

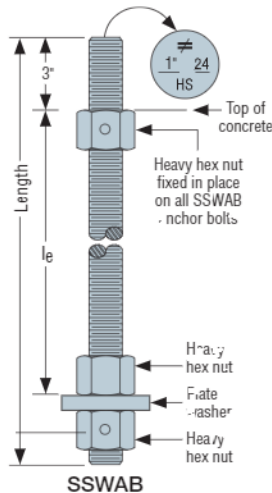
Steel Strong-Wall® Anchorage Solutions

SSWAB Anchor Bolts

SSWAB anchor bolts in ¾" and 1" diameters offer flexibility to meet specific project demands. Inspection is easy; tie head is stamped with a No-Equal® symbol for identification: bolt length, bolt diameter, and optional "HS" for High Strength if specified.

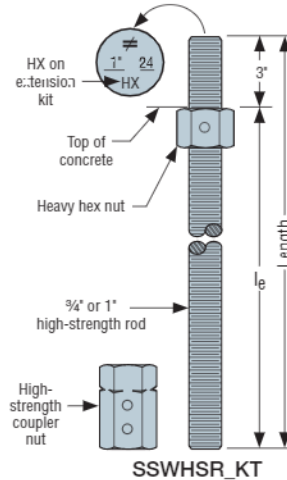
Material: ASTM F1554 Grade 36 High Strength (HS) ASTM A449

An additional nut for template installation is provided with each SSWAB. It may also be used for SSW installation.



SSWHSR Extension Kit

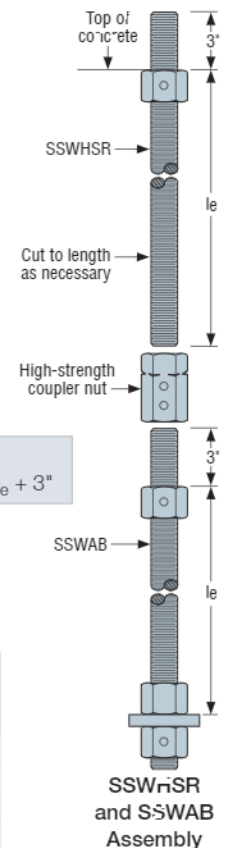
SSWHSR allows for anchorage in tall stemwall applications where full embedment of an SSWAB into the footing is required. The head is stamped for identification like an SSWAB. Kit includes ASTM A449 high-strength rod with heavy hex nut fixed in place and high strength coupler nut. Do not use in place of SSWAB.



$$\text{Total } l_e = \text{SSWHSR } l_e + \text{SSWAB } l_e + 3"$$

Steel Strong-Wall® Width (in.)	Model No.	Dia. (in.)	Total Length (in.)	l_e (in.)
12	SSWAB¾x24	¾	24	19
	SSWAB¾x24HS	¾	24	19
	SSWAB¾x30	¾	30	25
	SSWAB¾x30HS	¾	30	25
	SSWAB¾x36HS	¾	36	31
15, 18, 21, 24	SSWAB1x24	1	24	19
	SSWAB1x24HS	1	24	19
	SSWAB1x30	1	30	25
	SSWAB1x30HS	1	30	25
	SSWAB1x36HS	1	36	31

Steel Strong-Wall Width (in.)	Model No.	Dia. (in.)	Total Length (in.)	l_e (in.)
12	SSWHSR¾x2KT	¾	24	21
	SSWHSR¾x3KT	¾	36	33
15, 18, 21, 24	SSWHSR1x2KT	1	24	21
	SSWHSR1x3KT	1	36	33



Steel Strong-Wall® Anchorage Solutions — 2,500 psi Concrete^{1,2,6}

Design Criteria	Concrete Condition	Anchor Strength ³	SSWAB ¾" Anchor Bolt			SSWAB 1" Anchor Bolt		
			ASD Allowable Tension (lb.)	W (in.)	d_e (in.)	ASD Allowable Tension (lb.)	W (in.)	d_e (in.)
Seismic ⁴	Cracked	Standard	8,800	22	8	16,100	33	11
			14,600	24	8	17,100	35	12
		High-Strength	18,500	36	12	33,000	51	17
			19,900	38	13	35,300	54	18
	Uncracked	Standard	8,800	19	7	15,700	28	10
			9,600	21	7	17,100	30	10
		High-Strength	18,300	31	11	32,300	44	15
			19,900	33	11	35,300	47	16
Wind ⁵	Cracked	Standard	5,100	14	6	6,200	16	6
			7,400	18	6	11,400	24	8
			9,600	22	8	17,100	32	11
			11,400	24	8	21,100	36	12
		High-Strength	13,600	27	9	27,300	42	14
			15,900	30	10	31,800	46	16
			19,900	35	12	35,300	50	17
			19,900	35	12	35,300	50	17
	Uncracked	Standard	5,000	12	6	6,400	14	6
			7,800	16	6	12,500	22	8
			9,600	19	7	17,100	28	10
		High-Strength	12,500	22	8	21,900	32	11
			14,300	24	8	26,400	36	12
			17,000	27	9	31,500	40	14
			19,900	30	10	35,300	43	15

