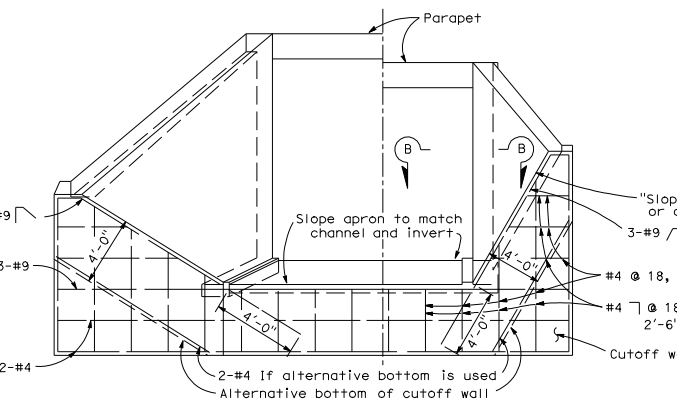
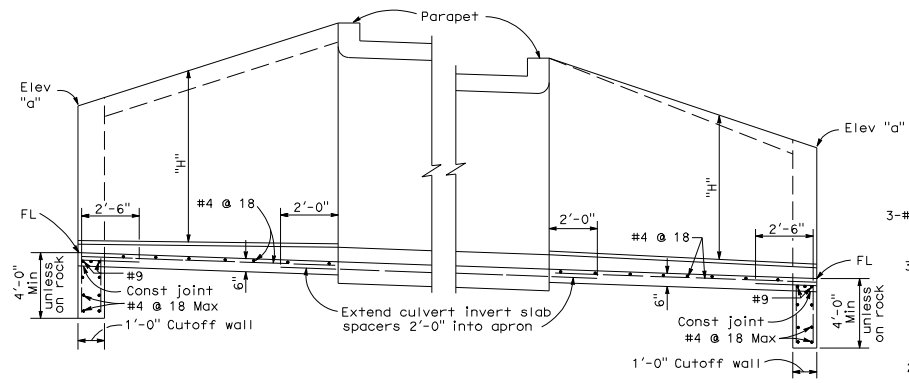


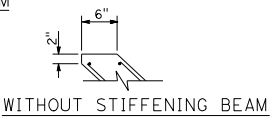
DIST	COUNTY	ROUTE	POST MILES	SHEET	TOTAL
			TOTAL PROJECT	NO.	SHEETS

James J. Forrester
 REGISTERED CIVIL ENGINEER
 No. C37765
 Exp. 12-31-06
 REGISTERED PROFESSIONAL ENGINEER
 Dallas Forester
 No. 12-31-06
 Exp. "CIVIL"
 STATE OF CALIFORNIA

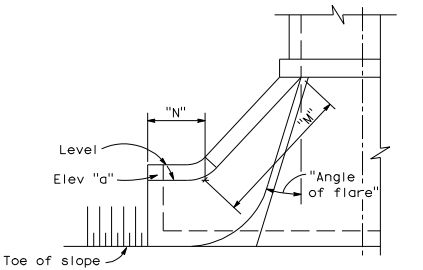
May 1, 2006
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.
 To get to the Caltrans web site, go to <http://www.dot.ca.gov>



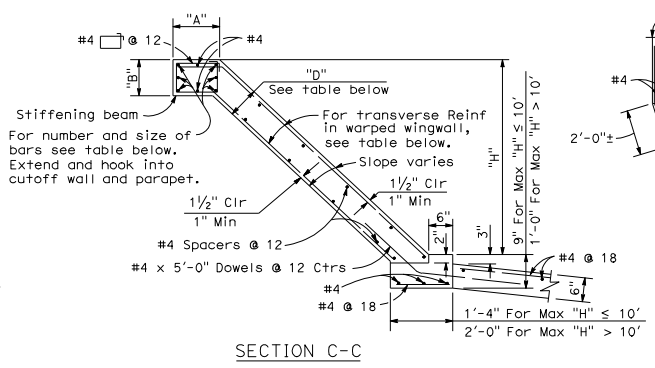
TYPICAL WITH STIFFENING BEAM TYPICAL WITHOUT STIFFENING BEAM
PART LONGITUDINAL SECTION



