| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 1 | 35 |

STATE OF CALIFORNIA

# DEPARTMENT OF TRANSPORTATION

## PROJECT PLANS FOR CONSTRUCTION ON

# STATE HIGHWAY

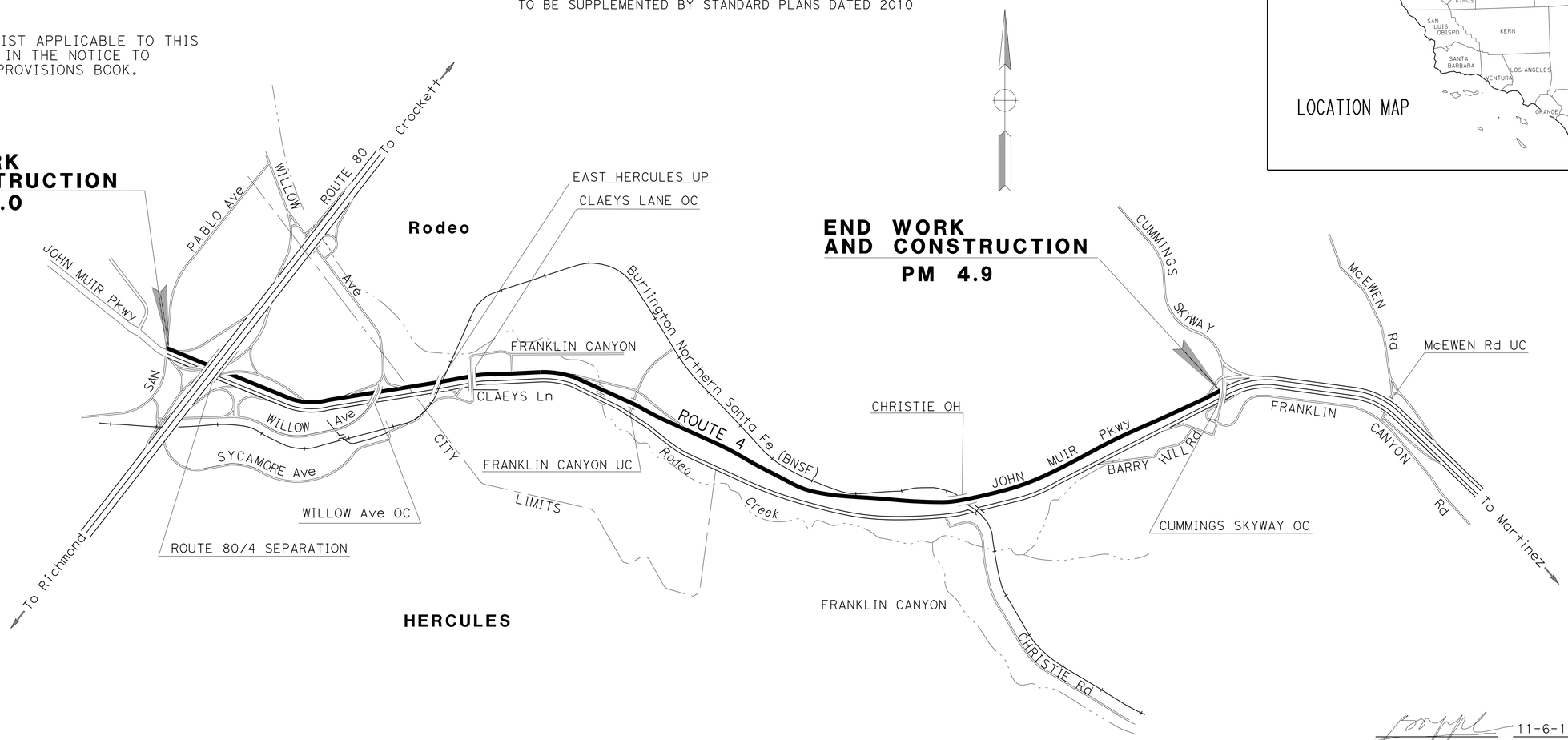
## IN CONTRA COSTA COUNTY
## IN AND NEAR HERCULES
## FROM SAN PABLO AVENUE
## TO CUMMINGS SKYWAY OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

INDEX OF PLANS


| SHEET No. | DESCRIPTION |
|---|---|
| 1 | TITLE SHEET AND LOCATION MAP |
| 2 | TYPICAL CROSS SECTIONS |
| 3-6 | CONSTRUCTION DETAILS |
| 7-13 | CONSTRUCTION AREA SIGNS |
| 14-15 | PAVEMENT DELINEATION QUANTITIES |
| 16 | SIGN PLAN AND QUANTITIES |
| 17-18 | SUMMARY OF QUANTITIES |
| 19-23 | ELECTRICAL PLANS |
| 24-35 | REVISED STANDARD PLANS |


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




NO SCALE

LOCATION MAP

PROJECT ENGINEER REGISTERED CIVIL ENGINEER — DATE 11-6-12

June 24, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Ba Nhu Nguyen — No. 64527 — Exp. 6-30-15 — CIVIL — STATE OF CALIFORNIA

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

PROJECT MANAGER: RAMSES SARGISS

DESIGN MANAGER: RONNIE CHUA

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

| CONTRACT No. | 04-3E3904 |
|---|---|
| PROJECT ID | 0412000302 |

LAST REVISION 11-12-12

DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 2 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Ba Nhu Nguyen No. 64527 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA

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

## NOTES:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
3. EXISTING MEDIAN BARRIER TYPE AND LOCATION IS APPROXIMATE.
4. FOR LOCATION AND DIMENSIONS OF COLD PLANE AC PAVEMENT, SEE Q SHEETS, AND AS DIRECTED BY THE ENGINEER.
5. THE EXISTING PAVEMENT DELINEATION WILL BE REPLACED AT THE SAME LOCATION IN KIND.

## ABBREVIATION:

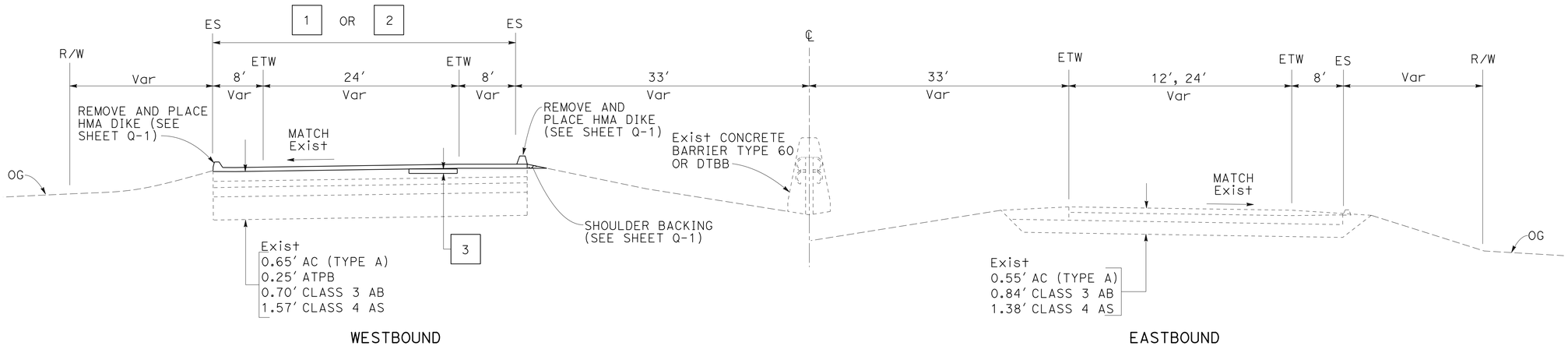
BWC-G BONDED WEARING COURSE-GAP GRADED

## STRUCTURAL SECTION NOTES:

1 — 0.1′ RHMA (BWC-G)

2 — 0.1′ COLD PLANE AC PAVEMENT
0.1′ RHMA (BWC-G)

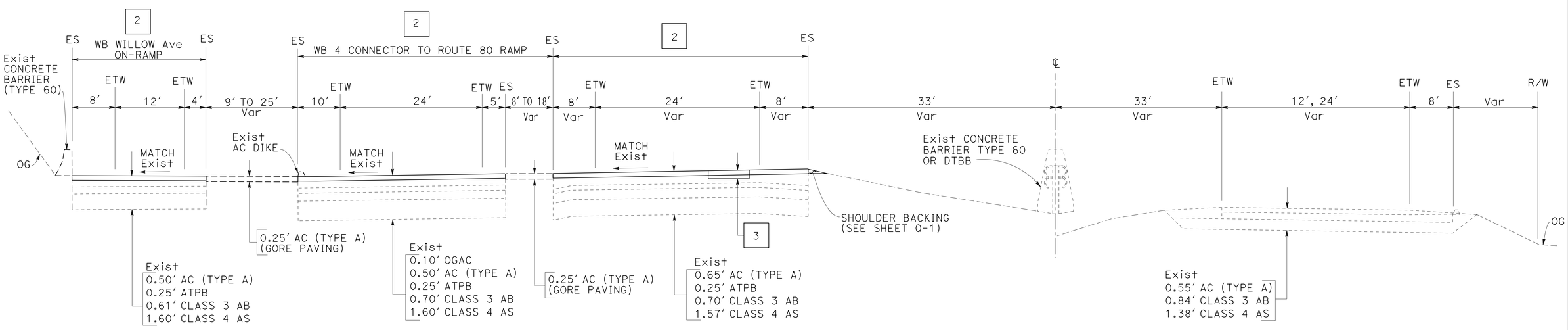
3 — 0.4′ COLD PLANE AC PAVEMENT
0.4′ HMA (TYPE A)




WESTBOUND

EASTBOUND

PM 0.91 TO PM 4.9




WESTBOUND

EASTBOUND

PM 0.0 TO PM 0.91

**ROUTE 4**

# TYPICAL CROSS SECTIONS

NO SCALE

**X-1**

| | |
|---|---|
| REVISED BY | BN |
| DATE REVISED | 6/20/13 |
| CALCULATED-DESIGNED BY | EDMOND SIU |
| CHECKED BY | BA NGUYEN |
| FUNCTIONAL SUPERVISOR | RONNIE CHUA |

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans® **DESIGN**

LAST REVISION 11-12-12

DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 3 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Ba Nhu Nguyen
No. 64527
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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

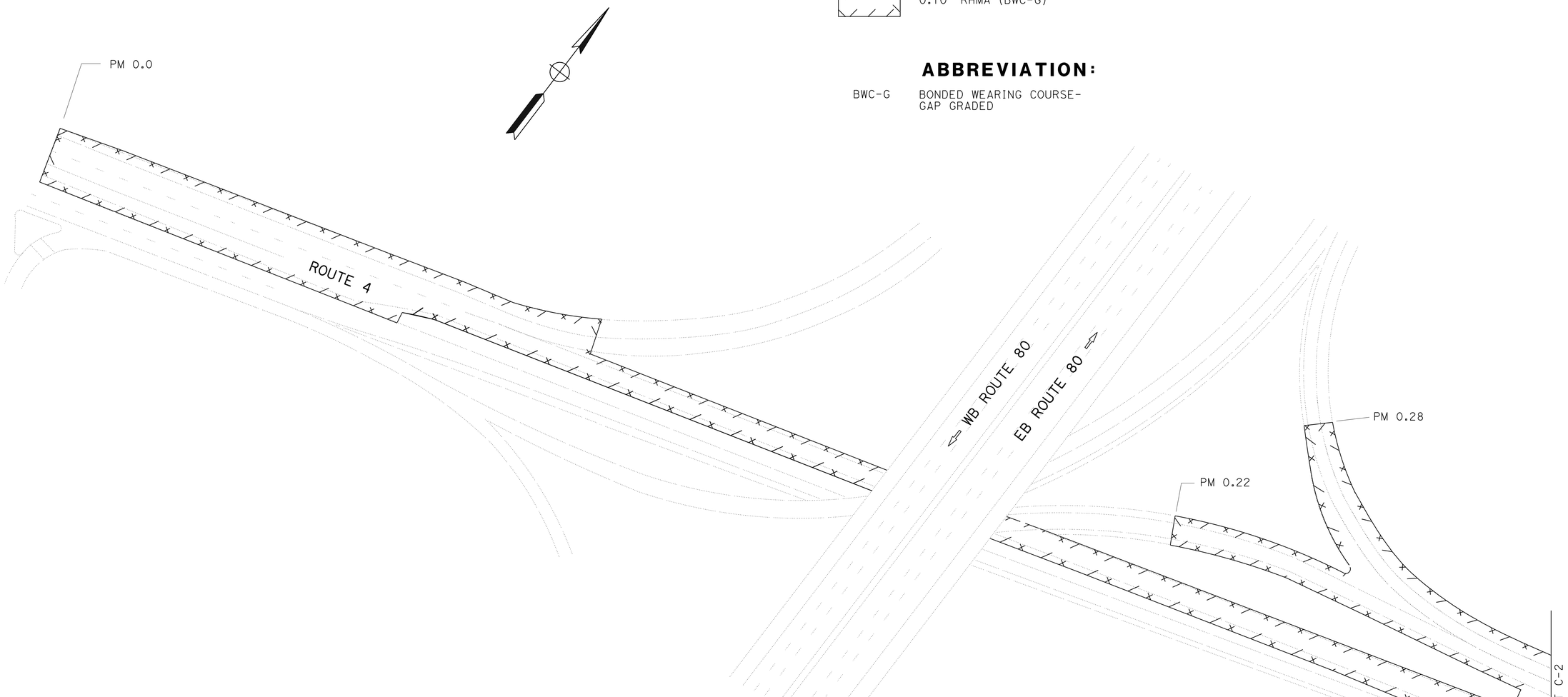
## LEGEND:

0.10′ COLD PLANE AC PAVEMENT
0.10′ RHMA (BWC-G)

0.10′ RHMA (BWC-G)

## ABBREVIATION:

BWC-G BONDED WEARING COURSE-GAP GRADED




# CONSTRUCTION DETAILS
NO SCALE

C-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR: RONNIE CHUA
CALCULATED-DESIGNED BY: EDMOND SIU
CHECKED BY: BA NGUYEN
REVISED BY: BN
DATE REVISED: 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 4 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Ba Nhu Nguyen
No. 64527
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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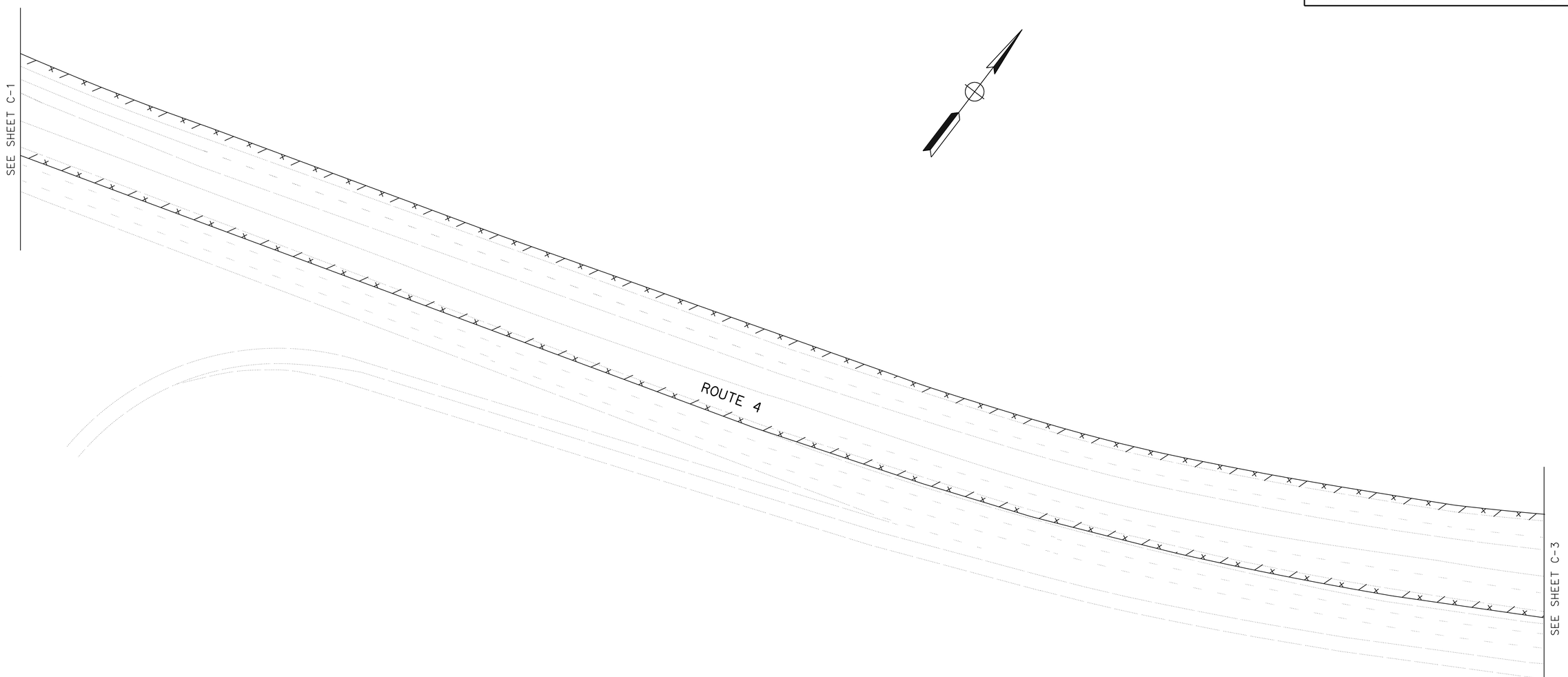



FOR LEGEND, SEE SHEET C-1

# CONSTRUCTION DETAILS

NO SCALE

C-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®
DESIGN

FUNCTIONAL SUPERVISOR: RONNIE CHUA
CALCULATED-DESIGNED BY: EDMOND SIU
CHECKED BY: BA NGUYEN
REVISED BY: BN
DATE REVISED: 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

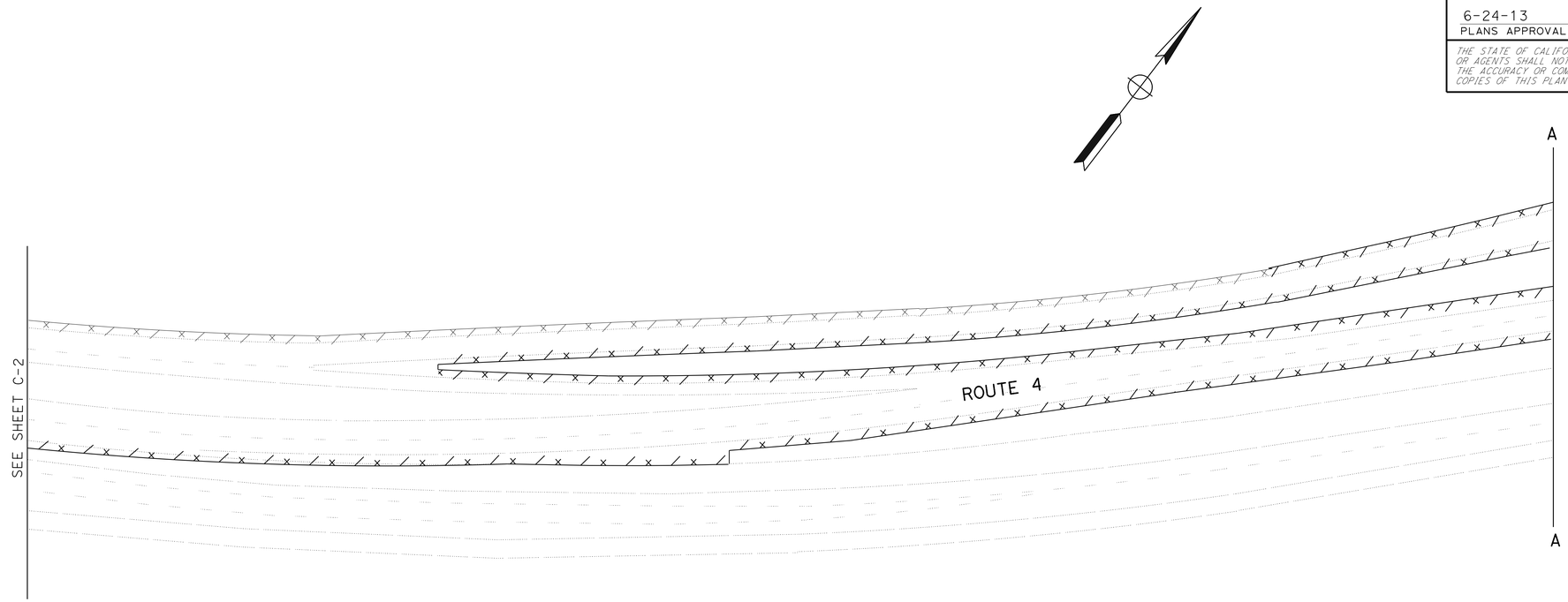
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 5 | 35 |

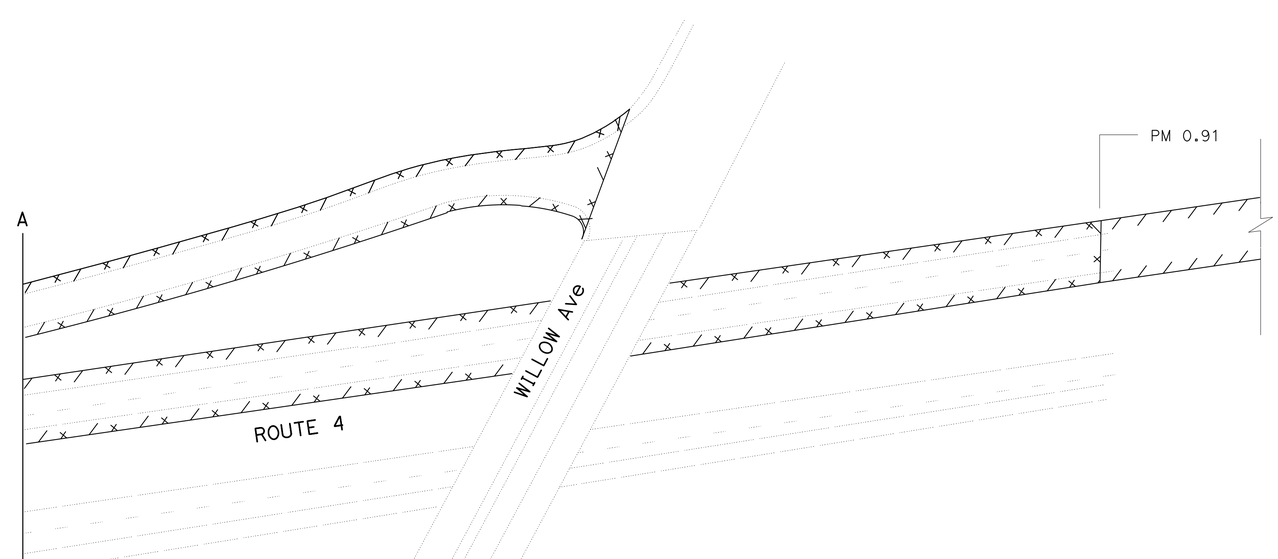
REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Ba Nhu Nguyen
No. 64527
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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




# CONSTRUCTION DETAILS

NO SCALE

FOR LEGEND, SEE SHEET C-1

C-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®
DESIGN

FUNCTIONAL SUPERVISOR: RONNIE CHUA
CALCULATED-DESIGNED BY: EDMOND SIU
CHECKED BY: BA NGUYEN
REVISED BY: BN
DATE REVISED: 6/20/13

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 6 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Ba Nhu Nguyen No. 64527 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA

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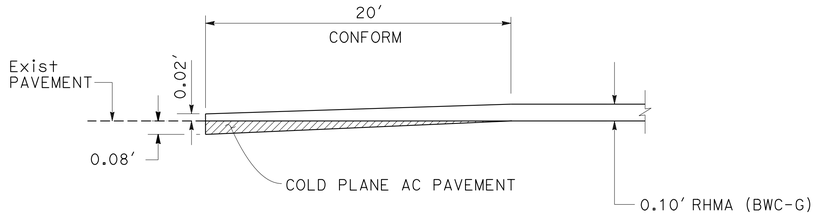
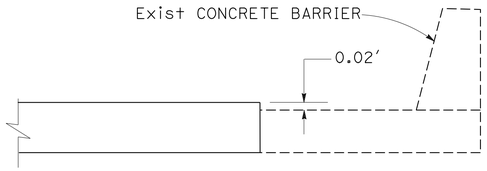
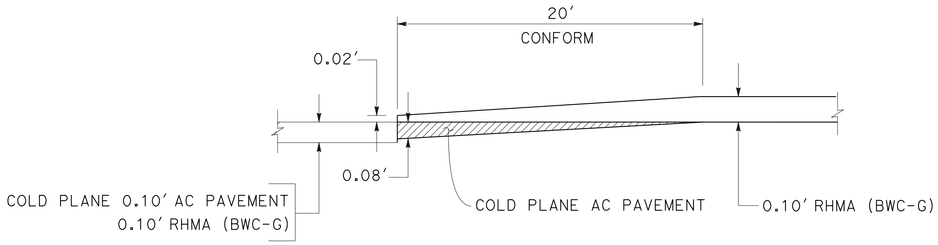



