell D. Hiatt  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

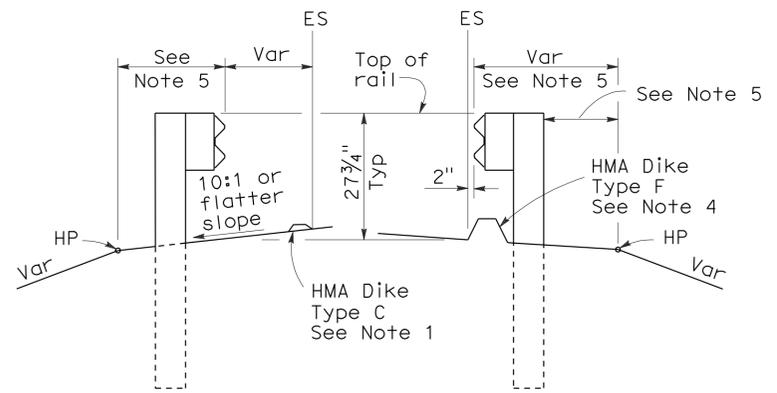
To accompany plans dated 11-30-09

**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 A87B.
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 4". Mountable dike should not be used. For dike and curb details, see Revised Standard Plans RSP A87A and Standard Plan A87B.
5. For details of typical distance between the face of rail and hinge point, see Standard Plan A77C3.



**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

RSP A77C4 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77C4  
DATED MAY 1, 2006 - PAGE 47 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77C4**

2006 REVISED STANDARD PLAN RSP A77C4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	15	23

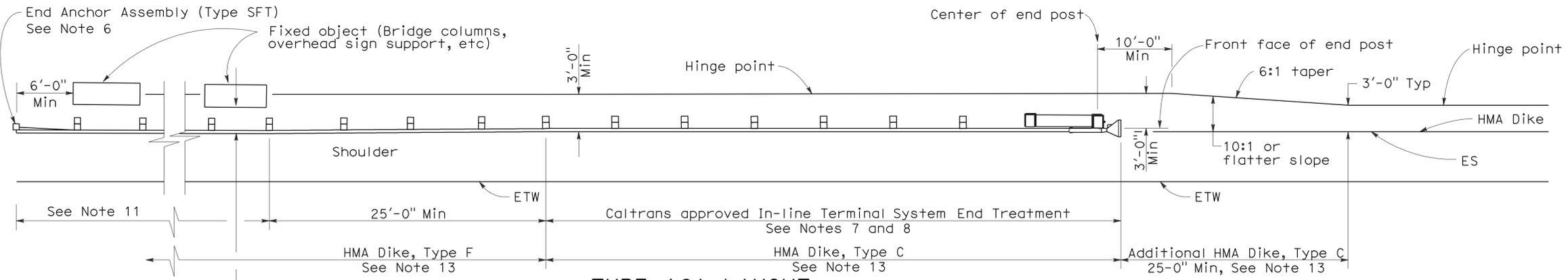
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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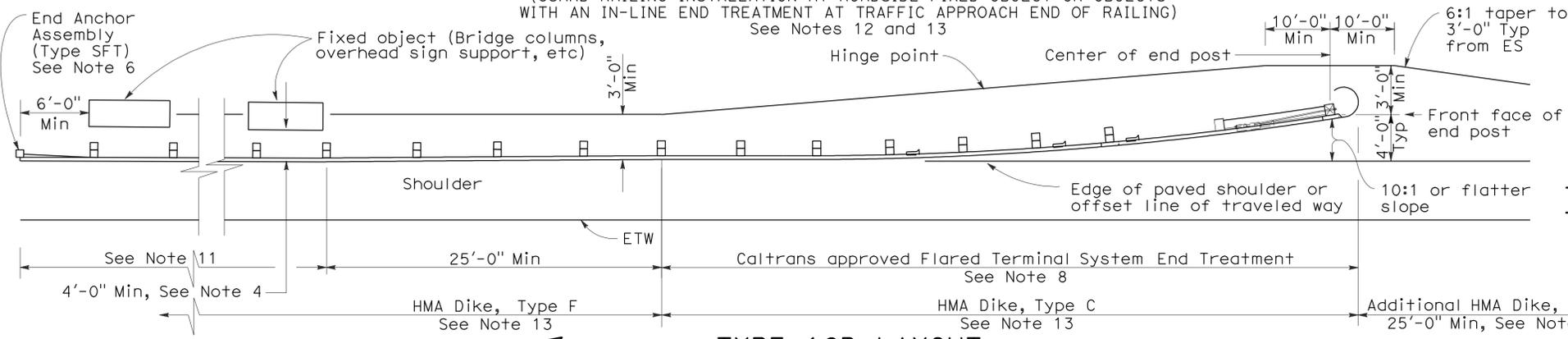
To accompany plans dated 11-30-09

2006 REVISED STANDARD PLAN RSP A77G3



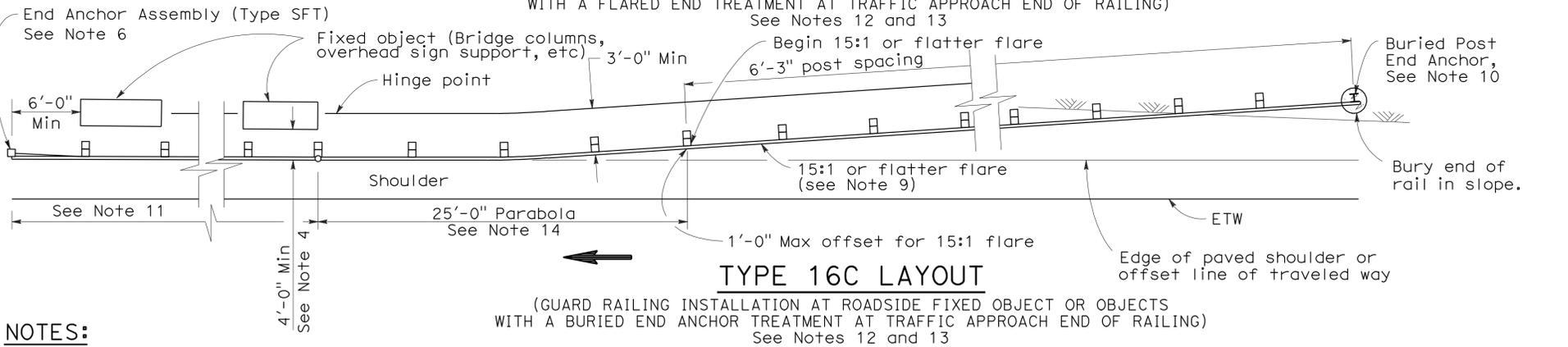
**TYPE 16A LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH AN IN-LINE END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 7 and 8



**TYPE 16B LAYOUT**

(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A FLARED END TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 12 and 13

