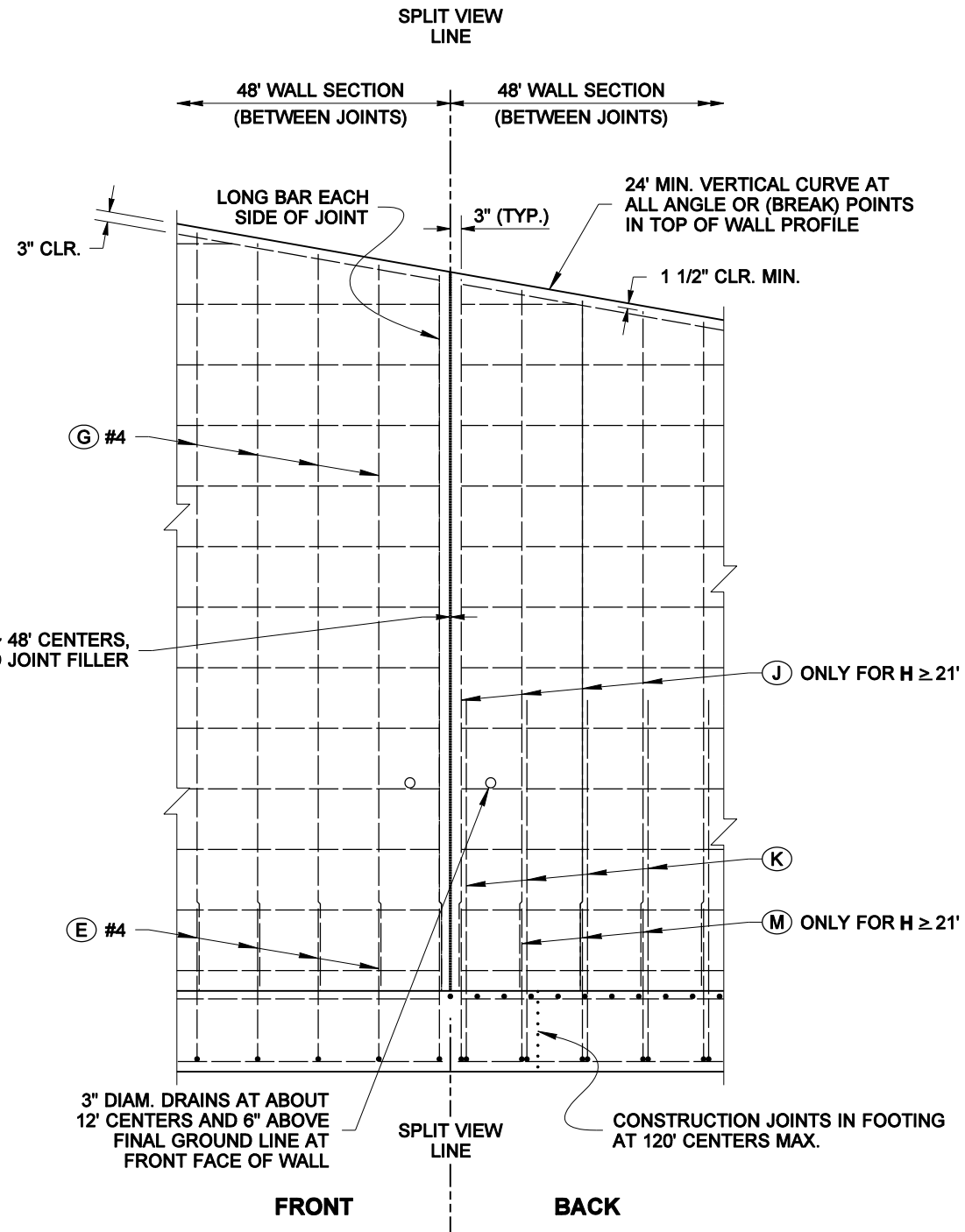


**TYPICAL SECTION**

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) =  $\frac{H(ft)}{8} - 2$
- 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**



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**REINFORCED CONCRETE RETAINING WALL TYPE 1 AND 1SW STANDARD PLAN D-10.10-01**

