DIMENSIONS					FOOTING REINFORCEMENT													STEM REINFORCEMENT			MATERIAL QUANTITY			
					BAR E (size #4)				BAR F			BAR K								BAR G (size #4)				
H (m)	B (mm)	C_v (mm)	D (mm)	h_k (mm)	SPACING (mm)	LENGTH (mm)	h (mm)	b (mm)	SIZE	SPACING (mm)	LENGTH (mm)	SIZE	SPACING (mm)	LENGTH (mm)	h (mm)	b (mm)				LENGTH (mm)	CONCRETE (m^3/m)	STEEL (Kg/m)	H (m)
1.5	800	530	300		460	1040	840	200		300	600	#5	300	1700	1400	410				1200	0.584	28.379	1.5
1.8	500	530	300		460	1040	840	200	#4	300	700	#5	300	2000	1700	410				1500	0.720	32.830	1.8
2.1	900	690	300		460	1040	840	200	#4	300	600	#5	300	2500	2000	560				1800	0.863	35.572	2.1
2.4	1100	760	300		460	1040	840	200	#4	300	700	#5	300	2800	2300	630				2100	1.041	40.411	2.4
2.7	1200	910	300		460	1040	840	200	#4	300	700	#5	300	3300	2600	810				2400	1.227	45.390	2.7
3.0	1400	1070	300		460	1040	840	200	#4	300	700	#5	300	3800	2900	940				2700	1.422	49.375	3.0
3.4	1600	1140	300		460	1040	840	200	#4	300	800	#5	300	4100	3200	1020				3000	1.648	54.517	3.4
3.7	1800	1220	300		460	1040	840	200	#4	300	1000	#5	250	4500	3500	1120				3300	1.886	65.204	3.7
4.0	2000	1370	300		460	1040	840	200	#4	250	1000	#5	230	5000	3800	1240				3600	2.110	72.666	4.0
4.3	2200	1450	380		460	1120	910	200	#4	230	1100	#5	180	5400	4100	1320				3900	2.308	89.412	4.3
4.6	2300	1520	380	460	460	1120	910	200	#4	200	1100	#6	200	5700	4400	1420				4200	3.055	113.697	4.6
4.9	2500	1600	380	460	460	1120	910	200	#5	200	1400	#6	180	6100	4700	1470				4500	3.344	132.928	4.9
5.2	2700	1680	380	460	460	1120	910	200	#5	200	1500	#6	150	6500	5100	1550				4800	3.642	156.096	5.2
5.5	3000	1680	380	460	460	1120	910	200	#6	150	1900	#6	130	6800	5400	1550				5100	3.951	197.594	5.5
5.8	3200	1750	460	460	460	1190	990	200	#6	130	2100	#7	150	7100	5700	1630				5300	4.452	233.673	5.8
6.1	3400	1830	530	460	460	1270	1070	200	#6	130	2200	#7	130	7500	6000	1730				5500	4.997	275.238	6.1
6.4	3700	1910	610	460	460	1320	1140	200	#6	130	2400	#8	280	4300	2700	1780	#8	280	3400	1800	1800	#8	280	5700	5800	5.579	290.554	6.4
6.7	3800	1980	610	460	460	1320	1140	200	#7	130	2700	#8	250	4500	2800	1880	#8	250	3500	1800	1900	#8	250	6000	6100	5.067	344.482	6.7
7.0	4000	2130	610	610	460	1320	1140	200	#7	130	2700	#8	250	4800	2900	2030	#8	250	3600	1800	2000	#8	250	6300	6400	6.484	357.840	7.0
7.3	4200	2210	690	610	460	1420	1220	200	#7	130	2900	#8	230	5000	3100	2080	#8	230	3800	1900	2100	#8	230	6600	6600	7.144	400.549	7.3
7.6	4300	2290	690	760	460	1420	1220	200	#8	130	3300	#9	250	5200	3200	2160	#9	250	4100	2200	2200	#9	250	6900	6900	7.781	493.028	7.6
7.9	4600	2360	690	760	460	1420	1220	200	#8	130	3400	#9	230	5300	3300	2340	#9	230	4200	2200	2200	#9	230	7200	7200	8.223	546.633	7.9
8.2	4700	2510	760	760	460	1500	1300	200	#8	130	3400	#9	200	5700	3500	2390	#9	200	4400	2300	2400	#9	200	7400	7400	8.907	616.188	8.2
8.5	4900	2670	760	760	460	1500	1300	200	#9	130	3400	#9	200	5900	3600	2540	#9	200	4600	2300	2500	#9	250	7700	7800	9.326	634.614	8.5
8.8	5100	2740	840	760	460	1650	1450	200	#9	130	3900	#10	230	6300	3800	2640	#10	230	5200	2700	2600	#10	230	7700	8000	10.121	772.506	8.8
9.1	5300	2820	910	760	460	1650	1450	200	#9	130	4000	#10	200	6400	3900	2690	#10	200	5400	2800	2700	#10	200	8200	8200	10.959	864.345	9.1
9.4	5500	2900	910	910	460	1650	1450	200	#9	130	4100	#10	200	6600	4000	2770	#10	200	5400	2800	2800	#10	200	8500	8500	11.724	889.215	9.4
9.8	5700	2970	990	1070	460	1730	1520	200	#9	130	4300	#10	200	6800	4200	2840	#10	200	5900	3400	2800	#10	200	8700	8800	12.968	1087.215	9.8
10.1	5900	3050	1070	1070	460	1800	1600	200	#10	130	4300	#10	200	7000	4300	2950	#10	200	6100	3400	2900	#10	200	8900	9000	13.821	1117.690	10.1