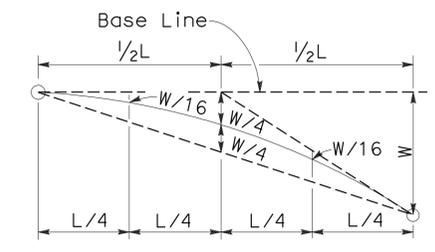


**TYPE 16C LAYOUT**

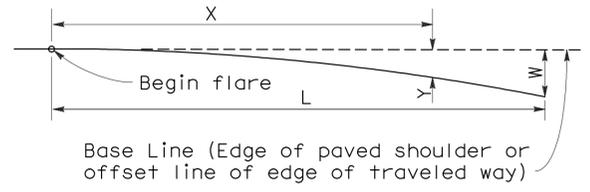
(GUARD RAILING INSTALLATION AT ROADSIDE FIXED OBJECT OR OBJECTS WITH A BURIED END ANCHOR TREATMENT AT TRAFFIC APPROACH END OF RAILING)  
See Notes 12 and 13

**NOTES:**

- Line post, blocks and hardware to be used are shown on Revised Standard Plans A77A1, A77A2, A77B1, A77C1 and A77C2.
- Guard railing post spacing to be 6'-3" center to center, except as otherwise noted.
- Except as noted, line posts are 6" x 8" x 6'-0" wood with 6" x 8" x 1'-2" wood blocks. W6 x 9 steel posts, 6'-0" in length, with 6" x 8" x 1'-2" notched wood blocks or notched recycled plastic blocks may be used for 6" x 8" x 6'-0" wood line posts with 6" x 8" x 1'-2" wood blocks where applicable and when specified.
- A 4'-0" minimum clearance is required between the face of the railing and the face of a fixed object located directly behind standard guard railing sections with post spacing of 6'-3". Construct guard railing as shown in the detail "Strengthened Railing Sections for Fixed Objects" on this plan, where the clearance between the face of the railing and the face of a fixed object is less than 4'-0", but not less than 2'-3". Where the clearance is less than 2'-3", a concrete wall or barrier should be constructed to shield the fixed object(s).
- Direction of adjacent traffic indicated by  $\rightarrow$ .
- For End Anchor Assembly (Type SFT) details, see Standard Plan A77H1.
- In-line Terminal System End Treatments are used where site conditions will not accommodate a flared end treatment.
- The type of terminal system to be used will be shown on the Project Plans.
- The 15:1 or flatter flare used with Type 16C Layout is based on the edge of the paved shoulder or offset line of edge of the traveled way. The length of guard railing within the 15:1 or flatter flare is based on site conditions and should be a length equal to multiples of 12'-6".
- For details of the Buried Post End Anchor used with Type 16C Layout, see Standard Plan A77I2.
- As site conditions dictate, construct additional guard railing to shield fixed object(s). Additional guard railing length equal to multiples of 12'-6". Post spacing at 6'-3" except as specified in Note 4.
- Layout Types 16A, 16B or 16C are typically used where guard railing is recommended to shield roadside fixed object(s) and a crashworthy end treatment is required for only one direction of traffic.
- Where placement of dike is required with guard railing, see Revised Standard Plan RSP A77C4 for dike positioning details.
- For typical flare offsets for 25'-0" length parabola with maximum offset of 1'-0", see Revised Standard Plan RSP A77E1.
- W6 x 15 steel post, 8'-0" in length, with 8" x 8" x 1'-2" notched wood block or notched recycled plastic blocks may be used in place of the 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood block shown in the "Strengthened Railing Sections Detail".

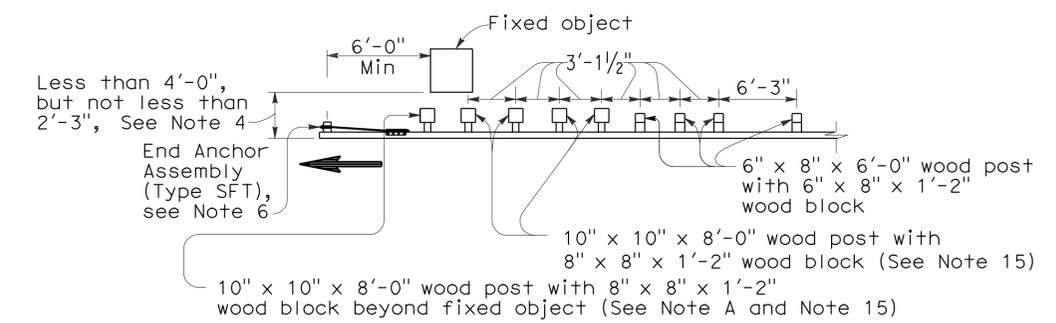


**TYPICAL PARABOLIC LAYOUT**



Base Line (Edge of paved shoulder or offset line of edge of traveled way)  
Y = Offset from base line  
W = Maximum offset  
X = Distance along base line  
L = Length of flare

**PARABOLIC FLARE OFFSETS**



**NOTE A:** For a series of fixed objects (bridge columns, overhead sign supports, etc.) additional 10" x 10" x 8'-0" wood post with 8" x 8" x 1'-2" wood blocks at 3'-1/2" center to center spacing are to be used between fixed objects.

**STRENGTHENED RAILING SECTIONS FOR FIXED OBJECT**

Use strengthened railing sections with Types 16A, 16B or 16C Layouts where minimum clearance between the face of the guard railing and fixed object(s) is less than 4'-0", but not less than 2'-3". See Note 4

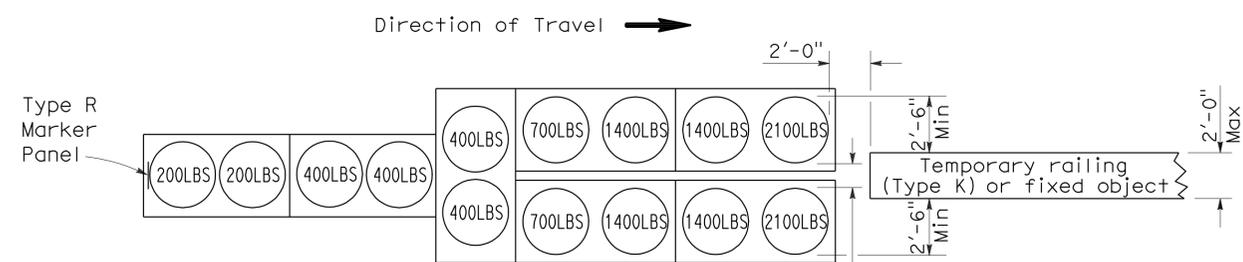
STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
**METAL BEAM GUARD RAILING TYPICAL LAYOUTS FOR ROADSIDE FIXED OBJECTS**

NO SCALE  
RSP A77G3 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN A77G3  
DATED MAY 1, 2006 - PAGE 61 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP A77G3**

