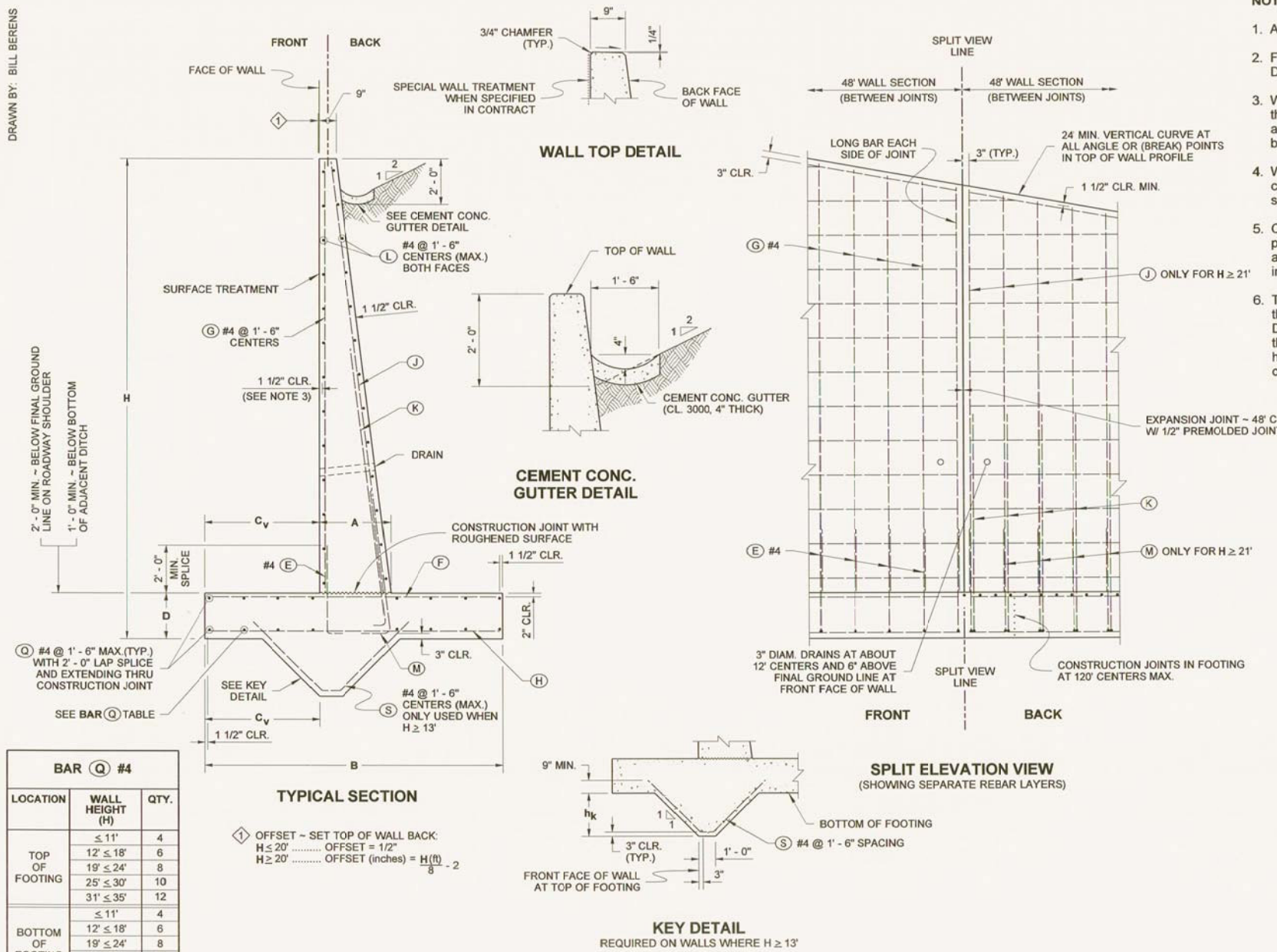


DRAWN BY: BILL BERENS



BAR Q #4		
LOCATION	WALL HEIGHT (H)	QTY.
TOP OF FOOTING	≤ 11'	4
	12' ≤ 18'	6
	19' ≤ 24'	8
	25' ≤ 30'	10
	31' ≤ 35'	12
BOTTOM OF FOOTING	≤ 11'	4
	12' ≤ 18'	6
	19' ≤ 24'	8
	25' ≤ 30'	10
	31' ≤ 35'	12

