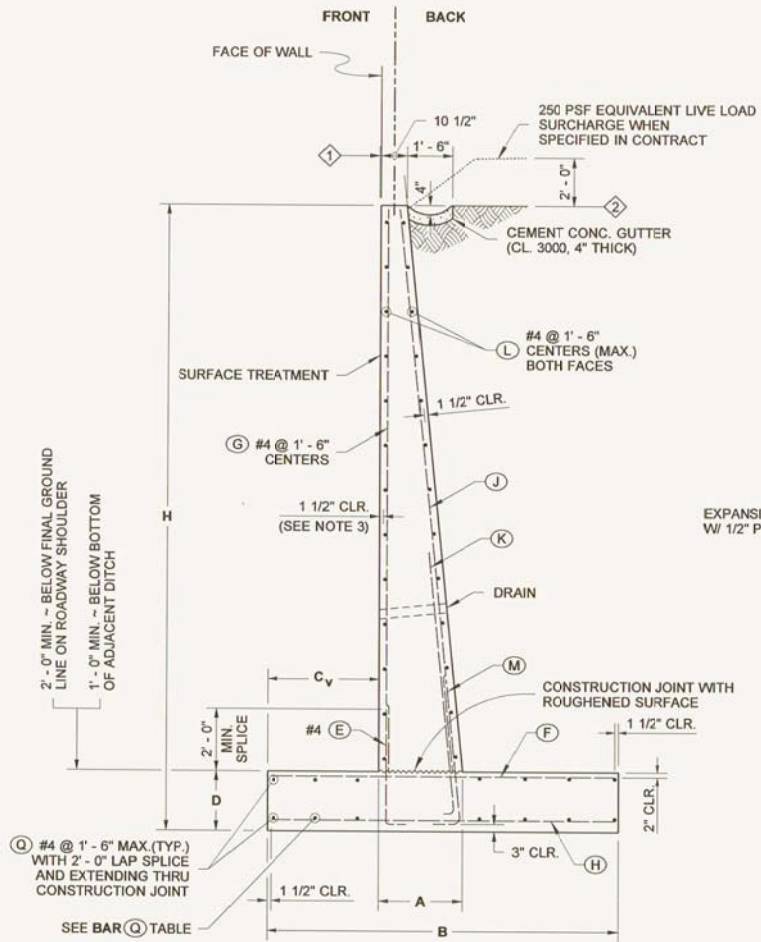


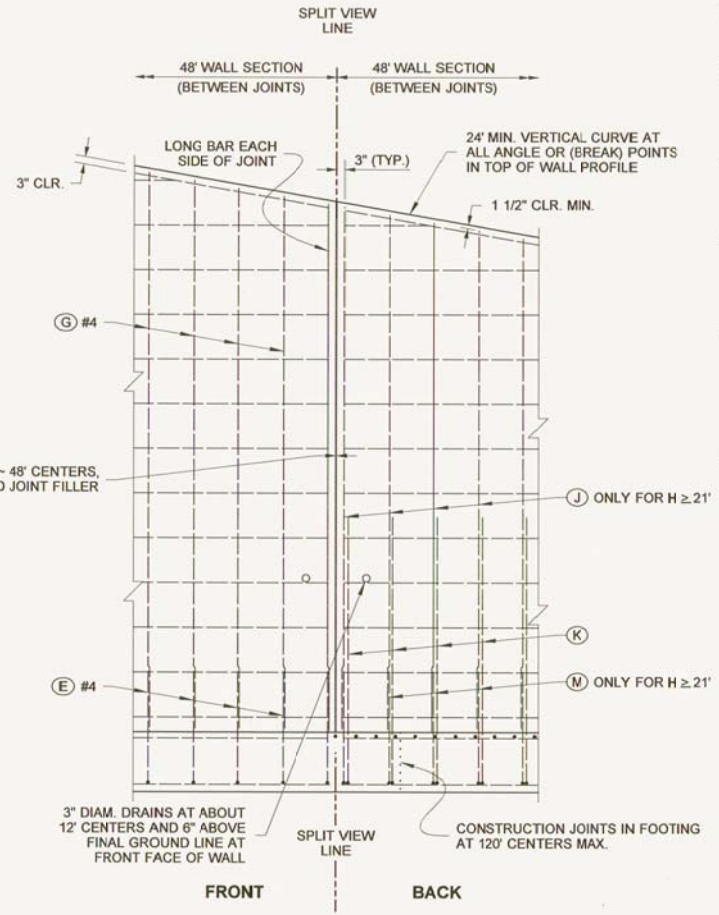
DRAWN BY: BILL BERENS



TYPICAL SECTION

BAR (Q) #4		
LOCATION	WALL HEIGHT (H)	QTY.
TOP OF FOOTING	≤ 16'	5
	16' ≤ 23'	7
	23' ≤ 28'	9
	29' ≤ 35'	11
BOTTOM OF FOOTING	≤ 16'	5
	16' ≤ 23'	7
	23' ≤ 28'	9
	29' ≤ 35'	11

- ① OFFSET - SET TOP OF WALL BACK  
 $H \leq 20'$  ..... OFFSET = 1/2"  
 $H \geq 20'$  ..... OFFSET (inches) =  $\frac{H(H)}{8} - 2$
- ② WHEN THE CONTRACT SPECIFIES CABLE FENCE, BACKFILL AND THE CEMENT CONCRETE GUTTER SHALL BE PLACED 6" MIN. FROM THE TOP OF THE WALL

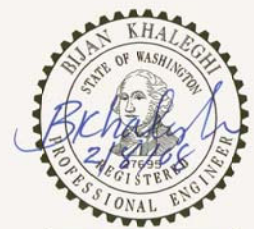


SPLIT ELEVATION VIEW (SHOWING SEPARATE REBAR LAYERS)

NOTES

1. All concrete shall be Class 4000, except as noted.
2. For backfill requirements, see Standard Plan D-4.
3. When Wall Type 1SW (saltwater) is specified, the concrete cover over steel in the front face and the total wall thickness shall be increased by 1".
4. When Wall Type 1SW (saltwater) is specified, concrete in the table column "Material Quantity" shall be increased by  $(0.003 \times H)$  CY/LF.
5. 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.
6. 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.
7. If Traffic Barriers are required, See Standard Plans D-15.10, D-15.20 and D-15.30.

VERTICAL FACE WALL DESIGN WITH A 250 PSF SURCHARGE OR TRAFFIC BARRIER



EXPIRES AUGUST 23, 2008

REINFORCED CONCRETE RETAINING WALL TYPE 1 AND 1SW STANDARD PLAN D-10.10-00

SHEET 1 OF 2 SHEETS

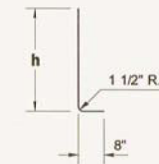
APPROVED FOR PUBLICATION

STATE DESIGN ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_  
 Washington State Department of Transportation