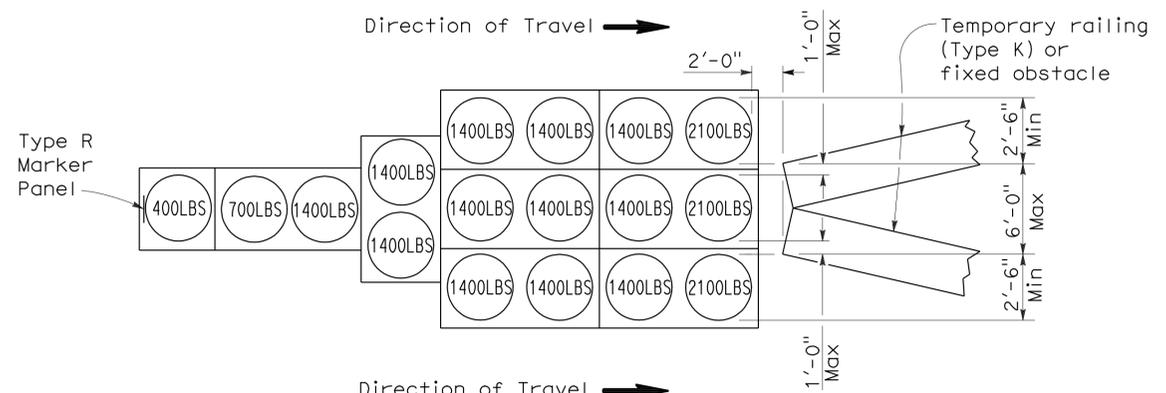
To accompany plans dated 11-30-09

2006 REVISED STANDARD PLAN RSP T1A



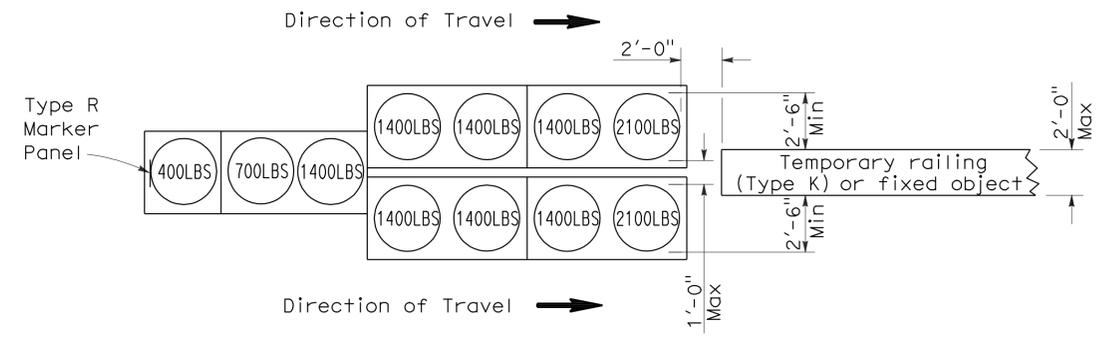
Direction of Travel →

**ARRAY 'TU14'**  
Approach speed 45 mph or more



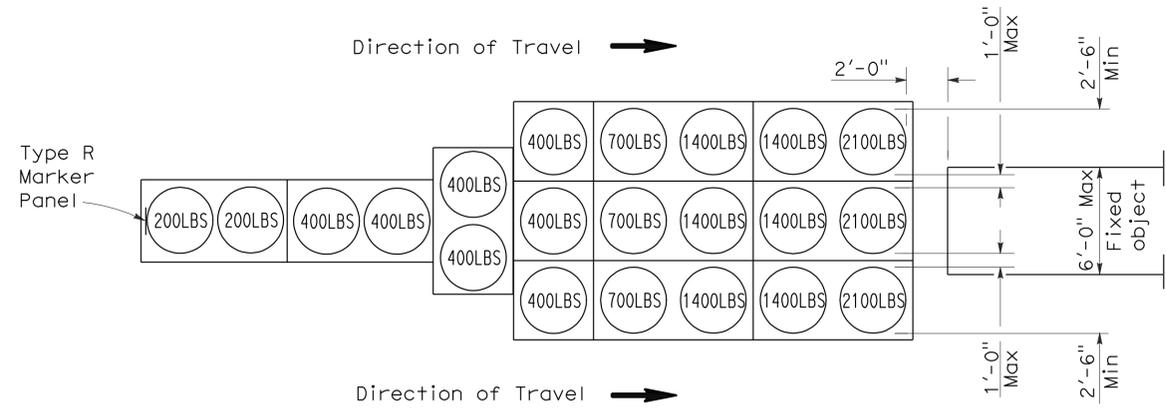
Direction of Travel →

**ARRAY 'TU17'**  
Approach speed less than 45 mph



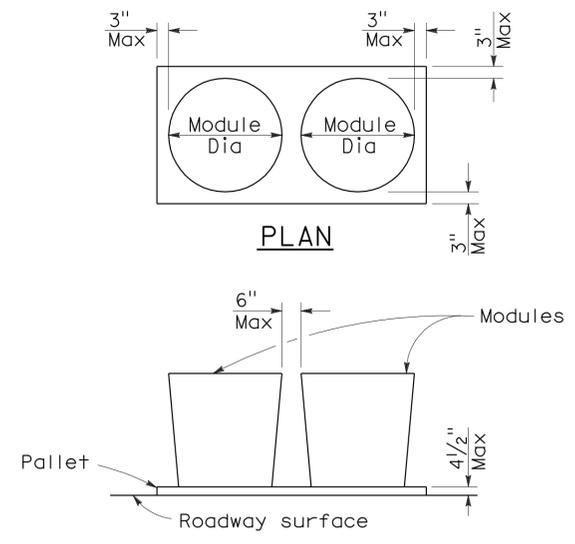
Direction of Travel →

**ARRAY 'TU11'**  
Approach speed less than 45 mph



Direction of Travel →

**ARRAY 'TU21'**  
Approach speed 45 mph or more



**PLAN**

**ELEVATION**

**CRASH CUSHION PALLET DETAIL**  
See Note 7

**NOTES:**

1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
2. All sand weights are nominal.
3. Temporary crash cushion arrays shall not encroach on the traveled way.
4. Place the top of Type R marker panel 1" below the module lid.
5. Refer to Standard Plan A73B for marker details.
6. Approach speeds indicated conform to NCHRP 350 Report criteria.
7. Use of pallets is optional.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(UNIDIRECTIONAL)**

NO SCALE

RSP T1A DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T1A  
DATED MAY 1, 2006 - PAGE 211 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T1A**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	17	23

