

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
X	X	X	X	X	X

REGISTERED CIVIL ENGINEER DATE _____

PLANS APPROVAL DATE _____

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

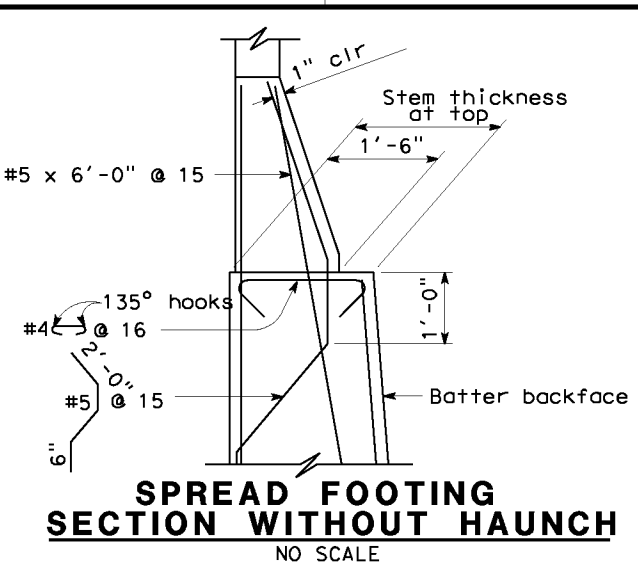
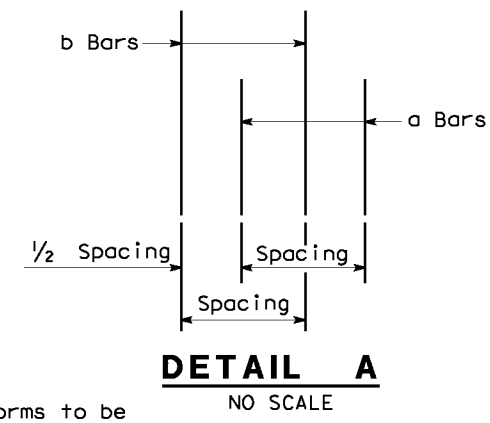
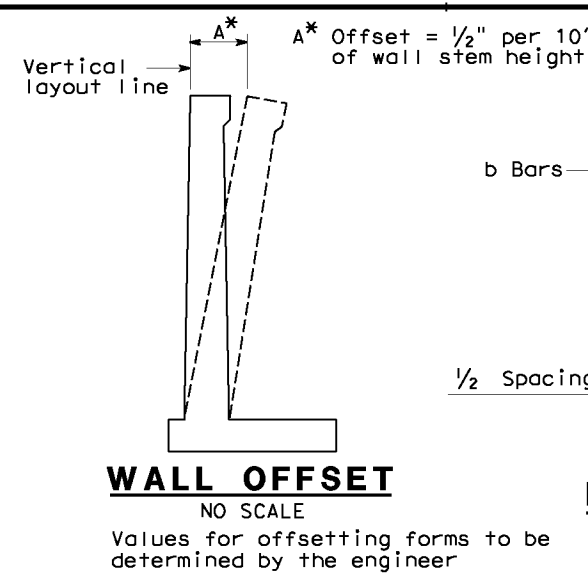
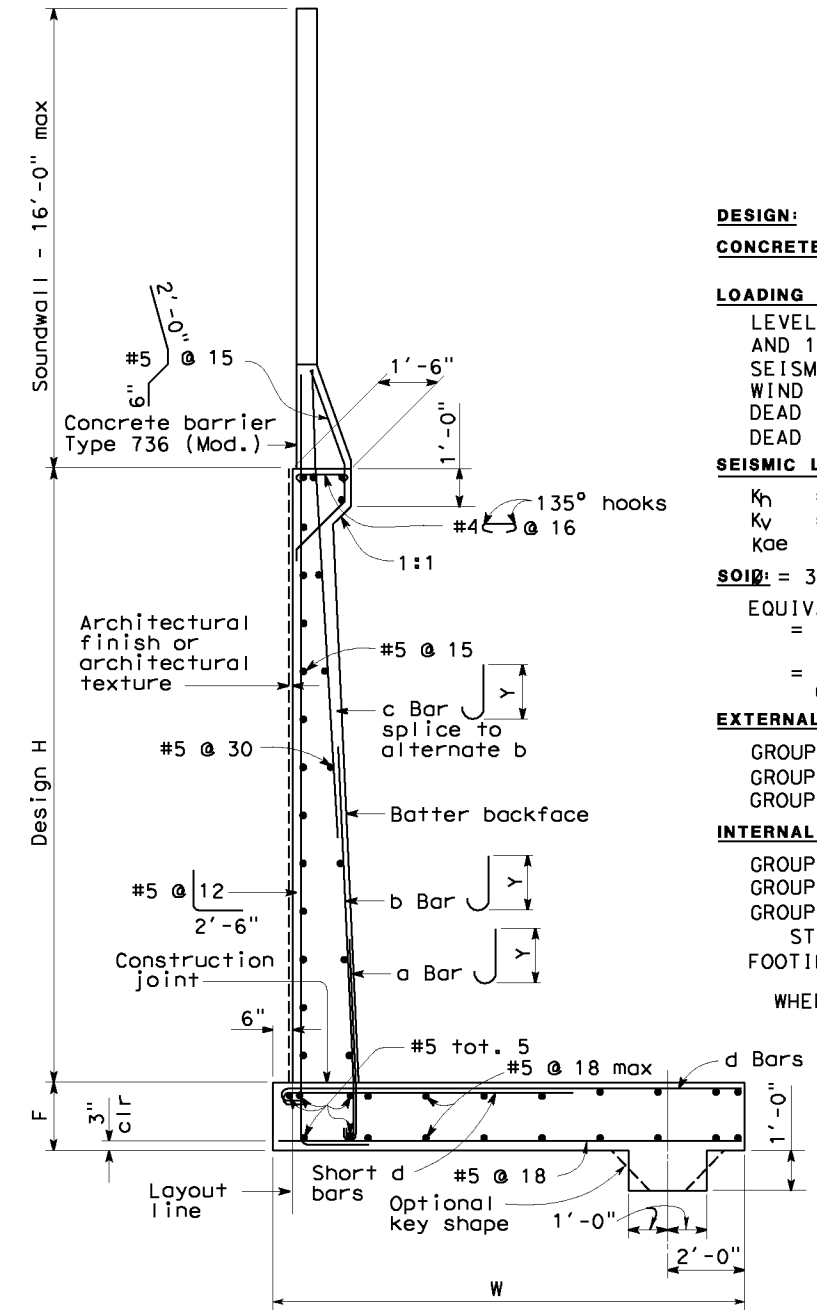