**DETAIL A**

**CONFORM AT THE BEGINNING, END, LOCAL STREET AND UNDERCROSSING**

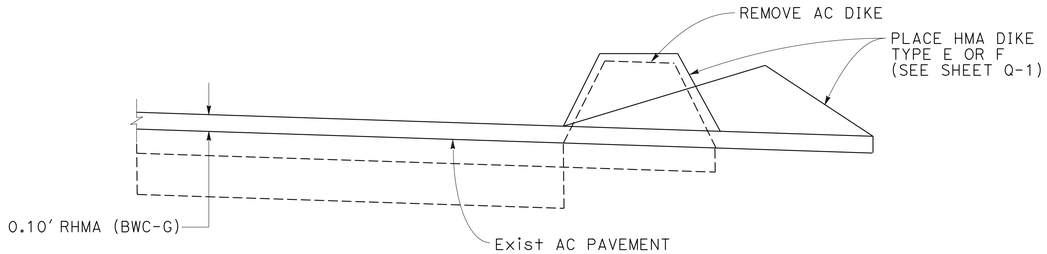



**CONFORM DETAIL AT CONCRETE BARRIER**

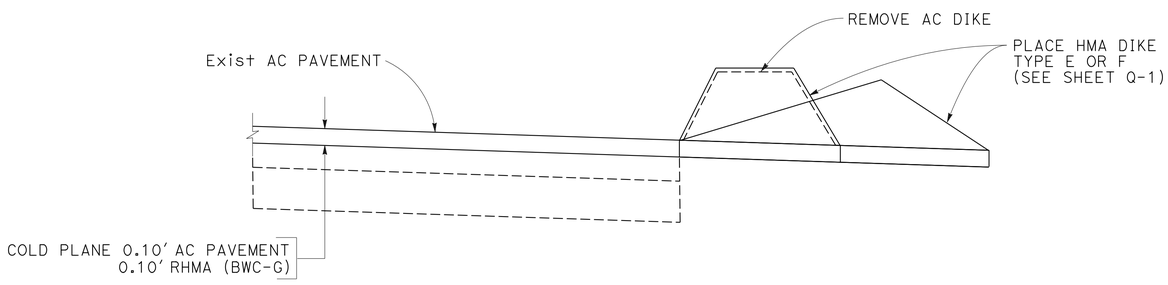



**DETAIL B**

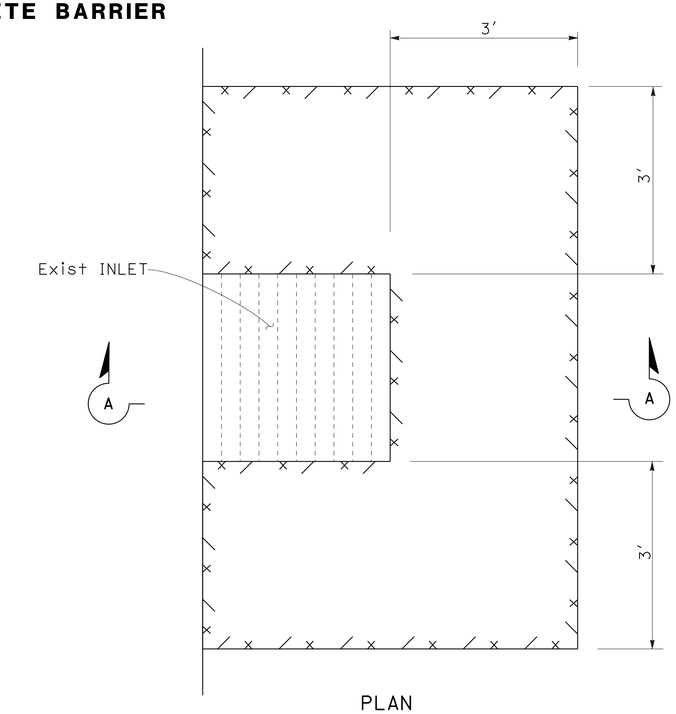
**CONFORM AT THE OVERCROSSING AND VARIOUS LOCATION (SEE SHEET Q-1)**



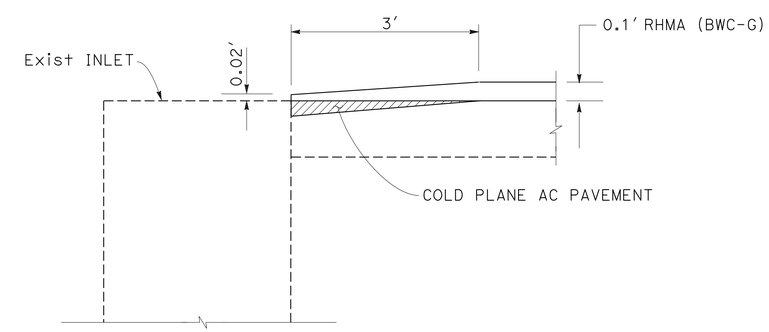

**PLACE AC DIKE (AT OVERLAY AREA)**




**PLACE HMA DIKE (AT COLD PLANE AND OVERLAY AREA)**




PLAN




SECTION A-A

**DETAIL C**

**PAVING CONFORM AT DRAINAGE INLET**

# CONSTRUCTION DETAILS

NO SCALE

C-4

| REVISED BY | DATE REVISED |
|---|---|
| BN | 6/20/13 |

EDMOND SIU — BA NGUYEN

CALCULATED-DESIGNED BY — CHECKED BY

FUNCTIONAL SUPERVISOR — RONNIE CHUA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — DESIGN — Caltrans

LAST REVISION 11-12-12 — DATE PLOTTED => 14-NOV-2013 — TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 7 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Florante P. Perez No. 41030 Exp. 3-31-15 CIVIL STATE OF CALIFORNIA

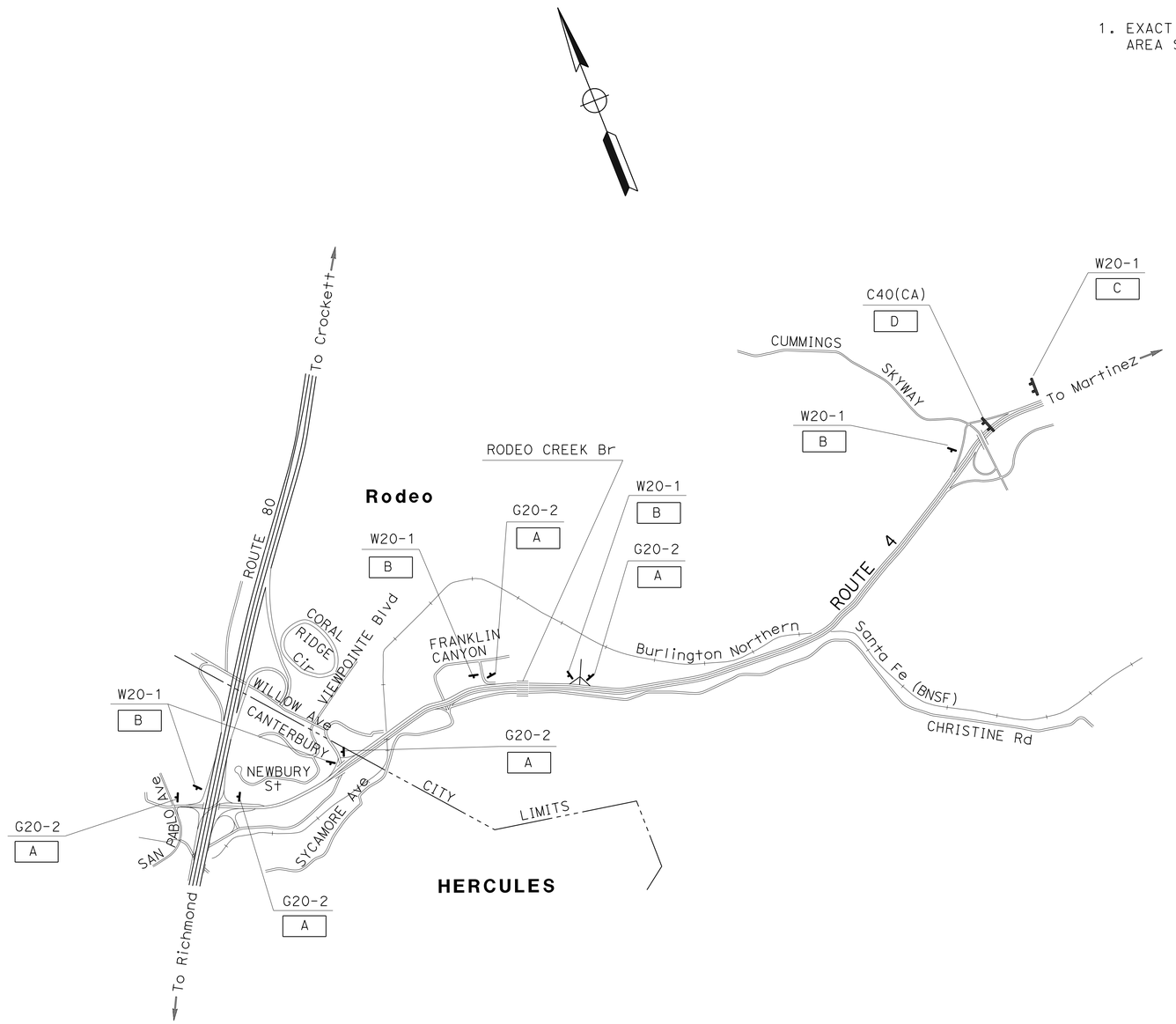
*THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.*

## LEGEND:

- CONSTRUCTION AREA SIGN DESIGNATION
- DIRECTION OF TRAFFIC
- RAMP OR CONNECTOR TO BE CLOSED

## NOTE:

1. EXACT LOCATION AND POSITION OF CONSTRUCTION AREA SIGNS TO BE DETERMINED BY THE ENGINEER.




# CONSTRUCTION AREA SIGNS

NO SCALE

**CS-1**

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:31

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans TRAFFIC

FUNCTIONAL SUPERVISOR: LOURDES DAVID

CALCULATED-DESIGNED BY: LEOPOLDO G. BONGATO

CHECKED BY: FLORANTE P. PEREZ

REVISED BY: FP

DATE REVISED: 6/20/13

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 8 | 35 |

Florante P. Perez 11-6-12
REGISTERED CIVIL ENGINEER DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Florante P. Perez
No. 41030
Exp. 3-31-15
CIVIL
STATE OF CALIFORNIA

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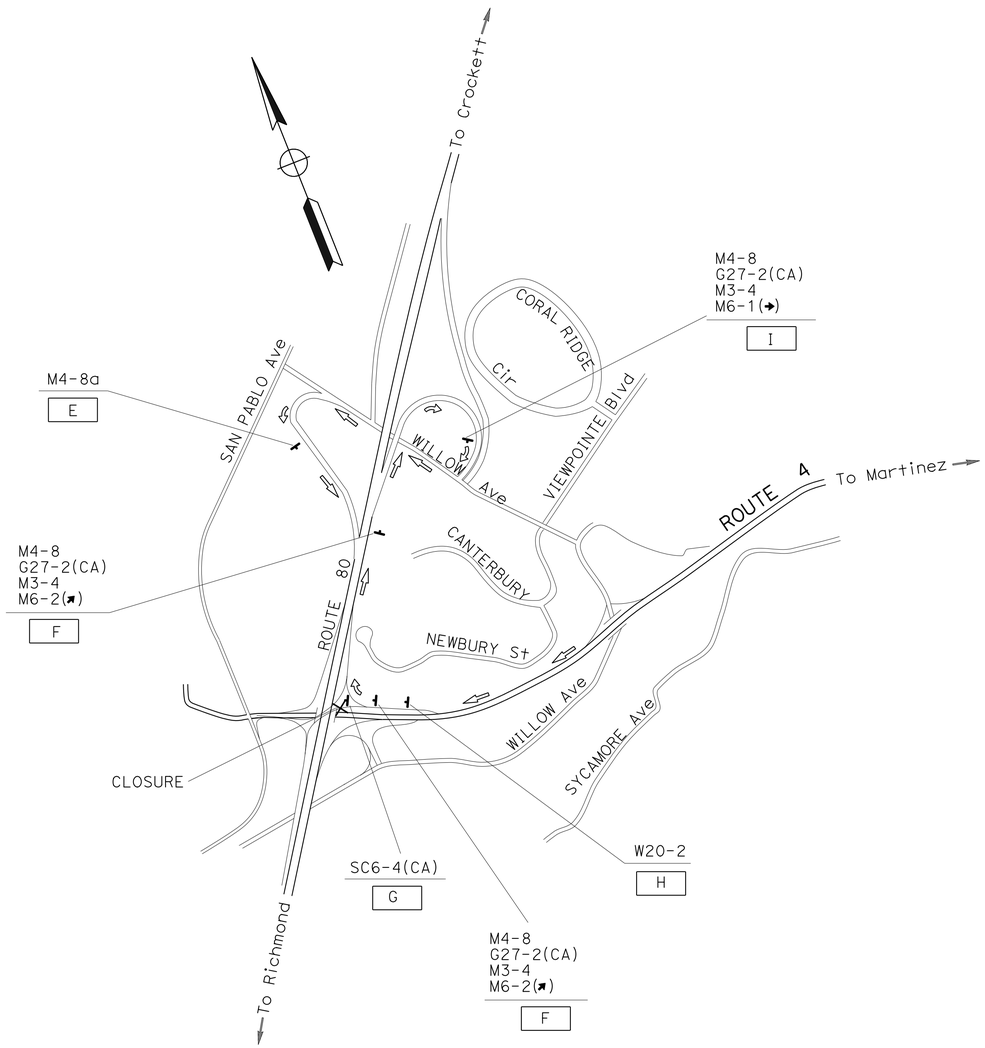
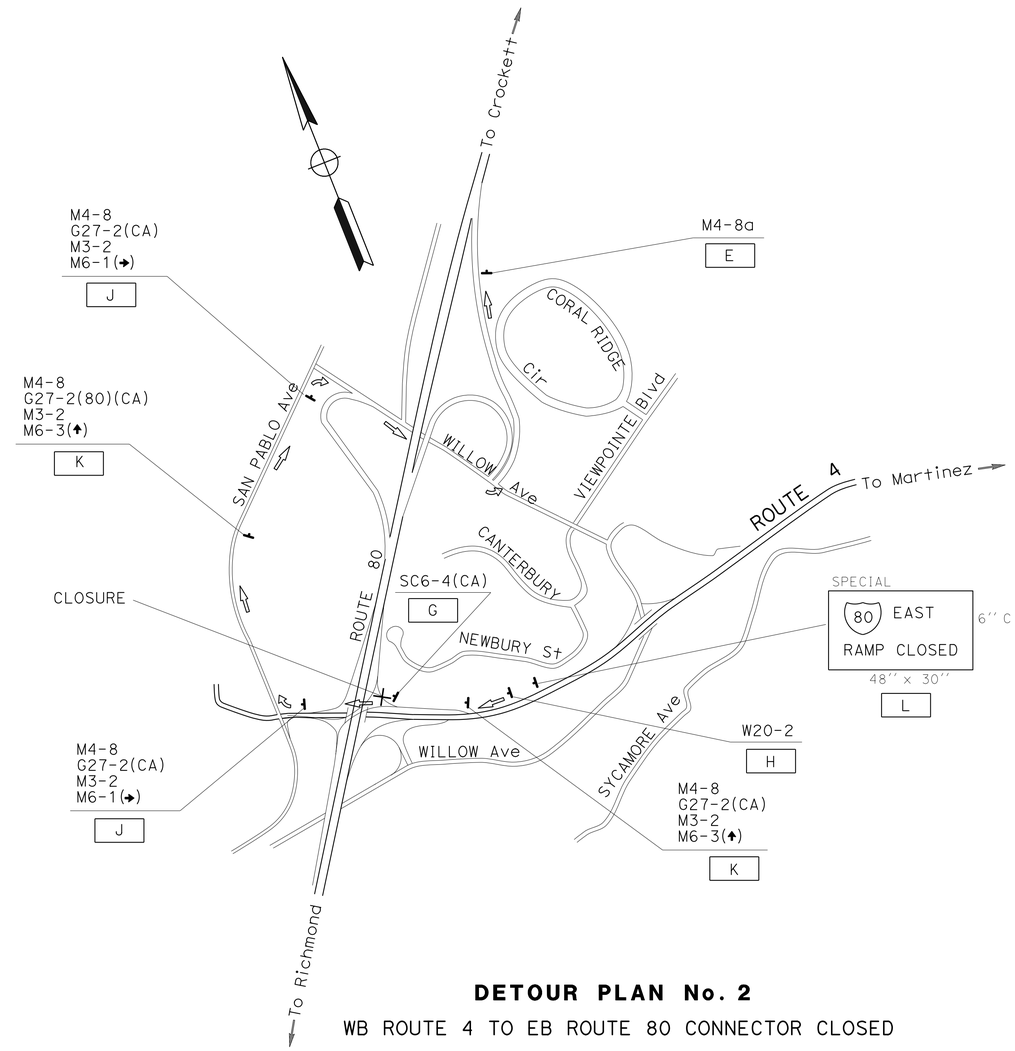



## DETOUR PLAN No. 1

WB ROUTE 4 TO WB ROUTE 80 CONNECTOR CLOSED

WB ROUTE 4
TAKE CONNECTOR TO EB ROUTE 80;
EB ROUTE 80;
OFF-RAMP TO WILLOW Ave;
NB WILLOW Ave;
ON-RAMP TO WB ROUTE 80.




## DETOUR PLAN No. 2

WB ROUTE 4 TO EB ROUTE 80 CONNECTOR CLOSED

WB ROUTE 4 TO WB JOHN MUIR Pkwy;
NB SAN PABLO Ave;
SB TO WILLOW Ave;
ON-RAMP TO EB ROUTE 80.

# CONSTRUCTION AREA SIGNS

NO SCALE

*APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY*

FOR NOTES AND LEGEND, SEE SHEET CS-1

**CS-2**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
TRAFFIC

FUNCTIONAL SUPERVISOR: LOURDES DAVID
CALCULATED-DESIGNED BY: LEOPOLDO G. BONGATO
CHECKED BY: FLORANTE P. PEREZ
REVISED BY: FP
DATE REVISED: 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 9 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Florante P. Perez No. 41030 Exp. 3-31-15 CIVIL STATE OF CALIFORNIA

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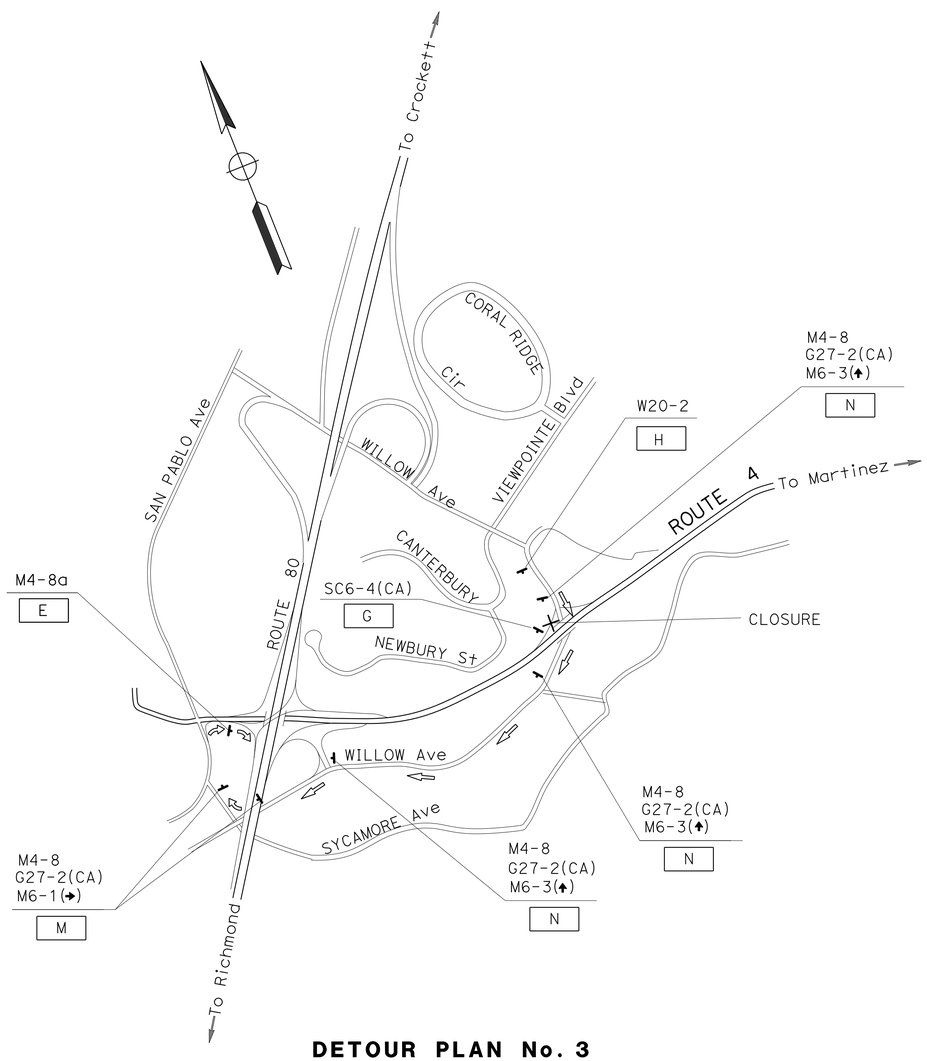
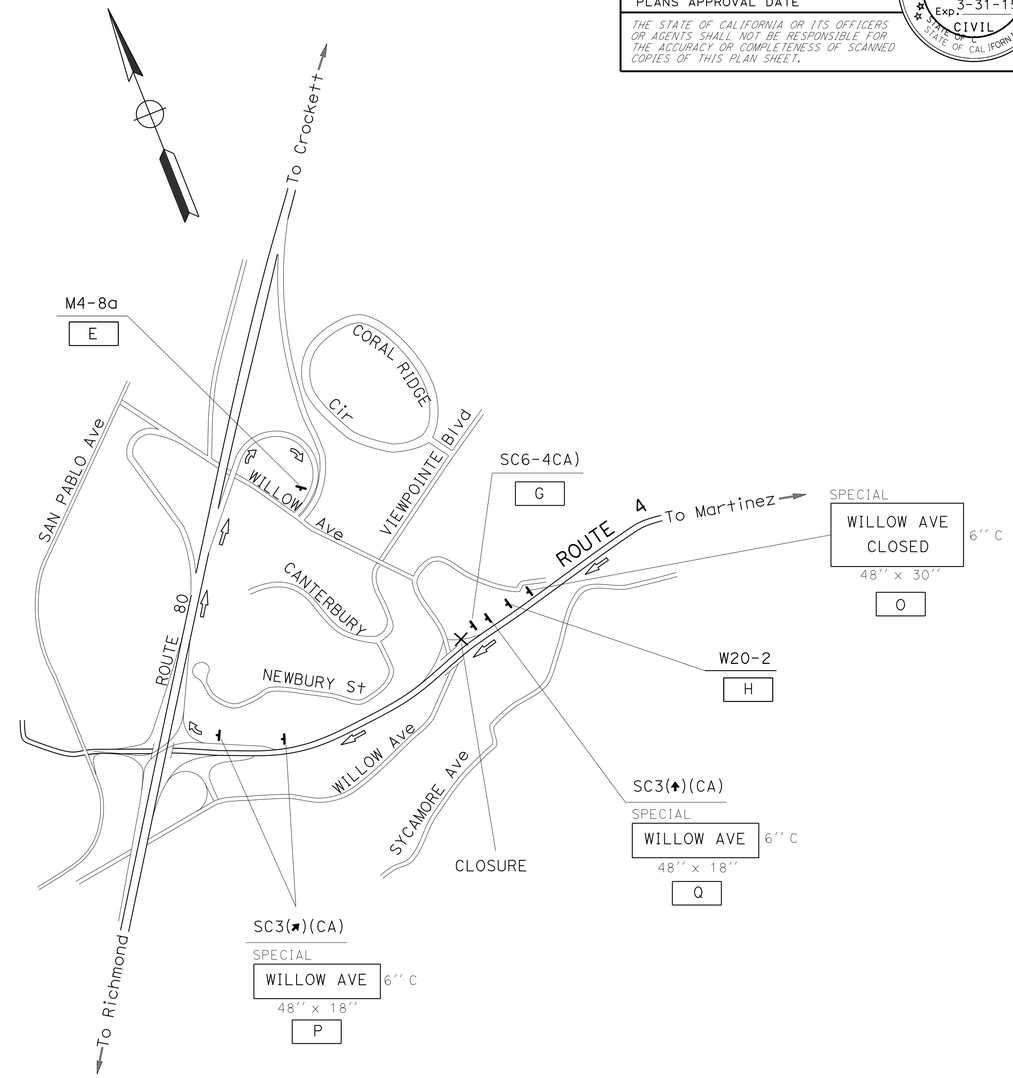



## DETOUR PLAN No. 3

WB ROUTE 4 ON-RAMP FROM WILLOW Ave CLOSED

SB WILLOW Ave;
NB SYCAMORE Ave;
NB SAN PABLO Ave;
EB JOHN MUIR Pkwy;
ON-RAMP TO WB OR EB ROUTE 80.




## DETOUR PLAN No. 4

WB ROUTE 4 OFF-RAMP TO WILLOW Ave CLOSED

WB ROUTE 4
TAKE CONNECTOR TO EB ROUTE 80;
EB ROUTE 80;
OFF-RAMP TO WILLOW Ave;
NB/SB WILLOW Ave.

