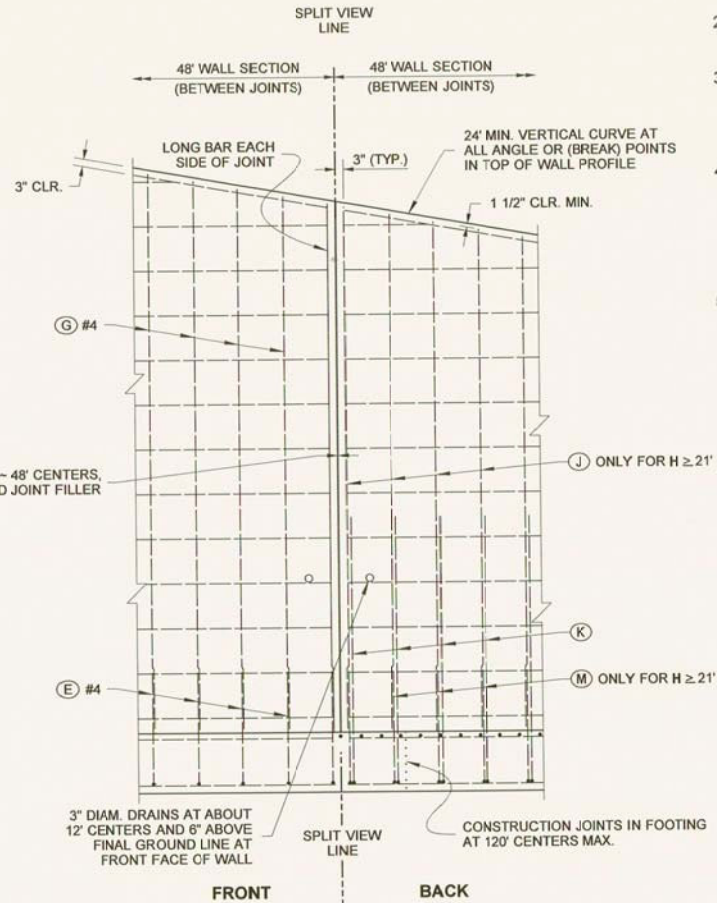


TYPICAL SECTION

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) = $\frac{H}{8} - 2$
- 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



EXPIRES AUGUST 23, 2008

REINFORCED CONCRETE
RETAINING WALL
TYPE 7
STANDARD PLAN D-10.40-00

SHEET 1 OF 2 SHEETS

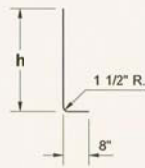
APPROVED FOR PUBLICATION

STATE DESIGN ENGINEER _____ DATE _____
 Washington State Department of Transportation

