

CASE I - LEVEL FILL

QUANTITIES

LIMIT STATE NOTES:

Dimensions							Steel List												Service Limit State			Strength Limit State									
H	W	B	C	F	E	X	S1			S2			S3			H	V	Y			F1	T			F2	Qtveu-SERV Lbs./Sq.Ft.	Qnveu-SERV Lbs./Sq.Ft.	B'SERV Ft.	Qtveu-STR Lbs./Sq.Ft.	Qnveu-STR Lbs./Sq.Ft.	B'STR Ft.
							Bar Size	Spacing	Length	Bar Size	Spacing	Length	Bar Size	Spacing	Length			Number	Length	Bar Size		Spacing	Length	Number							
4'	3'-0	1'-0	10"	10"	1'-4	8"	5	12"	5'-6						4	3'-9	5	12"	2'-3	2	5	12"	2'-3	3	840	480	2.46	1130	650	2.36	
5'	3'-6	1'-0	1'-0	10"	1'-8	9"	5	12"	6'-6						6	4'-9	5	12"	2'-9	2	5	12"	2'-9	3	920	560	2.91	1240	760	2.79	
6'	4'-0	1'-0	1'-2	10"	2'-0	10"	5	12"	7'-6						6	5'-9	5	12"	3'-3	2	5	12"	3'-3	3	1010	650	3.31	1380	900	3.16	
7'	4'-6	1'-0	1'-4	10"	2'-4	11"	5	12"	8'-6						8	6'-9	5	12"	3'-9	3	5	12"	3'-6	3	1110	750	3.70	1530	1040	3.52	
8'	5'-0	1'-2	1'-6	10"	2'-8	1'-0	5	12"	9'-9						10	7'-9	5	12"	4'-3	3	5	12"	4'-0	3	1270	890	4.01	1750	1240	3.79	
9'	5'-6	1'-2	1'-9	1'-0	2'-9	1'-2	5	12"	10'-9						10	8'-9	5	12"	4'-6	3	5	12"	4'-0	3	1350	970	4.40	1880	1370	4.14	
10'	6'-0	1'-2	1'-9	1'-0	3'-3	1'-4	6	12"	11'-9						12	9'-9	5	12"	4'-9	3	5	12"	4'-6	4	1510	1130	4.73	2100	1590	4.45	
11'	6'-6	1'-2	2'-0	1'-0	3'-6	1'-6	5	12"	4'-3	5	12"	12'-9			14	10'-9	5	12"	5'-3	4	5	12"	4'-9	4	1590	1210	5.12	2230	1710	4.81	
12'	7'-0	1'-3	2'-0	1'-0	4'-0	1'-8	6	12"	5'-3	5	12"	13'-9			14	11'-9	5	12"	5'-6	4	6	12"	5'-6	5	1770	1380	5.42	2490	1960	5.08	
13'	7'-6	1'-3	2'-3	1'-0	4'-3	1'-10	7	12"	6'-6	5	12"	14'-9			16	12'-9	5	12"	5'-9	4	6	9"	5'-9	5	1860	1470	5.81	2620	2090	5.43	
14'	8'-0	1'-3	2'-3	1'-2	4'-7	2'-0	7	12"	7'-0	5	12"	15'-9			18	13'-9	5	12"	6'-3	4	7	12"	6'-9	5	2020	1630	6.14	2850	2320	5.74	
15'	8'-6	1'-3	2'-6	1'-3	4'-9	2'-2	7	12"	8'-0	5	12"	16'-9			18	14'-9	6	12"	6'-6	5	7	12"	7'-0	5	2100	1710	6.53	2970	2450	6.10	
16'	9'-0	1'-4	2'-6	1'-4	5'-2	2'-4	7	12"	7'-3	6	12"	8'-9	5	12"	10'-9	20	15'-9	6	12"	6'-9	5	8	12"	8'-3	6	2300	1900	6.82	3250	2710	6.36
17'	9'-6	1'-4	2'-9	1'-5	5'-4	2'-6	7	12"	6'-0	7	12"	9'-9	5	12"	10'-9	22	16'-9	6	9"	7'-3	5	8	12"	8'-6	6	2380	1980	7.21	3380	2840	6.72
18'	10'-0	1'-5	2'-9	1'-6	5'-9	2'-8	7	12"	7'-0	7	12"	10'-6	5	12"	11'-0	22	17'-9	6	9"	7'-6	5	7	8"	8'-6	6	2580	2170	7.50	3660	3110	6.99
19'	10'-6	1'-6	3'-0	1'-7	5'-11	2'-10	8	12"	8'-0	7	12"	10'-3	6	12"	12'-9	24	18'-9	6	9"	8'-0	6	8	9"	9'-3	7	2690	2270	7.86	3830	3260	7.30
20'	11'-0	1'-6	3'-0	1'-8	6'-4	3'-0	8	12"	7'-6	8	12"	11'-6	6	12"	12'-9	26	19'-9	6	8"	8'-3	6	8	8"	9'-6	7	2860	2440	8.19	4070	3500	7.61
21'	11'-6	1'-7	3'-3	1'-9	6'-6	3'-2	8	12"	8'-3	8	12"	12'-6	6	12"	12'-9	26	20'-9	7	12"	8'-9	6	9	9"	10'-6	7	2970	2540	8.54	4240	3660	7.92
22'	12'-0	1'-8	3'-3	1'-10	6'-11	3'-4	9	12"	9'-6	8	12"	13'-6	6	12"	13'-0	28	21'-9	7	12"	9'-0	6	9	9"	11'-0	7	3180	2740	8.83	4530	3940	8.18
23'	12'-6	1'-9	3'-6	2'-0	7'-0	3'-6	10	12"	12'-3	7	12"	14'-0	6	12"	13'-3	30	22'-9	8	12"	9'-3	6	8	6"	10'-3	7	3290	2840	9.18	4700	4100	8.49
24'	13'-0	1'-10	3'-6	2'-2	7'-4	3'-8	9	12"	9'-3	9	12"	15'-6	6	12"	13'-3	30	23'-9	8	12"	9'-6	7	8	6"	10'-6	8	3500	3040	9.47	5000	4380	8.76
25'	13'-6	2'-0	3'-9	2'-4	7'-5	3'-10	9	12"	10'-3	9	12"	16'-6	6	12"	13'-6	32	24'-9	8	12"	10'-0	7	8	6"	10'-9	8	3650	3170	9.78	5220	4580	9.02
26'	14'-0	2'-3	3'-9	2'-6	7'-9	4'-0	10	12"	13'-0	8	12"	17'-6	6	12"	13'-9	34	25'-9	8	12"	10'-3	7	8	6"	11'-0	8	3920	3410	9.99	5630	4940	9.19
27'	14'-6	2'-6	4'-0	2'-8	7'-10	4'-2	10	12"	12'-3	9	12"	18'-6	6	12"	14'-3	34	26'-9	8	12"	10'-6	7	8	6"	11'-0	8	4110	3570	10.26	5910	5180	9.41
28'	15'-0	2'-9	4'-0	2'-10	8'-2	4'-4	10	12"	13'-3	9	12"	19'-9	6	12"	14'-3	36	27'-9	8	12"	11'-0	7	8	6"	11'-6	8	4390	3820	10.47	6330	5550	9.58
29'	15'-6	3'-0	4'-3	3'-0	8'-3	4'-6	10	12"	12'-0	10	12"	21'-0	6	12"	14'-3	38	28'-9	8	12"	11'-3	7	8	6"	11'-9	9	4580	3980	10.73	6610	5800	9.79
30'	16'-0	3'-3	4'-3	3'-2	8'-7	4'-8	10	12"	13'-0	10	12"	22'-3	6	12"	14'-3	38	29'-9	8	12"	11'-6	8	8	6"	11'-9	9	4860	4230	10.94	7040	6180	9.97