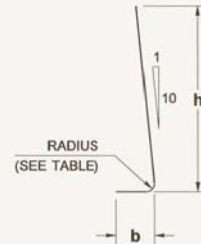
WALL HT H	DIMENSIONS				FOOTING REINFORCEMENT																STEM REINFORCEMENT				MATERIAL QUANTITY		MAXIMUM SOIL PRESSURE (PSF)						
					BAR (E) #4		BAR (F)		BAR (H)		BAR (K)				BAR (M)				BAR (J)		(G) #4	CONC. CY/LF	STEEL LBS/LF	SERVICE	STRENGTH	EXTREME EVENT 1	EXTREME EVENT 2						
	B	C <sub>v</sub>	D	A	LENGTH	h	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	LENGTH							
5'	6'-6"	2'-0"	1'-0"	1'-3"	3'-3 1/2"	2'-9"	#4	1'-0"	6'-3"	#4	1'-6"	6'-3"	#4	1'-6"	5'-2"	4'-7"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3'-9"	0.40	24.0	869	1206	1049	1589
6'	6'-6"	2'-0"	1'-0"	1'-4 1/2"	3'-3 1/2"	2'-9"	#4	1'-0"	6'-3"	#4	1'-6"	6'-3"	#4	1'-6"	6'-2"	5'-7"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4'-9"	0.45	26.4	955	1307	1217	1799
7'	6'-6"	2'-3"	1'-0"	1'-5 1/2"	3'-3 1/2"	2'-9"	#4	1'-0"	6'-3"	#4	1'-6"	6'-3"	#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'-9"	0.50	27.6	1015	1369	1344	1981
8'	6'-9"	2'-3"	1'-0"	1'-7"	3'-3 1/2"	2'-9"	#4	1'-0"	6'-6"	#4	1'-6"	6'-6"	#4	1'-0"	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'-9"	0.57	32.1	1107	1528	1543	2129
9'	7'-0"	2'-3"	1'-0"	1'-8"	3'-3 1/2"	2'-9"	#4	1'-0"	6'-9"	#4	1'-6"	6'-9"	#4	1'-0"	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'-9"	0.64	36.4	1242	1722	1767	2297
10'	7'-3"	2'-3"	1'-0"	1'-9"	3'-3 1/2"	2'-9"	#4	1'-0"	7'-0"	#4	1'-0"	7'-0"	#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'-9"	0.71	40.9	1387	1932	2020	2483
11'	7'-6"	2'-3"	1'-0"	1'-10 1/2"	3'-3 1/2"	2'-9"	#4	10"	7'-3"	#4	10"	7'-3"	#4	10"	11'-2"	10'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9'-9"	0.79	46.4	1544	2160	2303	2685
12'	7'-9"	2'-6"	1'-0"	1'-11 1/2"	3'-3 1/2"	2'-9"	#4	9"	7'-6"	#4	10"	7'-6"	#4	10"	12'-2"	11'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10'-9"	0.87	51.2	1636	2302	2478	2807
13'	8'-0"	2'-6"	1'-0"	2'-1"	3'-3 1/2"	2'-9"	#4	8"	7'-9"	#4	10"	7'-9"	#4	8"	13'-2 1/2"	12'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11'-9"	0.95	58.0	1809	2558	2812	3034
14'	8'-3"	2'-6"	1'-0"	2'-2"	3'-3 1/2"	2'-9"	#4	7"	8'-0"	#4	8"	8'-0"	#4	8"	14'-2 1/2"	13'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12'-9"	1.04	64.2	1993	2833	3184	3278
15'	8'-9"	2'-6"	1'-0"	2'-3"	3'-3 1/2"	2'-9"	#5	8"	8'-6"	#4	8"	8'-6"	#4	7"	15'-2 1/2"	14'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13'-9"	1.14	74.0	2158	3068	3519	3391