TABLE 1 : TABLE OF REINFORCING STEEL DIMENSION AND DATA

DESIGN H	STEM WITH HAUNCH													
	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'
W	8'-6"	8'-6"	9'-3"	10'-0"	11'-3"	12'-3"	13'-3"	14'-6"	15'-9"	17'-0"	18'-6"	20'-0"	21'-3"	22'-9"
F SPREAD FTG.	1'-3"	1'-3"	1'-3"	1'-6"	1'-6"	1'-9"	2'-0"	2'-0"	2'-3"	2'-6"	3'-0"	3'-3"	3'-9"	4'-0"
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 THICKNESS @ HAUNCH	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	#5 @ 12	#5 @ 9	#6 @ 9	#7@18	#8@18	#8@18	#9@18	#10@18	#8 @ 9	#8 @ 9	#7 @ 6	#10@12	#9 @ 9	#11@12
X	CONT	CONT	CONT	5'-6"	6'-6"	7'-6"	8'-0"	8'-6"	9'-6"	10'-6"	11'-6"	12'-6"	13'-6"	15'-0"
d BARS				#7@18	#8@18	#8@18	#9@18	#10@18	#8 @ 9	#8 @ 9	#7 @ 6	#10@12	#9 @ 9	#11@12
X				CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT
ULTIMATE BEARING CAPACITY REQUIRED k/sf	6.3	7.8	8.8	10.3	11.4	13.2	15	16.2	17.8	19.4	21.1	22.4	24.4	25.8