CASE I			
H	Concrete C.Y./Ln.Ft.	Steel Lbs./Ln.Ft.	Steel (Horiz. Lap) Lbs./Splice
4'	.30	27	10
5'	.35	31	12
6'	.40	33	12
7'	.45	38	14
8'	.53	42	15
9'	.61	44	15
10'	.67	53	17
11'	.72	57	19
12'	.80	66	20
13'	.86	78	21
14'	.96	84	22
15'	1.04	92	23
16'	1.16	108	25
17'	1.25	119	26
18'	1.37	128	26
19'	1.50	153	29
20'	1.61	171	30
21'	1.75	185	30
22'	1.90	203	32
23'	2.09	229	33
24'	2.29	236	34
25'	2.54	248	36
26'	2.84	264	37
27'	3.16	279	37
28'	3.50	294	38
29'	3.85	317	40
30'	4.22	328	41

Qtveu-SERV = Total equivalent uniform vertical bearing stress to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.

Qnveu-SERV = Net equivalent uniform vertical bearing stress to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.

B' SERV = Effective footing width to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.

Qtveu-STR = Total equivalent uniform vertical bearing stress to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.

Qnveu-STR = Net equivalent uniform vertical bearing stress to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.

B' STR = Effective footing width to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.

For other applicable limit states, perform project specific-analysis using the procedures in ADOT SF-1. ADOT SF-1 (Materials Group memorandum) is found at Materials Group website.

QUANTITIES NOTE:

Quantities are shown for information purposes only. The pay item is measured per square foot of wall.

Quantities are for one L.F. of wall except for horizontal steel lap splices and footing steps.

Steel quantities for horizontal lap splices shall be added for wall segments greater than 30 feet, and add a splice for each additional wall segment greater than 30 feet. Horizontal 1'-0 lap splices occur at construction or contraction joints.