1. OFFSET - SET TOP OF WALL BACK:
 $H \leq 20'$ OFFSET = 1/2"
 $H \geq 20'$ OFFSET (inches) = $\frac{H(f)}{8} - 2$

- NOTES**
- All concrete shall be Class 4000, except as noted.
 - For backfill requirements, see Standard Plan D-4.
 - When Wall Type 3SW (saltwater) is specified, the concrete cover over steel in the front face and the total wall thickness shall be increased by 1".
 - When Wall Type 3SW (saltwater) is specified, concrete in the table column "Material Quantity" shall be increased by $(0.003 \times H)$ CY/LF.
 - Concrete in the 48 foot wall sections shall be placed separately between expansion joints with a minimum 24 hour period before placing concrete in the adjacent section.
 - This wall has been designed in accordance with the requirements of the AASHTO LRFD Bridge Design Specifications 4th Edition 2007 and interims through 2008. The seismic design of these walls has been completed using an effective PGA of 0.51 g.

VERTICAL FACE WALL DESIGN WITH 2:1 BACKSLOPE



EXPIRES AUGUST 23, 2008

REINFORCED CONCRETE RETAINING WALL TYPE 3 AND 3SW STANDARD PLAN D-10.20-00

SHEET 1 OF 2 SHEETS

APPROVED FOR PUBLICATION

WALL HT H	DIMENSIONS					FOOTING REINFORCEMENT																STEM REINFORCEMENT				MATERIAL QUANTITY		MAXIMUM SOIL PRESSURE (PSF)					
						BAR (E) #4		BAR (F)		BAR (H)		BAR (K)				BAR (M)				BAR (J)		(G) #4	CONC. CY/LF	STEEL LBS/LF	SERVICE	STRENGTH	EXTREME EVENT 1						
	B	C _v	D	h _k	A	LENGTH	h	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	LENGTH						
5'	4'-3"	1'-6"	1'-0"	N/A	1'-3"	3'-3 1/2"	2'-9"	#4	1'-6"	4'-0"	#4	1'-6"	4'-0"	#4	1'-6"	5'-2"	4'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3'-10"	0.31	20.6	707	928	1019
6'	4'-3"	1'-6"	1'-0"	N/A	1'-4 1/2"	3'-3 1/2"	2'-9"	#4	1'-6"	4'-0"	#4	1'-6"	4'-0"	#4	1'-6"	6'-2"	5'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4'-10"	0.35	21.7	827	1084	1296
7'	4'-3"	1'-9"	1'-0"	N/A	1'-6"	3'-3 1/2"	2'-9"	#4	1'-6"	4'-0"	#4	1'-6"	4'-0"	#4	1'-6"	7'-2"	6'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5'-10"	0.41	24.2	920	1198	1557
8'	4'-6"	1'-9"	1'-0"	N/A	1'-7 1/2"	3'-3 1/2"	2'-9"	#4	1'-6"	4'-3"	#4	1'-6"	4'-3"	#4	1'-6"	8'-2"	7'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6'-10"	0.47	26.8	1020	1328	2018
9'	4'-9"	1'-9"	1'-0"	N/A	1'-9"	3'-3 1/2"	2'-9"	#4	1'-6"	4'-6"	#4	1'-6"	4'-6"	#4	1'-6"	9'-2"	8'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7'-10"	0.55	29.5	1129	1525	2647
10'	5'-6"	2'-0"	1'-0"	N/A	1'-10 1/2"	3'-3 1/2"	2'-9"	#4	1'-6"	5'-3"	#4	1'-6"	5'-3"	#4	1'-0"	10'-2"	9'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8'-10"	0.64	36.2	1238	1678	2868