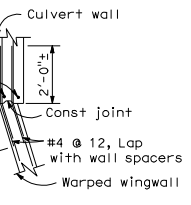
END ELEVATION



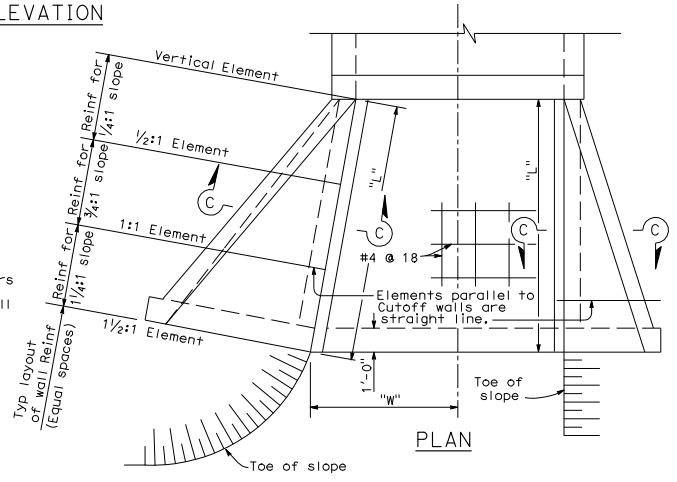
ALTERNATIVE WARPED WINGWALL
Use where additional protection to toe of embankment is required.



SECTION C-C



SECTION B-B



PLAN

Element Slope	WALL DIMENSIONS AND REINFORCING							STIFFENING BEAM DIMENSIONS AND REINFORCING										
	"H"	8' or less	10'	12'	14'	16'	18'	20'	"L" Max	12'	14'	16'	18'	20'	25'	30'	35'	40' or more
1/4:1	Front face Reinf	#4 @ 12	#4 @ 7	#5 @ 7	#5 @ 5	#6 @ 6	#7 @ 7	#7 @ 6	6'	No beam. Place 2-#6 in each face along top of wall. "A" = 1'-0"								
	Rear face Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12		8'	"A" = 1'-0"							
3/4:1	Front face Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 10	#4 @ 8	#4 @ 6	10'	"A" = 1'-6"								
	Rear face Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 10	#4 @ 7	#4 @ 6	#5 @ 8		12'	"A" = 1'-10"							
1 1/4:1	Front face Reinf	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	14'	"A" = 1'-10"								
	Rear face Reinf	#4 @ 8	#4 @ 8	#4 @ 5	#5 @ 6	#6 @ 7	#6 @ 6	#7 @ 6		16'	"B" = 1'-0"							
"D" at Cutoff Wall	6"	6"	6"	7 1/2"	8"	9 1/2"	11"		18'	"B" = 1'-0"								
"D" at Culvert	6"	6"	6"	8"	9 1/2"	11"	1'-1"		20'	"B" = 1'-6"								
										Total 6-#8 "B" = 1'-6"								
										Total 8-#9								

NOTES: Walls designed for 2' surcharge; earth density = 120 LB/CF; equivalent fluid pressure = 36 LB/CF.
 Vary "D" of warped wall uniformly from that at cutoff wall to that at culvert, for maximum "H" > 12'-0".
 Where abrasion is anticipated increase apron thickness to 7" minimum to provide 2" minimum reinforcement coverage.
 Dimensions "L", "W", "H", "M", "N", Elevation "a", "Angle of flare", and end "Slope" (as apply) are shown on the plans.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**BOX CULVERT
 WARPED WINGWALLS**

NO SCALE

D86A

2006 STANDARD PLAN D86A