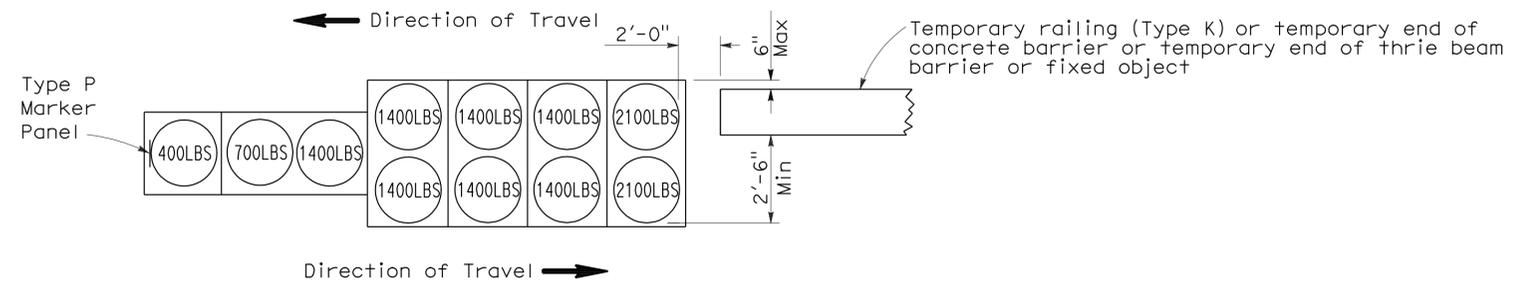
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

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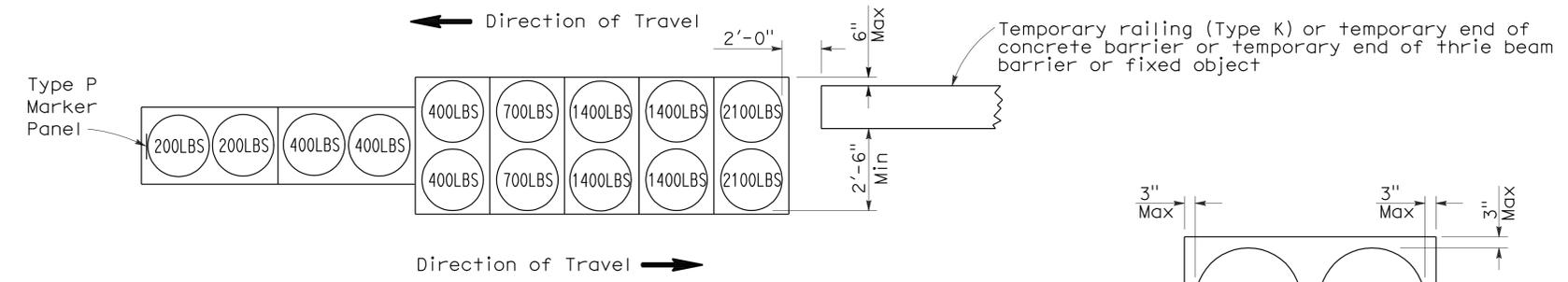
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

To accompany plans dated 11-30-09



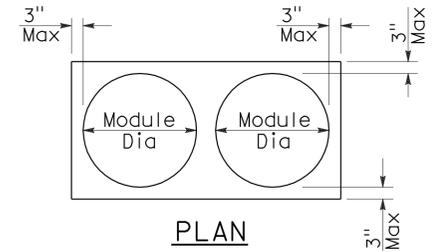
**ARRAY 'TB11'**

Approach speed less than 45 mph

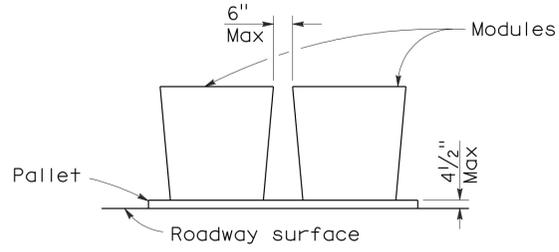


**ARRAY 'TB14'**

Approach speed 45 mph or more



PLAN



ELEVATION

**CRASH CUSHION PALLET DETAIL**

See Note 7

**NOTES:**

1. (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
2. All sand weights are nominal.
3. Temporary crash cushion arrays shall not encroach on the traveled way.
4. Place the Type P marker panel so that the bottom of the panel rests upon the pallet.
5. Refer to Standard Plan A73B for marker details.
6. Approach speeds indicated conform to NCHRP 350 Report criteria.
7. Use of pallets is optional.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(BIDIRECTIONAL)**

NO SCALE

RSP T1B DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T1B  
DATED MAY 1, 2006 - PAGE 212 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T1B**

2006 REVISED STANDARD PLAN RSP T1B

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	18	23

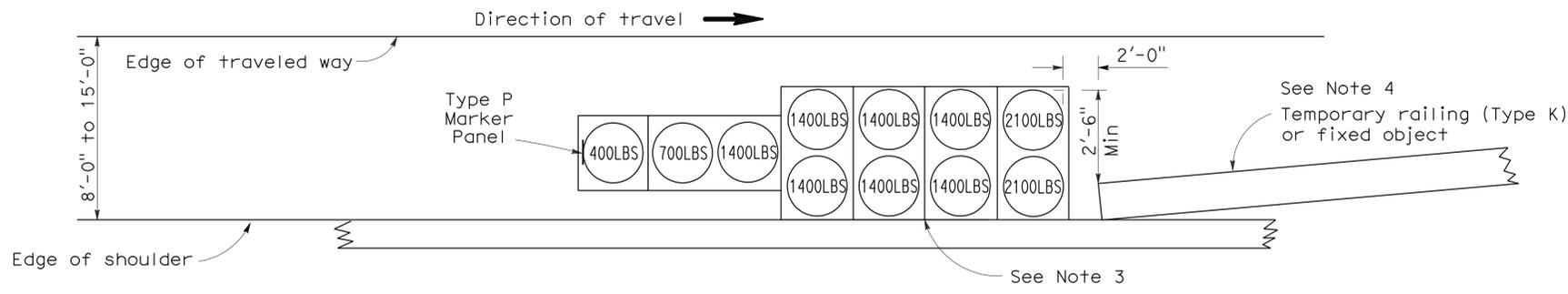
*Randell D. Hiatt*  
REGISTERED CIVIL ENGINEER

June 6, 2008  
PLANS APPROVAL DATE

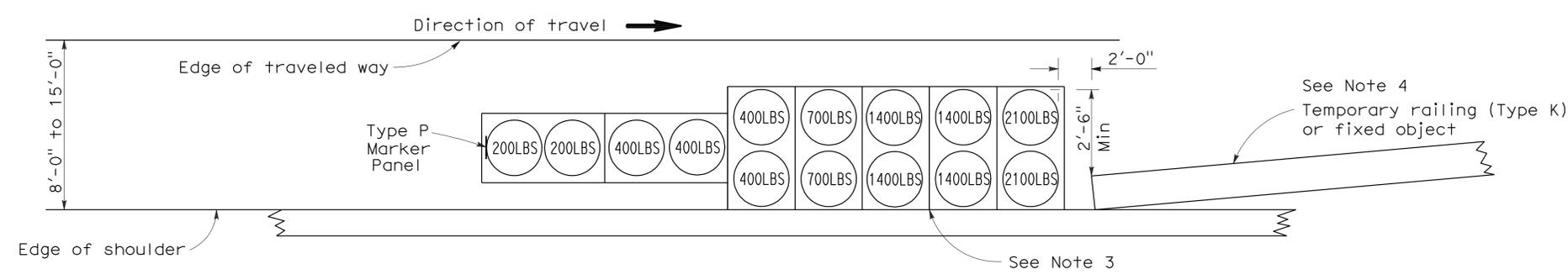
*Randell D. Hiatt*  
REGISTERED PROFESSIONAL ENGINEER  
No. C50200  
Exp. 6-30-09  
CIVIL  
STATE OF CALIFORNIA