11'	6'-9"	2'-0"	1'-0"	N/A	2'-0"	3'-3 1/2"	2'-9"	#4	1'-6"	6'-6"	#4	1'-6"	6'-6"	#5	1'-0"	11'-3 1/2"	10'-7 1/2"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9'-10"	0.76	44.3	1419	1923	3126
12'	8'-3"	3'-0"	1'-0"	N/A	2'-1 1/2"	3'-3 1/2"	2'-9"	#4	1'-0"	8'-0"	#4	9"	8'-0"	#5	10"	12'-3 1/2"	11'-7 1/2"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10'-10"	0.89	59.3	1493	1970	2850
13'	8'-3"	3'-3"	1'-0"	1'-0"	2'-3"	3'-3 1/2"	2'-9"	#4	1'-0"	8'-0"	#4	7"	8'-0"	#5	8"	13'-3 1/2"	12'-7 1/2"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11'-10"	1.05	67.8	1594	2088	3050
14'	8'-3"	3'-6"	1'-3"	1'-3"	2'-4"	3'-6 1/2"	3'-0"	#4	1'-0"	8'-0"	#4	7"	8'-0"	#5	7"	14'-3 1/2"	13'-7 1/2"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12'-7"	1.22	73.2	1672	2199	3539
15'	9'-0"	3'-9"	1'-3"	1'-3"	2'-5 1/2"	3'-6 1/2"	3'-0"	#4	1'-0"	8'-9"	#5	8"	8'-9"	#5	6"	15'-3 1/2"	14'-7 1/2"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13'-7"	1.34	86.6	1777	2347	3783
16'	9'-3"	4'-0"	1'-6"	1'-6"	2'-6 1/2"	3'-9 1/2"	3'-3"	#4	1'-0"	9'-0"	#5	6"	9'-0"	#6	7"	16'-5"	15'-7 1/2"	11"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14'-4"	1.54	104.3	1869	2554	4266
17'	10'-0"	4'-3"	1'-9"	1'-9"	2'-7 1/2"	4'-0 1/2"	3'-6"	#4	1'-0"	9'-9"	#6	8"	9'-9"	#7	8"	17'-6 1/2"	16'-8"	1'-1"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15'-1"	1.79	122.9	2007	2756	4560
18'	10'-9"	4'-3"	1'-9"	1'-9"	2'-9"	4'-0 1/2"	3'-6"	#4	10"	10'-6"	#6	8"	10'-6"	#7	7"	18'-7"	17'-8"	1'-1"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16'-1"	1.94	139.7	2186	3007	5040
19'	11'-0"	4'-6"	2'-0"	2'-0"	2'-10 1/2"	4'-3 1/2"	3'-9"	#4	10"	10'-9"	#6	8"	10'-9"	#7	6"	19'-7"	18'-8"	1'-1"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16'-10"	2.18	158.7	2336	3225	5583
20'	11'-9"	4'-6"	2'-3"	2'-3"	2'-11 1/2"	4'-6 1/2"	4'-0"	#4	9"	11'-6"	#6	7"	11'-6"	#8	7"	20'-8 1/2"	19'-8"	1'-3"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17'-7"	2.47	181.2	2561	3537	6137
21'	13'-0"	5'-0"	2'-3"	2'-3"	3'-1"	4'-6 1/2"	4'-0"	#4	7"	12'-9"	#6	7"	12'-9"	#8	1'-0"	13'-4 1/2"	12'-4"	1'-3"	#8	1'-0"	7'-5"	6'-2"	1'-3"	#8	1'-0"	18'-8"	18'-7"	2.69	192.8	2583	3556	5870	
22'	13'-3"	5'-3"	2'-6"	2'-6"	3'-2"	4'-9 1/2"	4'-3"	#4	7"	13'-0"	#6	6"	13'-0"	#9	1'-2"	14'-10"	13'-8 1/2"	1'-6"	#9	1'-2"	9'-0"	7'-6 1/2"	1'-6"	#9	1'-2"	19'-5"	19'-4"	2.97	246.3	2733	3774	6394	
23'	13'-9"	5'-6"	2'-9"	2'-9"	3'-3"	5'-0 1/2"	4'-6"	#4	7"	13'-6"	#6	6"	13'-6"	#9	1'-0"	14'-11"	13'-9 1/2"	1'-6"	#9	1'-0"	9'-3"	7'-9 1/2"	1'-6"	#9	1'-0"	20'-2"	20'-1"	3.29	261.3	2881	3986	6813	
24'	14'-9"	5'-9"	2'-9"	2'-9"	3'-4 1/2"	5'-0 1/2"	4'-6"	#4	6"	14'-6"	#6	6"	14'-6"	#10	1'-0"	15'-2 1/2"	13'-11 1/2"	1'-8"	#10	1'-0"	10'-6"	9'-0 1/2"	1'-8"	#10	1'-0"	21'-2"	21'-1"	3.52	322.1	2984	4122	6926	