TABLE 2 : TABLE OF REINFORCING STEEL DIMENSION AND DATA

DESIGN H	STEM WITH HAUNCH							STEM WITHOUT HAUNCH						
	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	32'
W	8'-6"	8'-6"	9'-0"	9'-9"	10'-6"	12'-6"	13'-3"	14'-3"	16'-3"	17'-0"	18'-9"	20'-3"	21'-3"	22'-6"
F SPREAD FTG.	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-6"	1'-6"	1'-9"	2'-3"	2'-3"	2'-9"	3'-3"	3'-9"	3'-9"
BATTER	0	0	0	0	0	0	0	0	0	0	1/4:12	1/2:12	1/2:12	1/2:12
STEM THICKNESS @ HAUNCH	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-3"	1'-3"							
STEM THICKN @ TOP								1'-6"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"
a BARS				#6@12	#5 @ 6	#8@12	#8 @ 9	#9@12	#9@12	#7 @ 6	#7 @ 6	#7 @ 6	#9 @ 9	#11@12
Y				5'-6"	5'-6"	6'-0"	6'-6"	8'-0"	8'-6"	9'-6"	11'-0"	12'-6"	13'-6"	14'-6"
b BARS	#5 @ 9	#6 @ 9	#6@12	#5 @ 6	#8@12	#8 @ 9	#9@12	#9@12	#7 @ 6	#7 @ 6	#7 @ 6	#9 @ 9	#11@12	#11@12
Y	CONT	CONT	CONT	CONT	8'-6"	11'-0"	11'-0"	11'-6"	17'-0"	19'-6"	21'-6"	24'-0"	24'-0"	
c BARS					#6 @ 12	#7 @ 18	#7 @ 12	#7 @ 12	#6 @ 12	#6 @ 12	#6 @ 12	#7 @ 18	#7 @ 12	
SHORT d BARS	#5 @ 9	#6 @ 9	#7@18	#5 @ 6	#8@12	#8 @ 9	#9@12	#9@12	#7 @ 6	#9 @ 6	#9 @ 6	#9 @ 9	#8 @ 6	
X	CONT	CONT	6'-0"	5'-6"	7'-0"	8'-6"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	
d BARS			#7@18	#5 @ 6	#9@18	#8 @ 9	#9@12	#9@12	#7 @ 6	#9 @ 6	#9 @ 6	#9 @ 9	#8 @ 6	
X			CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	
ULTIMATE BEARING CAPACITY REQUIRED k/sf		7.8	9	10.3	11.8	12.6	14.3	16.2	17.3	19.1	20.6	22.3	24.5	25.8



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 SURCHARGE AND 16' SOUNDWALL.
 SEISMIC 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
 $K_h = 0.3g$
 $K_v = 0.0$
 $K_{oe} : \text{MONOBE-OKABE METHOD}$
SOIL: $\gamma = 34^\circ = 120$ pcf
 EQUIVALENT FLUID PRESSURE:
 = 36 pcf MAX. FOR DETERMINATION OF TOE PRESSURE
 = 27 pcf MAX. FOR DETERMINATION OF HEEL PRESSURE

EXTERNAL STABILITY:
 GROUP 1 : D+E = SC
 GROUP 2 : D+E+SC+W
 GROUP 3 : D = PYM

INTERNAL STABILITY (LFD):
 GROUP A : $\beta D + 1.7E + 1.7SC$
 GROUP B : $\beta D + 1.7E + 1.7SC + W$
 GROUP C :
 STEM : $1.0D + 1.0E + 1.0EQD + 1.0EQE$
 FOOTING : D+PYM

WHERE : $\beta = 1.0$ OR 1.3 WHICHEVER CONTROLS DESIGN
 D = DEAD LOAD
 E = LATERAL EARTH PRESSURE
 SC = SURCHARGE
 W = WIND LOAD
 EQD = SEISMIC DEAD LOAD
 EQE = SEISMIC LATERAL EARTH PRESSURE
 PYM = PROBABLE YIELD MOMENT (1.3* NOMINAL YIELD MOMENT OF STEM)

GENERAL NOTES

- 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.
- FOR SOUNDWALL AND RETAINING WALL ARCHITECTURAL FINISH OR TEXTURE SEE DETAILS ELSEWHERE IN PROJECT PLANS.
 - FOR DETAILS NOT SHOWN AND DRAINAGE NOTES SEE (B3-8)
 - FOOTING COVER, 1'-6" MINIMUM.
 - FOR SOUNDWALL REINFORCEMENTS, SEE "SOUNDWALL MASONRY BLOCK" SHEETS IN STANDARD PLANS.

STANDARD DRAWING

FILE NO. **xs14-350x**

APPROVAL DATE July 2011

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO. X
 POST MILE X

RETAINING WALL TYPE 5SWB