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

REGISTERED ENGINEER - CIVIL

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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TABLE OF PILE SPACING: CLASS 45 - CONCRETE PILES

DESIGN H	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'
W	7'-3"	7'-6"	8'-0"	8'-6"	9'-6"	10'-3"	11'-0"	12'-3"	14'-0"	14'-9"	17'-3"	19'-0"	21'-3"	22'-9"
F	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-9"	2'-0"	2'-3"	2'-9"	3'-0"	3'-3"	3'-9"	4'-0"	4'-6"
M	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
N	5'-3"	5'-6"	6'-0"	6'-6"	7'-6"	8'-3"	9'-0"	10'-3"	12'-0"	12'-9"	15'-3"	17'-0"	19'-3"	20'-9"
ROW 1	8'-0"	8'-0"	8'-0"	7'-0"	6'-0"	4'-6"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"
ROW 2	16'-0"	16'-0"	16'-0"	14'-0"	15'-0"	11'-3"	10'-0"	12'-0"	6'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"
ROW 3								8'-0"	8'-0"	6'-0"	6'-0"	4'-0"	4'-0"	4'-0"
ROW 4											6'-0"	6'-0"	4'-0"	4'-0"
ROW 5													6'-0"	6'-0"
CONFIGURATION	I	I	I	I	I	I	I	II	II	II	III	III	IIII	IIII

ALTERNATIVE A: (CONSTANT TOP OF WALL THICKNESS) TABLE OF REINFORCING STEEL DIMENSIONS AND DATA

DESIGN H	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'
STEM BATTER	0	1/2 :12	1/2 :12	1/2 :12	1/2 :12	1/2 :12	1/2 :12	1/2 :12	1/2 :12	5/8 :12	3/4 :12	7/8 :12	1 :12	1 :12
STEM THICKN @ TOP	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
a BARS				*6 @ 18**	*7 @ 18**	*8 @ 18**	*9 @ 18**	*10 @ 18**	*8 @ 9*	*8 @ 9*	*7 @ 6*	*10 @ 12**	*9 @ 9*	*11 @ 12**
Y				8'-0"	6'-6"	7'-6"	8'-0"	9'-0"	9'-6"	11'-0"	11'-6"	13'-0"	14'-0"	15'-6"
b BARS	*5 @ 12	*5 @ 12	*5 @ 9	*6 @ 18**	*7 @ 18**	*8 @ 18**	*9 @ 18**	*10 @ 18**	*8 @ 9*	*8 @ 9*	*7 @ 6*	*10 @ 12**	*9 @ 9*	*11 @ 12**
Y	CONT	CONT	CONT	CONT	10'-6"	13'-0"	15'-0"	17'-6"	19'-6"	21'-0"	18'-6"	19'-0"	25'-6"	23'-6"
c BARS					*6 @ 18	*6 @ 18	*6 @ 18	*6 @ 18	*6 @ 18	*6 @ 18	*6 @ 12	*7 @ 12	*7 @ 18	*7 @ 12
SHORT d BARS					*8 @ 18**	*8 @ 18**	*9 @ 18**	*8 @ 12**	*8 @ 12**	*6 @ 6*	*8 @ 9*	*7 @ 6*	*9 @ 9*	*9 @ 9*
X					5'-6"	6'-6"	6'-6"	7'-6"	9'-6"	10'-0"	12'-0"	13'-0"	15'-0"	16'-0"
d BARS	*5 @ 12	*5 @ 9	*6 @ 9	*7 @ 9	*8 @ 18**	*8 @ 18**	*9 @ 18**	*8 @ 12**	*8 @ 12**	*6 @ 6*	*8 @ 9*	*7 @ 6*	*9 @ 9*	*9 @ 9*
X	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT
TOTAL e BARS	12 *6	12 *6	10 *5	12 *5	12 *5	14 *5	14 *5	16 *5	18 *5	18 *5	20 *5	22 *5	26 *5	26 *5