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To accompany plans dated 11-30-09



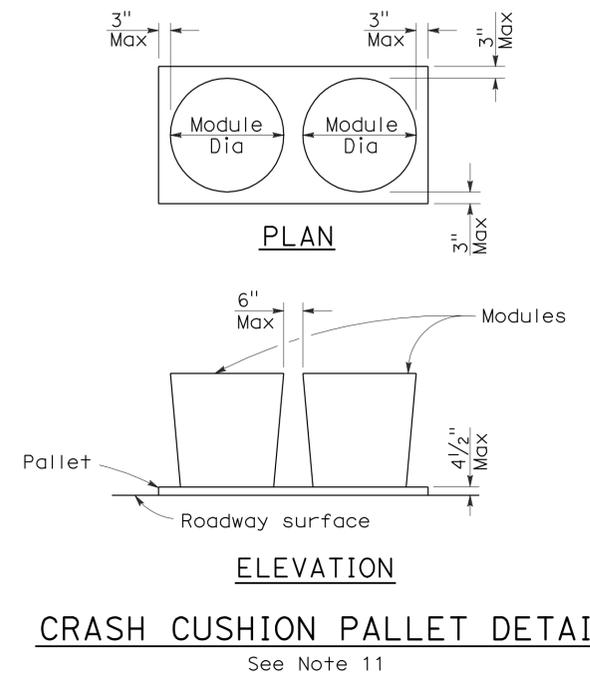
**ARRAY 'TS11'**  
Approach speed less than 45 mph  
See Note 9



**ARRAY 'TS14'**  
Approach speed 45 mph or more  
See Note 9

**NOTES:**

- (XXX) Indicates sand filled module location and weight of sand in pounds for each module. Module spacing is based on the greater diameter of the module.
- All sand weights are nominal.
- 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.
- If the fixed object or approach end of the temporary railing is less than 15'-0" from the edge of traveled way, a temporary crash cushion is required in a construction or work zone.
- Temporary crash cushion arrays shall not encroach on the traveled way.
- Arrays for median shoulders shall conform to details shown on this plan for outside shoulders.
- Place the Type P marker panel so that the bottom of the panel rests upon the pallet and faces traffic.
- Refer to Standard Plan A73B for marker details.
- For shoulder widths less than 8'-0", 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.
- Approach speeds indicated conform to NCHRP 350 Report criteria.
- Use of pallets is optional.



STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY CRASH CUSHION,  
SAND FILLED  
(SHOULDER INSTALLATIONS)**

NO SCALE

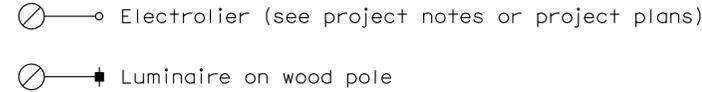
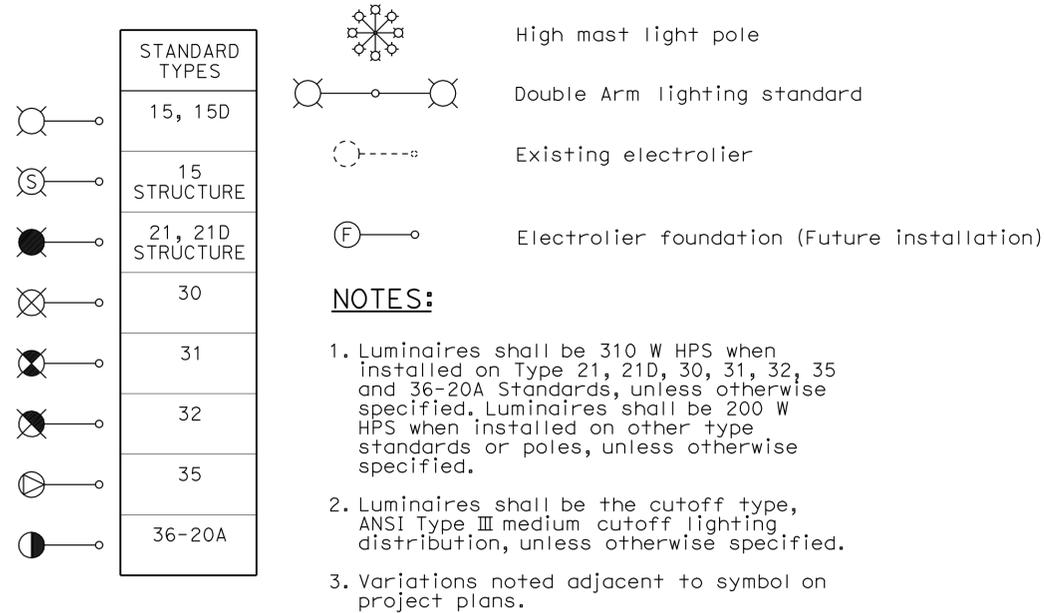
RSP T2 DATED JUNE 6, 2008 SUPERSEDES STANDARD PLAN T2  
DATED MAY 1, 2006 - PAGE 213 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP T2**

2006 REVISED STANDARD PLAN RSP T2



# ELECTROLIERS



## 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.
- 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 mounting vehicle signal faces, top attachment
MAS	mas	Mast arm mounting vehicle signal faces, side attachment
MAS-4A	mas-4A	Mast arm mounting vehicle signal faces, side attachment - 4 signal section
MAS-4B	mas-4B	
MAS-4C	mas-4C	
MAS-5A	mas-5A	Mast arm mounting vehicle signal faces, side attachment - 5 signal section
MAS-5B	mas-5B	
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		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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	20	23

REGISTERED ELECTRICAL ENGINEER

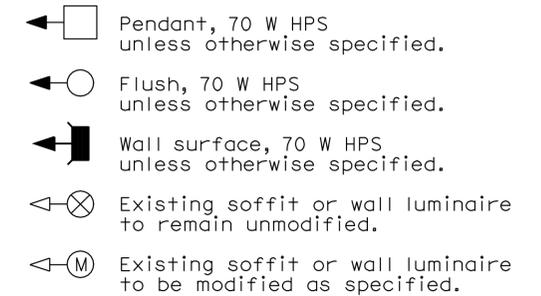
October 5, 2007
   
 PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
   
 Jeffrey G. McRae
   
 No. E14512
   
 Exp. 6-30-08
   
 ELECTRICAL
   
 STATE OF CALIFORNIA

To accompany plans dated 11-30-09

## SOFFIT AND WALL MOUNTED LUMINAIRES



### NOTE:

Arrow indicates "street side" of luminaire.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

# ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

RSP ES-1A DATED OCTOBER 5, 2007 SUPERSEDES STANDARD PLAN ES-1A DATED MAY 1, 2006 - PAGE 400 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1A**