# CONSTRUCTION AREA SIGNS

NO SCALE

*APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY*

FOR NOTES AND LEGEND, SEE SHEET CS-1

**CS-3**

| | |
|---|---|
| REVISED BY | FP |
| DATE REVISED | 6/20/13 |
| CALCULATED-DESIGNED BY | LEOPOLDO G. BONGATO |
| CHECKED BY | FLORANTE P. PEREZ |
| FUNCTIONAL SUPERVISOR | LOURDES DAVID |

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
TRAFFIC

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 10 | 35 |

Florante P. Perez 11-6-12
REGISTERED CIVIL ENGINEER DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Florante P. Perez
No. 41030
Exp. 3-31-15
CIVIL
STATE OF CALIFORNIA

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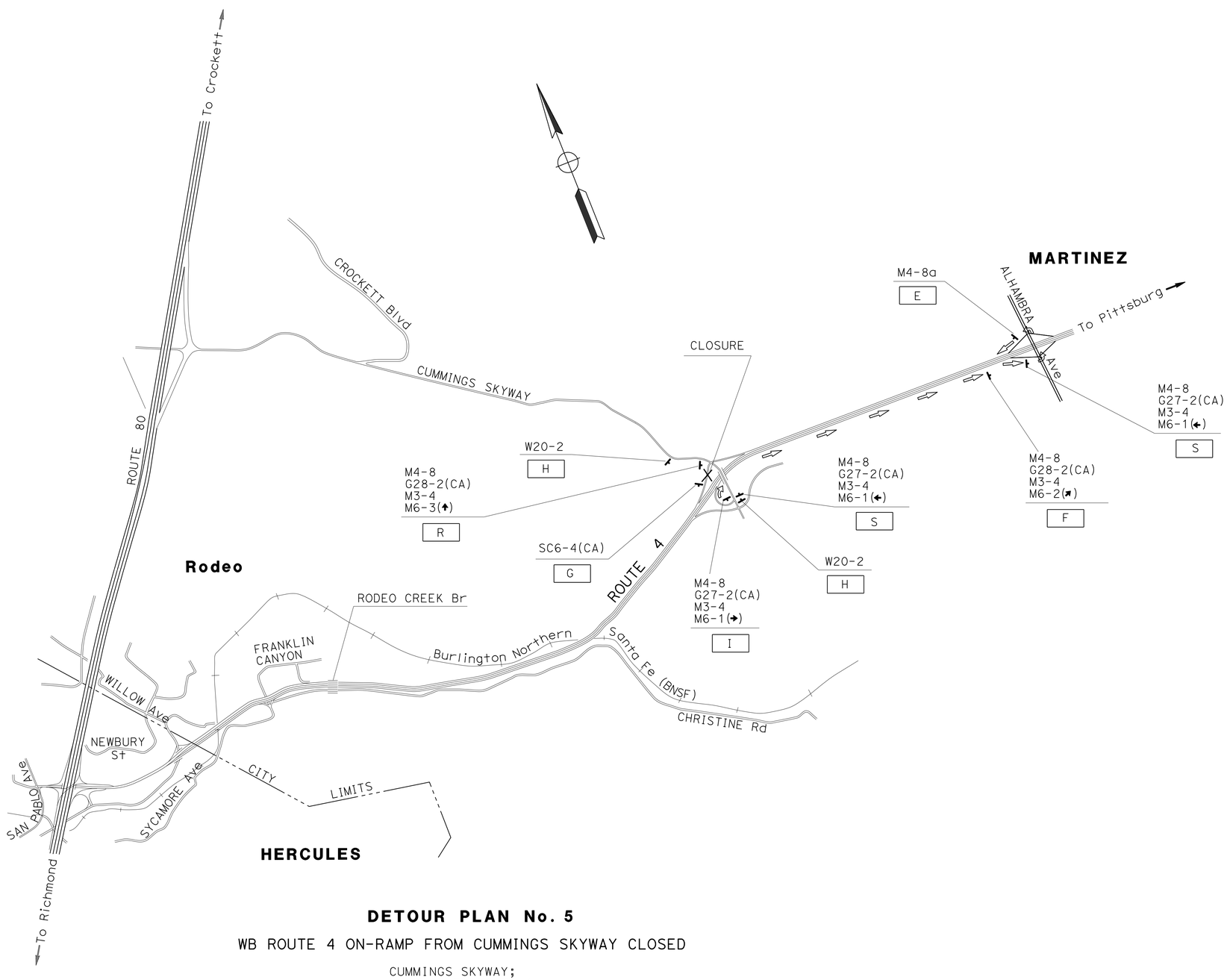


## DETOUR PLAN No. 5

WB ROUTE 4 ON-RAMP FROM CUMMINGS SKYWAY CLOSED

CUMMINGS SKYWAY;
ON-RAMP EB ROUTE 4;
OFF-RAMP TO ALHAMBRA Ave;
NB ALHAMBRA Ave;
ON-RAMP WB ROUTE 4.

*APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY*

FOR NOTES AND LEGEND, SEE SHEET CS-1

# CONSTRUCTION AREA SIGNS

NO SCALE

**CS-4**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
TRAFFIC

| FUNCTIONAL SUPERVISOR | LOURDES DAVID |
|---|---|
| CALCULATED-DESIGNED BY | LEOPOLDO G. BONGATO |
| CHECKED BY | FLORANTE P. PEREZ |
| REVISED BY | FP |
| DATE REVISED | 6/20/13 |

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 11 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Florante P. Perez No. 41030 Exp. 3-31-15 CIVIL STATE OF CALIFORNIA

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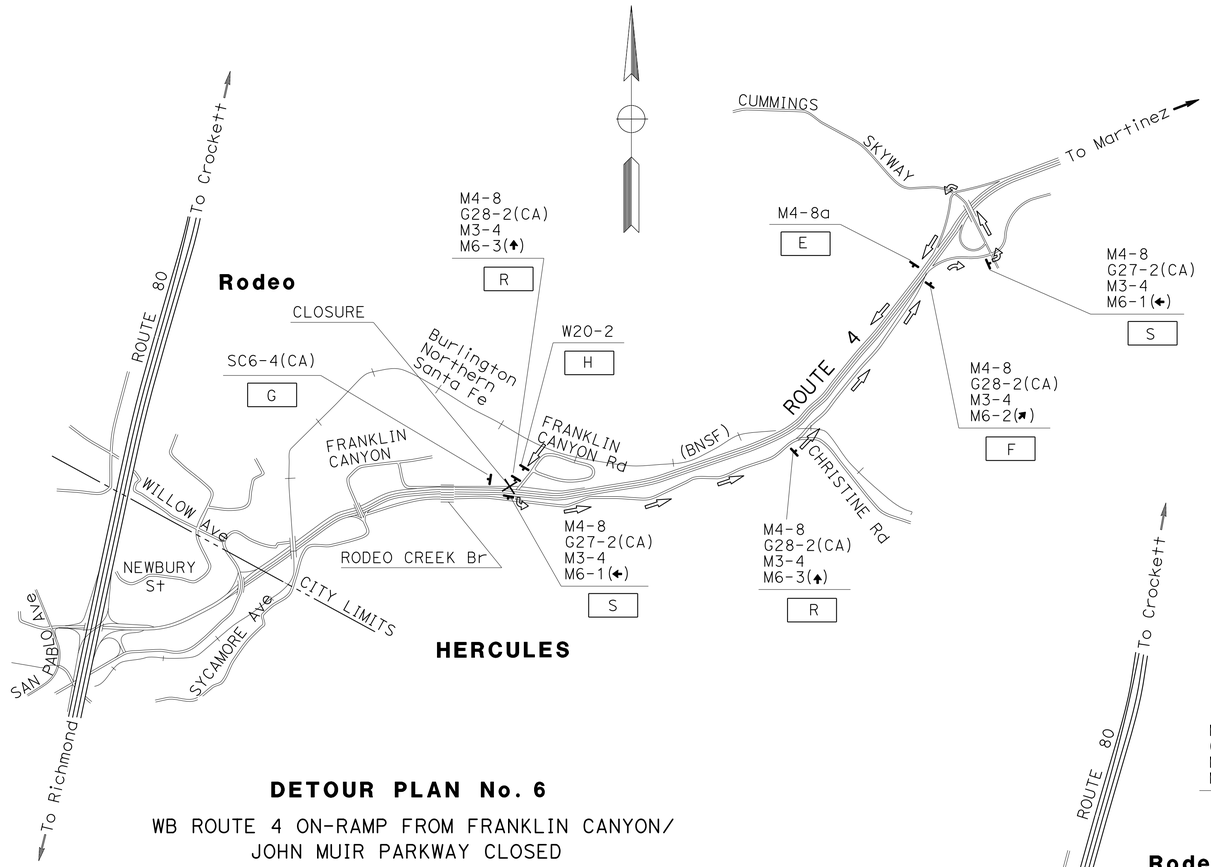
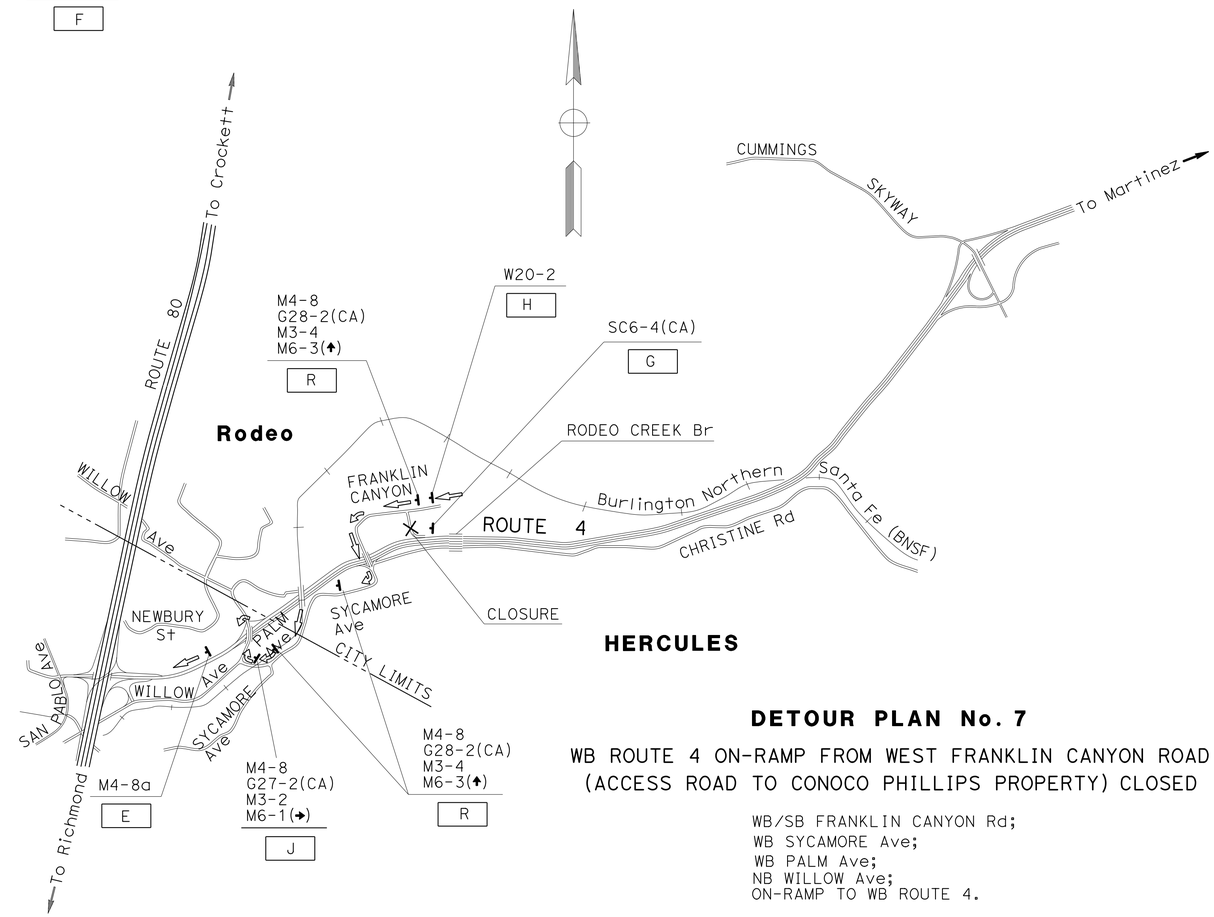



## DETOUR PLAN No. 6

WB ROUTE 4 ON-RAMP FROM FRANKLIN CANYON/
JOHN MUIR PARKWAY CLOSED

SB FRANKLIN CANYON Rd/
JOHN MUIR Pkwy;
ON-RAMP TO EB ROUTE 4;
OFF-RAMP TO CUMMINGS SKYWAY;
NB CUMMINGS SKYWAY;
ON-RAMP TO WB ROUTE 4.




## DETOUR PLAN No. 7

WB ROUTE 4 ON-RAMP FROM WEST FRANKLIN CANYON ROAD
(ACCESS ROAD TO CONOCO PHILLIPS PROPERTY) CLOSED

WB/SB FRANKLIN CANYON Rd;
WB SYCAMORE Ave;
WB PALM Ave;
NB WILLOW Ave;
ON-RAMP TO WB ROUTE 4.

*APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY*

FOR NOTES AND LEGEND, SEE SHEET CS-1

# CONSTRUCTION AREA SIGNS

NO SCALE

**CS-5**

| REVISED BY | DATE REVISED |
|---|---|
| FP | 6/20/13 |

CALCULATED-DESIGNED BY: LEOPOLDO G. BONGATO
CHECKED BY: FLORANTE P. PEREZ
FUNCTIONAL SUPERVISOR: LOURDES DAVID

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
TRAFFIC

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

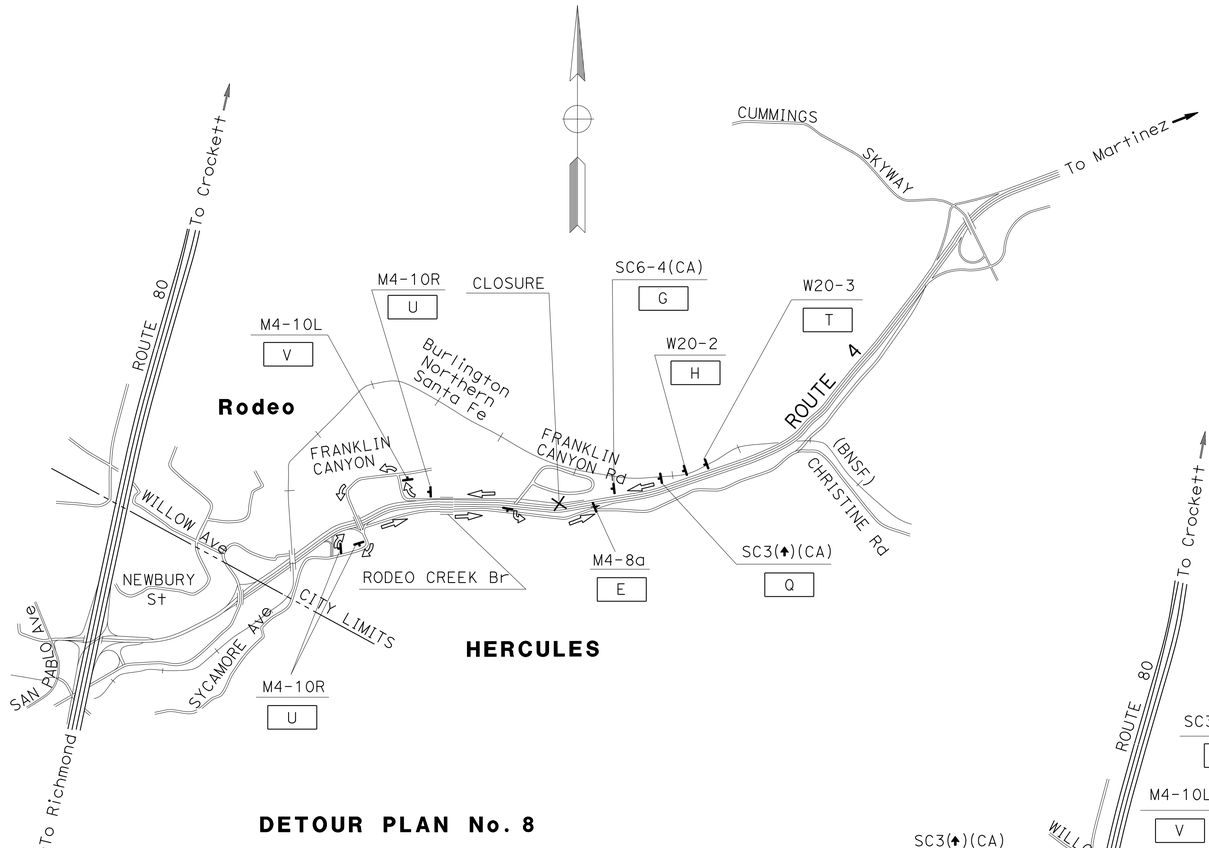
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 12 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Florante P. Perez No. 41030 Exp. 3-31-15 CIVIL STATE OF CALIFORNIA

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

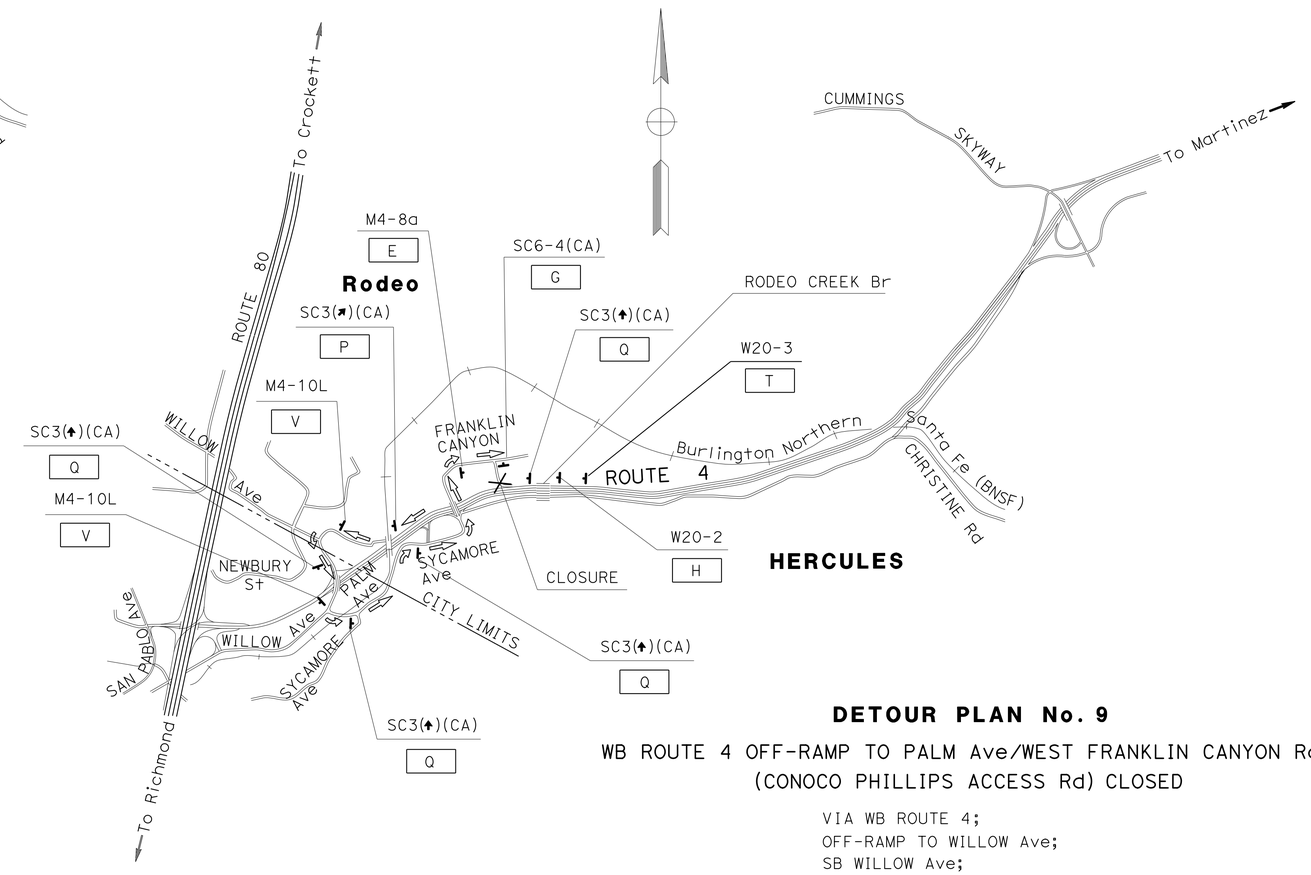



## DETOUR PLAN No. 8

WB ROUTE 4 OFF-RAMP TO FRANKLIN CANYON Rd/
JOHN MUIR PARKWAY CLOSED

VIA WB ROUTE 4;
OFF-RAMP TO PALM Ave (CONOCO PHILLIPS ACCESS Rd);
WB FRANKLIN CANYON Rd TOWARDS SYCAMORE Ave;
WB SYCAMORE Ave TO EB ROUTE 4 ON-RAMP;
EB ROUTE 4;

LEFT TURN TO FRANKLIN CANYON Rd/JOHN MUIR Pkwy.




## DETOUR PLAN No. 9

WB ROUTE 4 OFF-RAMP TO PALM Ave/WEST FRANKLIN CANYON Rd
(CONOCO PHILLIPS ACCESS Rd) CLOSED

VIA WB ROUTE 4;
OFF-RAMP TO WILLOW Ave;
SB WILLOW Ave;
EB PALM Ave TOWARDS SYCAMORE Ave;
CONTINUE ON TO SYCAMORE Ave;
TO FRANKLIN CANYON/CONOCO PHILLIPS ACCESS Rd.

# CONSTRUCTION AREA SIGNS

NO SCALE

**CS-6**

*APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY*

FOR NOTES AND LEGEND, SEE SHEET CS-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
TRAFFIC

FUNCTIONAL SUPERVISOR: LOURDES DAVID
CALCULATED-DESIGNED BY: LEOPOLDO G. BONGATO
CHECKED BY: FLORANTE P. PEREZ
REVISED BY: FP
DATE REVISED: 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 13 | 35 |

Florante P. Perez 11-6-12
REGISTERED CIVIL ENGINEER DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Florante P. Perez No. 41030 Exp. 3-31-15 CIVIL STATE OF CALIFORNIA

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

# STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

| SHEET No. | SIGN | CODE | SIGN MESSAGE | PANEL SIZE | No. OF POSTS AND SIZE | No. OF SIGNS |
|---|---|---|---|---|---|---|
| CS-1 | A | G20-2 | END ROAD WORK | 36" x 18" | 1 - 4" x 6" | 5 |
| | B | W20-1 | ROAD WORK AHEAD | 48" x 48" | 1 - 4" x 6" | 5 |
| | C | W20-1 | ROAD WORK AHEAD | 60" x 60" | 2 - 4" x 6" | 1 |
| | D | C40(CA) | TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONE | 144" x 60" | 2 - 6" x 8" | 1 |
| CS-2 TO CS-6 | E | M4-8a | END DETOUR | 24" x 18" | 1 - 4" x 4" | 9 |
| | F | M4-8 | DETOUR AHEAD | 24" x 12" | 1 - 4" x 6" | 4 |
| | | G27-2(CA) | ROUTE 80 | 24" x 25" | | |
| | | M3-4 | WEST | 21" x 12" | | |
| | | M6-2(↗) | UP-RIGHT ARROW | 21" x 15" | | |
| | G | SC6-4(CA) | RAMP CLOSED TIMES, DATES | 48" x 60" | 1 - 4" x 6" | 9 |
| | H | W20-2 | DETOUR AHEAD | 48" x 48" | 1 - 4" x 6" | 10 |
| | I | M4-8 | DETOUR AHEAD | 24" x 12" | 1 - 4" x 6" | 2 |
| | | G27-2(CA) | ROUTE 80 | 24" x 25" | | |
| | | M3-4 | WEST | 21" x 12" | | |
| | | M6-1(→) | RIGHT ARROW | 21" x 15" | | |
| | J | M4-8 | DETOUR AHEAD | 24" x 12" | 1 - 4" x 6" | 3 |
| | | G27-2(CA) | ROUTE 80 | 24" x 25" | | |
| | | M3-2 | EAST | 21" x 12" | | |
| | | M6-1(→) | RIGHT ARROW | 21" x 15" | | |
| | K | M4-8 | DETOUR AHEAD | 24" x 12" | 1 - 4" x 6" | 2 |
| | | G27-2(CA) | ROUTE 80 | 24" x 25" | | |
| | | M3-2 | EAST | 21" x 12" | | |
| | | M6-3(↑) | UP ARROW | 21" x 15" | | |
| | L | SPECIAL | ROUTE 80 EAST RAMP CLOSED | 48" x 30" | 1 - 4" x 6" | 1 |
| | M | M4-8 | DETOUR | 24" x 12" | 1 - 4" x 6" | 1 |
| | | G27-2(CA) | ROUTE 80 | 24" x 25" | | |
| | | M6-1(→) | RIGHT ARROW | 21" x 15" | | |
| | N | M4-8 | DETOUR | 24" x 12" | 1 - 4" x 6" | 3 |
| | | G27-2(CA) | ROUTE 80 | 24" x 25" | | |
| | | M6-3(↑) | UP ARROW | 21" x 15" | | |
| | O | SPECIAL | WILLOW AVE CLOSED | 48" x 30" | 1 - 4" x 6" | 1 |
| | P | SC3(↗)(CA)<br>SPECIAL | DETOUR UP-RIGHT ARROW<br>WILLOW AVE | 48" x 18"<br>48" x 18" | 1 - 4" x 6" | 2 |
| | Q | SC3(↑)(CA)<br>SPECIAL | DETOUR UP ARROW<br>WILLOW AVE | 48" x 18"<br>48" x 18" | 1 - 4" x 6" | 6 |
| | R | M4-8 | DETOUR AHEAD | 24" x 12" | 1 - 4" x 6" | 6 |
| | | G28-2(CA) | ROUTE 4 | 24" x 25" | | |
| | | M3-4 | WEST | 21" x 12" | | |
| | | M6-3(↑) | UP ARROW | 21" x 15" | | |
| | S | M4-8 | DETOUR AHEAD | 24" x 12" | 1 - 4" x 6" | 4 |
| | | G27-2(CA) | ROUTE 80 | 24" x 25" | | |
| | | M3-4 | WEST | 21" x 12" | | |
| | | M6-1(←) | LEFT ARROW | 21" x 15" | | |
| | T | W20-3 | ROAD CLOSED AHEAD | 48" x 48" | 1 - 4" x 4" | 2 |
| | U | M4-10R | DETOUR RIGHT ARROW | 48" x 18" | 1 - 4" x 4" | 3 |
| | V | M4-10L | DETOUR LEFT ARROW | 48" x 18" | 1 - 4" x 4" | 3 |

