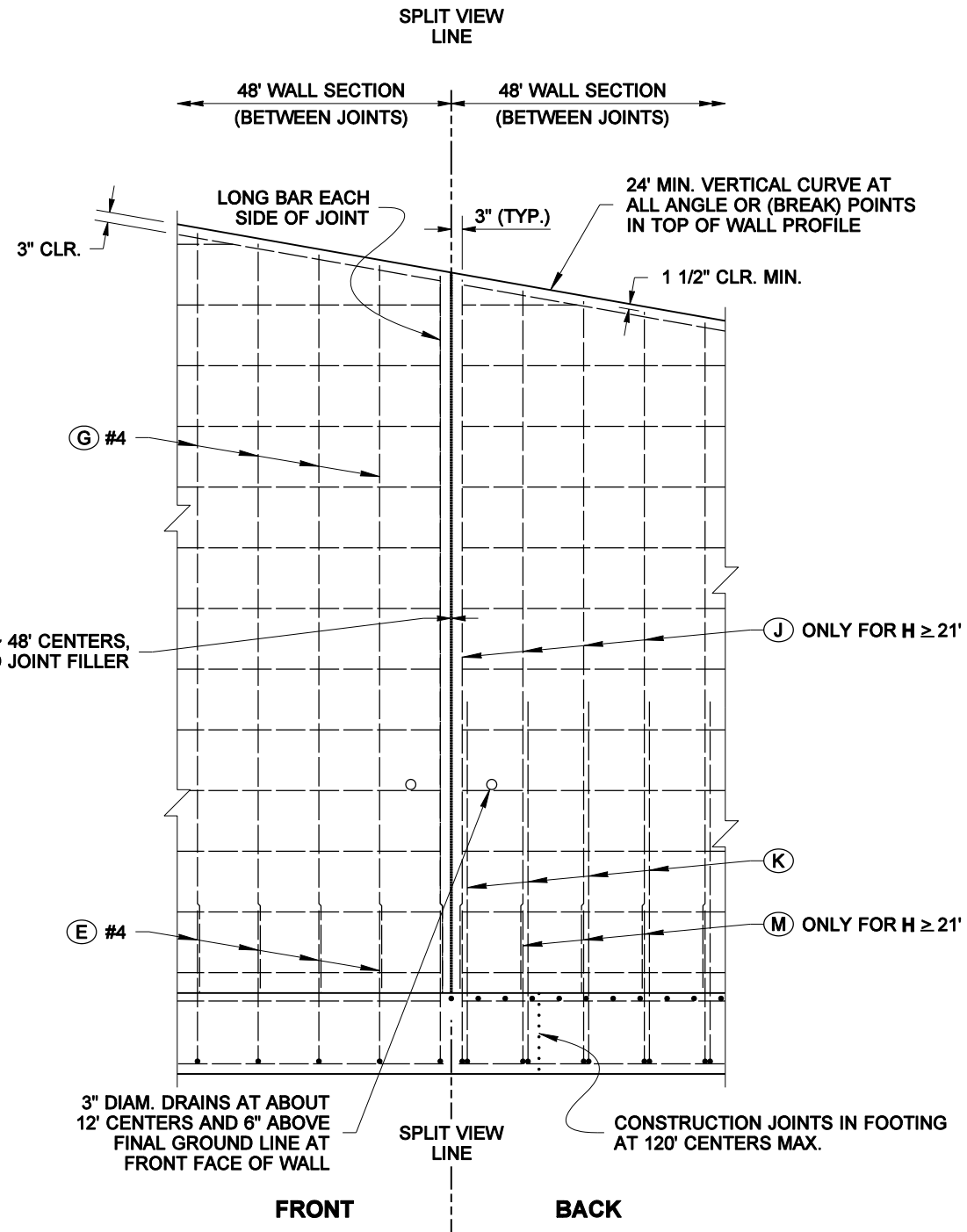


TYPICAL SECTION

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. 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.
4. 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 0.20 g.
5. 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



NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT UNTIL IT IS APPROVED FOR PUBLICATION BY THE ENGINEER AND APPROVED FOR THE CONTRACTOR. THE ENGINEER HAS REVIEWED THE PLAN FOR TECHNICAL FILE AT THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION. A COPY MAY BE OBTAINED UPON REQUEST.