See footnotes on p. 61.

Steel Strong-Wall® Anchorage Solutions

Steel Strong-Wall® Anchorage Solutions — 3,500 psi Concrete^{1,2,6}

Design Criteria	Concrete Condition	Anchor Strength ³	SSWAB ¾" Anchor Bolt			SSWAB 1" Anchor Bolt		
			ASD Allowable Tension (lb.)	W (in.)	d _e (in.)	ASD Allowable Tension (lb.)	W (in.)	d _e (in.)
Seismic ⁴	Cracked	Standard	9,000	20	7	15,700	29	10
			9,600	21	7	17,100	31	11
		High-Strength	18,200	32	11	32,900	46	16
			19,900	34	12	35,300	48	16
	Uncracked	Standard	8,800	17	6	15,700	25	3
			9,600	13	7	17,100	27	9
		High-Strength	18,600	28	10	32,600	40	14
			19,900	30	10	35,300	42	14
Wind ⁵	Cracked	Standard	6,000	14	6	7,300	16	6
			7,300	16	6	13,500	24	8
			9,600	20	7	17,100	29	10
		High-Strength	11,800	22	8	22,700	34	12
			13,500	24	8	27,400	38	13
			17,000	28	10	32,300	42	14
			19,900	32	11	35,300	45	15
	Uncracked	Standard	6,000	12	6	7,500	14	6
			7,500	14	6	12,800	20	7
			9,600	17	6	17,100	25	9
		High-Strength	12,800	20	7	21,300	28	10
			14,800	22	8	26,000	32	11
			16,900	24	8	31,300	36	12
			19,900	27	9	35,300	39	13

Steel Strong-Wall® Anchorage Solutions — 4,500 psi Concrete^{1,2,6}

Design Criteria	Concrete Condition	Anchor Strength ³	SSWAB ¾" Anchor Bolt			SSWAB 1" Anchor Bolt		
			ASD Allowable Tension (lb.)	W (in.)	d _e (in.)	ASD Allowable Tension (lb.)	W (in.)	d _e (in.)
Seismic ⁴	Cracked	Standard	8,700	18	6	16,000	27	9
			9,600	20	7	17,100	29	10
		High-Strength	17,800	29	10	32,100	42	14
			19,900	32	11	35,300	45	15
	Uncracked	Standard	9,100	16	6	15,700	23	8
			9,600	17	6	17,100	25	9
		High-Strength	17,800	25	9	32,500	37	13
			19,900	27	9	35,300	39	13
Wind ⁵	Cracked	Standard	5,400	12	6	6,800	14	6
			8,300	16	6	11,600	20	7
			9,600	18	6	17,100	26	9
		High-Strength	11,600	20	7	21,400	30	10
			13,400	22	8	25,800	34	12
			17,300	26	9	31,000	38	13
			19,900	29	10	35,300	42	14
	Uncracked	Standard	6,800	12	6	6,800	12	6
			8,500	14	6	12,400	18	6
			9,600	16	6	17,100	23	8
		High-Strength	12,400	18	6	21,600	26	9
			14,500	20	7	26,700	30	10
			16,800	22	8	32,200	34	12
			19,900	25	9	35,300	36	12

1. See pp. 63–64 for foundation illustrations showing W and d_e dimensions.

2. Anchorage designs conform to ACI 318-14 Chapter 17 and ACI 318-14 Appendix D with no supplementary reinforcement and cracked or uncracked concrete as noted.

3. Anchor strength indicates required grade of SSWAB anchor bolt. Standard or High-Strength (HS).

4. Seismic indicates Seismic Design Category C through F. Detached 1 and 2 family dwellings in SDC C may use wind anchorage solutions. Seismic anchorage designs conform to ACI 318-14 Section 17.2.3.4.3 and ACI 318-11 Section D.3.3.4.