2006 REVISED STANDARD PLAN RSP ES-1A

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	21	23

*Jeffery G. McRae*  
 REGISTERED ELECTRICAL ENGINEER  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

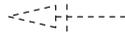
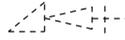
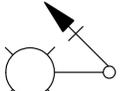
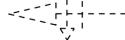
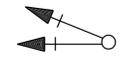
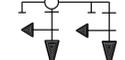
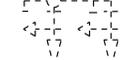
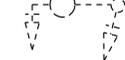
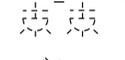
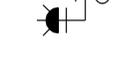
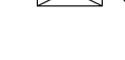
October 5, 2007  
 PLANS APPROVAL DATE

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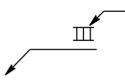
### CONDUIT

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-	-fo-	Fiber optic conduit
---	---	Conduit termination 
		Conduit riser in/on structure or service pole

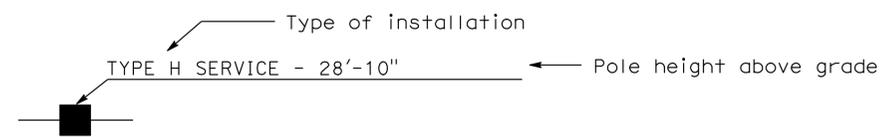
### SIGNAL EQUIPMENT

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
		Modifications of basic symbols: "L" indicates all non-arrow sections louvered "LG" indicates louvered green section only "PV" indicates 12" programmed visibility sections "8" indicates all 8" 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
		Type 15-FBS Standard with two vehicle signal face sections with lens, backplate and visor with a sign
		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

### SERVICE EQUIPMENT

PROPOSED	EXISTING	
---OH	---oh	Overhead lines
		Wood pole "U" indicates utility owned
		Pole guy with anchor
		Utility transformer - ground mounted
		Service equipment enclosure type
		Service equipment enclosure door indicates front of enclosure
		Telephone demarcation cabinet

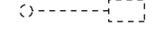
### POLE-MOUNTED SERVICE DESIGNATION



### ILLUMINATED OVERHEAD SIGN

PROPOSED	EXISTING	
		Overhead sign - Single post
		Overhead sign - Two post
		Overhead sign - Mounted on structure
		Overhead sign with electrolier

### SIGNAL EQUIPMENT Cont

PROPOSED	EXISTING	
		Guard post
		Type 1 Standard with "Meter On" sign
		Emergency Vehicle detector

### NOTES:

- All signal sections shall be 12" unless shown otherwise.
- Signal heads shall be provided with backplates unless shown otherwise.
- Signal indication shall be LED.

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS  
 (SYMBOLS AND ABBREVIATIONS)**  
 NO SCALE

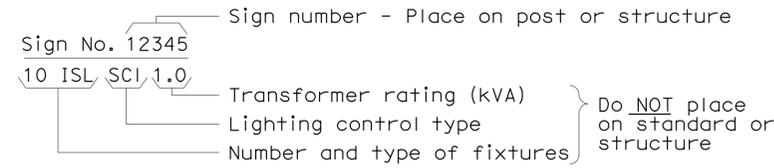
RSP ES-1B DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1B  
 DATED MAY 1, 2006 - PAGE 401 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1B**

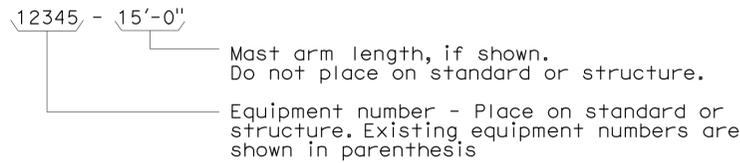
2006 REVISED STANDARD PLAN RSP ES-1B

### EQUIPMENT IDENTIFICATION

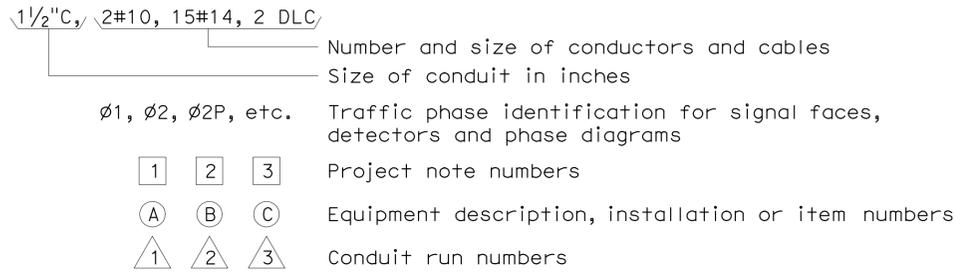
#### ILLUMINATED SIGN IDENTIFICATION NUMBER:



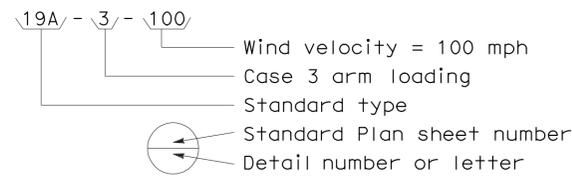
#### ELECTROLIER OR EQUIPMENT IDENTIFICATION NUMBER:



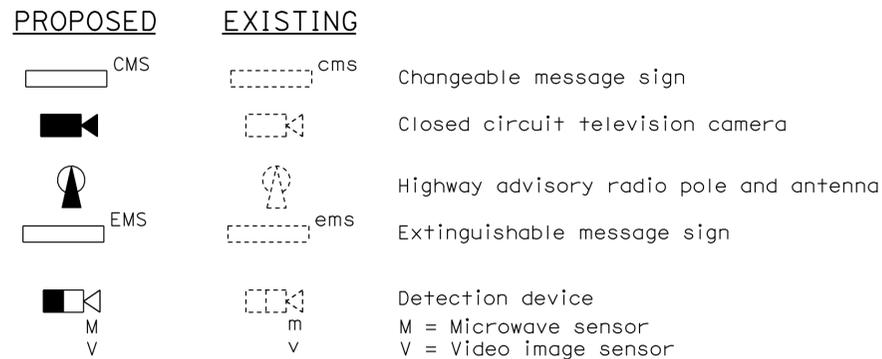
#### CONDUIT AND CONDUCTOR IDENTIFICATION:



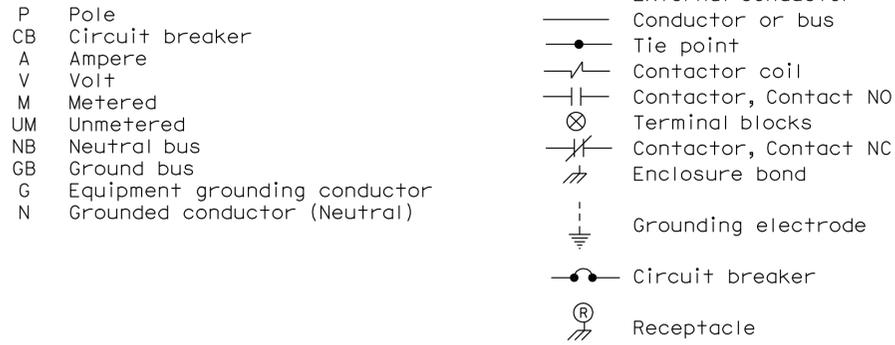
#### SIGNAL AND LIGHTING STANDARD (TYPICAL DESIGNATION):