## CONSTRUCTION AREA SIGNS

NO SCALE

CS-7

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans TRAFFIC

FUNCTIONAL SUPERVISOR: LOURDES DAVID
CALCULATED-DESIGNED BY: LEOPOLDO G. BONGATO
CHECKED BY: FLORANTE P. PEREZ
REVISED BY: FP
DATE REVISED: 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 14 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Ba Nhu Nguyen No. 64527 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA

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

# TRAFFIC STRIPES, PAVEMENT MARKINGS AND PAVEMENT MARKERS

| LOCATION PM | DETAIL No. OR PAVEMENT MARKING | THERMOPLASTIC TRAFFIC STRIPE | | | PAVEMENT MARKERS | | | | THERMOPLASTIC PAVEMENT MARKING | REMOVE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4" YELLOW | 4" WHITE | 8" WHITE | NON-RETROFLECTIVE TYPE A | RETROFLECTIVE TYPE D | RETROFLECTIVE TYPE G | RETROFLECTIVE TYPE H | | THERMOPLASTIC PAVEMENT MARKING | PAVEMENT MARKER | YELLOW THERMOPLASTIC TRAFFIC STRIPE | THERMOPLASTIC TRAFFIC STRIPE |
| | | LF | | | EA | | | | SQFT | | EA | LF | |
| 0.0-0.185 | CROSSWALK AND LIMIT | | | | | | | | 90 | 90 | | | |
| | TYPE III (L) ARROW | | | | | | | | 168 | 168 | | | |
| | TYPE II (R) ARROW | | | | | | | | 90 | 90 | | | |
| | AHEAD | | | | | | | | 62 | 62 | | | |
| | SIGNAL | | | | | | | | 64 | 64 | | | |
| | 27B | | 975 | | | | | | | | | | |
| | 38 | | | 77 | | | 4 | | | | | | |
| | 29 | 2612 | | | | 55 | | | | | | | |
| | 13M | | 82 | | 23 | | 7 | | | | | | |
| 0.185-0.891 | 25 | 5705 | | | | | | 120 | | | | | |
| | 9 | | 424 | | | | 31 | | | | | | |
| | 13M | | 666 | | 190 | | 49 | | | | | | |
| | 27B | | 5696 | | | | | | | | | | |
| | 36A | | 365 | 365 | | | 16 | | | | | | |
| | TYPE VI ARROW | | | | | | | | 126 | 126 | | | |
| FROM WB Rte 4 TO WB Rte 80 PM 0.222 | 25 | 306 | | | | | | 7 | | | 7 | 306 | |
| | 36B | | 310 | 152 | | | 7 | | | | | | 462 |
| FROM WB Rte 4 TO EB Rte 80 PM 0.276 | 27B | | 200 | | | | | | | | | | 200 |
| | 38B | | | 255 | | | 23 | | | | 23 | | 255 |
| FROM WILLOW Ave TO WB Rte 4 PM 0.887 | 27B | | 1376 | | | | | | | | | | 1376 |
| | 25A | 1130 | | | | | | 48 | | | 48 | 1130 | |
| | TYPE I 24'-0" ARROW | | | | | | | | 31 | 31 | | | |
| | 38 | | | 225 | | | | 10 | | | 10 | | 225 |
| 0.891-1.934 | 25 | 5507 | | | | | | 116 | | | 116 | 5507 | |
| | 13M | | 1606 | | 459 | | 116 | | | | 575 | | 1606 |
| | 38 | | | 334 | | | 15 | | | | 15 | | 334 |
| | 27B | | 4918 | | | | | | | | | | 4918 |
| | 8 | | 261 | | | | | | | | | | 261 |
| | TYPE I 24'-0" ARROW | | | | | | | | 124 | 124 | | | |
| | TYPE III (R) ARROW | | | | | | | | 126 | 126 | | | |
| | TYPE VI ARROW | | | | | | | | 126 | 126 | | | |
| FROM WB Rte 4 TO WILLOW Ave PM 0.928 | 36 | | | 620 | | | 54 | | | | 54 | | 620 |
| | 27B | | 670 | | | | | | | | | | 670 |
| | 25A | 656 | | | | | | 28 | | | 28 | 656 | |
| | 38B | | | 265 | | | 24 | | | | 24 | | 265 |
| | TYPE III (R) ARROW | | | | | | | | 42 | 42 | | | |
| | TYPE III (L) ARROW | | | | | | | | 42 | 42 | | | |
| | STOP | | | | | | | | 44 | 44 | | | |
| | CROSSWALK AND LIMIT | | | | | | | | 90 | 90 | | | |
| FROM WB Rte 4 TO FRANKLIN CANYON Rd PM 1.819 | 27B | | 421 | | | | | | | | | | 421 |
| | 22 | 434 | | | | 20 | | | | | 20 | 434 | |
| SHEET TOTAL | | 16350 | 17970 | 2293 | 672 | 75 | 346 | 329 | 1225 | 1225 | 920 | 8033 | 11613 |

# PAVEMENT DELINEATION QUANTITIES

**PDQ-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN
FUNCTIONAL SUPERVISOR: RONNIE CHUA
CALCULATED-DESIGNED BY: EDMOND SIU
CHECKED BY
REVISED BY: BA NGUYEN
DATE REVISED: 6/20/13
BN

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 15 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Ba Nhu Nguyen No. 64527 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA

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# TRAFFIC STRIPES, PAVEMENT MARKINGS AND PAVEMENT MARKERS

| LOCATION PM | DETAIL No. OR PAVEMENT MARKING | THERMOPLASTIC TRAFFIC STRIPE | | | PAVEMENT MARKERS | | | | THERMOPLASTIC PAVEMENT MARKING | REMOVE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4" YELLOW | 4" WHITE | 8" WHITE | NON-RETROREFLECTIVE | RETROREFLECTIVE | | | | THERMOPLASTIC PAVEMENT MARKING | PAVEMENT MARKER | YELLOW THERMOPLASTIC TRAFFIC STRIPE | THERMOPLASTIC TRAFFIC STRIPE |
| | | | | | TYPE A | TYPE D | TYPE G | TYPE H | | | | | |
| | | LF | | | EA | | | | SQFT | | EA | LF | |
| 1.969-2.569 | 25 | 3168 | | | | | | 67 | | | 67 | 3168 | |
| | 36B | 306 | | 277 | | | 13 | | | | 13 | 308 | 277 |
| | 13M | | 910 | | 260 | | 66 | | | | 326 | | 910 |
| | 27B | | 3215 | | | | | | | | | | 3215 |
| FROM FRANKLIN CANYON Rd TO WB Rte 4 PM 2.569 | 25A | 1460 | | | | | | 62 | | | 62 | 1460 | |
| | 27B | | 1800 | | | | | | | | | 0 | 1800 |
| | TYPE I ARROW | | | | | | | | 31 | 31 | | | |
| 2.602-3.488 | 25 | 4449 | | | | | | 94 | | | 94 | 4449 | |
| | 27B | | 4186 | | | | | | | | | | 4186 |
| | 36B | | 255 | 258 | | | 12 | | | | 12 | | 513 |
| | 13M | | 1295 | | 370 | | 116 | | | | 486 | | 1295 |
| | 12" YELLOW MARKING | | | | | | | | 480 | 480 | | | |
| FROM WB Rte 4 TO FRANKLIN CANYON Rd PM 2.602 | 25A | 862 | | | | | | 37 | | | 37 | 862 | |
| | 27B | | 1123 | | | | | | | | | | 1123 |
| | STOP | | | | | | | | 22 | 22 | | | |
| | CROSSWALK AND LIMIT | | | | | | | | 90 | 90 | | | |
| | TYPE V ARROW | | | | | | | | 99 | 99 | | | |
| 3.672-4.9 | 12" YELLOW MARKING | | | | | | | | 312 | 312 | | | |
| | 27B | | 5067 | | | | | | | | | | 5067 |
| | 8 | | 292 | | | | | | | | | | 292 |
| | 25 | 6484 | | | | | | 136 | | | 136 | 6484 | |
| | 13M | | 1891 | | 540 | | 136 | | | | 811 | | 1891 |
| FROM CUMMINGS SKYWAY TO WB Rte 4 PM 4.863 | 25A | 722 | | | | | | 31 | | | 31 | 721 | |
| | 27B | | 1254 | | | | | | | | | | 1254 |
| | 36B | | 1176 | 450 | | | 20 | | | | 20 | | 1626 |
| SHEET TOTAL | | 17451 | 22464 | 985 | 1170 | | 363 | 427 | 1034 | 1034 | 2095 | 17452 | 23449 |
| SHEET TOTAL FROM PDQ-1 | | 16350 | 17970 | 2293 | 672 | 75 | 346 | 329 | 1225 | 1225 | 920 | 8033 | 11613 |
| GRAND TOTAL | | 74235 | | 3278 | 1842 | 1540 | | | 2259 | 2259 | 3015 | 25485 | 35062 |

## PAVEMENT DELINEATION QUANTITIES

## PDQ-2

| REVISED BY | DATE REVISED |
|---|---|
| BN | 6/20/13 |

| CALCULATED-DESIGNED BY | CHECKED BY |
|---|---|
| EDMOND SIU | BA NGUYEN |

FUNCTIONAL SUPERVISOR: RONNIE CHUA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans DESIGN

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 16 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Ba Nhu Nguyen
No. 64527
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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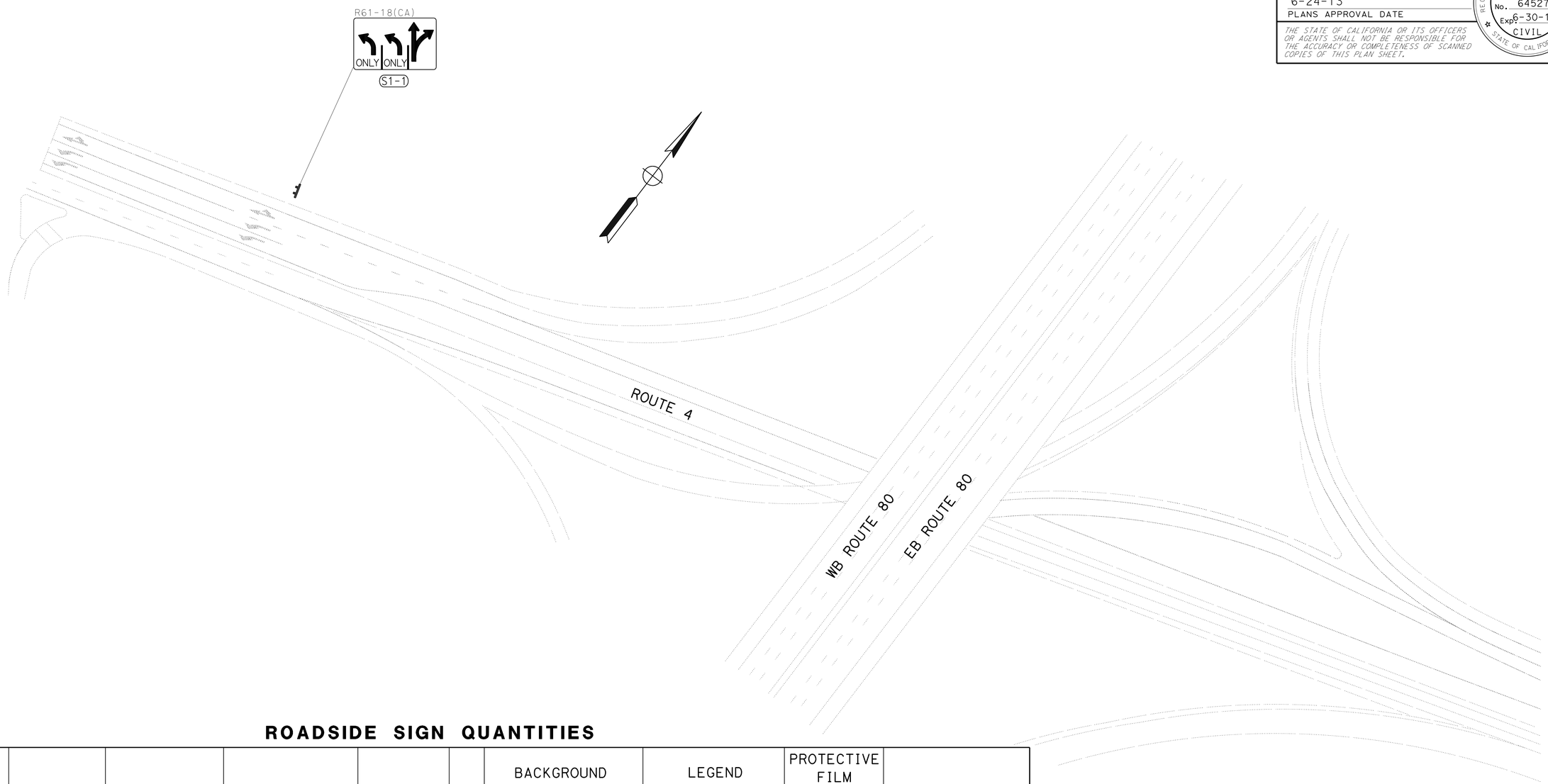
## LEGEND:

(No.) ROADSIDE SIGN NUMBER




## ROADSIDE SIGN QUANTITIES

| SIGN | CODE | PANEL SIZE | POST SIZE AND LENGTH | ROADSIDE SIGN TWO POST | SINGLE FACE | BACKGROUND | | LEGEND | | PROTECTIVE FILM | FURNISH SINGLE SHEET ALUMINUM SIGN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | SHEETING COLOR | RETROREFLECTIVE ASTM TYPE | SHEETING COLOR | RETROREFLECTIVE ASTM TYPE | PREMIUM | UNFRAMED 0.063" |
| | | | 4" x 6" | EA | | | | | | | SQFT |
| S-1-1 | R81(CA) | 72" x 45" | 15.25′ | 1 | X | BLACK | III | WHITE | PLAIN | X | 22.50 |
| TOTAL | | | | 1 | | | | | | | 22.50 |

*APPROVED FOR SIGN WORK ONLY*

# SIGN PLAN AND QUANTITIES

NO SCALE

**S-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
TRAFFIC

FUNCTIONAL SUPERVISOR: LOURDES DAVID
CALCULATED-DESIGNED BY: LEOPOLDO BONGATO
CHECKED BY: FLORANTE P. PEREZ
REVISED BY: BN
DATE REVISED: 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
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|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 17 | 35 |

REGISTERED CIVIL ENGINEER 11-6-12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Ba Nhu Nguyen No. 64527 Exp. 6-30-15 CIVIL STATE OF CALIFORNIA

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## ABBREVIATIONS:

BWC-G BONDED WEARING COURSE-GAP GRADED

LNMI LANE MILE

## COLD PLANE (0.4' Max) AND PLACE HMA (TYPE A)

| LOCATION PM | WB DIRECTION LANE No. | COLD PLANE AC PAVEMENT (0.4' Max) WIDTH | LENGTH | 0.4' COLD PLANE | HMA (TYPE A) | TACK COAT |
|---|---|---|---|---|---|---|
| | | LF (N) | | SQYD | TON | |
| 0.19 | 1 | 12 | 363 | 484 | 130.68 | 0.08 |
| WILLOW Ave ON-RAMP | | Var | Var | 647.78 | 19.43 | 0.11 |
| WILLOW Ave OFF-RAMP | | Var | Var | 576.33 | 17.29 | 0.10 |
| 1.19 | 1 | 6 | 368 | 245.33 | 66.24 | 0.04 |
| 1.20 | 2 | 12 | 368 | 490.67 | 132.48 | 0.08 |
| 1.58 | 2 | 12 | 750 | 1000 | 270 | 0.17 |
| 3.29 | 1 | 12 | 265 | 353 | 95.40 | 0.06 |
| 3.29 | 2 | 12 | 265 | 353 | 95.40 | 0.06 |
| 3.77 | 2 | 12 | 215 | 286.67 | 77.40 | 0.05 |
| 4.10 | 2 | 12 | 334 | 445.33 | 120.24 | 0.07 |
| 4.28 | 2 | 12 | 335 | 446.67 | 120.60 | 0.07 |
| 4.63 | 2 | 12 | 126 | 168 | 45.36 | 0.03 |
| CUMMINGS SKYWAY OFF-RAMP | | Var | Var | 390 | 11.70 | 0.065 |
| SUBTOTAL | | | | 5886.78 | 1202.22 | 0.98 |
| TOTAL FROM CONFORM AND COLD PLANE AC PAVEMENT | | | | 69042 | | |
| TOTAL | | | | 74928.78 | 1202.22 | 0.98 |

## CRACK TREATMENT

| PM | LNMI |
|---|---|
| 0.0-4.9 | 5 |

## SHOULDER BACKING

| LOCATION PM | FT(N) | TON |
|---|---|---|
| 4.10 | 720 | 26.97 |
| 4.80 | 337 | 12.62 |
| TOTAL | 1057 | 39.59 |

## HOT MIX ASPHALT DIKE

| LOCATION PM | DIKE TYPE C | TYPE F | TYPE E | VOLUME | HMA TYPE A | REMOVE HMA DIKE |
|---|---|---|---|---|---|---|
| | LF | | | CY (N) | TON | LF |
| 0.02 | | | 43 | 0.56 | 1.13 | 43 |
| 0.18 | | | 272 | 3.54 | 7.16 | 272 |
| 0.20 | 30 | 260 | | 1.83 | 3.71 | 290 |
| 0.21 | 30 | 155 | | 1.14 | 2.30 | 185 |
| OFF-RAMP TO Rte 80 WEST RAMP | 30 | 54 | | 0.47 | 0.95 | 84 |
| OFF-RAMP TO Rte 80 EAST RAMP | 30 | 121 | | 0.91 | 1.85 | 151 |
| 0.65 | | | 2113 | 27.47 | 55.62 | 2113 |
| 0.77 | | | 492 | 6.40 | 12.95 | 492 |
| 0.78 | 30 | 59 | | 0.50 | 1.02 | 89 |
| 0.93 | | | 731 | 9.50 | 19.24 | 731 |
| 1.14 | | | 155 | 2.02 | 4.08 | 155 |
| 1.44 | | | 1425 | 18.53 | 37.51 | 1425 |
| 1.62 | | | 354 | 4.60 | 9.32 | 354 |
| 1.73 | | | 1369 | 17.80 | 36.04 | 1369 |
| 1.80 | 60 | 420 | | 3.00 | 6.08 | 480 |
| 1.81 | | | 150 | 1.95 | 3.95 | 150 |
| 1.85 | | | 150 | 1.95 | 3.95 | 150 |
| 2.20 | | | 1131 | 14.70 | 29.77 | 1131 |
| FRANKLIN CANYON ON-RAMP | | | 1922 | 24.99 | 50.60 | 1922 |
| FRANKLIN CANYON OFF-RAMP | | | 1003 | 13.04 | 26.40 | 1003 |
| 3.48 | 30 | 97 | | 0.75 | 1.53 | 127 |
| 3.68 | 30 | 49 | | 0.44 | 0.89 | 79 |
| 4.90 | | | 348 | 4.52 | 9.16 | 348 |
| CUMMINGS SKYWAY OFF-RAMP | | | 1536 | 19.97 | 40.44 | 1536 |
| SUBTOTAL | 270 | 1215 | 13194 | 180.58 | 365.65 | 14679 |
| TOTAL | 14679 | | | 180.58 | 365.65 | 14679 |

(N) = NOT A PAY ITEM, FOR INFORMATION ONLY

## CONFORM AND COLD PLANE AC PAVEMENT

| LOCATION PM | WIDTH** | LENGTH | 0.1' COLD PLANE |
|---|---|---|---|
| | LF (N) | | SQYD |
| 0 TO 0.91 INCLUDING Rte 80 CONNECTORS AND WILLOW Ave ON-RAMP | 71.80 | 4805 | 38368 |
| 1.11 OFF-RAMP TO WILLOW Ave | 27.80 | 982 | 3028 |
| 1.18 | 42 | 93 | 433 |
| 1.55 SYCAMORE Ave OC | 42 | 185 | 867 |
| 1.88 UC | 45 | 439 | 2195 |
| 2.35 INCLUDING UC ON-RAMP FRANKLIN CANYON Rd | 63 | 1193 | 8321 |
| 2.81 | 45 | 482 | 2387 |
| 3.31 INCLUDING OC | 47 | 971 | 10318 |
| 4.23 | 36 | 354 | 1429 |
| 4.8 INCLUDING OC AND CUMMINGS SKYWAY ON-RAMP | 37 | 415 | 1696 |
| SUBTOTAL | | | 69042 |

** AVERAGE

# SUMMARY OF QUANTITIES

Q-1

| CALCULATED-DESIGNED BY | BN | REVISED BY | EDMOND SIU | FUNCTIONAL SUPERVISOR | RONNIE CHUA |
|---|---|---|---|---|---|
| CHECKED BY | 6/20/13 | DATE REVISED | BA NGUYEN | | |

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans® DESIGN

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 18 | 35 |

REGISTERED CIVIL ENGINEER DATE 11-6-12

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Ba Nhu Nguyen
No. 64527
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

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

## PLACE 0.10' RUBBERIZED HOT MIX ASPHALT (BONDED WEARING COURSE-GAP GRADED)

| LOCATION PM | OVERLAY AREA | 0.10' RHMA (BWC-G) | ASPHALTIC EMULSION MEMBRANE (BONDED WEARING COURSE) |
|---|---|---|---|
| | SQYD (N) | TON | |
| 0 TO 0.91 | 38368 | 2589.84 | 27.18 |
| 0.91 TO 1.18 | 8785 | 592.99 | 6.22 |
| 1.19 TO 1.59 | 8669 | 585.16 | 6.14 |
| 1.59 TO 1.93 | 10212 | 689.31 | 7.23 |
| 1.94 TO 2.57 | 18812 | 1269.81 | 13.33 |
| 2.6 - 2.89 INCLUDING OFF-RAMP | 10766 | 726.71 | 7.63 |
| 2.89 TO 3.49 | 14527 | 980.57 | 10.29 |
| 3.7 TO 4.23 | 14012 | 945.81 | 9.93 |
| 4.23 - 4.8 INCLUDING CUMMINGS SKYWAY ON-RAMP | 19533 | 1318.48 | 13.94 |
| TOTAL | 143684 | 9698.68 | 101.89 |

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

## SUMMARY OF QUANTITIES

Q-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR: RONNIE CHUA
CALCULATED-DESIGNED BY: EDMOND SIU
CHECKED BY: BA NGUYEN
REVISED BY: BN
DATE REVISED: 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 19 | 35 |

REGISTERED ELECTRICAL ENGINEER 8/27/12 DATE

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Mahmood Noii No. 13717 Exp. 6-30-15 ELECT STATE OF CALIFORNIA

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

## GENERAL NOTES:

1. THE FIRST ORDER OF WORK SHALL BE FOR THE CONTRACTOR TO VERIFY THE LOCATION OF THE EXISTING LOOP DETECTORS AND VEHICLE SENSOR NODES TO BE REPLACED, PRIOR TO PAVING.
2. NO ABOVE GROUND ELECTRICAL WORK SHALL BE PERFORMED ON ANY SYSTEM WITHIN THE PROJECT SITE UNTIL ALL CONTRACTOR-FURNISHED ELECTRICAL MATERIALS FOR THAT INDIVIDUAL SYSTEM HAVE BEEN TESTED AND DELIVERED TO CONTRACTOR.
3. RC THE EXISTING VEHICLE SENSOR NODES INDICATED IN THE CHART ON E-1. THEY SHALL BE REMOVED PRIOR TO GRINDING OF THE EXISTING PAVEMENT AS PER THE MANUFACTURER'S (SENSYS NETWORKS INC.) DIRECTIONS. CARE SHALL BE TAKEN NOT TO PUNCTURE OR DAMAGE THE VSN CASING. INSTALL NEW VEHICLE SENSOR NODES PER DETAILS ON E-5.
4. ABANDON THE EXISTING DETECTORS SHOWN ON E-2 AND INSTALL NEW DETECTORS IN KIND. SEE E-3 FOR DETECTOR SPACING.
5. INSTALL NEW DETECTOR TERMINATION CONDUITS AT ALL LOCATIONS UNLESS OTHERWISE NOTED.
6. SPLICE NEW LOOP CONDUCTORS TO CORRESPONDING DLC IN TERMINATION PULL BOX. VERIFY IDENTIFICATION OF EXISTING DLC BEFORE CONNECTING TO THE CORRESPONDING LOOP DETECTORS.
7. ALL LOOP DETECTORS AT EACH LOCATION SHALL BE REPLACED AND TESTED WITHIN THE TIME ALLOTTED FOR TRAFFIC SIGNAL SYSTEM SHUTDOWN AT THAT LOCATION.
8. THE CONTRACTOR SHALL PROVIDE TWO REPORTS PER LOCATION ON THE STATUS OF EACH LOOP DETECTOR REPLACEMENT SHOWING CONTINUITY AND INSULATION RESISTANCE READING. THE REPORT SHALL BE SUBMITTED TO THE ENGINEER, ONE BEFORE STARTING WORK AND ANOTHER AFTER WORK HAS BEEN COMPLETED AT EACH LOCATION.