25'	15'-0"	6'-0"	3'-0"	3'-0"	3'-6"	5'-3 1/2"	4'-9"	#4	6"	14'-9"	#7	7"	14'-9"	#10	1'-0"	16'-7 1/2"	15'-4 1/2"	1'-8"	#10	1'-0"	10'-11"	9'-3 1/2"	1'-8"	#10	1'-0"	21'-11"	21'-10"	3.84	324.2	3136	4344	7476	
26'	15'-9"	6'-3"	3'-0"	3'-0"	3'-7 1/2"	5'-3 1/2"	4'-9"	#5	8"	15'-6"	#7	6"	15'-6"	#10	10"	16'-1 1/2"	14'-10 1/2"	1'-8"	#10	10"	10'-11"	9'-3 1/2"	1'-8"	#10	10"	22'-11"	22'-10"	4.06	378.8	3241	4489	7715	
27'	16'-9"	6'-6"	3'-3"	3'-3"	3'-8 1/2"	5'-6 1/2"	5'-0"	#5	6"	16'-6"	#7	6"	16'-6"	#10	10"	17'-7"	16'-4"	1'-8"	#10	10"	11'-2"	9'-6 1/2"	1'-8"	#10	10"	23'-8"	23'-7"	4.49	406.8	3382	4679	7870	
28'	17'-9"	6'-9"	3'-3"	3'-3"	3'-10"	5'-6 1/2"	5'-0"	#6	8"	17'-6"	#7	6"	17'-6"	#10	9"	17'-10"	16'-7"	1'-8"	#10	9"	11'-2"	9'-6 1/2"	1'-8"	#10	9"	24'-8 1/2"	24'-7"	4.75	433.8	3485	4816	7995	
29'	18'-3"	7'-0"	3'-6"	3'-6"	4'-0"	5'-9 1/2"	5'-3"	#6	8"	18'-0"	#8	7"	18'-0"	#10	8"	17'-10 1/2"	16'-7 1/2"	1'-8"	#10	8"	11'-5"	9'-9 1/2"	1'-8"	#10	8"	25'-5 1/2"	25'-4"	5.16	442.5	3633	5026	8403	
30'	18'-6"	7'-3"	3'-9"	3'-9"	4'-0 1/2"	6'-0 1/2"	5'-6"	#6	8"	18'-3"	#8	7"	18'-3"	#10	8"	19'-3 1/2"	18'-0 1/2"	1'-8"	#10	8"	11'-8"	10'-0 1/2"	1'-8"	#10	8"	26'-2 1/2"	26'-1"	5.55	459.3	3785	5249	8947	
31'	19'-0"	7'-6"	4'-0"	4'-0"	4'-1 1/2"	6'-3 1/2"	5'-9"	#6	8"	18'-9"	#8	7"	18'-9"	#11	9"	20'-10"	19'-5"	1'-10"	#11	9"	13'-5 1/2"	11'-8"	1'-10"	#11	9"	26'-11 1/2"	26'-10"	5.99	533.5	3934	5462	9370	
32'	19'-6"	7'-9"	4'-0"	4'-0"	4'-3"	6'-4 1/2"	5'-10"	#6	8"	19'-3"	#8	6"	19'-3"	#11	8"	20'-7"	19'-2 1/2"	1'-10"	#11	8"	13'-7"	11'-10"	1'-10"	#11	8"	27'-11 1/2"	27'-10"	6.22	661.9	4044	5620	9757	
33'	20'-3"	8'-0"	4'-1"	4'-1"	4'-4"	6'-6 1/2"	6'-0"	#6	8"	20'-0"	#8	6"	20'-0"	#11	7"	20'-0"	18'-7 1/2"	1'-10"	#11	7"	13'-9 1/2"	12'-0"	1'-10"	#11	7"	28'-10 1/2"	28'-9"	6.57	746.0	4162	5783	10009	
34'	21'-6"	8'-3"	4'-3"	4'-3"	4'-5 1/2"	6'-9 1/2"	6'-3"	#6	6"	21'-3"	#8	6"	21'-3"	#11	7"	21'-4"	19'-11 1/2"	1'-10"	#11	7"	14'-1"	12'-4"	1'-10"	#11	7"	29'-8 1/2"	29'-7"	7.09	849.0	4285	5941	10005	
35'	23'-0"	8'-6"	4'-3"	4'-3"	4'-7"	6'-10 1/2"	6'-4"	#7	7"	22'-9"	#8	6"	22'-9"	#11	6"	20'-2 1/2"	18'-10"	1'-10"	#11	6"	14'-3"	12'-5 1/2"	1'-10"	#11	6"	30'-8 1/2"	30'-7"	7.49	968.6	4381	6058	9904	

VERTICAL FACE WALL DESIGN WITH 2 :1 BACKSLOPE



BAR (E)
@ 1'-6" CENTERS

BAR	RADIUS
#4	1 1/2"
#5	1 7/8"
#6	2 1/4"
#7	2 5/8"
#8	3"
#9	4 3/4"
#10	5 3/8"
#11	6"

BARS (K) AND (M)

BAR	MIN. SPLICE
#4	2'-0"
#5	2'-0"
#6	2'-0"
#7	2'-6"
#8	3'-3"
#9	4'-2"
#10	5'-3"



EXPIRES AUGUST 23, 2008

REINFORCED CONCRETE RETAINING WALL TYPE 3 AND 3SW STANDARD PLAN D-10.20-00

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION

STATE DESIGN ENGINEER DATE
Washington State Department of Transportation