SHEET 1 OF 2 SHEETS

APPROVED FOR PUBLICATION

**Pasco Bakotich III** 12-02-08

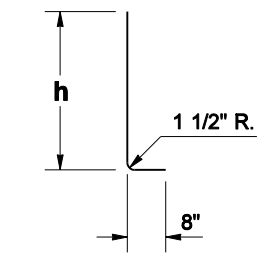
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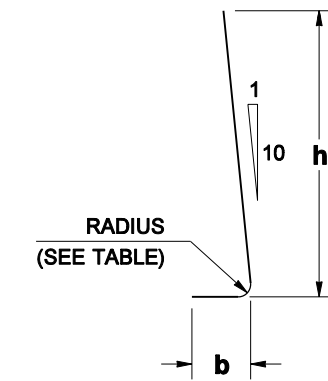
WALL HT H	DIMENSIONS				FOOTING REINFORCEMENT															STEM REINFORCEMENT				MATERIAL QUANTITY		MAXIMUM SOIL PRESSURE (PSF)					
					BAR (E) #4		BAR (F)			BAR (H)			BAR (K)				BAR (M)					BAR (J)				(G) #4	CONC. CY/LF	STEEL LBS/LF	SERVICE	STRENGTH	EXTREME EVENT 1
	LENGTH	h	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	LENGTH									
5'	6'-6"	2'-0"	1'-0"	1'-4"	3'-4"	2'-9"	#4	1'-0"	6'-3"	#4	1'-6"	6'-3"	#4	1'-6"	5'-2"	4'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4'-4"	0.40	25.7	915	1260	1131	1623
6'	6'-6"	2'-0"	1'-0"	1'-5 1/2"	3'-4"	2'-9"	#4	1'-0"	6'-3"	#4	1'-6"	6'-3"	#4	1'-6"	6'-2"	5'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5'-4"	0.45	28.2	992	1350	1311	1850
7'	6'-6"	2'-3"	1'-0"	1'-6 1/2"	3'-4"	2'-9"	#4	1'-0"	6'-3"	#4	1'-6"	6'-3"	#4	1'-6"	7'-2 1/2"	6'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6'-4"	0.51	29.3	1046	1443	1446	2049
8'	6'-9"	2'-3"	1'-0"	1'-7 1/2"	3'-4"	2'-9"	#4	1'-0"	6'-6"	#4	1'-6"	6'-6"	#4	1'-0"	8'-2 1/2"	7'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7'-4"	0.58	33.8	1176	1631	1660	2217
9'	7'-0"	2'-3"	1'-0"	1'-9"	3'-4"	2'-9"	#4	1'-0"	6'-9"	#4	1'-6"	6'-9"	#4	1'-0"	9'-2 1/2"	8'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8'-4"	0.65	38.1	1318	1836	1904	2402
10'	7'-3"	2'-3"	1'-0"	1'-10"	3'-4"	2'-9"	#4	10"	7'-0"	#4	1'-0"	7'-0"	#4	1'-0"	10'-2 1/2"	9'-7 1/2"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9'-4"	0.72	43.6	1471	2060	2178	2604
11'	7'-6"	2'-3"	1'-0"	1'-11 1/2"	3'-4"	2'-9"	#4	9"	7'-3"	#4	1'-0"	7'-3"	#4	10"	11'-2 1/2"	10'-8"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10'-4"	0.80	48.8	1636	2303	2486	2822
12'	7'-9"	2'-6"	1'-0"	2'-0 1/2"	3'-4"	2'-9"	#4	9"	7'-6"	#4	10"	7'-6"	#4	10"	12'-2 1/2"	11'-8"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11'-4"	0.88	53.0	1733	2455	2676	2958
13'	8'-0"	2'-6"	1'-0"	2'-1 1/2"	3'-4"	2'-9"	#4	8"	7'-9"	#4	10"	7'-9"	#4	8"	13'-2 1/2"	12'-8"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12'-4"	0.96	59.7	1915	2728	3041	3202