## ELECTRICAL INDEX:

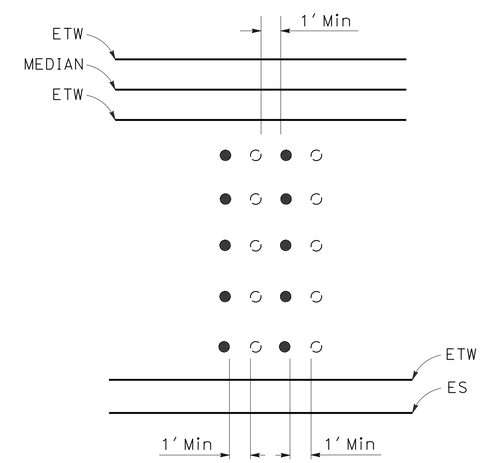

| | |
|---|---|
| E-1 | VEHICLE SENSOR NODE REPLACEMENT, ELECTRICAL INDEX, NOTES AND ABBREVIATIONS |
| E-2 | LOOP DETECTOR REPLACEMENT |
| E-3 TO E-5 | ELECTRICAL DETAILS |


## ABBREVIATIONS:

| | |
|---|---|
| AP | ACCESS POINT |
| VSH | VEHICLE SENSOR NODE |
| WVDS | WIRELESS VEHICLE DETECTION STATION |

## LEGEND

○ EXISTING VSN
● NEW VSN




VSN PLACEMENT

## CONTRA COSTA ROUTE 4

| LOCATION No. | WVDS POLE SETBACK | DIRECTION | APROXIMATE POST MILE | NUMBER OF LANES | WVDS POLE COORDINATES N | WVDS POLE COORDINATES E | AFFECTED VEHICLE SENSOR NODES (SEE E-5) | VSN CONFIGURATION TYPE | VSN TALK TO AP OR REPEATER AT LOCATION NUMBER | ACCESS POINT |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | WB | FT | | WB | | | |
| 1 | 25' FROM ETW (Exist MBGR) | WB | 0.66 | 2 | 2196379.468 | 6055406.922 | 4 | II | 1 | 1 |
| 2 | 31' FROM ETW | WB | 3.00 | 2 | 2194296.964 | 6065947.924 | 4 | I | 2 | 1 |
| 3 | 31' FROM ETW | WB | 3.63 | 2 | 2194164.680 | 6069119.665 | 4 | I | 3 | 1 |
| 4 | 29' FROM ETW (Exist MBGR) | WB | 4.08 | 2 | 2194952.036 | 6071203.647 | 4 | I | 4 | 1 |
| 5 | 15' FROM ETW (Exist MBGR) | WB | 4.75 | 2 | 2196486.411 | 6074066.339 | 4 | I | 5 | 1 |
| TOTAL | | | | | | | 20 | | | |

# VEHICLE SENSOR NODE REPLACEMENT

## ELECTRICAL INDEX, NOTES AND ABBREVIATIONS

NO SCALE

E-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
ELECTRICAL
FUNCTIONAL SUPERVISOR BEHZAD GOLEMOHAMMADI
CALCULATED-DESIGNED BY PIERRE LASSALLE
CHECKED BY MAHMOOD NOII
REVISED BY PL
DATE REVISED 6/20/13

LAST REVISION 11-12-12
DATE PLOTTED => 14-NOV-2013
TIME PLOTTED => 12:31

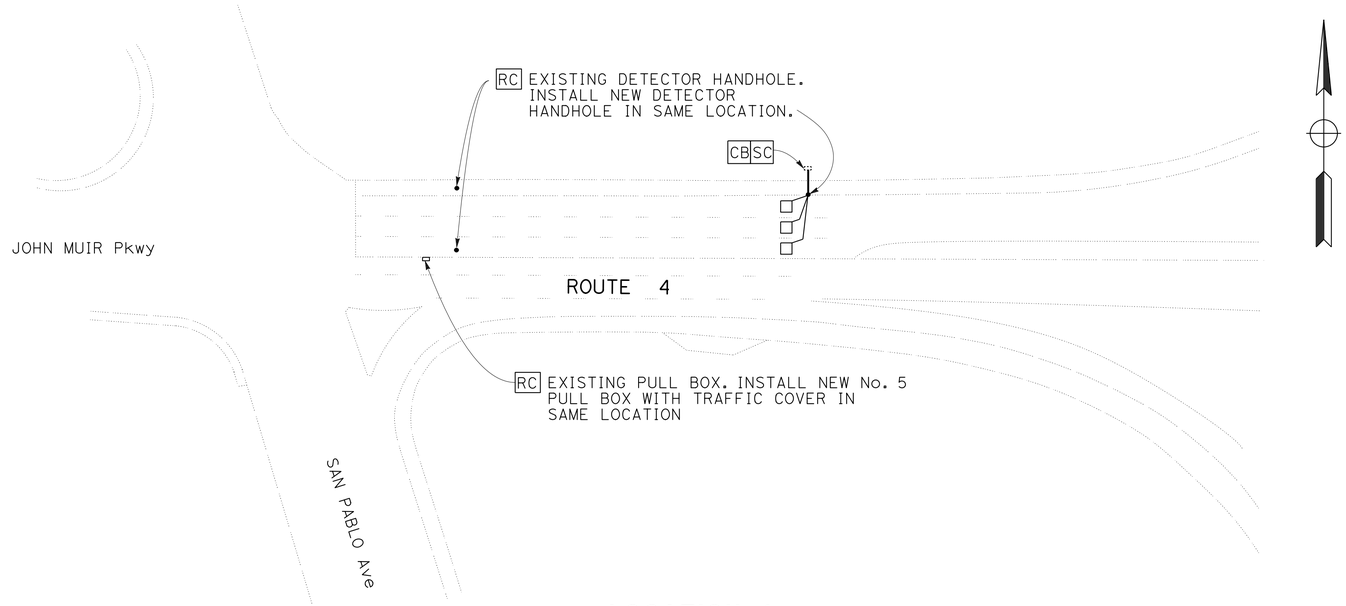
| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 20 | 35 |

REGISTERED ELECTRICAL ENGINEER — DATE 8/27/12

6-24-13
PLANS APPROVAL DATE

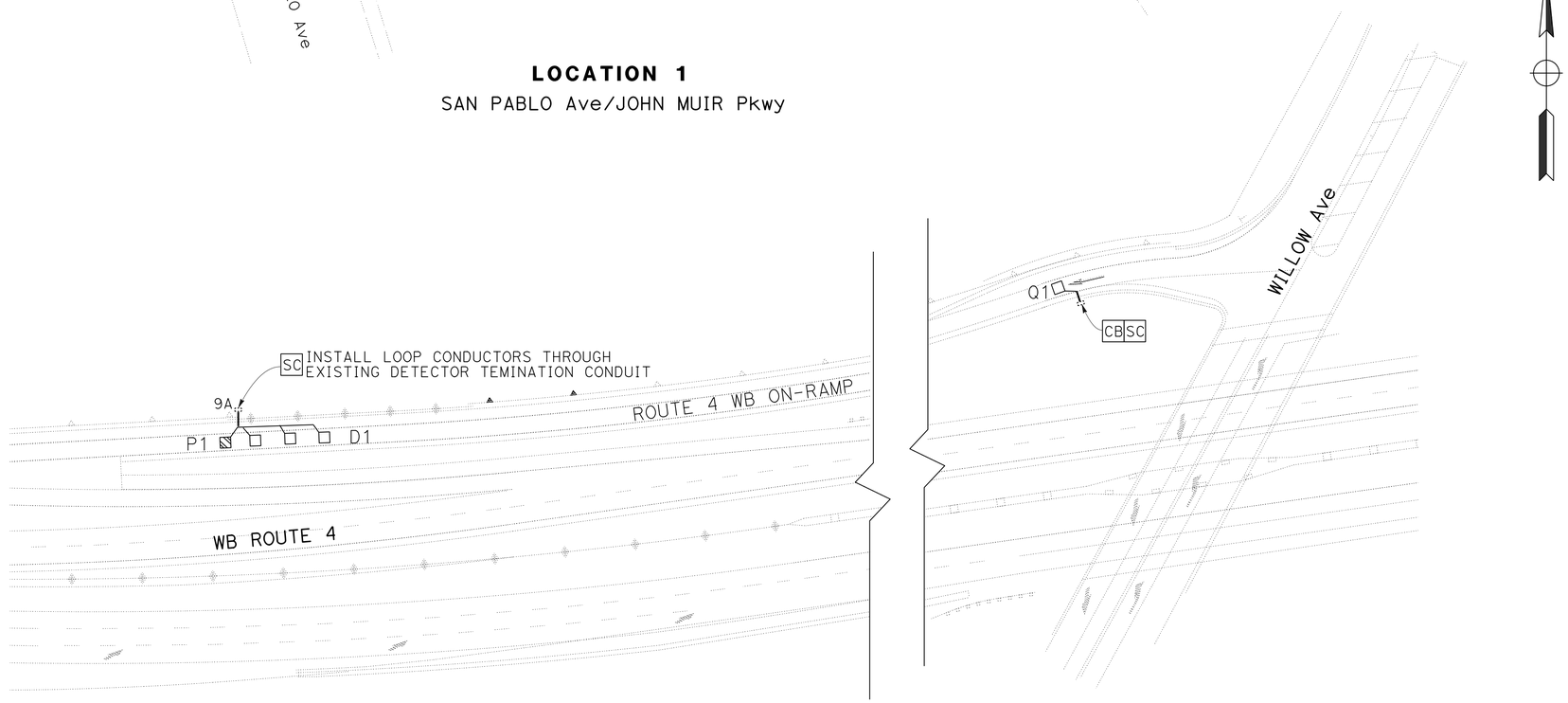
REGISTERED PROFESSIONAL ENGINEER — Mahmood Noii — No. 13717 — Exp. 6-30-15 — ELECT — STATE OF CALIFORNIA

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




**LOCATION 1**

SAN PABLO Ave/JOHN MUIR Pkwy




**LOCATION 2**

ROUTE 4 WB ON-RAMP FROM WILLOW Ave

# LOOP DETECTOR REPLACEMENT

NO SCALE

*APPROVED FOR ELECTRICAL WORK ONLY*

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET E-1

**E-2**

| | | | |
|---|---|---|---|
| PIERRE LASSALLE | PL | CALCULATED-DESIGNED BY | FUNCTIONAL SUPERVISOR |
| MAHMOOD NOII | 6/20/13 | CHECKED BY | BEHZAD GOLEMOHAMMADI |
| REVISED BY | DATE REVISED | | |

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

**ELECTRICAL**

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:31

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 21 | 35 |

REGISTERED ELECTRICAL ENGINEER — DATE 8/29/12

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Ray C. Duschane No. 14758 Exp. 6-30-15 ELECT STATE OF CALIFORNIA

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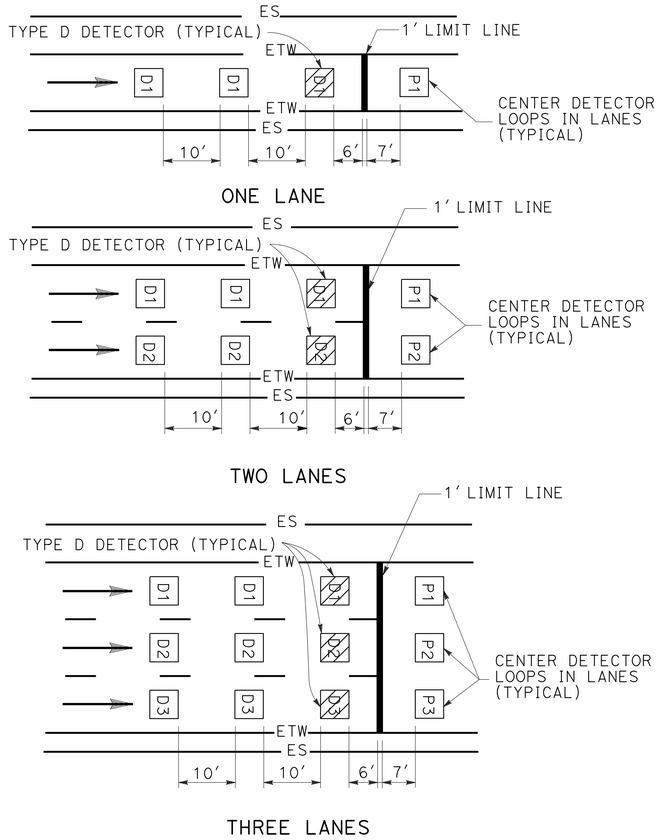
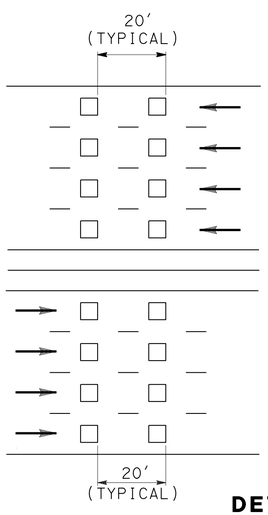



**DETAIL "RM"**
**RAMP METERING STATION**

## RAMP METERING STATION NOTES:

1. SEE ES-5A, ES-5B, AND ES-13A FOR ADDITIONAL DETAILS.
2. DLC CONDUCTORS SHALL BE SPLICED TO THE LOOP CONDUCTORS IN THE NEAREST PULLBOX.
3. ALL SPLICES SHALL BE TYPE "S" OR TYPE "ST" AS REQUIRED.




TRAFFIC MONITORING STATION NOTES

FREEWAY MAINLINE DETECTOR DESIGNATION:

N = NORTHBOUND LANES (NB)
S = SOUTHBOUND LANES (SB)
E = EASTBOUND LANES (EB)
W = WESTBOUND LANES (WB)

NUMBER OF LANES FROM LEFT WITH RESPECT TO DIRECTION OF TRAFFIC:

1 = FIRST LANE FROM LEFT
2 = SECOND LANE FROM LEFT
3 = THIRD LANE FROM LEFT
4 = FOURTH LANE FROM LEFT

NUMBER OF DETECTOR IN THE SAME LANE:

1 = ENTERING DETECTOR
2 = LEAVING DETECTOR

N 3-2

**DETAIL "TM"**
**TRAFFIC MONITORING STATION**

## RAMP DETECTOR DESIGNATION:

D = DEMAND DETECTOR
P = PASSAGE DETECTOR
Q = QUEUE DETECTOR
F = OFFRAMP DETECTOR

1 = FIRST LANE FROM LEFT
2 = SECOND LANE FROM LEFT

D-2

# ELECTRICAL DETAILS
## (RAMP METERING AND TRAFFIC MONITORING DETECTOR SPACING AND DESIGNATION)

NO SCALE

**E-3**

| | | | |
|---|---|---|---|
| RAY DUSCHANE | CHARLES PRICE | RD | 6/20/13 |
| CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED |
| FUNCTIONAL SUPERVISOR | CHARLES PRICE | | |

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
ELECTRICAL

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:32

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 22 | 35 |

REGISTERED ELECTRICAL ENGINEER — DATE: 8/27/12

6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mahmood Noii — No. 13717 — Exp. 6-30-15 — ELECT — STATE OF CALIFORNIA

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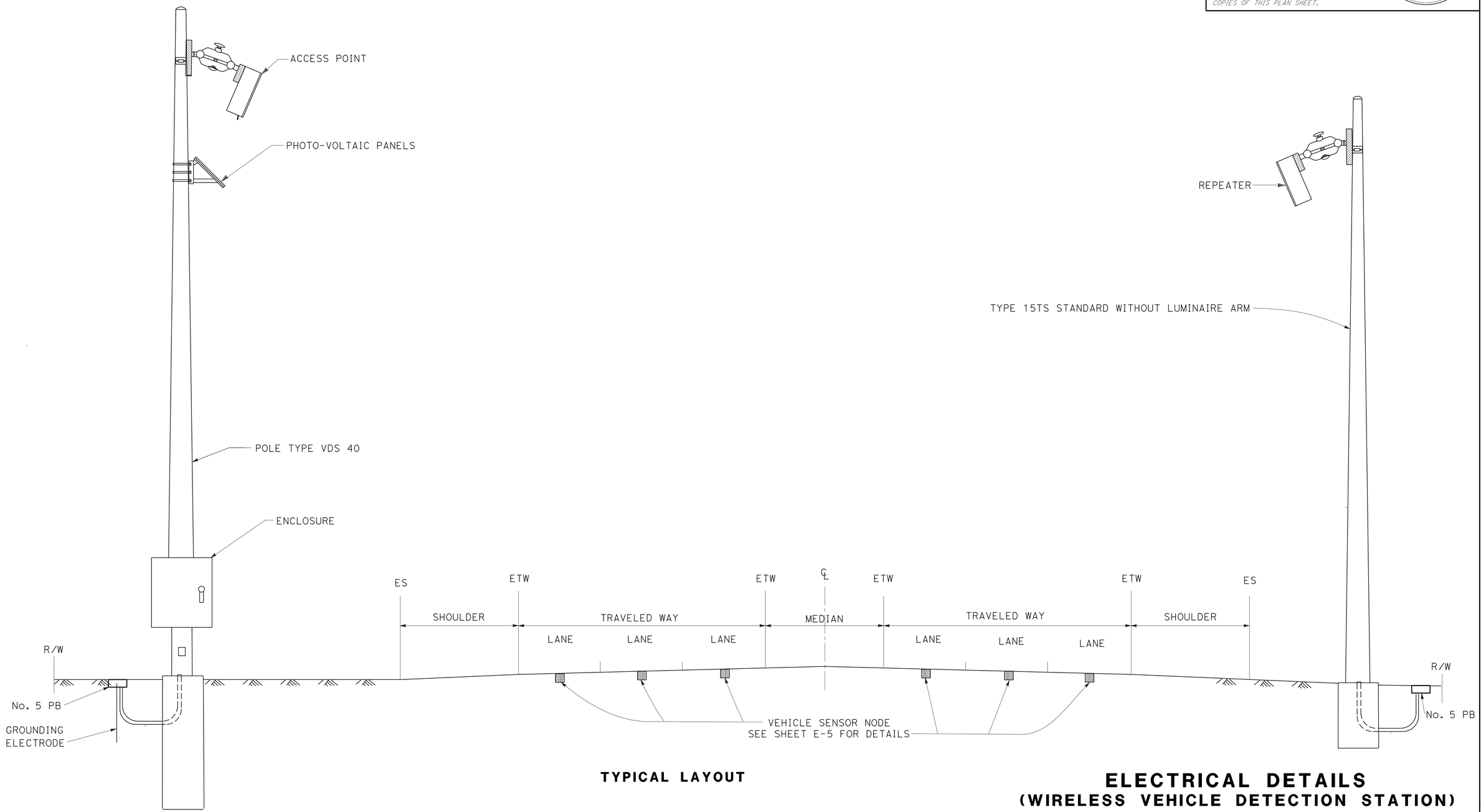



**TYPICAL LAYOUT**

# ELECTRICAL DETAILS
## (WIRELESS VEHICLE DETECTION STATION)

NO SCALE

**E-4**

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

FUNCTIONAL SUPERVISOR: BEHZAD GOLEMOHAMMADI
CALCULATED-DESIGNED BY: PIERRE LASSALE
CHECKED BY: MAHMOOD NOII
REVISED BY: PL
DATE REVISED: 6/20/13

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:32

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 23 | 35 |

REGISTERED ELECTRICAL ENGINEER — DATE 8/27/12

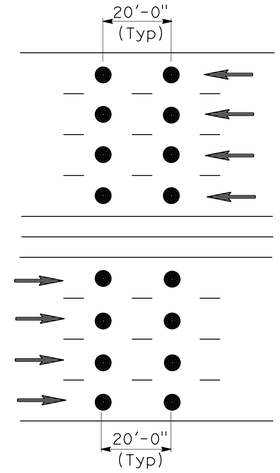
6-24-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Mahmood Noii — No. 13717 — Exp. 6-30-15 — ELECT — STATE OF CALIFORNIA

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

## VEHICLE SENSOR NODE INSTALLATION PROCEDURE

1. PRIOR TO INSTALLATION, IDENTIFY VEHICLE SENSOR NODE'S ID, LANE NUMBER, AND LOCATION IN LANE.
2. MAKE SURE THE VEHICLE SENSOR NODE INSTALLS FLAT IN THE CORED HOLED AND IS NOT TILTED.
3. USE THE HEAT-GUN OR HOT COMPRESSED AIR TO DRY THE INSIDE OF THE CORED HOLE. THERE MUST BE ABSOLUTELY NO MOISTURE ON THE APPLIED SURFACE.
4. FILL THE HOLE ABOUT 1/4 FULL OF THE SEALANT.
5. PLACE VEHICLE SENSOR NODE IN THE HOLE WITH ARROW POINTING IN THE DIRECTION OF TRAFFIC. THE SEALANT SHOULD STILL HAVE WORK TIME, SO THE VEHICLE SENSOR NODE CAN BE ROTATED TO THE CORRECT ORIENTATION. PUSH VEHICLE SENSOR NODE DOWN SO IT LAYS FLAT ON THE BOTTOM OF THE HOLE.
6. FILL THE HOLE WITH THE REMAINING SEALANT TO COVER THE VEHICLE SENSOR NODE. LEVEL SEALANT WITH THE SURFACE OF THE ROAD.
7. AFTER THE FIRST APPLICATION, DO NOT LET THE SEALANT SIT FOR MORE THAN 30 SECONDS BEFORE THE NEXT APPLICATION.
8. DEPENDING ON AMBIENT TEMPERATURE AND HUMIDITY, SEALANT DRYING TIME WILL VARY FROM 5 MINUTES TO 15 MINUTES. VERIFY HARDNESS OF SEALANT BEFORE REOPENING THE LANE FOR TRAFFIC.
9. RECORD DISTANCES BETWEEN EACH VEHICLE SENSOR NODE PAIR.