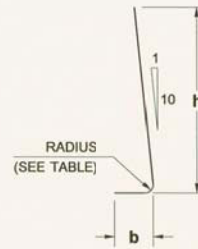
WALL HT H	DIMENSIONS				FOOTING REINFORCEMENT																STEM REINFORCEMENT				MATERIAL QUANTITY		MAXIMUM SOIL PRESSURE (PSF)						
					BAR (E) #4		BAR (F)		BAR (H)		BAR (K)				BAR (M)				BAR (J)		(G) #4	CONC CY/LF	STEEL LBS/LF	SERVICE	STRENGTH	EXTREME EVENT 1	EXTREME EVENT 2						
	B	C _v	D	A	LENGTH	h	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	h	b	SIZE	SPA.	LENGTH	LENGTH							
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"	6'-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	1033	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	1188	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	1298	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	1475	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	1671	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	1888	2483
11'	7'-6"	2'-3"	1'-0"	1'-10 1/2"	3'-3 1/2"	2'-9"	#4	10"	7'-3"	#4	1'-0"	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	2126	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	2257	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	2524	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	2814	3278
15'	8'-6"	2'-6"	1'-0"	2'-3"	3'-3 1/2"	2'-9"	#5	8"	8'-3"	#4	8"	8'-3"	#5	10"	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'-9"	1.13	75.1	2189	3129	3130	3536
16'	9'-0"	2'-9"	1'-3"	2'-4"	3'-6 1/2"	3'-0"	#5	8"	8'-9"	#4	8"	8'-9"	#5	10"	16'-3 1/2"	15'-7 1/2"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14'-6"	1.30	79.6	2290	3272	3306	3582
17'	9'-6"	3'-0"	1'-3"	2'-5"	3'-6 1/2"	3'-0"	#5	8"	9'-3"	#4	8"	9'-3"	#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'-6"	1.41	90.9	2366	3384	3427	3603
18'	10'-0"	3'-3"	1'-3"	2'-6 1/2"	3'-6 1/2"	3'-0"	#5	8"	9'-9"	#5	10"	9'-9"	#5	8"	18'-4"	17'-8"	9"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16'-6"	1.53	98.2	2443	3496	3547	3637
19'	10'-3"	3'-6"	1'-3"	2'-7 1/2"	3'-6 1/2"	3'-0"	#6	10"	10'-0"	#5	8"	10'-0"	#6	10"	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'-6"	1.63	112.8	2554	3677	3702	3795
20'	11'-0"	3'-6"	1'-3"	2'-9"	3'-6 1/2"	3'-0"	#6	7"	10'-9"	#5	8"	10'-9"	#6	10"	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'-6"	1.77	128.8	2685	3841	3963	3839
21'	11'-6"	3'-9"	1'-3"	2'-10"	3'-6 1/2"	3'-0"	#6	7"	11'-3"	#5	7"	11'-3"	#5	8"	4'-1 1/2"	3'-5 1/2"	9"	#5	8"	3'-10"	3'-1 1/2"	9"	#5	8"	19'-8"	1.89	141.8	2762	3952	4083	3897		
22'	12'-0"	4'-0"	1'-6"	2'-11"	3'-9 1/2"	3'-3"	#6	7"	11'-9"	#5	7"	11'-9"	#5	8"	5'-9 1/2"	5'-1 1/2"	9"	#5	8"	4'-1"	3'-4 1/2"	9"	#5	8"	20'-5"	2.11	150.1	2864	4097	4274	4002		
23'	12'-6"	4'-3"	1'-6"	3'-0"	3'-9 1/2"	3'-3"	#6	7"	12'-3"	#5	6"	12'-3"	#5	8"	7'-5"	6'-9"	9"	#5	8"	4'-1"	3'-4 1/2"	9"	#5	8"	21'-5"	2.25	162.0	2941	4209	4397	4071		
24'	13'-0"	4'-3"	1'-9"	3'-1"	4'-0 1/2"	3'-6"	#6	6"	12'-9"	#5	6"	12'-9"	#5	8"	8'-11 1/2"	8'-4"	9"	#5	8"	4'-4"	3'-7 1/2"	9"	#5	8"	22'-2"	2.48	175.8	3131	4473	4773	4284		
25'	13'-6"	4'-6"	1'-9"	3'-2"	4'-0 1/2"	3'-6"	#6	6"	13'-3"	#5	6"	13'-3"	#5	8"	10'-6"	9'-10"	9"	#5	8"	4'-4"	3'-7 1/2"	9"	#5	8"	23'-2"	2.63	185.6	3208	4584	4897	4358		
26'	14'-0"	4'-9"	1'-9"	3'-3 1/2"	4'-0 1/2"	3'-6"	#7	7"	13'-9"	#6	7"	13'-9"	#5	8"	12'-0"	11'-4"	9"	#5	8"	4'-4"	3'-7 1/2"	9"	#5	8"	24'-2"	2.78	207.7	3284	4695	5022	4435		
27'	14'-6"	5'-0"	2'-0"	3'-4 1/2"	4'-3 1/2"	3'-9"	#7	7"	14'-3"	#6	7"	14'-3"	#5	8"	13'-5"	12'-9 1/2"	9"	#5	8"	4'-7"	3'-10 1/2"	9"	#5	8"	24'-11 1/2"	3.04	216.5	3388	4841	5224	4555		
28'	15'-0"	5'-3"	2'-0"	3'-5 1/2"	4'-3 1/2"	3'-9"	#7	7"	14'-9"	#6	7"	14'-9"	#6	1'-0"	15'-8 1/2"	14'-11"	11"	#6	1'-0"	5'-2"	4'-3 1/2"	11"	#6	1'-0"	25'-11 1/2"	3.21	224.7	3465	4953	5350	4636		
29'	15'-6"	5'-6"	2'-3"	3'-6 1/2"	4'-6 1/2"	4'-0"	#7	7"	15'-3"	#6	7"	15'-3"	#6	1'-0"	17'-1"	16'-4"	11"	#6	1'-0"	5'-5"	4'-6 1/2"	11"	#6	1'-0"	26'-8 1/2"	3.48	233.2	3570	5100	5557	4760		
30'	16'-3"	5'-9"	2'-3"	3'-7 1/2"	4'-6 1/2"	4'-0"	#7	6"	16'-0"	#6	6"	16'-0"	#6	1'-0"	18'-5 1/2"	17'-8"	11"	#6	1'-0"	5'-5"	4'-6 1/2"	11"	#6	1'-0"	27'-8 1/2"	3.68	259.6	3619	5152	5647	4787		
31'	16'-9"	6'-0"	2'-6"	3'-8 1/2"	4'-9 1/2"	4'-3"	#7	6"	16'-6"	#6	6"	16'-6"	#6	1'-0"	19'-9 1/2"	19'-0"	11"	#6	1'-0"	5'-8"	4'-9 1/2"	11"	#6	1'-0"	28'-5 1/2"	3.98	269.9	3723	5300	5858	4915		
32'	17'-3"	6'-3"	2'-6"	3'-10"	4'-9 1/2"	4'-3"	#7	6"	17'-0"	#7	7"	17'-0"	#6	1'-0"	21'-1 1/2"	20'-4"	11"	#6	1'-0"	5'-8"	4'-9 1/2"	11"	#6	1'-0"	29'-5 1/2"	4.16	287.4	3801	5413	5988	5004		
33'	18'-0"	6'-6"	2'-9"	3'-10 1/2"	5'-0 1/2"	4'-6"	#7	6"	17'-9"	#7	7"	17'-9"	#6	10"	20'-7"	19'-9 1/2"	11"	#6	10"	5'-11"	5'-1"	11"	#6	10"	30'-2 1/2"	4.51	314.2	3882	5507	6168	5085		
34'	18'-6"	6'-9"	3'-0"	3'-11 1/2"	5'-3 1/2"	4'-9"	#7	6"	18'-3"	#7	7"	18'-3"	#6	8"	19'-3 1/2"	18'-6"	11"	#6	8"	6'-2"	5'-4"	11"	#6	8"	30'-11 1/2"	4.84	343.5	3987	5656	6385	5217		
35'	19'-0"	7'-0"	3'-0"	4'-1"	5'-3 1/2"	4'-9"	#7	5"	18'-9"	#7	7"	18'-9"	#6	8"	20'-8"	19'-10 1/2"	11"	#6	8"	6'-2"	5'-4"	11"	#6	8"	31'-11 1/2"	5.04	370.0	4066	5769	6518	5310		

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 7 STANDARD PLAN D-10.40-00

SHEET 2 OF 2 SHEETS

APPROVED FOR PUBLICATION

STATE DESIGN ENGINEER DATE
Washington State Department of Transportation