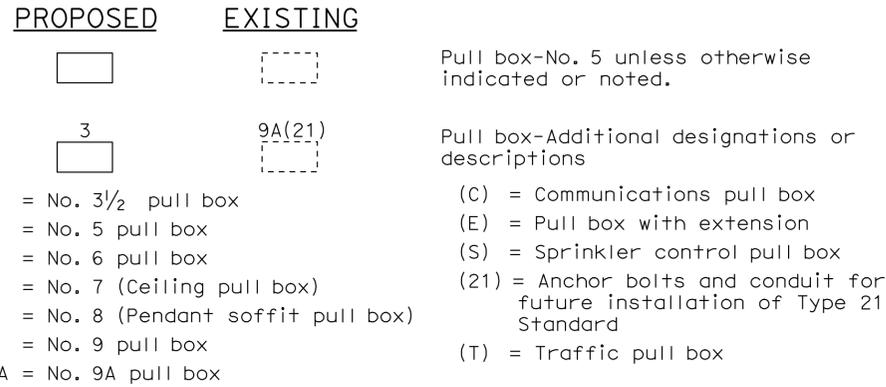
### MISCELLANEOUS EQUIPMENT



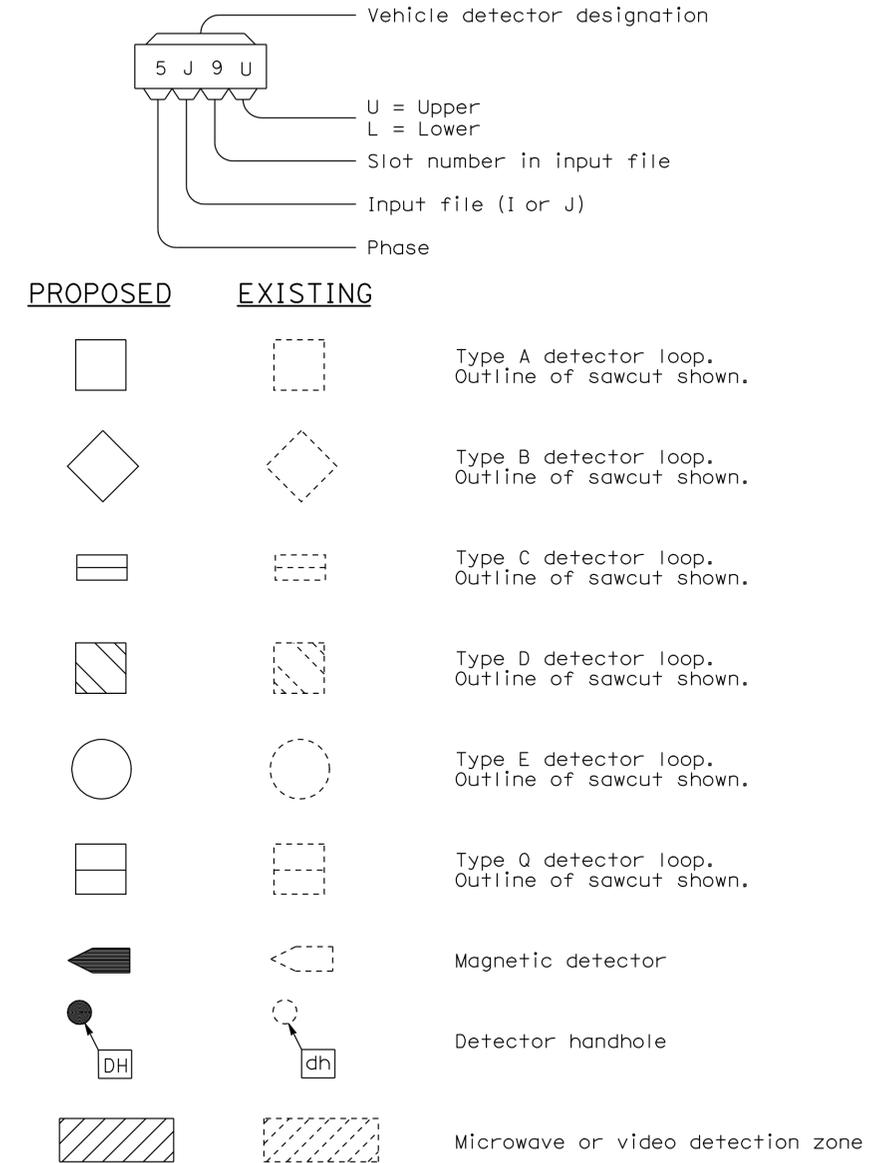
### WIRING DIAGRAM LEGEND



### PULL BOXES



### VEHICLE DETECTORS



STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION

## ELECTRICAL SYSTEMS (SYMBOLS AND ABBREVIATIONS)

NO SCALE

RSP ES-1C DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-1C  
 DATED MAY 1, 2006 - PAGE 402 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-1C**

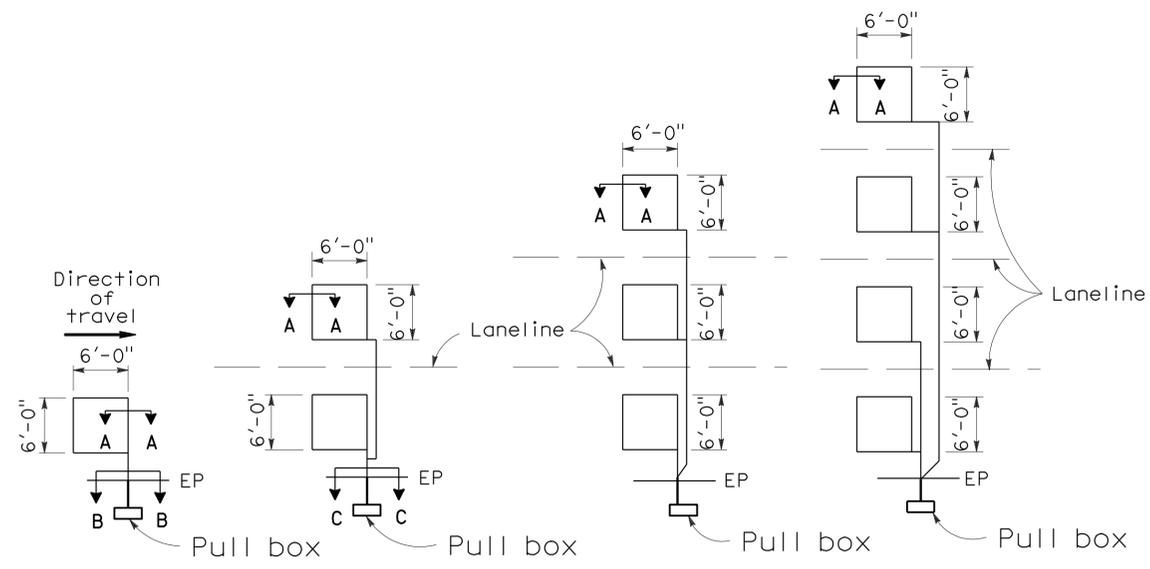
2006 REVISED STANDARD PLAN RSP ES-1C

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
06	Kin	198	R9.2/R14.7	23	23