### WVDS NOTES

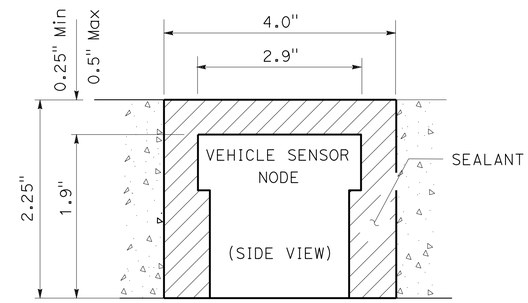
FREEWAY MAINLINE DETECTOR DESIGNATION:
- N = NORTHBOUND LANES (NB)
- S = SOUTHBOUND LANES (SB)
- E = EASTBOUND LANES (EB)
- W = WESTBOUND LANES (WB)

NUMBER OF LANES FROM LEFT WITH RESPECT TO DIRECTION OF TRAFFIC:
- 1 = FIRST LANE FROM LEFT
- 2 = SECOND LANE FROM LEFT
- 3 = THIRD LANE FROM LEFT
- 4 = FOURTH LANE FROM LEFT

NUMBER OF VSN IN THE SAME LANE:
- 1 = ENTERING DETECTOR
- 2 = LEAVING DETECTOR

N 3-2

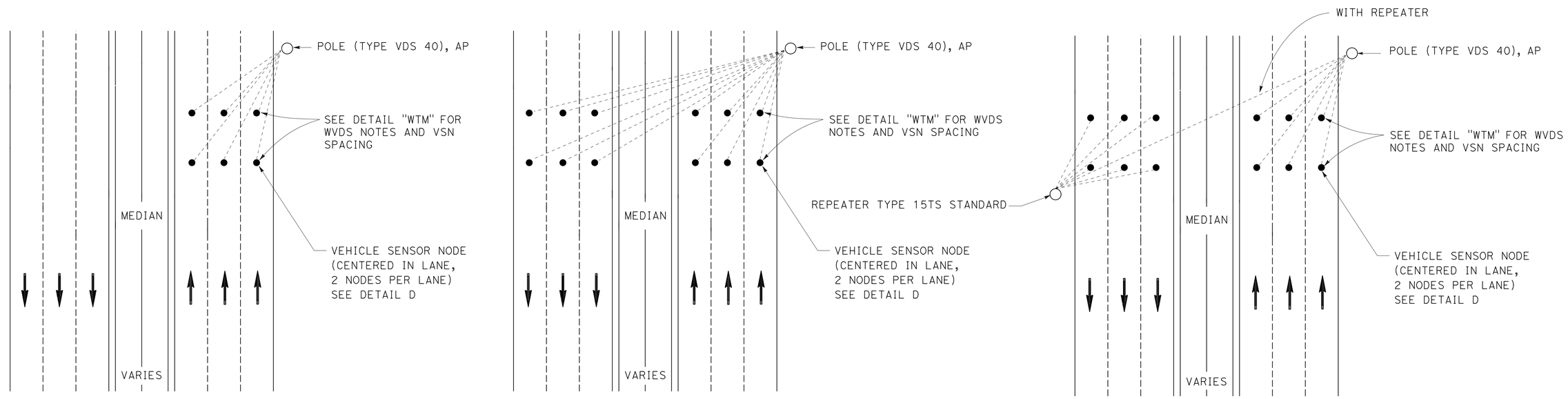
**DETAIL "WTM"**




**DETAIL D**
VEHICLE SENSOR NODE INSTALLED IN ROADWAY

### LEGEND:

DIRECTION OF TRAFFIC




**TYPE I** **TYPE II** **TYPE III**

**DETAIL C**
VEHICLE SENSOR NODE INSTALLATION

# ELECTRICAL DETAILS
## (WIRELESS VEHICLE DETECTION STATION)

NO SCALE

**E-5**

| REVISED BY | DATE REVISED |
|---|---|
| PL | 6/20/13 |

CALCULATED-DESIGNED BY: PIERRE LASSALE
CHECKED BY: MAHMOOD NOII
FUNCTIONAL SUPERVISOR: BEHZAD GOLEMOHAMMADI

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
ELECTRICAL

LAST REVISION 11-12-12 | DATE PLOTTED => 14-NOV-2013 | TIME PLOTTED => 12:32

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 24 | 35 |

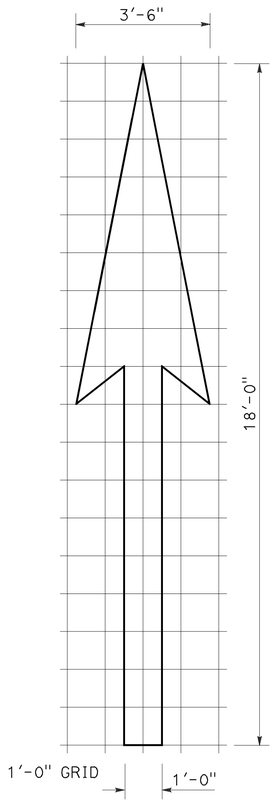
REGISTERED CIVIL ENGINEER

April 20, 2012
PLANS APPROVAL DATE

Roberta L. McLaughlin
No. C40375
Exp. 3-31-13
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

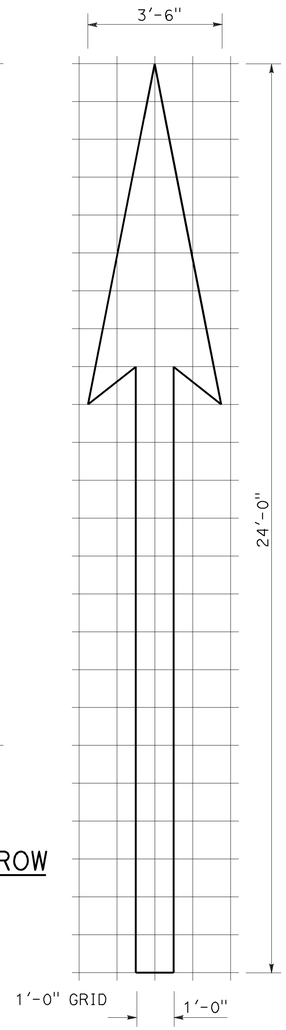
*THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.*

TO ACCOMPANY PLANS DATED 6-24-13



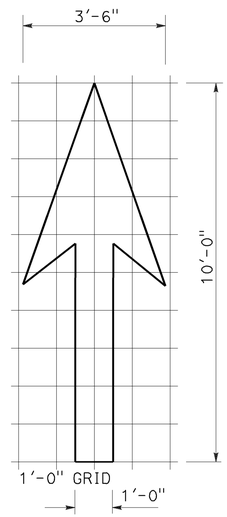

A=25 ft$^2$

TYPE I 18'-0" ARROW



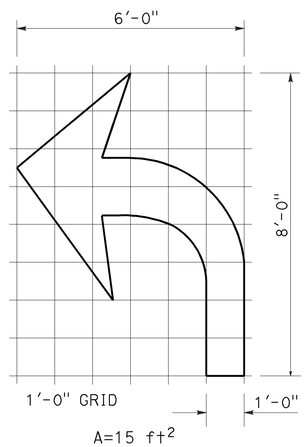

A=31 ft$^2$

TYPE I 24'-0" ARROW




A=14 ft$^2$

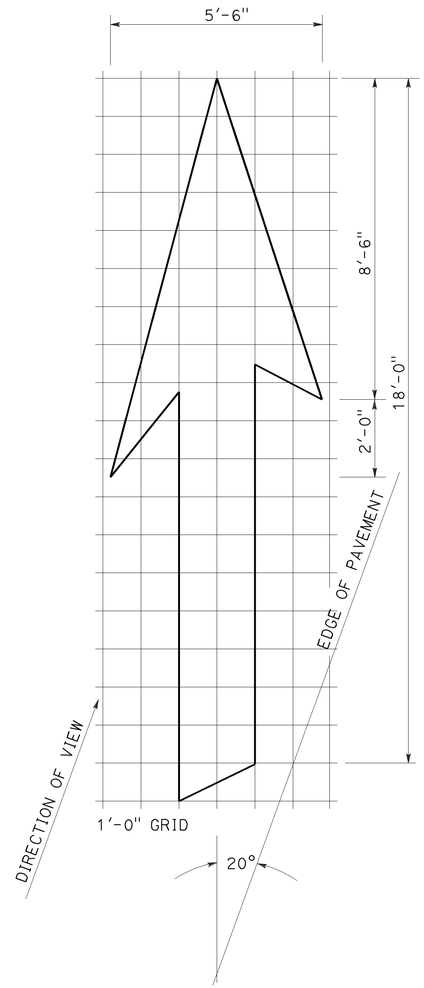
TYPE I 10'-0" ARROW




A=15 ft$^2$

TYPE IV (L) ARROW

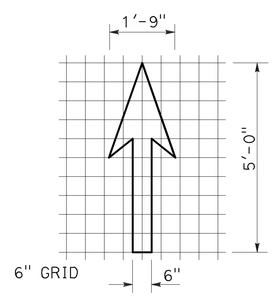
(For Type IV (R) arrow, use mirror image)




A=42 ft$^2$

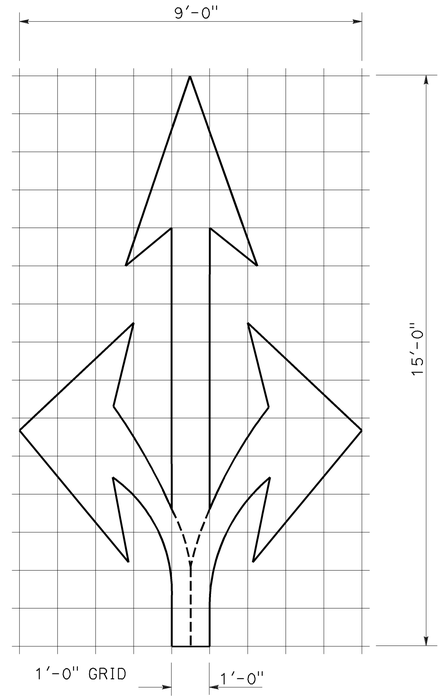
TYPE VI ARROW

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



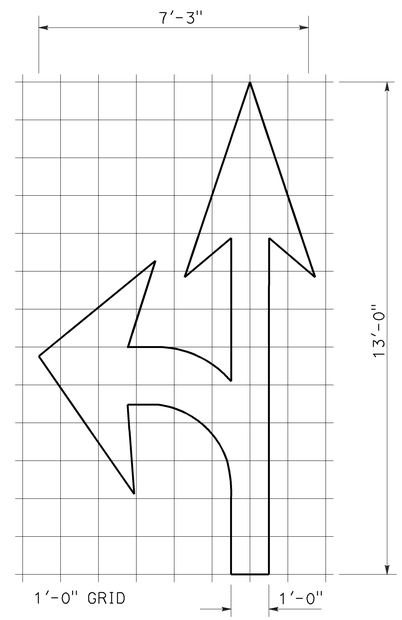

A=3.5 ft$^2$

BIKE LANE ARROW




A=36 ft$^2$

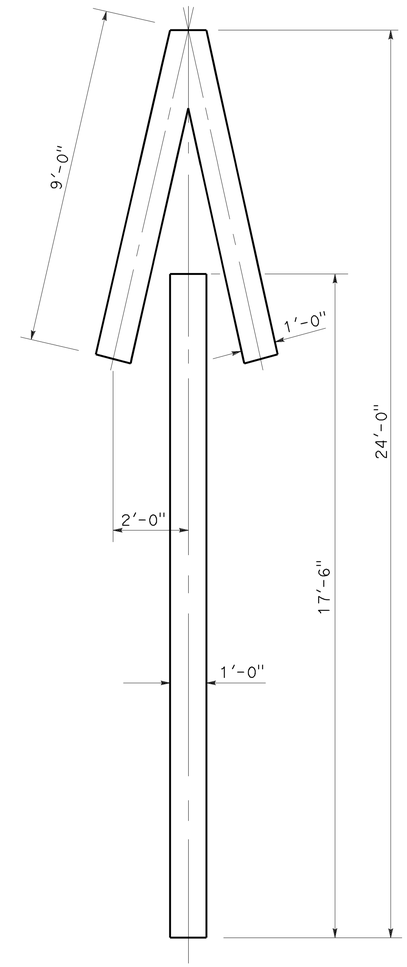
TYPE VIII ARROW




A=27 ft$^2$

TYPE VII (L) ARROW

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




A=33 ft$^2$

TYPE V ARROW

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# PAVEMENT MARKINGS ARROWS

NO SCALE

RSP A24A DATED APRIL 20, 2012 SUPERSEDES STANDARD PLAN A24A DATED MAY 20, 2011 - PAGE 13 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A24A**

**2010 REVISED STANDARD PLAN RSP A24A**

3-14-12

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 25 | 35 |

REGISTERED CIVIL ENGINEER

July 20, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Roberta L. McLaughlin
No. C40375
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

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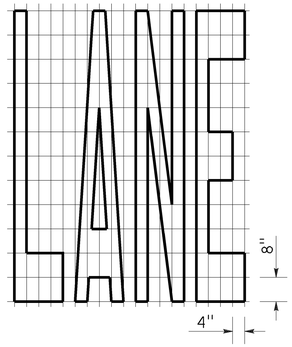
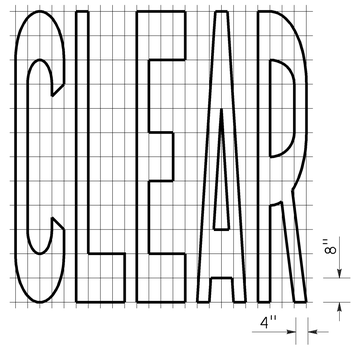
TO ACCOMPANY PLANS DATED 6-24-13




A=24 ft$^2$

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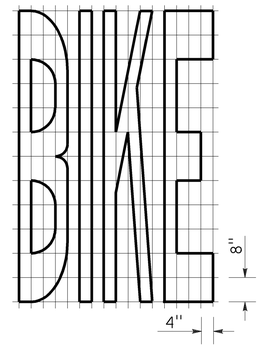


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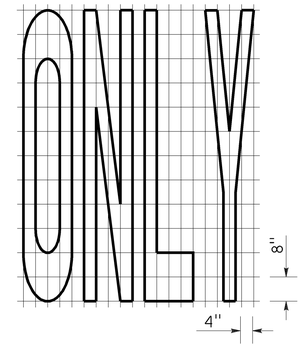


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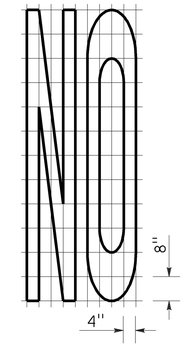


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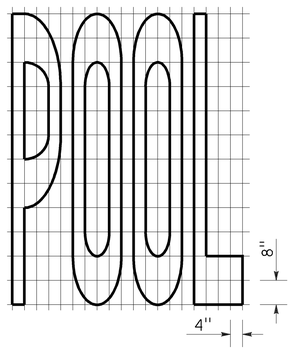


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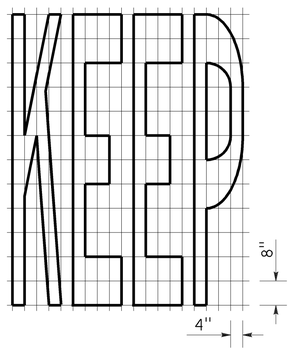


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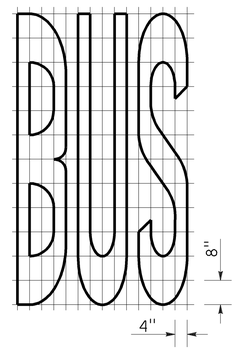


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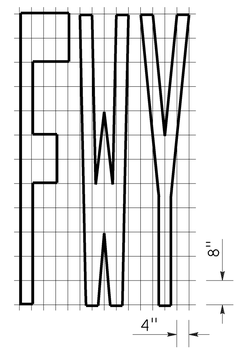


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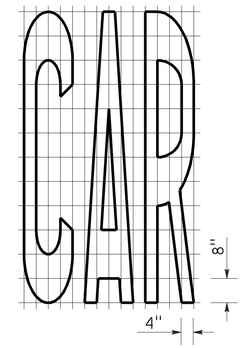
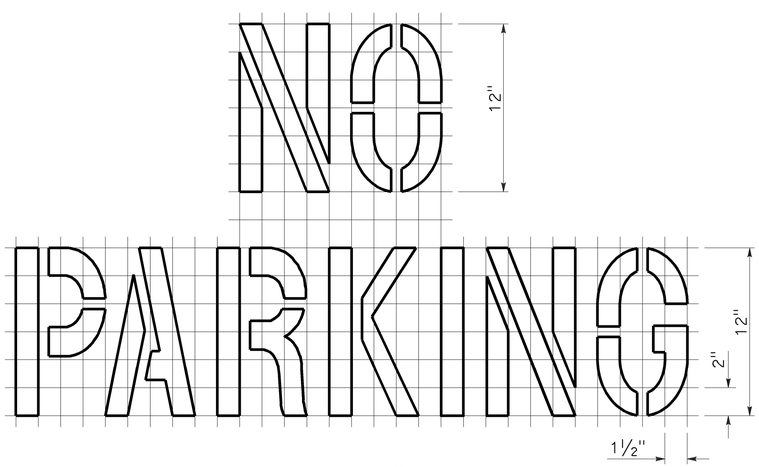
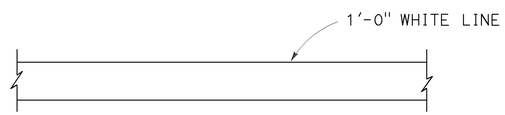



A=17 ft$^2$

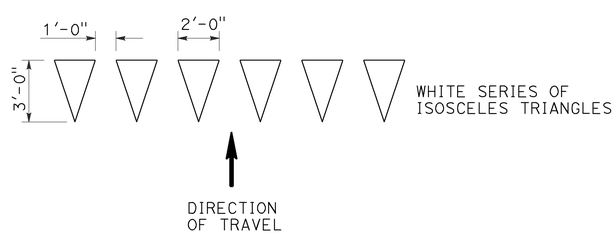
| WORD MARKINGS | | | |
|---|---|---|---|
| ITEM | ft$^2$ | ITEM | ft$^2$ |
| LANE | 24 | NO | 14 |
| POOL | 23 | BIKE | 21 |
| CAR | 17 | BUS | 20 |
| CLEAR | 27 | ONLY | 22 |
| KEEP | 24 | FWY | 16 |




A=2 ft$^2$
See Notes 6 and 7




LIMIT LINE (STOP LINE)




YIELD LINE

NOTES:

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# PAVEMENT MARKINGS WORDS, LIMIT AND YIELD LINES

NO SCALE

RSP A24E DATED JULY 20, 2012 SUPERSEDES STANDARD PLAN A24E
DATED MAY 20, 2011 - PAGE 17 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A24E**

**2010 REVISED STANDARD PLAN RSP A24E**

6-12-12

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 26 | 35 |

REGISTERED CIVIL ENGINEER

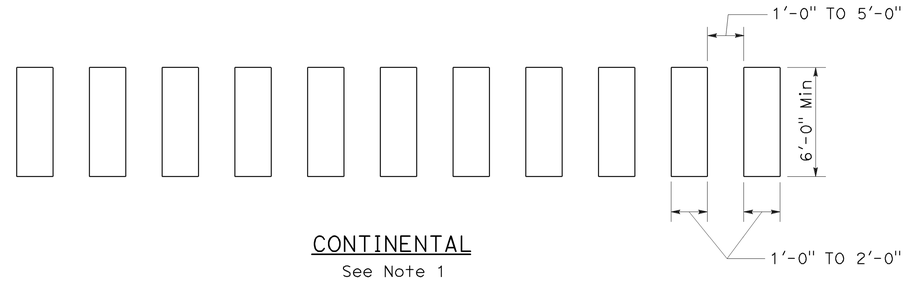
July 20, 2012
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Roberta L. McLaughlin
No. C40375
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

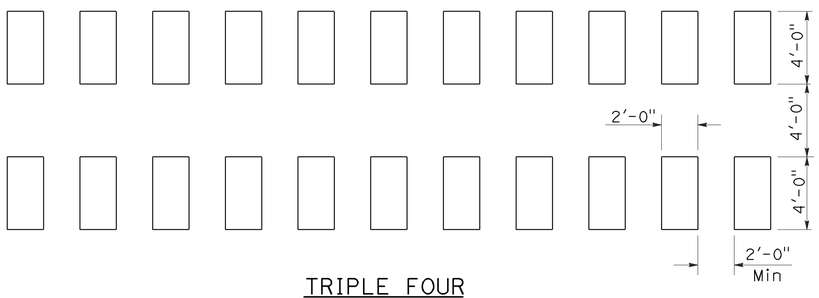
*THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.*

TO ACCOMPANY PLANS DATED 6-24-13

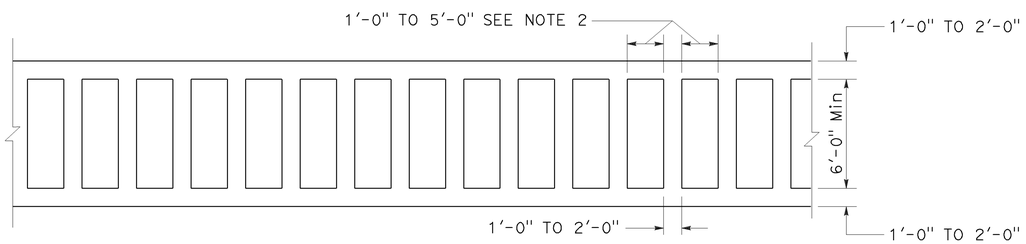
**2010 REVISED STANDARD PLAN RSP A24F**



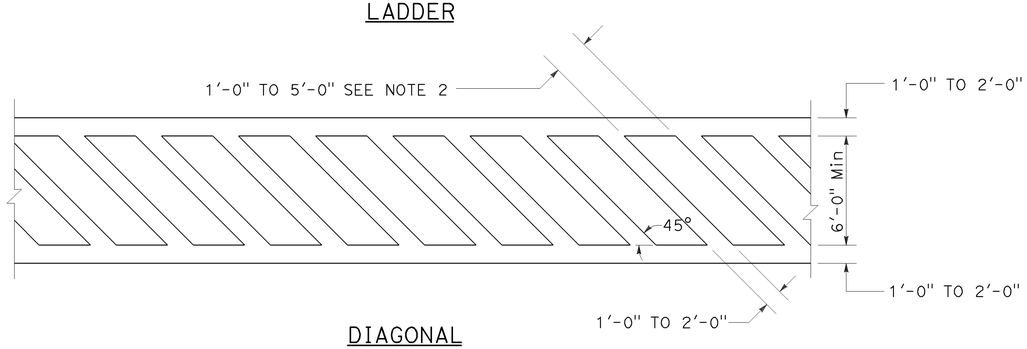

CONTINENTAL
See Note 1




TRIPLE FOUR
See Note 1




LADDER

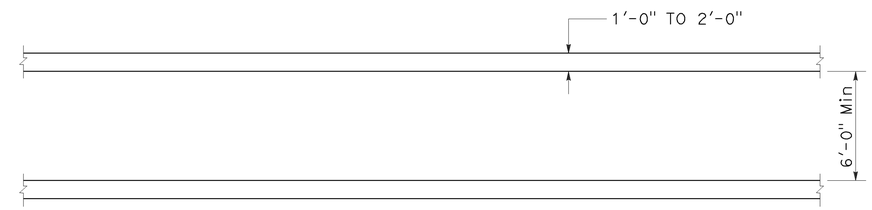



DIAGONAL

HIGHER VISIBILITY CROSSWALKS

NOTES:

1. Spaces between markings should be placed in wheel tracks of each lane.
2. Spacings not to exceed 2.5 times width of longitudinal line.
3. All crosswalk markings must be white except for those near schools must be yellow.




BASIC

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# PAVEMENT MARKINGS CROSSWALKS

NO SCALE

RSP A24F DATED JULY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP A24F**

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 27 | 35 |

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Gurinderpal Bhullar
No. C48815
Exp. 9-30-14
CIVIL
STATE OF CALIFORNIA

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TO ACCOMPANY PLANS DATED 6-24-13

## TABLE 1

### TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING

| SPEED (S) | MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W) | | | | MAXIMUM CHANNELIZING DEVICE SPACING | | |
|---|---|---|---|---|---|---|---|
| | | | | | X | Y | Z ** |
| | TANGENT 2L | MERGING L | SHIFTING L/2 | SHOULDER L/3 | TAPER | TANGENT | CONFLICT |
| mph | ft | ft | ft | ft | ft | ft | ft |
| 20 | 160 | 80 | 40 | 27 | 20 | 40 | 10 |
| 25 | 250 | 125 | 63 | 42 | 25 | 50 | 12 |
| 30 | 360 | 180 | 90 | 60 | 30 | 60 | 15 |
| 35 | 490 | 245 | 123 | 82 | 35 | 70 | 17 |
| 40 | 640 | 320 | 160 | 107 | 40 | 80 | 20 |
| 45 | 1080 | 540 | 270 | 180 | 45 | 90 | 22 |
| 50 | 1200 | 600 | 300 | 200 | 50 | 100 | 25 |
| 55 | 1320 | 660 | 330 | 220 | 55 | 110 | 27 |
| 60 | 1440 | 720 | 360 | 240 | 60 | 120 | 30 |
| 65 | 1560 | 780 | 390 | 260 | 65 | 130 | 32 |
| 70 | 1680 | 840 | 420 | 280 | 70 | 140 | 35 |

* - For other offsets, use the following merging taper length formula for L:
For speed of 40 mph or less, $L = WS^2/60$
For speed of 45 mph or more, $L = WS$

Where: L = Taper length in feet
W = Width of offset in feet
S = Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Use for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers (CA).

## TABLE 2

### LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING

| SPEED * | Min D ** | DOWNGRADE Min D *** | | |
|---|---|---|---|---|
| | | -3% | -6% | -9% |
| mph | ft | ft | ft | ft |
| 20 | 115 | 116 | 120 | 126 |
| 25 | 155 | 158 | 165 | 173 |
| 30 | 200 | 205 | 215 | 227 |
| 35 | 250 | 257 | 271 | 287 |
| 40 | 305 | 315 | 333 | 354 |
| 45 | 360 | 378 | 400 | 427 |
| 50 | 425 | 446 | 474 | 507 |
| 55 | 495 | 520 | 553 | 593 |
| 60 | 570 | 598 | 638 | 686 |
| 65 | 645 | 682 | 728 | 785 |
| 70 | 730 | 771 | 825 | 891 |

* - Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Longitudinal buffer space or flagger station spacing

*** - Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

## TABLE 3

### ADVANCE WARNING SIGN SPACING

| ROAD TYPE | DISTANCE BETWEEN SIGNS * | | |
|---|---|---|---|
| | A | B | C |
| | ft | ft | ft |
| URBAN - 25 mph OR LESS | 100 | 100 | 100 |
| URBAN - MORE THAN 25 mph TO 40 mph | 250 | 250 | 250 |
| URBAN - MORE THAN 40 mph | 350 | 350 | 350 |
| RURAL | 500 | 500 | 500 |
| EXPRESSWAY / FREEWAY | 1000 | 1500 | 2640 |

* - The distances are approximate, are intended for guidance purposes only, and should be applied with engineering judgment. These distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommmended distances.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON FREEWAYS AND EXPRESSWAYS

NO SCALE

RSP T9 DATED APRIL 19, 2013 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T9**

**2010 REVISED STANDARD PLAN RSP T9**

1-23-13

TO ACCOMPANY PLANS DATED 6-24-13

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 28 | 35 |

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Gurinderpal Bhullar No. C48815 Exp. 9-30-14 CIVIL STATE OF CALIFORNIA

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

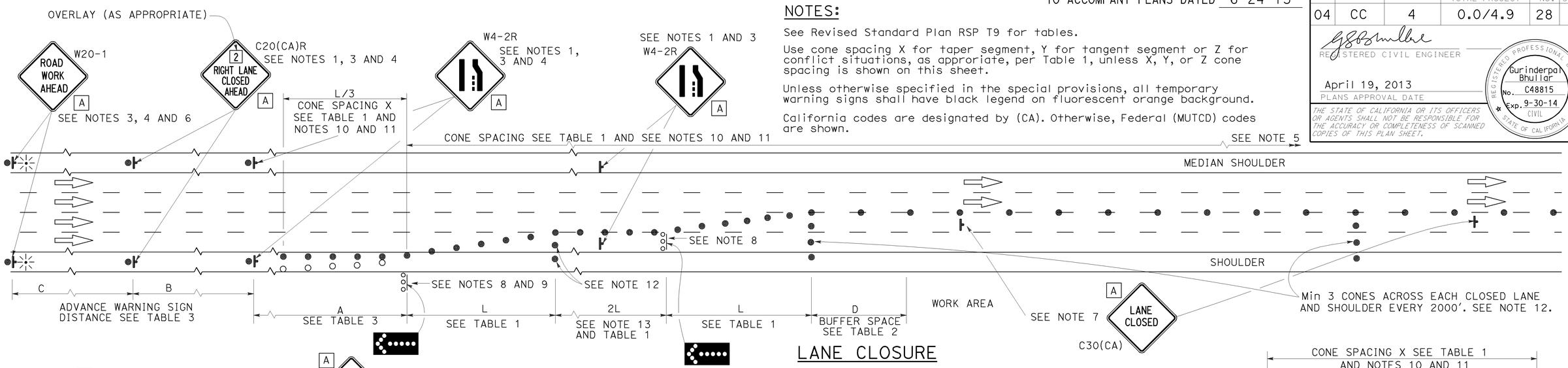
## NOTES:

See Revised Standard Plan RSP T9 for tables.