14'	8'-3"	2'-6"	1'-0"	2'-3"	3'-4"	2'-9"	#4	7"	8'-0"	#4	8"	8'-0"	#4	7"	14'-2 1/2"	13'-8"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13'-4"	1.05	67.9	2109	3022	3451	3462
15'	8'-9"	2'-6"	1'-0"	2'-4"	3'-4"	2'-9"	#5	8"	8'-6"	#4	8"	8'-6"	#4	6"	15'-3"	14'-8"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14'-4"	1.16	78.6	2277	3261	3804	3570
16'	9'-3"	2'-9"	1'-3"	2'-5"	3'-7"	3'-0"	#5	8"	9'-0"	#4	8"	9'-0"	#5	6"	16'-4"	15'-8"	10"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15'-1"	1.33	87.1	2377	3403	4031	3628
17'	9'-9"	3'-0"	1'-6"	2'-6"	3'-10"	3'-3"	#5	8"	9'-6"	#4	8"	9'-6"	#5	8"	17'-4"	16'-8"	10"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15'-10"	1.51	91.9	2478	3546	4264	3700
18'	10'-3"	3'-3"	1'-6"	2'-7"	3'-10"	3'-3"	#5	8"	10'-0"	#5	10"	10'-0"	#5	6"	18'-4"	17'-8"	10"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16'-10"	1.63	108.8	2555	3658	4422	3741
19'	10'-9"	3'-6"	1'-9"	2'-8"	4'-1"	3'-6"	#5	8"	10'-6"	#6	10"	10'-6"	#6	9"	19'-5 1/2"	18'-8 1/2"	1'-0"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17'-7"	1.83	114.2	2658	3803	4664	3834
20'	11'-6"	3'-6"	1'-9"	2'-9 1/2"	4'-1"	3'-6"	#6	9"	11'-3"	#5	10"	11'-3"	#6	7"	20'-5 1/2"	19'-8 1/2"	1'-0"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18'-7"	1.97	137.0	2790	3970	4926	3905
21'	12'-0"	3'-9"	2'-0"	2'-10"	4'-4"	3'-9"	#6	9"	11'-9"	#5	10"	11'-9"	#6	1'-4"	12'-10 1/2"	12'-1"	1'-0"	#6	1'-4"	5'-2 1/2"	4'-4"	1'-0"	#6	1'-4"	19'-6 1/2"	2.19	130.1	2892	4115	5173	4012
22'	12'-6"	4'-0"	2'-0"	2'-11 1/2"	4'-4"	3'-9"	#6	8"	12'-3"	#5	8"	12'-3"	#6	1'-4"	14'-2 1/2"	13'-5"	1'-0"	#6	1'-4"	5'-2 1/2"	4'-4"	1'-0"	#6	1'-4"	20'-6 1/2"	2.34	143.3	2970	4227	5338	4083
23'	13'-0"	4'-3"	2'-3"	3'-0 1/2"	4'-7"	4'-0"	#6	9"	12'-9"	#5	8"	12'-9"	#6	1'-4"	15'-6 1/2"	14'-9"	1'-0"	#6	1'-4"	5'-5 1/2"	4'-7"	1'-0"	#6	1'-4"	21'-3 1/2"	2.58	146.6	3074	4373	5592	4198
24'	13'-9"	4'-3"	2'-3"	3'-1 1/2"	4'-7"	4'-0"	#6	7"	13'-6"	#5	7"	13'-6"	#6	1'-4"	16'-10"	16'-0 1/2"	1'-0"	#6	1'-4"	5'-5 1/2"	4'-7"	1'-0"	#6	1'-4"	22'-3 1/2"	2.75	166.0	3207	4544	5860	4311
25'	14'-3"	4'-6"	2'-6"	3'-2 1/2"	4'-10"	4'-3"	#6	7"	14'-0"	#6	10"	14'-0"	#6	1'-4"	18'-1 1/2"	17'-4"	1'-0"	#6	1'-4"	5'-8 1/2"	4'-10"	1'-0"	#6	1'-4"	23'-0 1/2"	3.01	172.9	3310	4689	6120	4431