ALTERNATIVE B: (VARIABLE TOP OF WALL THICKNESS) TABLE OF REINFORCING STEEL DIMENSIONS AND DATA

DESIGN H		8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'
BATTER		0	0	0	0	0	0	0	0	0	1/4 :12	1/2 :12	1/2 :12	1/2 :12
STEM THICKN @ TOP		1'-0"	1'-0"	1'-0"	1'-0"	1'-3"	1'-3"	1'-6"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"
a BARS				*6 @ 12**	*5 @ 6*	*9 @ 18**	*9 @ 12**	*9 @ 12**	*9 @ 12**	*7 @ 6*	*7 @ 6*	*7 @ 6*	*9 @ 9*	*11 @ 12**
Y				5'-6"	5'-6"	7'-0"	7'-0"	8'-0"	8'-6"	9'-6"	11'-0"	12'-6"	13'-6"	14'-6"
b BARS		*5 @ 9	*6 @ 9	*6 @ 12**	*5 @ 6*	*9 @ 18**	*9 @ 12**	*9 @ 12**	*9 @ 12**	*7 @ 6*	*7 @ 6*	*7 @ 6*	*9 @ 9*	*11 @ 12**
Y		CONT	CONT	CONT	CONT	9'-6"	9'-6"	11'-0"	11'-6"	17'-0"	19'-6"	21'-6"	24'-0"	24'-0"
c BARS						*7 @ 18	*7 @ 12	*7 @ 12	*7 @ 12	*6 @ 12	*6 @ 12	*6 @ 12	*7 @ 18	*7 @ 12
SHORT d BARS					*8 @ 18**	*8 @ 18**	*9 @ 18**	*8 @ 12**	*8 @ 12**	*6 @ 6*	*8 @ 9*	*7 @ 6*	*9 @ 9*	*9 @ 9*
X					5'-6"	6'-6"	6'-6"	7'-6"	9'-6"	10'-0"	12'-0"	13'-0"	15'-0"	16'-0"
d BARS		*5 @ 9	*6 @ 9	*7 @ 9	*8 @ 18**	*8 @ 18**	*9 @ 18**	*8 @ 12**	*8 @ 12**	*6 @ 6*	*8 @ 9*	*7 @ 6*	*9 @ 9*	*9 @ 9*
X		CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT
TOTAL e BARS		12 *6	10 *5	12 *5	12 *5	14 *5	14 *5	16 *5	18 *5	18 *5	20 *5	22 *5	26 *5	26 *5

CONT = CONTINUOUS

* = a AND b [SHORT d & d] BARS ARE BUNDLED TOGETHER.

** = ALTERNATE a AND b BARS AS SHOWN IN DETAIL A.
ALTERNATE SHORT d AND d BARS.

DESIGN DATA

DESIGN: LOAD FACTOR DESIGN (LFD)

CONCRETE: REINFORCED CONCRETE, $f'c$ = 3600 psi
f_y = 60000 psi

LOADING CASE:

LEVEL GROUND WITH 240 psf LIVE LOAD SURCHARGE AND 16' SOUNDWALL.

SEISMIC LOAD DEAD LOAD = 0.3 DEAD LOAD
WIND LOAD = 30 psf
DEAD LOAD OF SOUNDWALL = 1414 lb/lf
DEAD LOAD OF BARRIER = 372 lb/lf

SEISMIC LOAD: SOIL

Kh = 0.3g
Kv = 0.0
Kae : MONOBE-OKABE METHOD

SOIL: $\emptyset = 34^{o}$ γ = 120 pcf

EQUIVALENT FLUID PRESSURE:
= 36 pcf MAX. FOR DETERMINATION OF TOE PRESSURE
= 27 pcf MAX. FOR DETERMINATION OF HEEL PRESSURE

LOAD COMBINATIONS:

GROUP A : βD + 1.7 E + 1.7 SC
GROUP B : βD + 1.7 E + 1.3 W
GROUP C :
STEM : 1.0 D + 1.0 E + 1.0 EQD + 1.0 EQE
FOOTING : D + PYM

WHERE : β = 1.0 OR 1.3 WHICHEVER CONTROLS DESIGN
D = DEAD LOAD
E = LATERAL EARTH PRESSURE
SC = LIVE LOAD SURCHARGE
W = WIND LOAD
EQD = SEISMIC DEAD LOAD
EQE = SEISMIC LATERAL EARTH PRESSURE

GENERAL NOTES

1. CLASS 45-CONCRETE PILES WERE USED FOR THE DESIGN.
2. PILE BATTER SHOWN ARE 1:3.
3. MINIMUM DISTANCE BETWEEN CENTER PILE AND EDGE OF FOOTING IS 1'-6".
4. REDUCTION FACTORS:
   GROUPS A & B : $\emptyset$ = 0.75
   GROUP C : $\emptyset$ = 1.0
5. LATERAL RESISTANCE OF EACH PILE:
   GROUPS A & B : = 30 kip
   GROUP C : = 40 kip
6. MAXIMUM SPACING BETWEEN PILES IS SHOWN IN THE TABLE. REDUCE TO SUIT THE LENGTH OF FOOTING.
7. MINIMUM DISTANCE BETWEEN ANY TWO PILES IS 3'-0".

DATE PLOTTED => 24-MAR-2006 TIME PLOTTED => 13:30

STANDARD DRAWING

RELEASE DATE 12/1/05 | DESIGN BY MADON SAH | CHECKED OVERCOMER HOR | RELEASED BY
DETAILS BY A R DUDSAK | CHECKED J.C. MOESE
FILE NO. xs14-360-1e | SUBMITTED BY OVERCOMER HOR | DRAWING DATE 12/1/05 | OFFICE CHIEF

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO.
POST MILE

RETAINING WALL TYPE 5SWP - DETAIL NO. 1

DS OSD 2147A (REV. X/XX/XX)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU
EA

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY) | SHEET | OF

USERNAME => rwu

xs14-360-1e.dgn