16'	9'-3"	2'-9"	1'-3"	2'-4"	3'-6 1/2"	3'-0"	#5	8"	9'-0"	#4	8"	9'-0"	#4	6"	16'-2 1/2"	15'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14'-6"	1.31	81.5	2259	3211	3740	3453
17'	9'-9"	3'-0"	1'-6"	2'-5"	3'-9 1/2"	3'-3"	#5	8"	9'-6"	#4	8"	9'-6"	#5	8"	17'-3 1/2"	16'-8"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15'-3"	1.49	91.5	2361	3356	3965	3529
18'	10'-3"	3'-3"	1'-6"	2'-6"	3'-9 1/2"	3'-3"	#5	8"	10'-0"	#5	1'-0"	10'-0"	#5	7"	18'-4"	17'-8"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16'-3"	1.61	100.8	2440	3469	4124	3575
19'	10'-9"	3'-6"	1'-9"	2'-7"	4'-0 1/2"	3'-6"	#5	8"	10'-6"	#5	10"	10'-6"	#6	9"	19'-5 1/2"	18'-8"	11"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17'-0"	1.81	113.8	2543	3615	4359	3670
20'	11'-3"	3'-6"	1'-9"	2'-8"	4'-0 1/2"	3'-6"	#6	10"	11'-0"	#5	10"	11'-0"	#6	8"	20'-5 1/2"	19'-8"	11"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18'-0"	1.94	127.0	2705	3845	4714	3831
21'	11'-9"	3'-9"	2'-0"	2'-9"	4'-3 1/2"	3'-9"	#6	10"	11'-6"	#5	10"	11'-6"	#6	1'-4"	12'-0"	11'-3"	11"	#6	1'-4"	5'-1 1/2"	4'-3 1/2"	11"	#6	1'-4"	18'-11"	18'-9"	2.15	123.7	2808	3990	4958	3935	
22'	12'-0"	4'-0"	2'-0"	2'-10 1/2"	4'-3 1/2"	3'-9"	#6	10"	11'-9"	#5	8"	11'-9"	#6	1'-4"	13'-4 1/2"	12'-7 1/2"	11"	#6	1'-4"	5'-1 1/2"	4'-3 1/2"	11"	#6	1'-4"	19'-11"	19'-9"	2.28	132.9	2917	4164	5224	4084	
23'	13'-0"	4'-3"	2'-3"	2'-11"	4'-6 1/2"	4'-0"	#6	9"	12'-9"	#5	8"	12'-9"	#6	1'-4"	14'-8 1/2"	13'-11 1/2"	11"	#6	1'-4"	5'-4 1/2"	4'-6 1/2"	11"	#6	1'-4"	20'-8"	20'-6"	2.55	143.4	2964	4196	5280	4051	
24'	13'-6"	4'-3"	2'-3"	3'-0 1/2"	4'-6 1/2"	4'-0"	#6	7"	13'-3"	#5	8"	13'-3"	#6	1'-4"	16'-0 1/2"	15'-3"	11"	#6	1'-4"	5'-4 1/2"	4'-6 1/2"	11"	#6	1'-4"	21'-8"	21'-6"	2.71	158.7	3124	4422	5644	4227	
25'	14'-0"	4'-6"	2'-6"	3'-1 1/2"	4'-9 1/2"	4'-3"	#6	7"	13'-9"	#6	10"	13'-9"	#6	1'-4"	17'-4"	16'-6 1/2"	11"	#6	1'-4"	5'-7 1/2"	4'-9 1/2"	11"	#6	1'-4"	22'-5"	22'-3"	2.96	169.9	3228	4588	5900	4346	
26'	14'-6"	4'-9"	2'-6"	3'-2 1/2"	4'-9 1/2"	4'-3"	#6	7"	14'-3"	#6	9"	14'-3"	#6	1'-4"	18'-7 1/2"	17'-10"	11"	#6	1'-4"	5'-7 1/2"	4'-9 1/2"	11"	#6	1'-4"	23'-5"	23'-3"	3.13	179.5	3306	4681	6070	4429	
27'	15'-3"	5'-0"	2'-9"	3'-4"	5'-0 1/2"	4'-6"	#6	6"	15'-0"	#6	9"	15'-0"	#6	1'-4"	19'-10 1/2"	19'-1"	11"	#6	1'-4"	5'-10 1/2"	5'-1"	11"	#6	1'-4"	24'-2"	24'-0"	3.43	193.9	3387	4778	6237	4500	