26'	14'-9"	4'-9"	2'-6"	3'-3 1/2"	4'-10"	4'-3"	#6	6"	14'-6"	#6	9"	14'-6"	#6	1'-4"	19'-4 1/2"	18'-7 1/2"	1'-0"	#6	1'-4"	5'-8 1/2"	4'-10"	1'-0"	#6	1'-4"	24'-0 1/2"	3.18	188.8	3388	4802	6290	4515
27'	15'-6"	5'-0"	2'-9"	3'-4 1/2"	5'-1"	4'-6"	#6	6"	15'-3"	#6	9"	15'-3"	#6	1'-0"	18'-7"	17'-9 1/2"	1'-0"	#6	1'-0"	5'-11 1/2"	5'-1"	1'-0"	#6	1'-0"	24'-9 1/2"	3.48	213.2	3467	4897	6454	4587
28'	16'-0"	5'-3"	3'-0"	3'-5 1/2"	5'-4"	4'-9"	#6	6"	15'-9"	#6	8"	15'-9"	#6	10"	18'-4"	17'-6 1/2"	1'-0"	#6	10"	6'-2 1/2"	5'-4"	1'-0"	#6	10"	25'-6 1/2"	3.77	237.8	3571	5043	6723	4713
29'	16'-9"	5'-6"	3'-3"	3'-6 1/2"	5'-7"	5'-0"	#7	8"	16'-6"	#6	8"	16'-6"	#8	1'-4"	19'-11 1/2"	18'-11"	1'-3"	#8	1'-4"	8'-4 1/2"	7'-2 1/2"	1'-3"	#8	1'-4"	26'-4"	4.11	265.1	3653	5143	6898	4796
30'	17'-3"	5'-9"	3'-3"	3'-7 1/2"	5'-7"	5'-0"	#7	7"	17'-0"	#6	7"	17'-0"	#8	1'-4"	21'-3 1/2"	20'-3"	1'-3"	#8	1'-4"	8'-4 1/2"	7'-2 1/2"	1'-3"	#8	1'-4"	27'-4"	4.30	287.4	3733	5257	7075	4888
31'	18'-0"	6'-0"	3'-6"	3'-8 1/2"	5'-10"	5'-3"	#7	7"	17'-9"	#6	7"	17'-9"	#8	1'-4"	22'-7"	21'-6 1/2"	1'-3"	#8	1'-4"	8'-7 1/2"	7'-5 1/2"	1'-3"	#8	1'-4"	28'-1"	4.65	298.5	3817	5362	7258	4979
32'	18'-6"	6'-3"	3'-9"	3'-9 1/2"	6'-1"	5'-6"	#7	7"	18'-3"	#6	7"	18'-3"	#8	1'-2"	22'-7 1/2"	21'-7"	1'-3"	#8	1'-2"	8'-10 1/2"	7'-8 1/2"	1'-3"	#8	1'-2"	28'-10"	4.99	322.9	3923	5509	7540	5111
33'	19'-3"	6'-6"	4'-0"	3'-10"	6'-4"	5'-9"	#7	7"	19'-0"	#6	7"	19'-0"	#8	1'-0"	22'-4 1/2"	21'-4"	1'-3"	#8	1'-0"	9'-1 1/2"	7'-11 1/2"	1'-3"	#8	1'-0"	29'-7"	5.38	354.3	4009	5618	7733	5208
34'	20'-0"	6'-9"	4'-3"	3'-11"	6'-7"	6'-0"	#7	7"	19'-9"	#6	7"	19'-9"	#9	10"	19'-2 1/2"	17'-11 1/2"	1'-6"	#9	10"	10'-8 1/2"	9'-4"	1'-6"	#9	10"	30'-4"	5.78	444.8	4097	5729	7933	5308
35'	20'-6"	7'-0"	4'-6"	4'-0"	6'-10"	6'-3"	#7	7"	20'-3"	#6	7"	20'-3"	#10	1'-0"	21'-1 1/2"	19'-9"	1'-8"	#10	1'-0"	12'-4"	10'-10"	1'-8"	#10	1'-0"	31'-1"	6.16	480.4	4203	5877	8224	5442

**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**



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**REINFORCED CONCRETE RETAINING WALL TYPE 1 AND 1SW STANDARD PLAN D-10.10-01**

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION  
**Pasco Bakotich III** 12-02-08  
 STATE DESIGN ENGINEER DATE  
 Washington State Department of Transportation

DRAWN BY: BILL BERENS