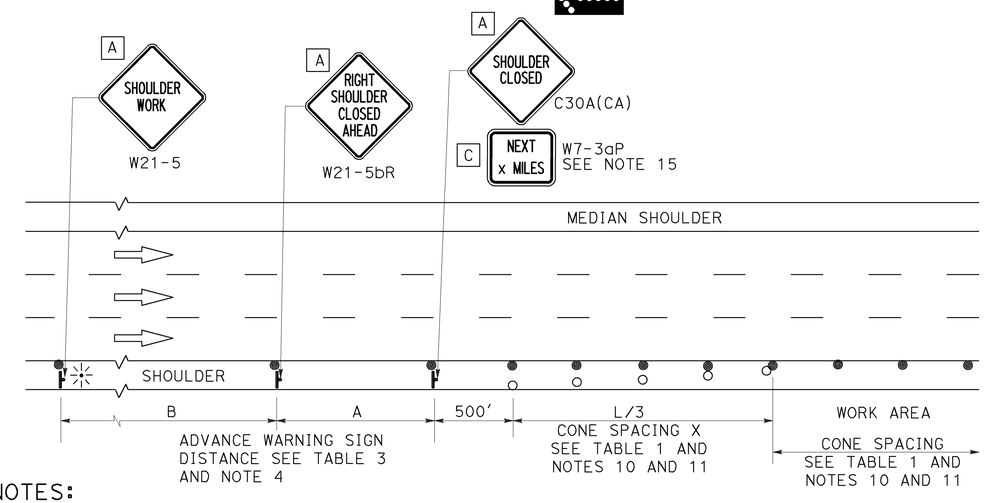
Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as approriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.

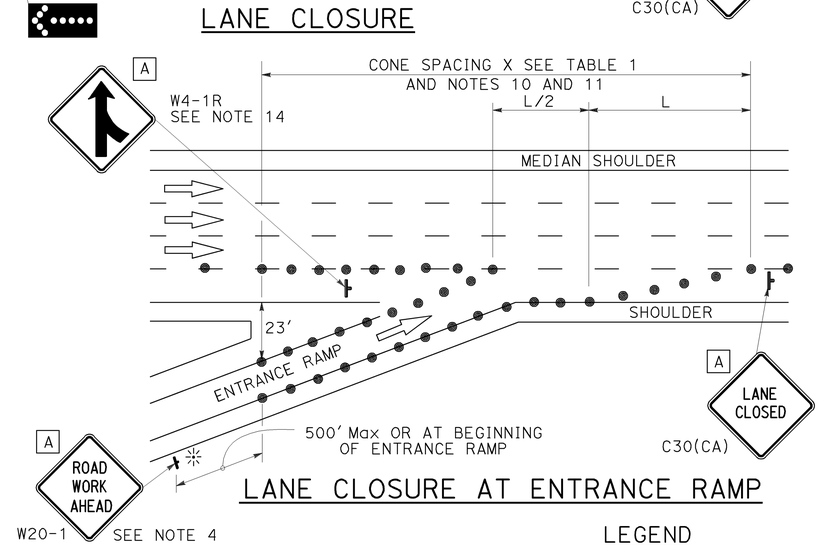
California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.



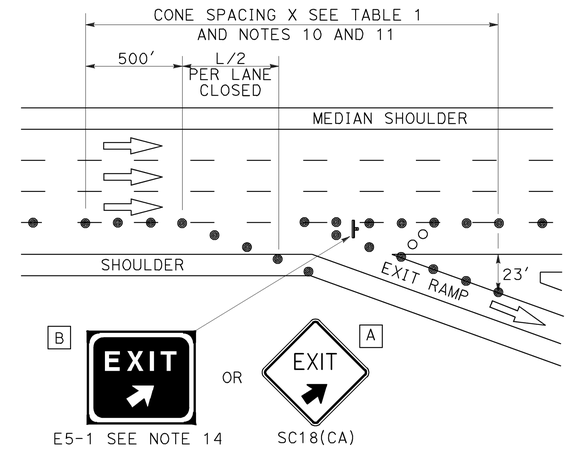

## LANE CLOSURE




## SHOULDER CLOSURE




## LANE CLOSURE AT ENTRANCE RAMP




## LANE CLOSURE AT EXIT RAMP

## NOTES:

1. Median lane closures shall conform to the details as shown except that C20(CA)L and W4-2L signs shall be used.
2. At least one person shall be assigned to provide full time maintenance of traffic control devices for lane closures.
3. Duplicate sign installations are not required:
   a) On opposite shoulder if at least one-half of the available lanes remain open to traffic.
   b) In the median if the width of the median shoulder is less than 8' and the outside lanes are to be closed.
4. Each advance warning sign on each side of the roadway shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" 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.
5. A G20-2 "END ROAD WORK" sign, with minimum size of 48" x 24" as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious or ends within a larger project's limits.
6. If the W20-1 sign would follow within 2000' of a stationary W20-1 or G20-1 "ROAD WORK NEXT _____ MILES", use a C20(CA) sign for the first advance warning sign.
7. Place a C30(CA) sign every 2000' throughout length of lane closure.
8. One flashing arrow sign for each lane closed. The flashing arrow signs shall be Type I.
9. A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at top of crest vertical curve or on a horizontal curve.
10. All cones used for lane closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
11. Portable delineators, placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
12. Unless otherwise specified in the special provisions, a minimum of 3 cones shall be placed transversely across each closed lane and shoulder at each location where a taper across a traffic lane ends and every 2000' as shown on the "Lane Closure" detail. Two Type II barricades may be used instead of the 3 cones. The transverse alignment of the cones or barricades on the closed shoulder may be shifted from the transverse alignment to provide access to the work.
13. Unless otherwise specified in the special provisions, the 2L tangent shown along lane lines shall be used between the L tapers required for each closed traffic lane.
14. Unless otherwise specified in the special provisions, the E5-1 or SC18(CA) and W4-1 signs shall be used as shown.
15. A W7-3aP "NEXT____ MILES" plaque must be used if theshoulder closure extends beyond the distance that can be perceived by road users.

## LEGEND

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON

## SIGN PANEL SIZE (Min)

| | |
|---|---|
| A | 48" x 48" |
| B | 72" x 60" |
| C | 36" x 30" |

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON FREEWAYS AND EXPRESSWAYS

NO SCALE

RSP T10 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T10 DATED MAY 20, 2011 - PAGE 237 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T10**

**2010 REVISED STANDARD PLAN RSP T10**

12-18-12

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 29 | 35 |

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Gurinderpal Bhullar No. C48815 Exp. 9-30-14 CIVIL STATE OF CALIFORNIA

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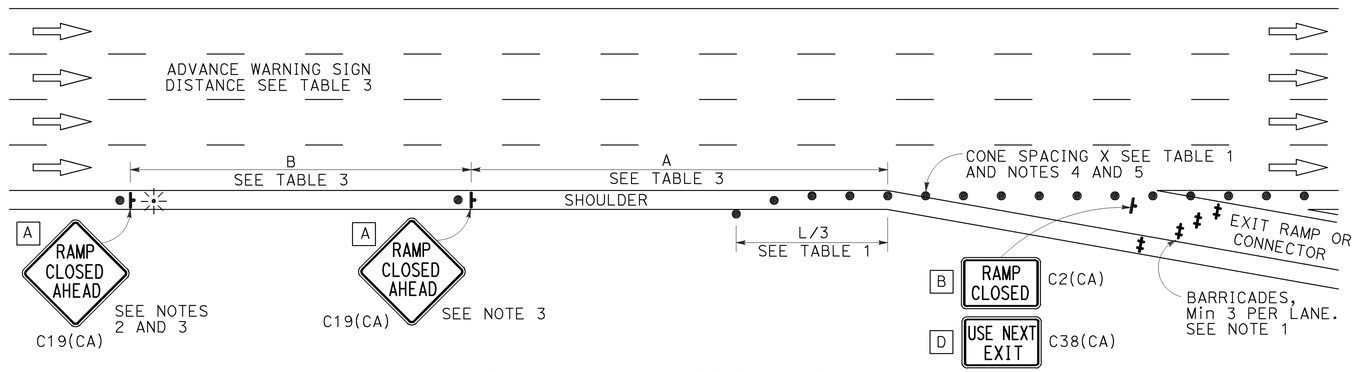
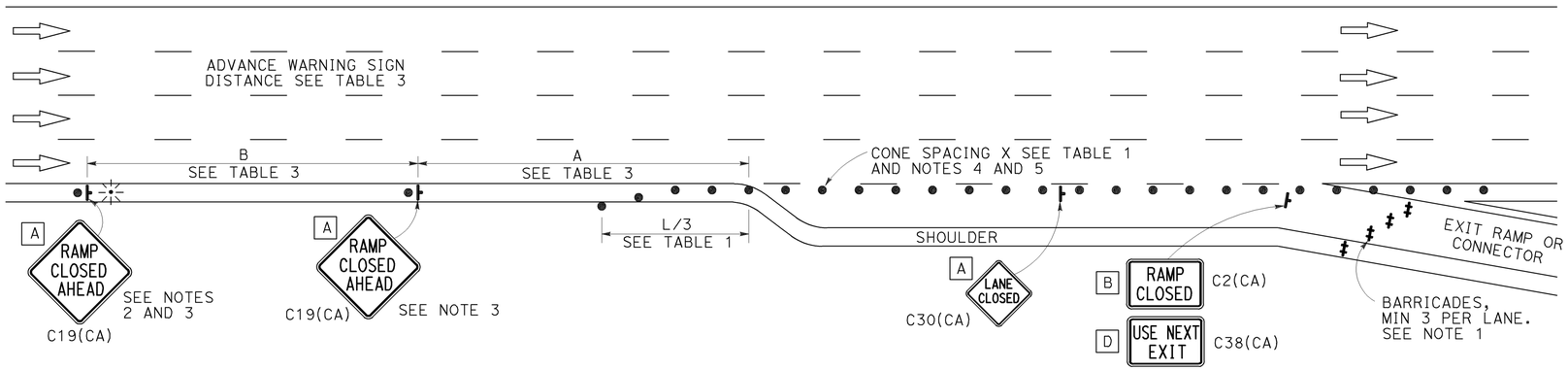
TO ACCOMPANY PLANS DATED 6-24-13

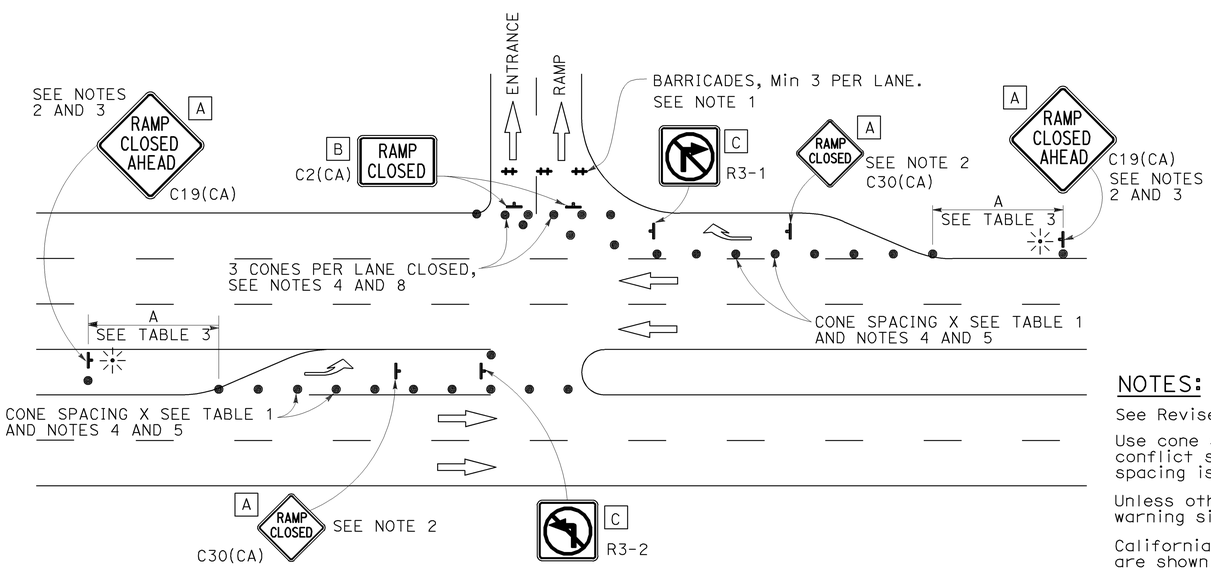
# TYPICAL RAMP CLOSURES




## EXIT RAMP OR CONNECTOR




## EXIT RAMP OR CONNECTOR WITH ADDITIONAL LANE




## ENTRANCE RAMP WITH TURNING POCKETS

## SIGN PANEL SIZE (Min)

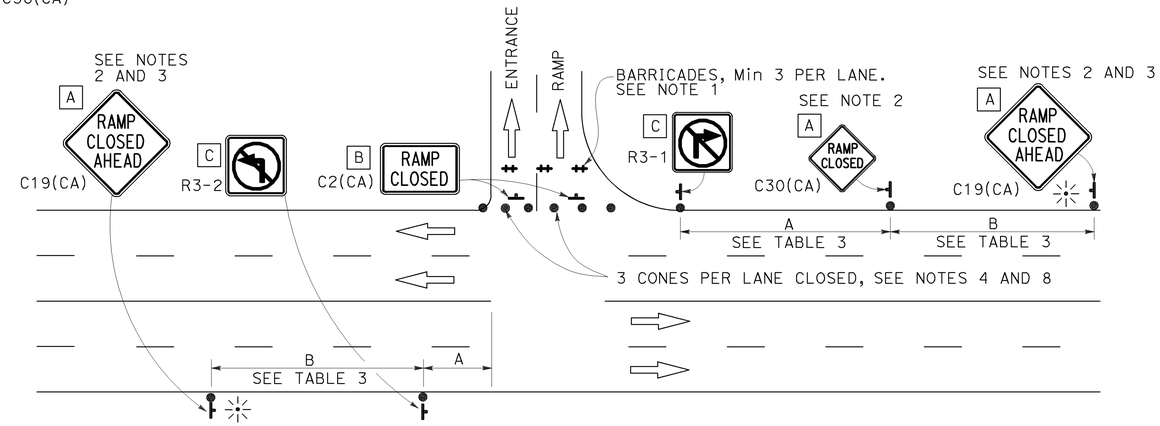
- A 48" × 48"
- B 48" × 30"
- C 36" × 36"
- D 48" × 36"

## LEGEND

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- BARRICADES
- PORTABLE FLASHING BEACON

## NOTES:

1. Barricades shall be Type I, II, or III for closures lasting one week or less and Type III for closures lasting longer than one week.
2. In addition to placing the C19(CA) "RAMP CLOSED AHEAD" and C30(CA) "RAMP CLOSED" signs, black on orange overlay plates with the word "CLOSED" may be mounted, as directed by the Engineer, on all guide signs that refer to the closed ramp. The letter size on the overlay shall be the same as the guide sign.
3. Each advance C19(CA) "RAMP CLOSED AHEAD" sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" × 16" in size and shall be orange or fluorescent red-orange in color. A flashing beacon shall be placed on top of the first C19(CA) sign during hours of darkness.
4. All cones used for ramp closures during the hours of darkness shall be fitted with retroreflective bands (or sleeves) as specified in the specifications.
5. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used instead of cones for daytime ramp closures only.
6. At least one person shall be assigned to provide full time maintenance of traffic control devices, unless otherwise directed by the Engineer.
7. The existing "EXIT" signs shall be covered during ramp closures.
8. A minimum of 3 cones shall be placed transversely across each closed lane and shoulder.




## ENTRANCE RAMP WITHOUT TURNING POCKETS

## NOTES:

See Revised Standard Plan RSP T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as approriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Unless otherwise specified in the special provisions, all temporary warning signs shall have black legend on fluorescent orange background.

California codes are designated by (CA). Otherwise, Federal (MUTCD) codes are shown.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# TRAFFIC CONTROL SYSTEM FOR RAMP CLOSURE

NO SCALE

RSP T14 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T14
DATED MAY 20, 2011 - PAGE 242 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T14**

**2010 REVISED STANDARD PLAN RSP T14**

12-18-12

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 30 | 35 |

REGISTERED CIVIL ENGINEER

April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Gurinderpal Bhullar No. C48815 Exp. 9-30-14 CIVIL STATE OF CALIFORNIA

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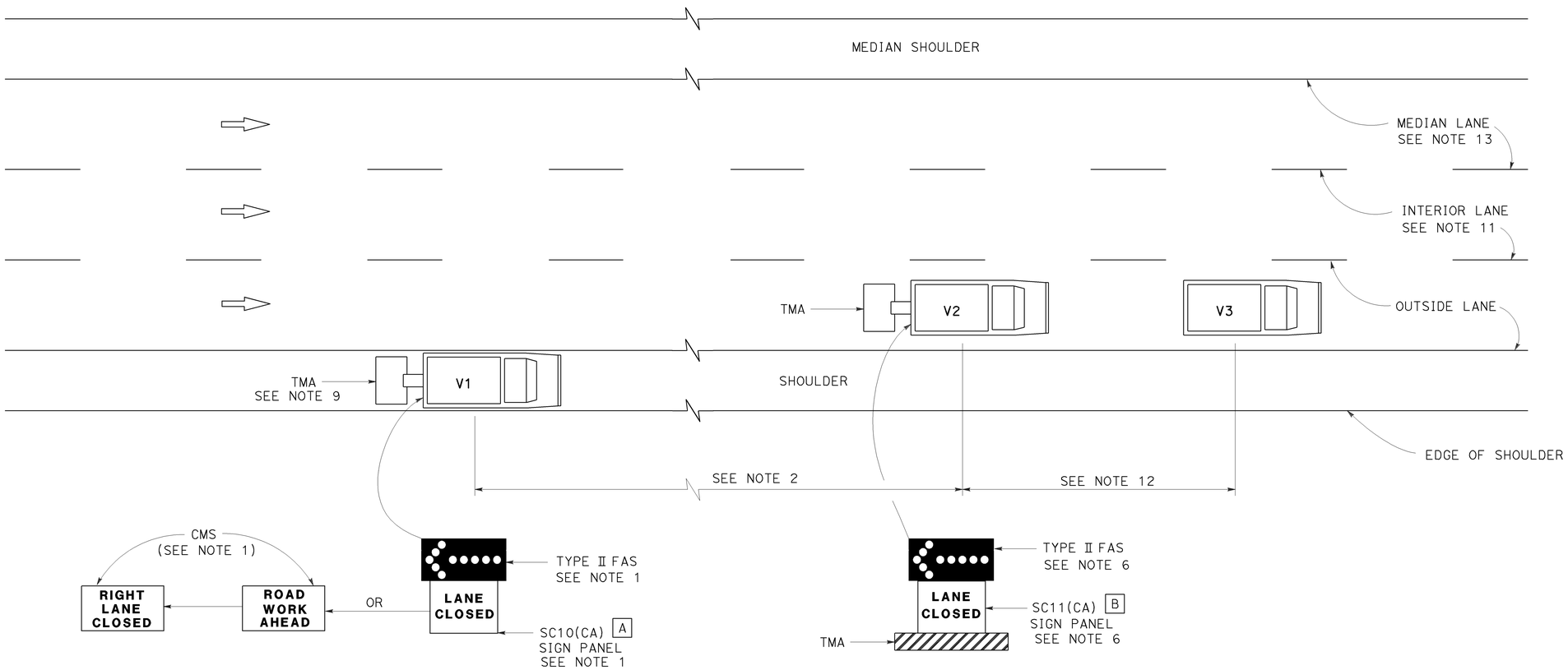
TO ACCOMPANY PLANS DATED 6-24-13

**2010 REVISED STANDARD PLAN RSP T15**




## MOVING LANE CLOSURE ON MEDIAN LANE OR OUTSIDE LANE OF MULTILANE HIGHWAYS

### SIGN PANEL SIZE (Min)

A 66" x 36"

B 54" x 42"

### LEGEND

| | |
|---|---|
| V1 | SIGN VEHICLE |
| V2 | SHADOW VEHICLE |
| V3 | WORK/APPLICATION VEHICLE |
| | FLASHING ARROW SIGN (FAS) |
| CMS | CHANGEABLE MESSAGE SIGN |
| TMA | TRUCK-MOUNTED ATTENUATOR |

### NOTES:

1. Either a changeable message sign or a SC10(CA) sign panel and a Type II flashing arrow sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "RIGHT LANE CLOSED" message. For median lane closure, the flashing arrow symbol shall be reversed with the arrowhead on the right and the changeable message sign shall show "LEFT LANE CLOSED".
2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
3. A minimum sight distance of 1500′ should be provided in advance of sign vehicle V1.
4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500′.
5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2. For median lane closure the flashing arrow sign symbol shall be displayed with the arrowhead on the right.
7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
8. All vehicles shall be equipped with flashing or rotating amber lights.
9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
10. Where workers would be on foot in the work area, a stationary type lane closure (Revised Standard Plan T10, T11, etc., as applicable) shall be used instead of this plan.
11. For moving lane closure on interior lane of multilane highways, use Revised Standard Plan T16.
12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
13. When the work/application vehicle V3 occupies the median lane, sign vehicle V1 should drive in the median shoulder and indicate left lane closed ahead.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON MULTILANE HIGHWAYS

NO SCALE

RSP T15 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T15
DATED MAY 20, 2011 - PAGE 243 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T15**

12-18-12

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 31 | 35 |

REGISTERED CIVIL ENGINEER

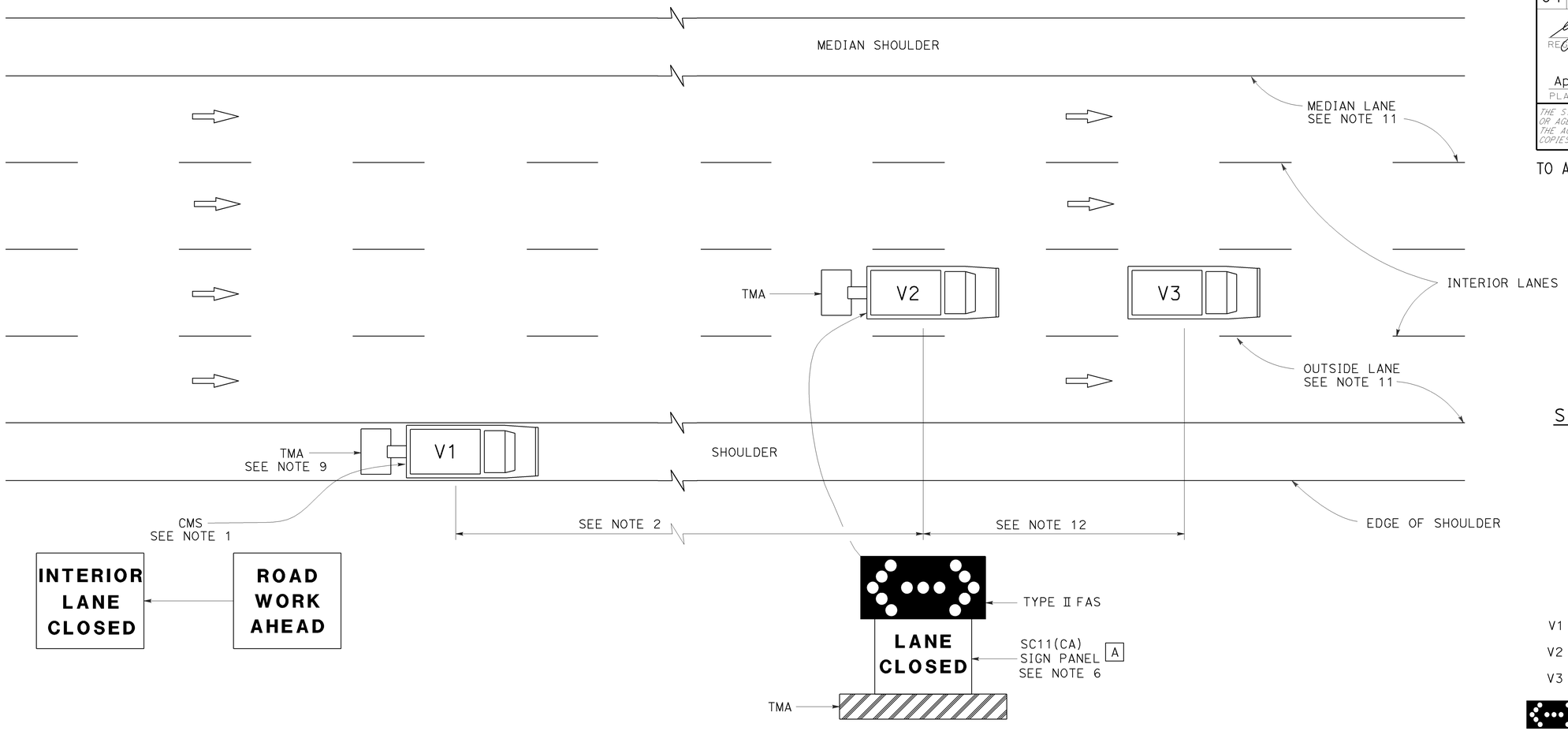
April 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Gurinderpal Bhullar No. C48815 Exp. 9-30-14 CIVIL STATE OF CALIFORNIA