5. Wind includes seismic design category A and B and detached one- and two-family dwellings in SDC C.

6. Foundation dimensions are for anchorage only. Foundation design (size and reinforcement) by designer. The registered design professional may specify alternate embedment, footing size or anchor bolt.

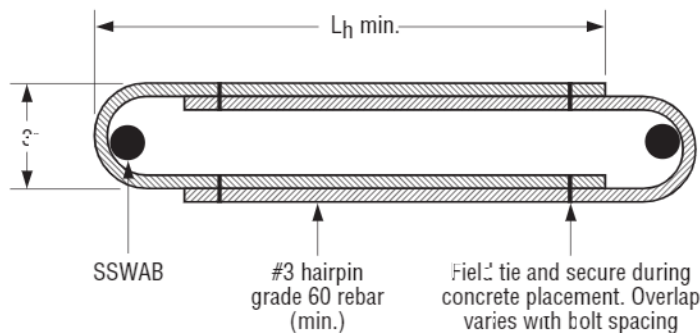
Steel Strong-Wall® Anchorage Solutions

Foundation shear reinforcement to resist shear forces from Strong-Wall shearwalls located at the edge of concrete is shown in the table below. The SSW12 and SSW15 used in wind applications do not require shear reinforcement when the shearwall design shear force is less than the anchorage allowable shear load shown in the table below.

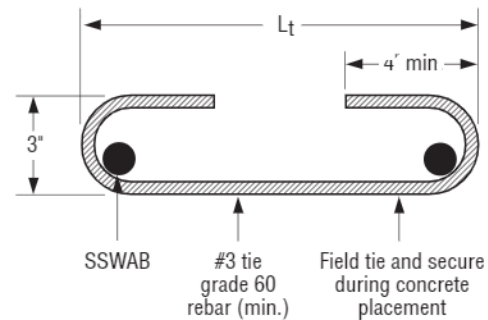
Shear Anchorage Solutions

Model No.	L_t or L_h (in.)	Seismic ³		Wind ⁴		ASD Allowable Shear Load V_u (lb.)			
		Shear Reinforcement	Minimum Curb/Stemwall Width (in.)	Shear Reinforcement	Minimum Curb/Stemwall Width (in.)	6" Minimum Curb/Stemwall		8" Minimum Curb/Stemwall	
						Uncracked	Cracked	Uncracked	Cracked
SSW12	9	(1) #3 Tie	6	See Note 6	—	1,230	880	1,440	1,030
SSW15	12	(2) #3 Ties	6	See Note 6	—	1,590	1,135	1,810	1,295
SSW18	14	(1) #3 Hairpin	8 ⁵	(1) #3 Hairpin	6	Hairpin reinforcement achieves maximum allowable shear load of the Steel Strong-Wall.			
SSW21	15	(2) #3 Hairpins	8 ⁵	(1) #3 Hairpin	6				
SSW24	17	(2) #3 Hairpins	8 ⁵	(1) #3 Hairpin	6				

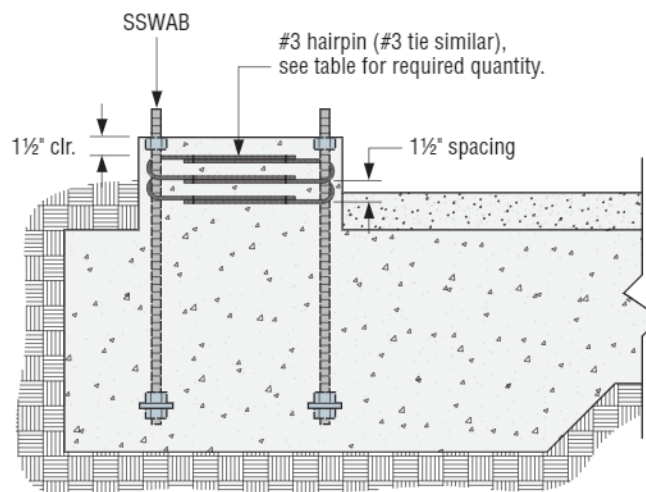
1. Shear anchorage designs conform to ACI 318-14 Chapter 17 and 318-11 and assume minimum $f'_c = 2,500$ psi concrete. See pp. 60-61 for tension anchorage.
2. Shear reinforcement is not required for panels installed on a wood floor, interior foundation applications (panel installed away from edge of concrete), or braced-wall panel applications.
3. Seismic indicates Seismic Design Category C through F. Detached 1 and 2 family dwellings in SDC C may use wind anchorage solutions. Seismic shear reinforcement designs conform to ACI 318-14 Section 17.2.3.5.3 and ACI 318-11 Section D.3.3.5.
4. Wind includes seismic design category A and B and detached one- and two-family dwellings in SDC C.
5. Where noted minimum curb/stemwall width is 6" when standard-strength SSWAB is used.
6. Use (1) #3 tie for SSW12 and SSW15 when the Steel Strong-Wall design shear force exceeds the tabulated anchorage allowable shear load.
7. No. 4 grade 40 shear reinforcement may be substituted for SSW shear anchorage solutions.
8. The registered design professional may specify alternate shear anchorage.