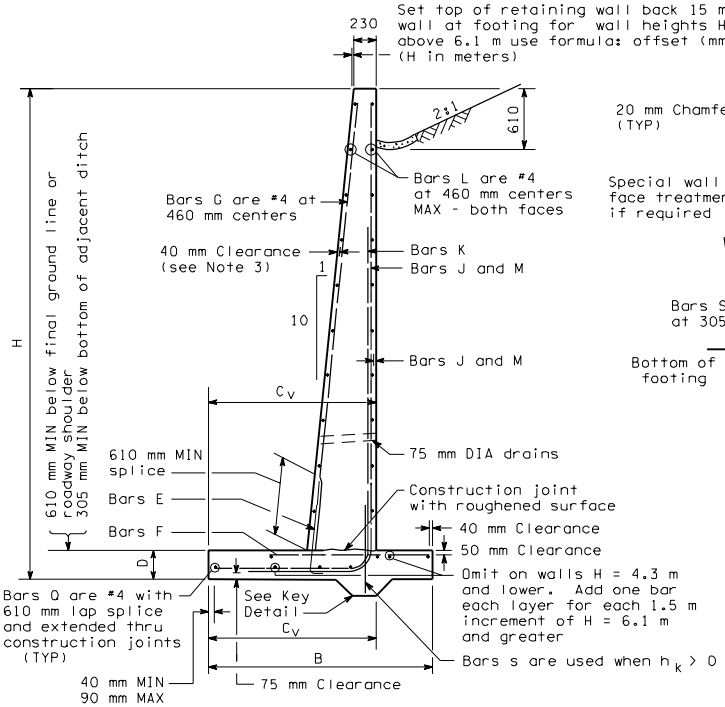
NOTES

1. All concrete shall be Class 28.
2. For backfill requirements, see Standard Plan "Backfill for Retaining Walls".
3. When Wall Type 4-SW (saltwater) is specified, the concrete cover over steel in the front face and the total wall thickness shall be increased by 25 mm.
4. When Wall Type 4-SW (saltwater) is specified, concrete in the table column "Material Quantity" shall be increased by 0.0254 x H m^3/m.

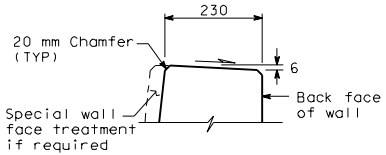
BAR M					BAR J		
SIZE	SPACING (mm)	LENGTH (mm)	h (mm)	b (mm)	SIZE	SPACING (mm)	LENGTH (mm)
#8	280	3400	1800	1800	#8	280	5700
#8	250	3500	1800	1900	#8	250	6000
#8	250	3600	1800	2000	#8	250	6300
#8	230	3800	1900	2100	#8	230	6600
#9	250	4100	2200	2200	#9	250	6900
#9	230	4200	2200	2200	#9	230	7200
#9	200	4400	2300	2400	#9	200	7400
#9	200	4600	2300	2500	#9	250	7700
#10	230	5200	2700	2600	#10	230	7700
#10	200	5400	2800	2700	#10	200	8200
#10	200	5400	2800	2800	#10	200	8500
#10	200	5900	3400	2800	#10	200	8700
#10	200	6100	3400	2900	#10	200	8900

Bar	Radius (mm)
#5	230
#6	250
#7	330
#8	380
#9	460
#10	510

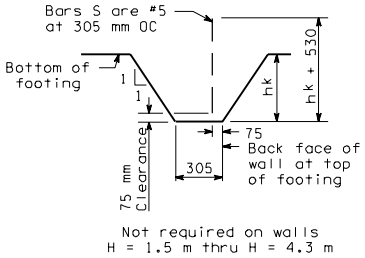
Bar	MIN Splice (mm)
#4	610
#5	610
#6	640
#7	890
#8	1140
#9	1450
#10	1850



SECTION - SLOPING FACE

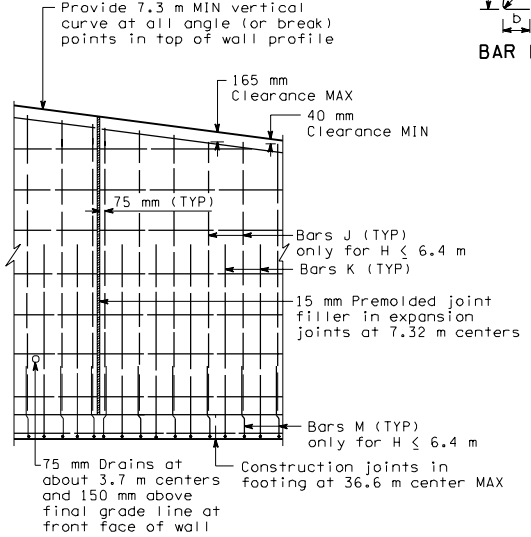


WALL TOP DETAIL

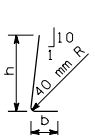


Not required on walls H = 1.5 m thru H = 4.3 m

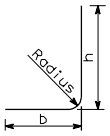
KEY DETAIL



ELEVATION



BAR E



BARS K AND M

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

REINFORCED CONCRETE RETAINING WALL TYPE 4 AND 4 SW

2:1 BACKSLOPE WITH SLOPING FRONT FACE

STANDARD PLAN D-1d

APPROVED FOR PUBLICATION

STATE DESIGN ENGINEER DATE

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
OLYMPIA, WASHINGTON