REINFORCED CONCRETE RETAINING WALL TYPE 7 STANDARD PLAN D-10.40-01

SHEET 1 OF 2 SHEETS

APPROVED FOR PUBLICATION

Pasco Bakotich III 12-02-08

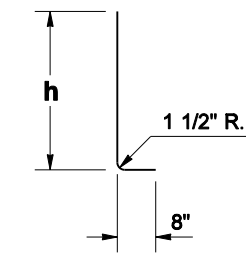
STATE DESIGN ENGINEER DATE



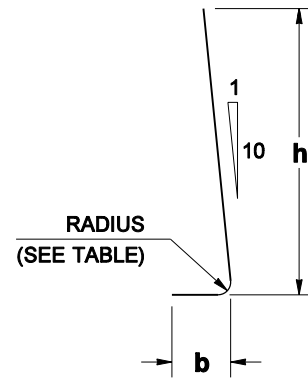
WALL HT H	DIMENSIONS				FOOTING REINFORCEMENT													STEM REINFORCEMENT				MATERIAL QUANTITY		MAXIMUM SOIL PRESSURE (PSF)								
					BAR (E) #4		BAR (F)		BAR (H)			BAR (K)				BAR (M)				BAR (J)				G #4	SERVICE	STRENGTH	EXTREME EVENT 1	EXTREME EVENT 2				
	B	C _v	D	A	LENGTH	h	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.					LENGTH	LENGTH	CONC. CY / LF	STEEL LBS / LF
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	N/A	4' - 4"	0.40	25.7	915	1260	1108	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	N/A	5' - 4"	0.45	28.2	992	1350	1272	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	N/A	6' - 4"	0.51	29.3	1046	1443	1384	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	N/A	7' - 4"	0.58	33.8	1176	1631	1572	2217
9'	7' - 0"	2' - 3"	1' - 0"	1' - 9"	3' - 4"	2' - 9"	#4	1' - 0"	6' - 9"	#4	1' - 0"	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	N/A	8' - 4"	0.65	39.6	1318	1836	1781	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	N/A	9' - 4"	0.72	43.6	1471	2060	2011	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	N/A	10' - 4"	0.80	48.8	1636	2303	2264	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	9"	12' - 2 1/2"	11' - 8"	8"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11' - 4"	0.88	53.0	1733	2455	2400	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	N/A	12' - 4"	0.96	59.7	1915	2728	2685	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	N/A	13' - 4"	1.05	65.9	2109	3022	2995	3462
15'	8' - 9"	2' - 6"	1' - 0"	2' - 4"	3' - 4"	2' - 9"	#5	8"	8' - 6"	#4	8"	8' - 6"	#5	10"	15' - 4"	14' - 8"	10"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14' - 4"	1.16	77.5	2277	3261	3287	3570
16'	9' - 3"	2' - 9"	1' - 3"	2' - 5"	3' - 7"	3' - 0"	#5	8"	9' - 0"	#4	8"	9' - 0"	#5	10"	16' - 4"	15' - 8"	10"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15' - 1"	1.33	82.0	2377	3403	3466	3628
17'	9' - 9"	3' - 0"	1' - 3"	2' - 6 1/2"	3' - 7"	3' - 0"	#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	N/A	16' - 1"	1.44	93.3	2453	3514	3585	3658
18'	10' - 3"	3' - 3"	1' - 3"	2' - 7 1/2"	3' - 7"	3' - 0"	#5	7"	10' - 0"	#5	10"	10' - 0"	#5	8"	18' - 4"	17' - 8"	10"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17' - 1"	1.56	102.9	2530	3625	3705	3700
19'	10' - 6"	3' - 6"	1' - 3"	2' - 8 1/2"	3' - 7"	3' - 0"	#6	10"	10' - 3"	#5	8"	10' - 3"	#6	10"	19' - 5 1/2"	18' - 8 1/2"	1' - 0"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18' - 1"	1.66	115.4	2642	3809	3864	3859
20'	11' - 0"	3' - 6"	1' - 3"	2' - 10"	3' - 7"	3' - 0"	#6	7"	10' - 9"	#5	7"	10' - 9"	#6	9"	20' - 5 1/2"	19' - 8 1/2"	1' - 0"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19' - 1"	1.79	132.9	2808	4043	4169	4012
21'	11' - 6"	3' - 9"	1' - 3"	2' - 11"	3' - 7"	3' - 0"	#6	7"	11' - 3"	#5	6"	11' - 3"	#5	8"	4' - 8 1/2"	4' - 1"	10"	#5	8"	3' - 10 1/2"	3' - 2"	10"	#5	8"	20' - 3 1/2"	1.92	148.7	2883	4152	4288	4067	