Hairpin Shear Reinforcement



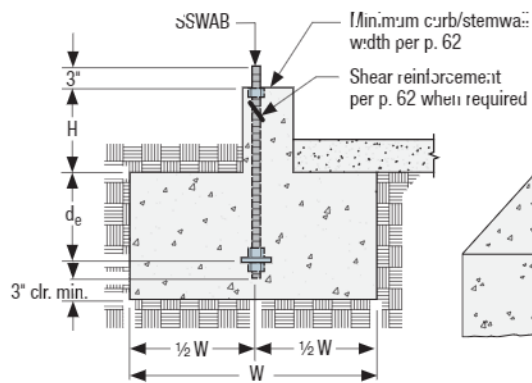
Tie Shear Reinforcement



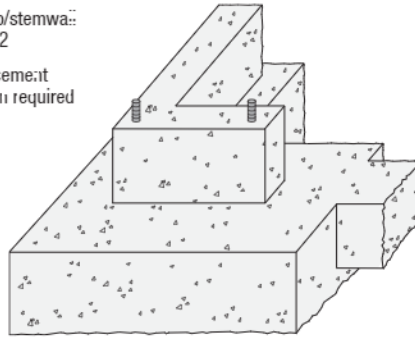
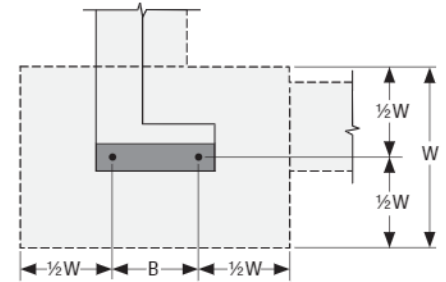
Hairpin Installation
(Garage curb shown, other footing types similar)

Steel Strong-Wall® Anchorage Solutions

Curb or Stemwall Installation

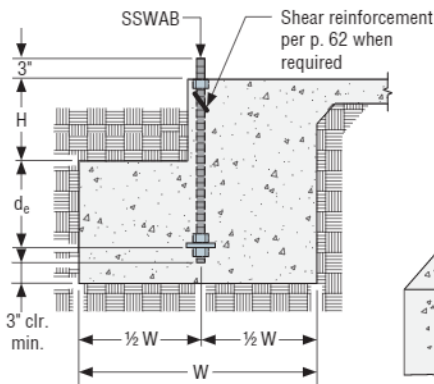


Curb or Stemwall Section View


 Perspective View
 (Slab not shown for clarity)