28'	15'-9"	5'-3"	3'-0"	3'-4 1/2"	5'-3 1/2"	4'-9"	#6	6"	15'-6"	#6	9"	15'-6"	#6	1'-0"	19'-1"	18'-3 1/2"	11"	#6	1'-0"	6'-1 1/2"	5'-4"	11"	#6	1'-0"	24'-11 1/2"	24'-9"	3.72	216.1	3491	4925	6504	4626	
29'	16'-6"	5'-6"	3'-3"	3'-5"	5'-6 1/2"	5'-0"	#6	6"	16'-3"	#6	9"	16'-3"	#8	1'-4"	19'-1 1/2"	18'-1 1/2"	1'-3"	#8	1'-4"	8'-3 1/2"	7'-2 1/2"	1'-3"	#8	1'-4"	25'-8 1/2"	25'-6"	4.05	254.3	3575	5027	6681	4709	
30'	17'-0"	5'-9"	3'-3"	3'-6 1/2"	5'-6 1/2"	5'-0"	#7	8"	16'-9"	#6	8"	16'-9"	#8	1'-4"	20'-6"	19'-5 1/2"	1'-3"	#8	1'-4"	8'-3 1/2"	7'-2 1/2"	1'-3"	#8	1'-4"	26'-8 1/2"	26'-6"	4.24	268.7	3654	5142	6857	4800	
31'	17'-6"	6'-0"	3'-6"	3'-7 1/2"	5'-9 1/2"	5'-3"	#7	8"	17'-3"	#6	7"	17'-3"	#8	1'-4"	21'-9 1/2"	20'-9"	1'-3"	#8	1'-4"	8'-6 1/2"	7'-5 1/2"	1'-3"	#8	1'-4"	27'-5 1/2"	27'-3"	4.56	284.8	3759	5289	7133	4930	
32'	18'-3"	6'-3"	3'-9"	3'-8"	6'-0 1/2"	5'-6"	#7	7"	18'-0"	#6	7"	18'-0"	#8	1'-4"	23'-1"	22'-0 1/2"	1'-3"	#8	1'-4"	8'-9 1/2"	7'-8 1/2"	1'-3"	#8	1'-4"	28'-2 1/2"	28'-0"	4.93	303.5	3845	5396	7322	5022	
33'	19'-0"	6'-6"	4'-0"	3'-9"	6'-3 1/2"	5'-9"	#7	7"	18'-9"	#6	7"	18'-9"	#8	1'-2"	23'-2"	22'-1 1/2"	1'-3"	#8	1'-2"	9'-0 1/2"	7'-11 1/2"	1'-3"	#8	1'-2"	28'-11 1/2"	28'-9"	5.31	328.3	3933	5506	7517	5119	
34'	19'-6"	6'-9"	4'-3"	3'-10"	6'-6 1/2"	6'-0"	#7	7"	19'-3"	#6	7"	19'-3"	#9	1'-0"	20'-10"	19'-8 1/2"	1'-6"	#9	1'-0"	10'-7 1/2"	9'-4"	1'-6"	#9	1'-0"	29'-8 1/2"	29'-6"	5.67	401.8	4038	5653	7803	5252	
35'	20'-3"	7'-0"	4'-6"	3'-11"	6'-9 1/2"	6'-3"	#7	7"	20'-0"	#6	7"	20'-0"	#10	1'-2"	22'-4 1/2"	21'-1 1/2"	1'-8"	#10	1'-2"	12'-3"	10'-9 1/2"	1'-8"	#10	1'-2"	30'-5 1/2"	30'-3"	6.09	441.8	4127	5786	8006	5354	

**REINFORCEMENT NOTES**

- ① IF TRAFFIC BARRIER IS USED, ADD 0.100 CY/LF OF CONCRETE CLASS 4000 FOR BARRIER ALTERNATE 1. ADD 0.123 CY/LF OF CONCRETE CLASS 4000 FOR BARRIER ALTERNATE 2. SEE STANDARD PLAN D-15.10
- ② ADD 28 LB/LF OF REINFORCING STEEL FOR BARRIER ALTERNATE 1 OR 19 LB/LF OF REINFORCING STEEL FOR BARRIER ALTERNATE 2. SEE STANDARD PLAN D-15.10



**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"

**VERTICAL FACE WALL DESIGN WITH A 250 PSF SURCHARGE OR TRAFFIC BARRIER**



EXPIRES AUGUST 23, 2008

**REINFORCED CONCRETE RETAINING WALL TYPE 1 AND 15W STANDARD PLAN D-10.10-00**

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION

