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

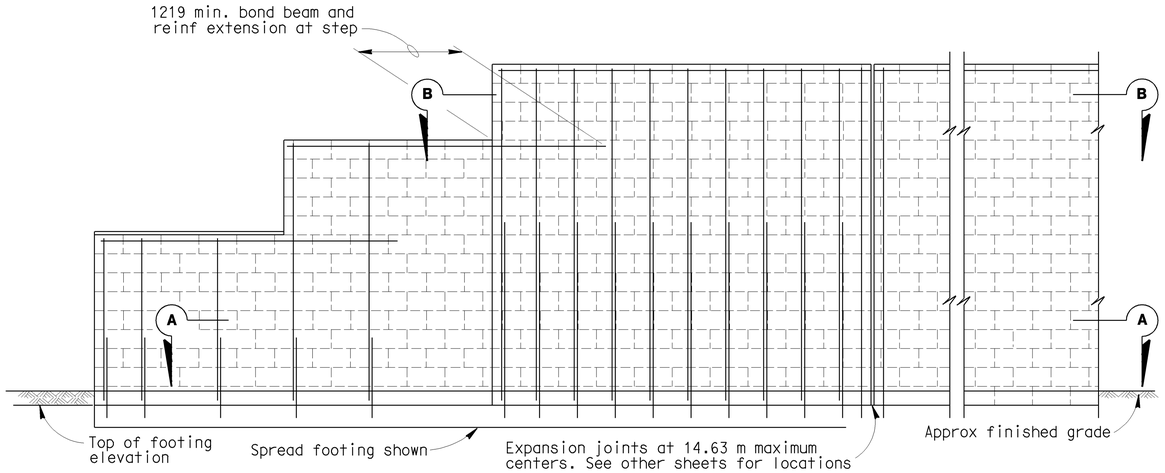
REGISTERED ENGINEER - CIVIL

PLANS APPROVAL DATE

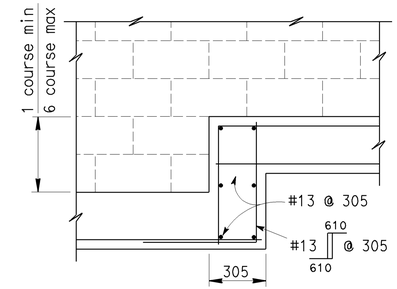
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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

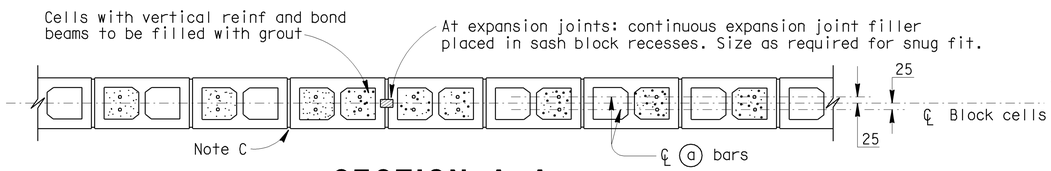
Caltrans Metric



ELEVATION



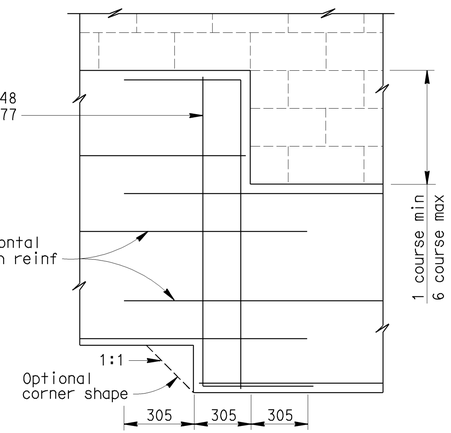
SPREAD FOOTING



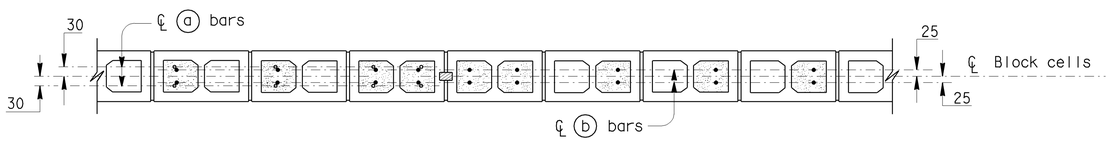
SECTION A-A

For details not shown, see other sections

H=1829 THRU H=3048



TRENCH FOOTING



SECTION A-A SECTION B-B

For details not shown, see other sections

H=3658 THRU H=4877

Note I: For details not shown, see "SOUNDWALL-MASONRY BLOCK ON FOOTING" - DETAILS NO.1" sheet.

FOOTING STEP DETAILS

DESIGN NOTES

DESIGN

Uniform Building Code, 1997 Edition and the Bridge Design Specifications.

DESIGN WIND LOAD

958 Pa

DESIGN SEISMIC LOAD

0.57 Dead load

CONCRETE MASONRY

REINFORCED CONCRETE

$f'c$ = 22.408 MPa
fy = 413.688 MPa

REGULAR STRENGTH	HIGH STRENGTH	
$f'm$ = 10.342 MPa	$f'm$ = 13.79 MPa	$f'm$ = 17.237 MPa
fb = 3.413 MPa	f_b = 4.551 MPa	f_b = 5.723 MPa
fs = 165.474 MPa	fs = 165.473 MPa	fs = 165.473 MPa
n = 25.78	n = 19.33	n = 15.47

LOAD FACTORS AND LOAD COMBINATIONS

Working Stress Design (WSD) Percentage of unit stress

Group 1: D + E + SC	100%
Group 2: D + W + SC + E	100%
Group 3: D + 0.71 EQD + E	100%

Where:

D = Dead load
E = Lateral earth pressure
SC = Live load surcharge
W = Wind load
EQD = Seismic dead load

Load Factor Design (LFD)

Group A: βD +1.7 E + 1.7 SC
Group B: βD +1.7 E + 1.3 W
Group C: βD +1.3 E + 1.0 EQE
Group D: βD +1.3 E + 1.0 EQD
Group E: βD +1.1 E + 0.85 (EQE + EQD)

Where : β = 0.9 or 1.2, whichever controls in design

D = Dead load
E = Lateral earth pressure
SC = Live load surcharge
W = Wind load
EQD = Seismic dead load
EQE = Seismic earth load

STRENGTH REDUCTION FACTORS, Ø

Reinforced concrete:

For flexure ---------- Ø = 0.90
For shear ---------- Ø = 0.85

Concrete masonry:

For flexure ---------- Ø = 0.80
For shear ---------- Ø = 0.60

FACTORS OF SAFETY FOR SPREAD FOOTING DESIGN

Overturning ---------- 1.5 Minimum
Sliding ---------- 1.2 Minimum

(Based on service level loads)

Note 1: Concrete masonry designed by the Strength Design Method. Footings designed for flexure and shear (Internal stability) by the Strength Design Method.

Trench Footing

Note 2: Case 1 - Level ground on both sides of the soundwall: Trench footing embedment lengths (External stability) were determined using the Sheet Pile Procedure with Service Loads and a Factor of Safety for overturning of 1.5. Allowable net lateral soil pressures (Q) of 38.2 kN/m²/m (243 psf/ft), 62.1 kN/m²/m (395 psf/ft) and 101 kN/m²/m (643 psf/ft) were considered based on a Log Spiral Analysis using 67% of the ultimate passive pressure. These values correspond with angles of shearing resistance (Ø) of 25°, 30° and 35° respectively and unit weights of soil (γ) of 17.27 kN/m³ (115 pcf) and 18.84 kN/m³ (120 pcf) respectively.

Note 3: Case 2 - Level ground on one side of the soundwall and sloping ground on the opposite side: Trench footing lengths (External stability were determined using the Sheet Pile Procedure with Service Loads and Factor of safety for overturning of 1.5. Allowable net lateral soil pressures for the sloping side of the wall (Q) of 10.5 kN/m²/m (67 psf/ft), and 21.08 kN/m²/m (134 psf/ft) were considered based on a Log Spiral analysis using 67% of the ultimate passive pressure. These values correspond with angles of shearing resistance (Ø) of 30° and 35° respectively and unit weights of soil (γ), 18.05 kN/m³ (115 pcf) and 18.84 kN/m³ (120 pcf) respectively.

Spread Footing

Footings were designed for external stability using service loads with a factor of safety of 1.5 for overturning and 1.2 for sliding. The maximum bearing pressure of the soil was 71.8 kPa (1500 psf). The eccentricity of loading evaluated using factored loads was limited to ⅜ of the footing width.

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

STANDARD DRAWING					
RELEASE DATE 9/8/03	DESIGN	BY D. DUNRUD	CHECKED W. C. WALKER	RELEASED BY	
FILE NO. xs15-010-2	DETAILS	BY R. YEE	CHECKED W. C. WALKER	OFFICE CHIEF	
	SUBMITTED	BY D. DUNRUD	DRAWING DATE 11/94		

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO.

KILOMETER POST

SOUNDWALL - MASONRY BLOCK ON FOOTING

DETAILS NO. 2

DS OSD 2147A (METRIC) (REV. 2/25/97)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU
EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

USERNAME => jsanchez

xs15-010-2.dgn

DATE PLOTTED => 16-JAN-2004 TIME PLOTTED => 14:51