Jeffrey G. McRae  
 REGISTERED ELECTRICAL ENGINEER  
 October 5, 2007  
 PLANS APPROVAL DATE  
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 REGISTERED PROFESSIONAL ENGINEER  
 Jeffrey G. McRae  
 No. E14512  
 Exp. 6-30-08  
 ELECTRICAL  
 STATE OF CALIFORNIA

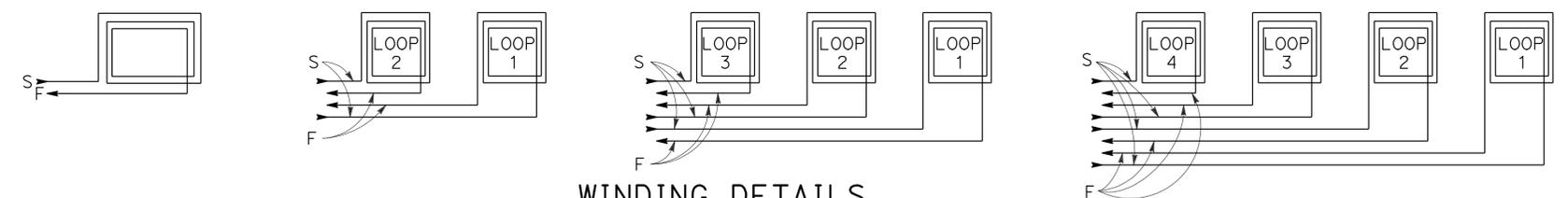
# LOOP INSTALLATION PROCEDURE

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



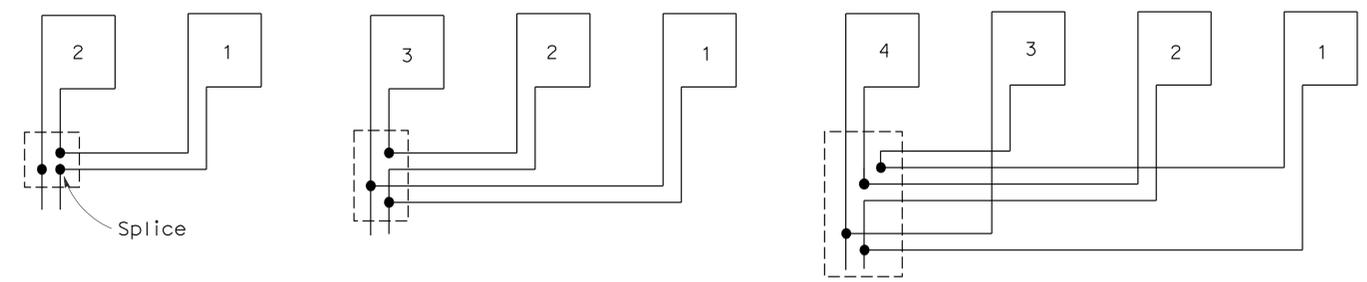
TYPE 1A INSTALLATION    TYPE 2A INSTALLATION    TYPE 3A INSTALLATION    TYPE 4A INSTALLATION  
**SAWCUT DETAILS**  
 (Type A loop detector configurations illustrated)

- 1A thru 4A = 1 Type A loop configuration in each lane.
  - 1B thru 4B = 1 Type B loop configuration in each lane.
  - 1C = 1 Type C loop configuration entering lanes as required.
  - 1D thru 4D = 1 Type D loop configuration in each lane.
  - 1E thru 4E = 1 Type E loop configuration in each lane.
  - 1Q thru 4Q = 1 Type Q loop configuration in each lane.
- (Use Type A, B, C, D, E or Q loop detector configurations only when specified or shown on plans)



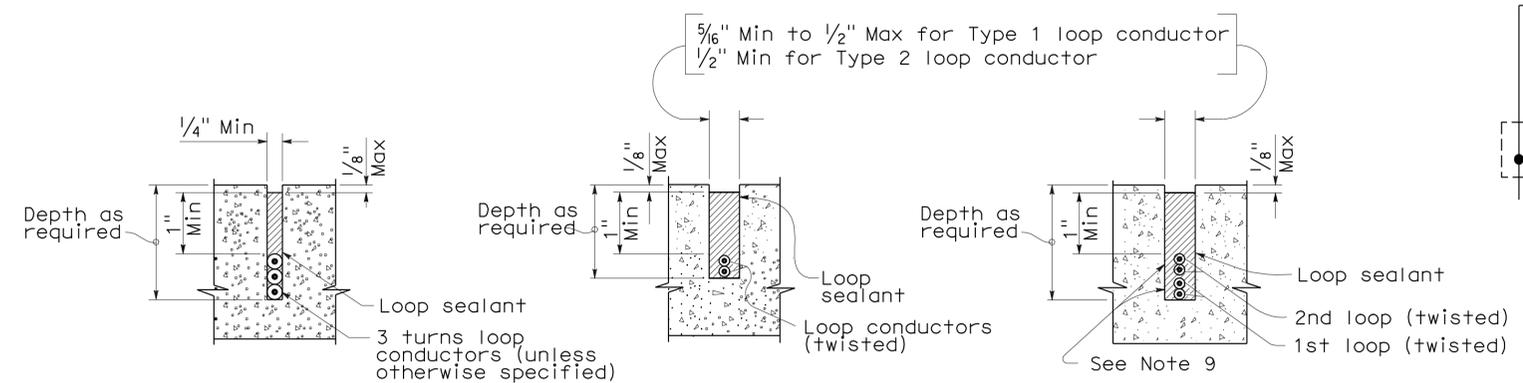
**WINDING DETAILS**

See Notes 6 and 7



**TYPICAL LOOP CONNECTIONS**

(Dashed lines represent the pull box)



SECTION A-A    SECTION B-B    SECTION C-C  
**SLOT DETAILS - TYPE 1 AND TYPE 2 LOOP CONDUCTOR**

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**ELECTRICAL SYSTEMS (DETECTORS)**

NO SCALE

RSP ES-5A DATED OCTOBER 5, 2007 SUPERCEDES STANDARD PLAN ES-5A  
 DATED MAY 1, 2006 - PAGE 423 OF THE STANDARD PLANS BOOK DATED MAY 2006.

**REVISED STANDARD PLAN RSP ES-5A**

2006 REVISED STANDARD PLAN RSP ES-5A