22'	12' - 0"	4' - 0"	1' - 6"	3' - 0"	3' - 10"	3' - 3"	#6	7"	11' - 9"	#5	7"	11' - 9"	#5	8"	6' - 5"	5' - 9"	10"	#5	8"	4' - 1 1/2"	3' - 5"	10"	#5	8"	21' - 0 1/2"	2.13	152.3	2985	4296	4481	4169	
23'	12' - 9"	4' - 3"	1' - 6"	3' - 1"	3' - 10"	3' - 3"	#6	6"	12' - 6"	#5	6"	12' - 6"	#5	8"	8' - 0"	7' - 4 1/2"	10"	#5	8"	4' - 1 1/2"	3' - 5"	10"	#5	8"	22' - 0 1/2"	2.28	170.8	3026	4335	4561	4151	
24'	13' - 0"	4' - 3"	1' - 9"	3' - 2"	4' - 1"	3' - 6"	#6	6"	12' - 9"	#5	6"	12' - 9"	#5	8"	9' - 7"	8' - 11"	10"	#5	8"	4' - 4 1/2"	3' - 8"	10"	#5	8"	22' - 9 1/2"	2.50	178.0	3252	4672	4990	4448	
25'	13' - 6"	4' - 6"	1' - 9"	3' - 3 1/2"	4' - 1"	3' - 6"	#6	6"	13' - 3"	#6	8"	13' - 3"	#5	8"	11' - 1 1/2"	10' - 5 1/2"	10"	#5	8"	4' - 4 1/2"	3' - 8"	10"	#5	8"	23' - 9 1/2"	2.65	190.1	3328	4782	5112	4520	
26'	14' - 3"	4' - 9"	2' - 0"	3' - 4"	4' - 4"	3' - 9"	#7	7"	14' - 0"	#6	7"	14' - 0"	#5	8"	12' - 7"	11' - 11 1/2"	10"	#5	8"	4' - 7 1/2"	3' - 11"	10"	#5	8"	24' - 6 1/2"	2.93	212.7	3395	4855	5268	4562	
27'	14' - 9"	5' - 0"	2' - 0"	3' - 5 1/2"	4' - 4"	3' - 9"	#7	7"	14' - 6"	#6	7"	14' - 6"	#5	8"	14' - 0 1/2"	13' - 4 1/2"	10"	#5	8"	4' - 7 1/2"	3' - 11"	10"	#5	8"	25' - 6 1/2"	3.09	221.6	3472	4966	5393	4642	
28'	15' - 3"	5' - 3"	2' - 3"	3' - 6 1/2"	4' - 7"	4' - 0"	#7	6"	15' - 0"	#6	7"	15' - 0"	#6	1' - 0"	16' - 4"	15' - 6 1/2"	1' - 0"	#6	1' - 0"	5' - 5 1/2"	4' - 7"	1' - 0"	#6	1' - 0"	26' - 4"	3.36	238.4	3576	5112	5600	4765	
29'	16' - 0"	5' - 6"	2' - 3"	3' - 7 1/2"	4' - 7"	4' - 0"	#7	6"	15' - 9"	#6	6"	15' - 9"	#6	1' - 0"	17' - 8 1/2"	16' - 11"	1' - 0"	#6	1' - 0"	5' - 5 1/2"	4' - 7"	1' - 0"	#6	1' - 0"	27' - 4"	3.55	255.7	3623	5162	5686	4789	
30'	16' - 6"	5' - 9"	2' - 6"	3' - 8 1/2"	4' - 10"	4' - 3"	#7	6"	16' - 3"	#6	6"	16' - 3"	#6	1' - 0"	19' - 1"	18' - 3 1/2"	1' - 0"	#6	1' - 0"	5' - 8 1/2"	4' - 10"	1' - 0"	#6	1' - 0"	28' - 1"	3.85	263.4	3727	5308	5897	4916	
31'	17' - 0"	6' - 0"	2' - 6"	3' - 9 1/2"	4' - 10"	4' - 3"	#7	6"	16' - 9"	#6	6"	16' - 9"	#6	1' - 0"	20' - 5"	19' - 7 1/2"	1' - 0"	#6	1' - 0"	5' - 8 1/2"	4' - 10"	1' - 0"	#6	1' - 0"	29' - 1"	4.03	273.8	3805	5421	6027	5005	
32'	17' - 6"	6' - 3"	2' - 9"	3' - 10 1/2"	5' - 1"	4' - 6"	#7	6"	17' - 3"	#7	7"	17' - 3"	#6	1' - 0"	21' - 8 1/2"	20' - 11 1/2"	1' - 0"	#6	1' - 0"	5' - 11 1/2"	5' - 1"	1' - 0"	#6	1' - 0"	29' - 10"	4.35	291.4	3910	5568	6242	5134	
33'	18' - 3"	6' - 6"	3' - 0"	3' - 11 1/2"	5' - 4"	4' - 9"	#8	7"	18' - 0"	#7	7"	18' - 0"	#6	10"	21' - 2"	20' - 5"	1' - 0"	#6	10"	6' - 2 1/2"	5' - 4"	1' - 0"	#6	10"	30' - 7"	4.70	327.3	3989	5660	6421	5215	
34'	18' - 9"	6' - 9"	3' - 0"	4' - 0 1/2"	5' - 4"	4' - 9"	#8	7"	18' - 6"	#7	7"	18' - 6"	#6	8"	19' - 10 1/2"	19' - 1 1/2"	1' - 0"	#6	8"	6' - 2 1/2"	5' - 4"	1' - 0"	#6	8"	31' - 7"	4.90	358.8	4067	5774	6554	5307	
35'	19' - 3"	7' - 0"	3' - 3"	4' - 1 1/2"	5' - 7"	5' - 0"	#8	7"	19' - 0"	#7	7"	19' - 0"	#7	8"	21' - 9 1/2"	20' - 10 1/2"	1' - 2"	#7	8"	7' - 3"	6' - 3"	1' - 2"	#7	8"	32' - 4"	5.25	423.0	4173	5922	6776	5440	

REINFORCEMENT NOTES

- 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
- 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 7
STANDARD PLAN D-10.40-01**

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION

Pasco Bakotich III 12-02-08

STATE DESIGN ENGINEER DATE