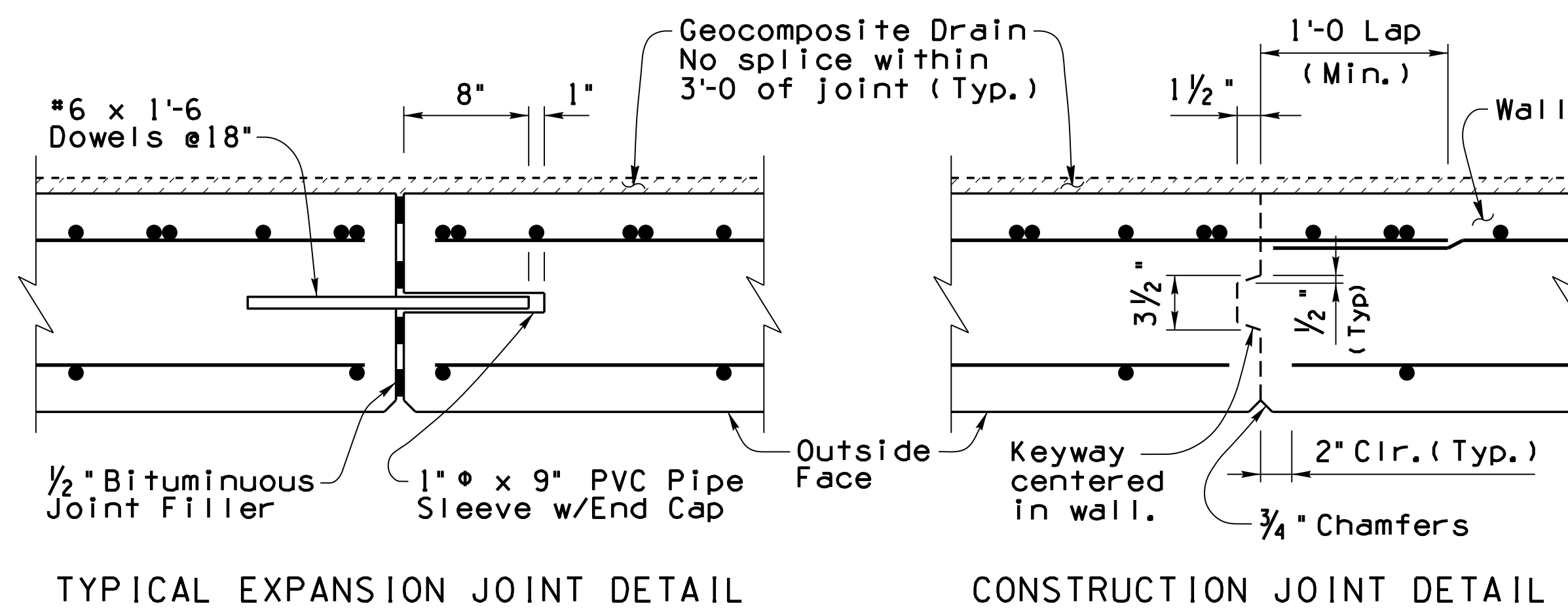
Steel and concrete quantities for footing steps shall be added to those shown in the table.

JOINT NOTES:

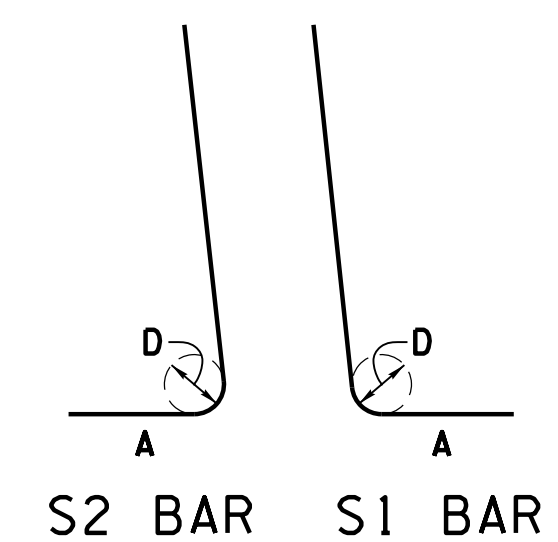
All retaining walls shall have construction joints or contraction joints spaced at not more than 30'-0 apart or as shown. Contraction joints may be substituted for construction joints for wall pours longer than 30'-0.

Expansion joints shall be provided at intervals not exceeding 90'-0.

Footings may be continuous with no joints (except at footing step locations).



Bar Size	Dimension	
	A	D
5	1'-0	3 3/4"
6	1'-0	4 1/2"
7	1'-2	5 1/4"
8	1'-4	6"
9	1'-8	9"
10	1'-10	10"
11	2'-0	11"



NOTE:

For General Notes, Typical Elevations, Sections, and Details see SD 7.01 (1, 3 and 4).

DESIGN APPROVED <i>Celina Aman</i>		ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL	
APPROVED FOR DISTRIBUTION <i>[Signature]</i>		RETAINING WALL (REINFORCED CONCRETE CANTILEVER)	
ROUTE	PROJECT NO.	FA NO.	DRAWING NO. SD 7.01 (2 of 5)
LOCATION			SHEET NO. OF

Note to Designer: The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	Original Issue	S.J.H.	9-10
2	General updates, added limit state values and notes.	D.B.B.	1-15
3			
4			