Footing Plan

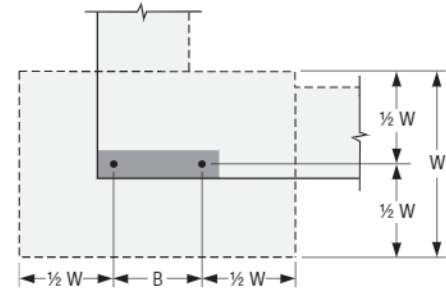
Slab-on-Grade Installation



Slab-on-Grade Section View

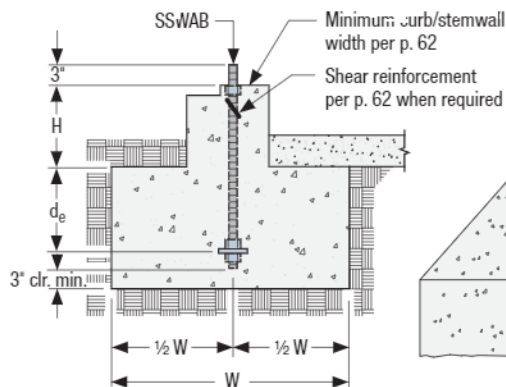


Perspective View

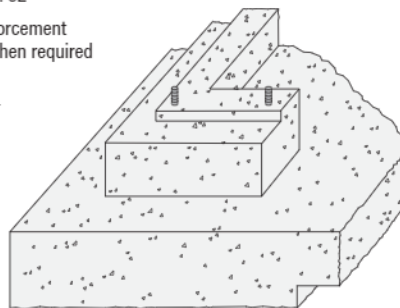


Footing Plan

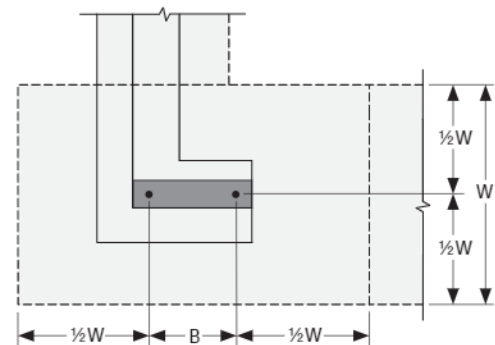
Brick Ledge Installation



Brick Ledge Section View



Perspective View



Footing Plan

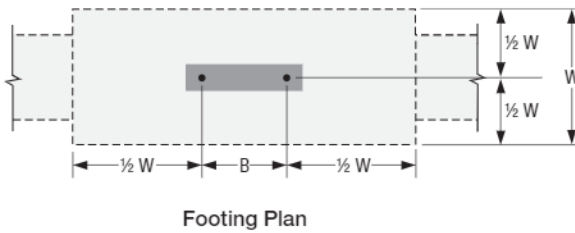
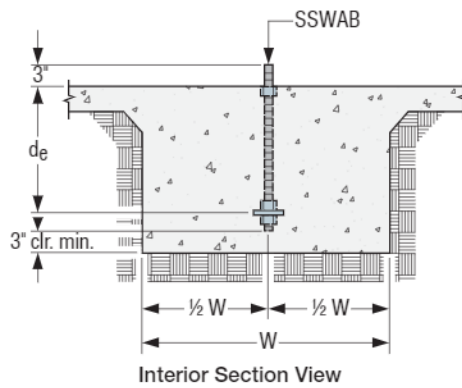
Anchorage Solutions General Notes

1. The designer may specify alternate embedment, footing size or bolt grade.
2. Footing dimensions and rebar requirements are for anchorage only.
3. See pp. 60–61 for W and d_e and p. 64 for B definitions.

Foundation design
 (size and reinforcement) by designer.

Steel Strong-Wall® Anchorage Solutions

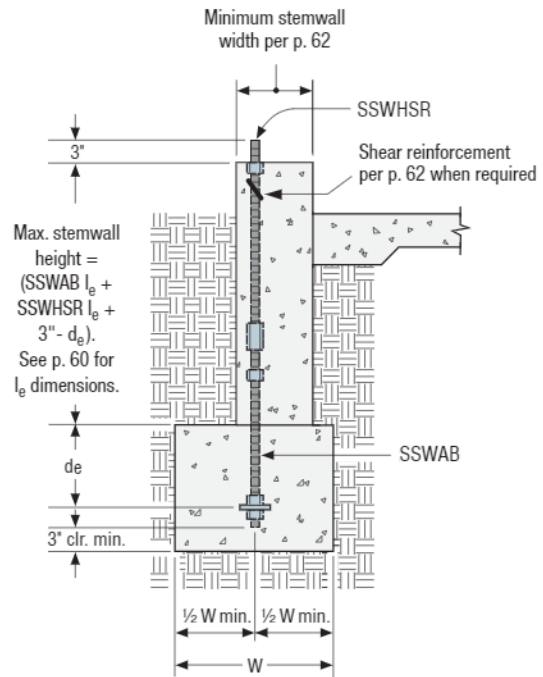
Interior Installation



Anchorage Solutions General Notes

1. The designer may specify alternate embedment, footing size or bolt grade.
2. Footing dimensions and rebar requirements are for anchorage only.
3. See pp. 60–61 for W and d_e definitions.

Stemwall Extension Installation



Steel Strong-Wall® Anchor Bolt Layout

Model No.	Distance from End of Wall to Center of SSWABs, A (in.)	Distance from Center to Center of SSWABs, B (in.)	Distance from Exterior Face of Wall to Center of All SSWABs, C (in.)
SSW12	2 1/8	6 7/8	2
SSW15	2 1/8	9 1/4	1 1/8
SSW18	2 7/8	12 1/4	1 1/8
SSW21	2 7/8	15 1/4	1 1/8
SSW24	2 7/8	18 1/4	1 1/8