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

TO ACCOMPANY PLANS DATED 6-24-13

2010 REVISED STANDARD PLAN RSP T16




## SIGN PANEL SIZE (Min)

A 54" x 42"

## LEGEND

| | |
|---|---|
| V1 | SIGN VEHICLE |
| V2 | SHADOW VEHICLE |
| V3 | WORK/APPLICATION VEHICLE |
| | FLASHING ARROW SIGN (FAS) IN FLASHING DOUBLE ARROW MODE |
| CMS | CHANGEABLE MESSAGE SIGN |
| TMA | TRUCK-MOUNTED ATTENUATOR |

## MOVING LANE CLOSURE ON INTERIOR LANE OF MULTILANE HIGHWAYS

## NOTES:

1. A changeable message sign shall be mounted on the rear of sign vehicle V1. The changeable message sign shall be sequenced to show the "ROAD WORK AHEAD" message first, followed by the "INTERIOR LANE CLOSED" message. The message "CENTER LANE CLOSED" may be used in place of the "INTERIOR LANE CLOSED" message.
2. If traffic queues develop, sign vehicle V1 should be positioned upstream from the end of queue. Sign vehicle V1 shall be positioned where highly visible when shoulders are not available.
3. A minimum sight distance of 1500′ should be provided in advance of sign vehicle V1.
4. Sign vehicle V1 should remain at the beginning of horizontal or vertical curves until the other vehicles (V2 and V3) are far enough beyond the curve to resume the minimum sight distance of 1500′.
5. Vehicle-mounted sign panels shall have Type III or above retroreflective sheeting, black on white, or black on fluorescent orange, with 6" minimum series D letters per Caltrans sign specifications.
6. Shadow vehicle V2 shall be equipped with a truck-mounted attenuator. The sign panel shown and a Type II flashing arrow sign shall be mounted on the rear of shadow vehicle V2.
7. All vehicles used for lane closures shall be equipped with two-way radios, and the vehicle operators shall maintain communication during the work or application operation.
8. All vehicles shall be equipped with flashing or rotating amber lights.
9. If sign vehicle V1 encroaches into the traffic lane due to insufficient shoulder width, sign vehicle V1 shall be equipped with a truck-mounted attenuator. Sign vehicle V1 shall stay as close to the edge of shoulder as practicable.
10. Where workers would be on foot in the work area, a stationary type lane closure (Revised Standard Plan T10, T11 etc., as applicable) shall be used instead of this plan.
11. For moving lane closure on median lane or outside lane of multilane highways, use Revised Standard Plan T15.
12. The spacing between work vehicle(s) and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# TRAFFIC CONTROL SYSTEM FOR MOVING LANE CLOSURE ON MULTILANE HIGHWAYS

NO SCALE

RSP T16 DATED APRIL 19, 2013 SUPERSEDES STANDARD PLAN T16
DATED MAY 20, 2011 - PAGE 244 OF THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP T16**

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 32 | 35 |

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

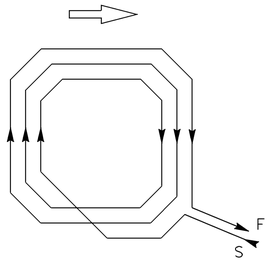
July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
Theresa Aziz Gabriel
No. E15129
Exp. 6-30-14
ELECTRICAL
STATE OF CALIFORNIA

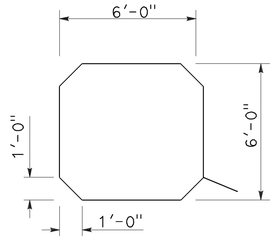
*THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.*

TO ACCOMPANY PLANS DATED 6-24-13

**2010 REVISED STANDARD PLAN RSP ES-5B**

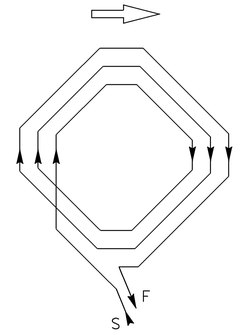



WINDING DETAIL

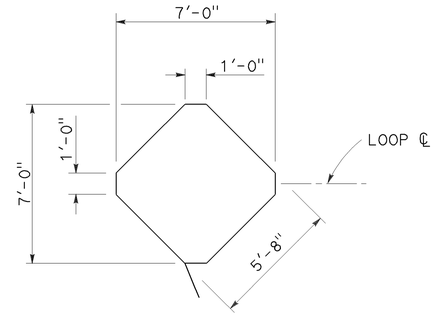



SAWCUT DETAIL

TYPE A LOOP DETECTOR CONFIGURATION

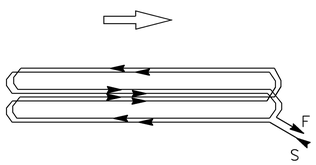



WINDING DETAIL

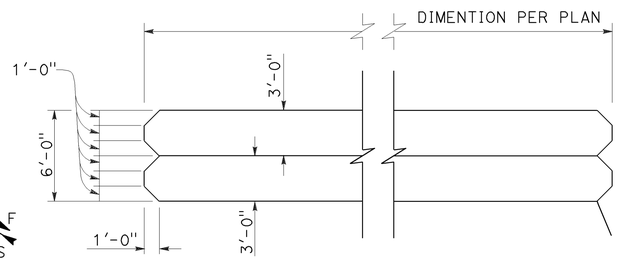



SAWCUT DETAIL

TYPE B LOOP DETECTOR CONFIGURATION

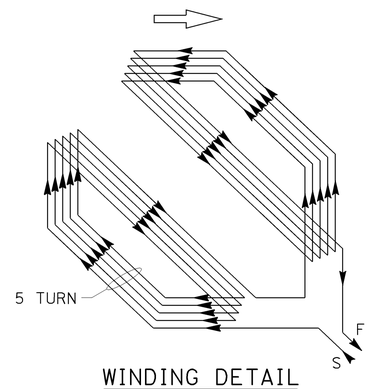



WINDING DETAIL

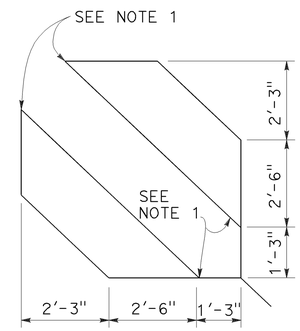



SAWCUT DETAIL

TYPE C LOOP DETECTOR CONFIGURATION

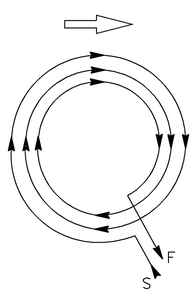



WINDING DETAIL

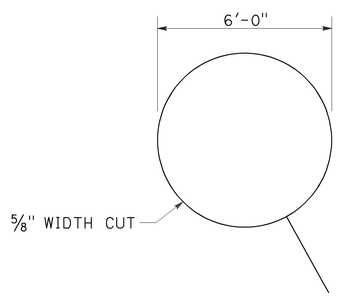



SAWCUT DETAIL

TYPE D LOOP DETECTOR CONFIGURATION

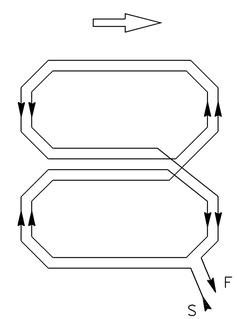



WINDING DETAIL

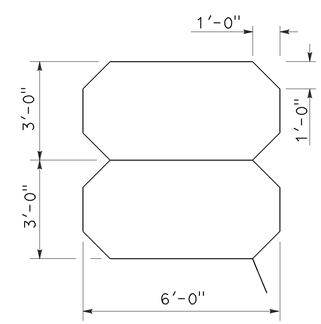



SAWCUT DETAIL

TYPE E LOOP DETECTOR CONFIGURATION

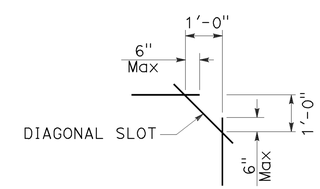



WINDING DETAIL




SAWCUT DETAIL

TYPE Q LOOP DETECTOR CONFIGURATION




PLAN VIEW OF DIAGONAL SLOT AT CORNERS

NOTES:

1. Round corners of acute angle sawcuts to prevent damage to conductors.
2. Typical distance separating loops from edge to edge is 10' for Type A, B, D and E installation in single lane.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# ELECTRICAL SYSTEMS (DETECTORS)

NO SCALE

RSP ES-5B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN ES-5B DATED MAY 20, 2011 - PAGE 449 OF THE STANDARD PLANS BOOK DATED 2010.

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

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 33 | 35 |

Theresa Gabriel
REGISTERED ELECTRICAL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Theresa Aziz Gabriel No. E15129 Exp. 6-30-14 ELECTRICAL STATE OF CALIFORNIA

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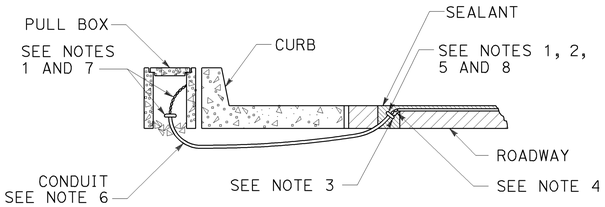
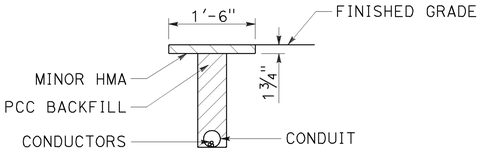
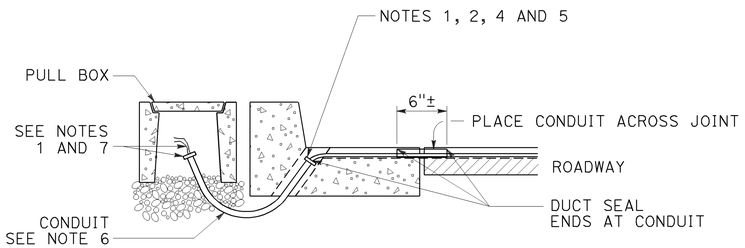
TO ACCOMPANY PLANS DATED 6-24-13



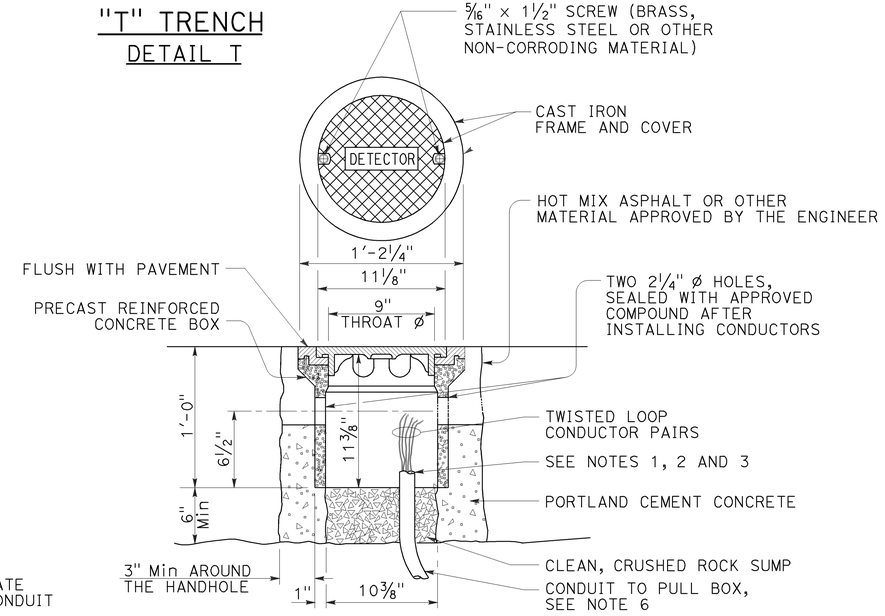

TYPE A
CURB TERMINATION DETAIL



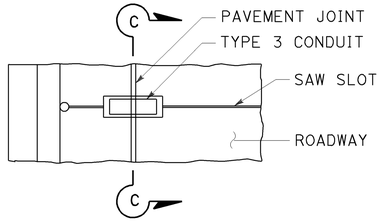

"T" TRENCH
DETAIL T



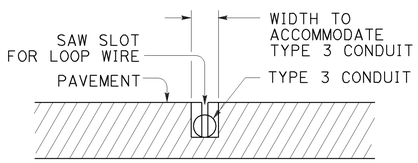

CROSS SECTION




DETECTOR HANDHOLE DETAIL

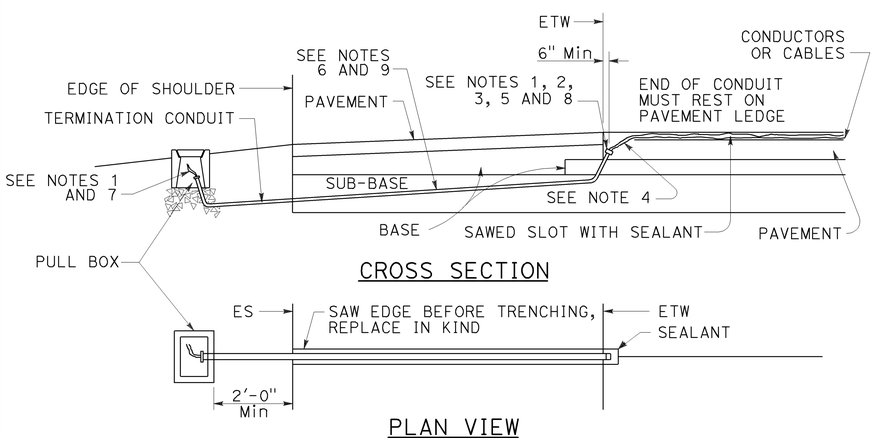



PLAN VIEW




SECTION C-C

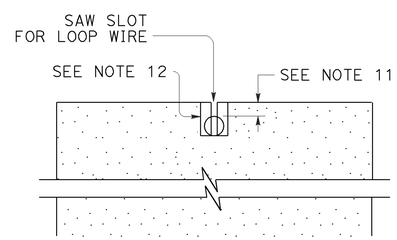
TYPE B
CURB TERMINATION DETAIL



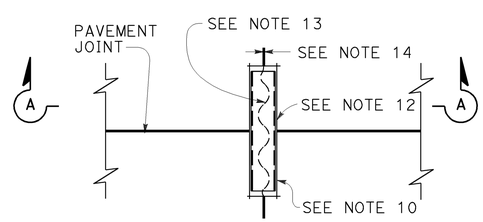

CROSS SECTION

PLAN VIEW

SHOULDER TERMINATION DETAILS

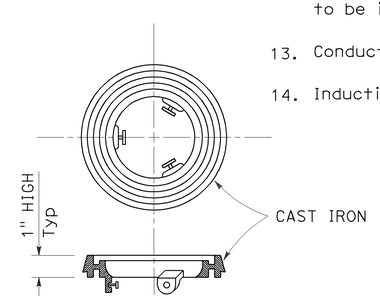



SECTION A-A




PLAN VIEW

TYPICAL LOOP LEAD-IN DETAIL
AT PAVEMENT JOINT




LOCKING GRADE RING

NOTES:

1. Bushing shall be used at end of conduit.
2. Tape detector conductors or cables 3" each side of bushings.
3. Install duct seal compound to each end of termination conduit before installing sealant.
4. Round all sharp edges where detector conductors or cables have to pass.
5. End of conduit shall be 3⅛" below roadway surface.
6. 

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

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

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ELECTRICAL SYSTEMS (CURB TERMINATION AND HANDHOLE)**

NO SCALE

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

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

**2010 REVISED STANDARD PLAN RSP ES-5D**

7-9-13

| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 34 | 35 |

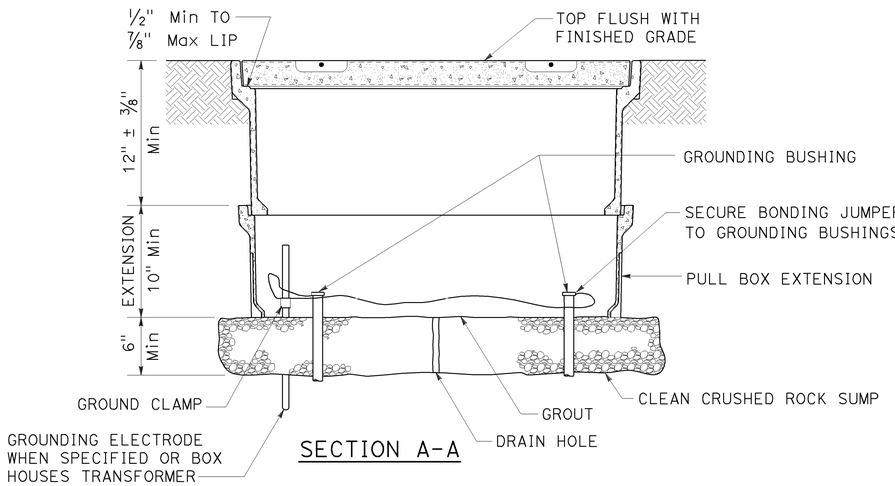
REGISTERED ELECTRICAL ENGINEER

January 20, 2012
PLANS APPROVAL DATE

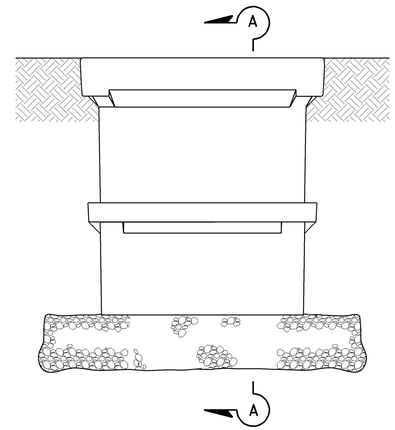
REGISTERED PROFESSIONAL ENGINEER
Jeffery G. McRae
No. E14512
Exp. 6-30-12
ELECTRICAL
STATE OF CALIFORNIA

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

TO ACCOMPANY PLANS DATED 6-24-13



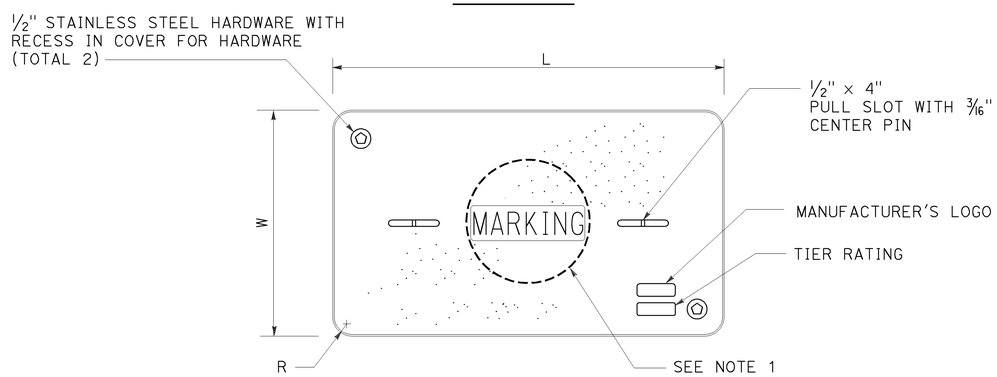

SECTION A-A



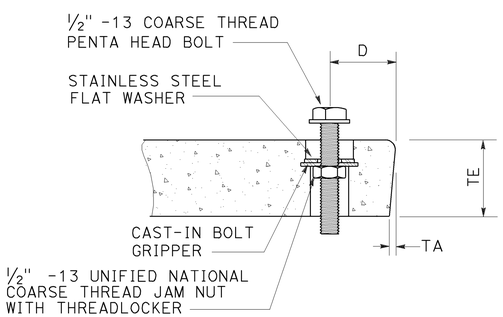

SIDE VIEW

## INSTALLATION DETAILS

### DETAIL A

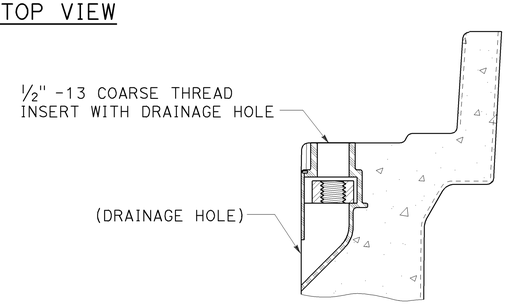



COVER TOP VIEW




TYPICAL COVER CAPTIVE BOLT

OR SIMILAR




TYPICAL THREADED INSERT

OR SIMILAR

DIMENSION TABLE

| PULL BOX | PULL BOX | | | COVER | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | MINIMUM DEPTH BOX | MINIMUM DEPTH EXTENSION | MAXIMUM WEIGHT | L | W | R | TE | TA | D | MAXIMUM WEIGHT |
| No. 3½ | 12" | N/A | 40 lb | 1' - 3⅜" | 10⅛" | 1⅜" | 2" | ⅛" | 1¾" | 30 lb |
| No. 5 | 12" | 10" | 55 lb | 1' - 11¼" | 1' - 1¾" | 1⅜" | 2" | ⅛" | 1¾" | 60 lb |
| No. 6 | 12" | 10" | 70 lb | 2' - 6½" | 1' - 5½" | 1⅜" | 2" | ⅛" | 2" | 85 lb |

## NOTES ON PULL BOXES:

1. Pull box covers must 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) "COMMUNICATIONS" - Communication circuits.
      8) "TOS COMMUNICATIONS" - TOS communication 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.

2. The nominal dimensions of the opening in which the cover sets must be the same as the cover dimensions (L and W) plus ⅛" or greater.
3. Covers and boxes must be interchangeable with California Standard. When interchanged with a standard, the top surfaces must be flush within ⅛". Top outside radius of covers and pull boxes must have a ⅛" radius.
4. Pull box extension may be another pull box as long as the bottom edge of the pull box can fit into the cover opening.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# ELECTRICAL SYSTEMS (PULL BOX)

NO SCALE

RSP ES-8A DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

**REVISED STANDARD PLAN RSP ES-8A**

**2010 REVISED STANDARD PLAN RSP ES-8A**

01-09-12

| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 4 | 0.0/4.9 | 35 | 35 |

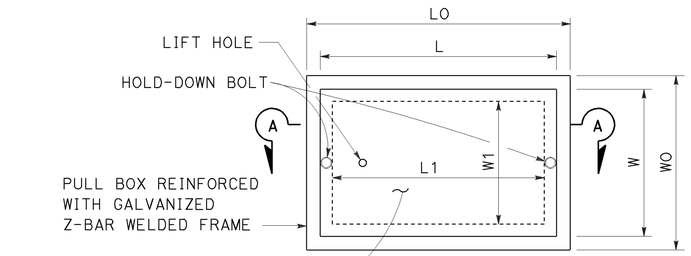
REGISTERED ELECTRICAL ENGINEER

January 20, 2012
PLANS APPROVAL DATE

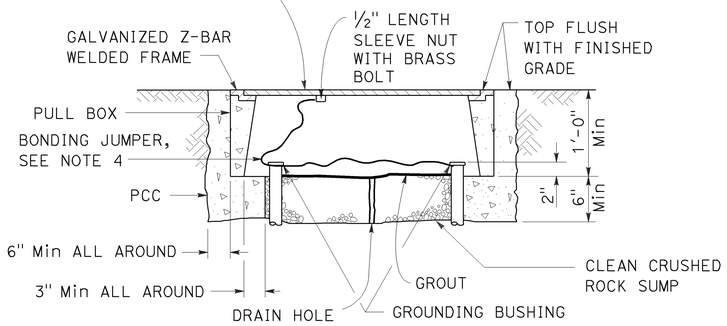
REGISTERED PROFESSIONAL ENGINEER
Jeffery G. McRae
No. E14512
Exp. 6-30-12
ELECTRICAL
STATE OF CALIFORNIA

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

TO ACCOMPANY PLANS DATED 6-24-13




TOP VIEW




SECTION A-A

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

## 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. Pull box covers must 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(T) 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(T) or 6(T) 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.
4. Bonding jumper for metal covers shall be 3' long, minimum.
5. The nominal dimensions of the opening in which the cover sets must be the same as the cover dimensions except the length and width dimensions shall be ⅛" greater.
6. Covers and boxes must be interchangeable with California standard male and female gages. When interchanged with a standard male or female gage, the top surfaces must be flush within ⅛".

### DIMENSION TABLE

| PULL BOX | BOX | | | | | | COVER | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MINIMUM * THICKNESS | MINIMUM DEPTH BOX AND EXTENSION | WO | LO | L1 | W1 | L ** | W ** | R | EDGE THICKNESS | EDGE TAPER |
| No. 3½(T) | 1½" | 1'-0" | 1'-5"± 1" | 1'-8⅞"± | 1'-2½"± | 10⅝"± 1" | 1'-8"± | 1'-1¾"± | 0" | ½" | NONE |
| No. 5(T) | 1¾" | 1'-0" | 1'-11½"± 1" | 2'-5½"± | 1'-7"± | 1'-1"± 1" | 2'-3"± | 1'-4"± | 0" | ½" | NONE |
| No. 6(T) | 2" | 1'-0" | 2'-6"± 1" | 2'-11½"± | 1'-11½"± | 1'-5"± 1" | 2'-9"± | 1'-8"± | 0" | ½" | NONE |

* EXCLUDING CONDUIT WEB ** TOP DIMENSION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# ELECTRICAL SYSTEMS (TRAFFIC RATED PULL BOX)

NO SCALE

RSP ES-8B DATED JANUARY 20, 2012 SUPPLEMENTS THE STANDARD PLANS BOOK DATED 2010.

# REVISED STANDARD PLAN RSP ES-8B

2010 REVISED STANDARD PLAN RSP ES-8B