ANCLAJE METÁLICO

CÓDIGO	DESCRIPCION
0904-058-412	ANCLAJE 5/8X4-1/2SRS
0904-058-007	ANCLAJE 5/8 X 7 SRS
0904-058-006	ANCLAJE 5/8 X 6 SRS
0904-038-003	ANCLAJE 3/8 X 3 SRS
0904-012-414	ANCLAJE 1/2 X 4 1/4 SRS
0904-034-614	ANCLAJE 3/4 X 6-1/4 SRS

Características

- El diámetro requerido del agujero es igual al diámetro del anclaje.
- Excelente para ajustar inmediatamente.
- Puede ser cargado inmediatamente.
- Se puede colocar en un agujero sin fondo.
- Tuerca y arandela incluidas en el paquete.
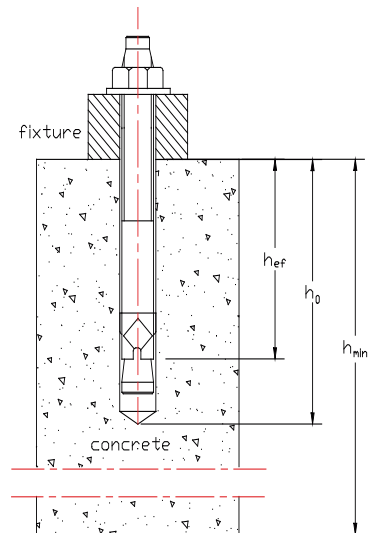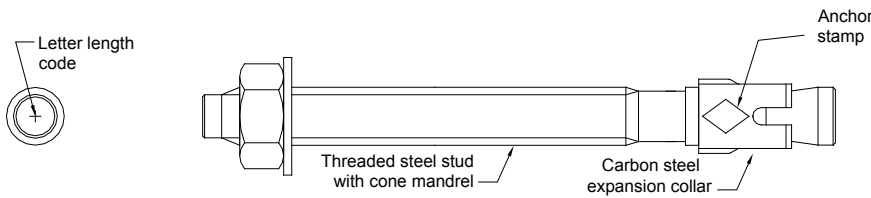
Importante:

- No usar en ladrillo o bloque
- No se recomienda su uso donde las cargas vibratorias son altas.
- Los agujeros de gran tamaño son perjudiciales y reducirán el rendimiento de la carga.

ANCHOR INSTALLATION INFORMATION[1]

SETTING INFORMATION	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER		
			$^1/_4$ inch	$^3/_8$ inch	$^1/_2$ inch
Nominal Diameter	d_0	in. (mm)	1/4 (6.4)	3/8 (9.5)	1/2 (12.7)
Drill Bit Diameter	d_{bit}	in. (mm)	1/4	3/8	1/2
Minimum Hole Depth	h_0	in. (mm)	2 (51)	2 5/8 (67)	2 3/4 (70) 4 (102)
Minimum Base Plate Clearance Hole Diameter [2]	d_c	in. (mm)	5/16 (7.5)	7/16 (11.1)	9/16 (14.3)
Installation Torque (Carbon Steel)	T_{inst}	ft-lbf (N-m)	8 (11)	30 (41)	80 (108)
Embedment Depth	h_{nom}	in. (mm)	1 3/4 (44)	2 3/8 (60)	2 1/2 (64) 3 3/4 (95)
Effective Embedment Depth	h_{ef}	in. (mm)	1 1/2 (38)	2 (51)	2(51) 3 1/4(83)
Minimum Edge Distance	c_{min}	in. (mm)	1 3/4 (44)	2 1/4 (57)	6 1/2 (165) 4 (102)
Minimum Spacing	s_{min}	in. (mm)	2 1/4 (57)	3 3/4 (95)	7 1/4 (184) 5 (127)
Minimum Concrete Thickness	h_{min}	in. (mm)	4 (102)	4 (102)	5 (127) 6 (152)

For **SI:** 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.

[1]The information presented in this table must be used in conjunction with the design requirements of ACI 318 Appendix D.
The clearance must comply with applicable code requirements for the connected element.

FIGURE 1—ANCHOR

FIGURE 2—ANCHOR (INSTALLED)

LENGTH IDENTIFICATION SYSTEM (CARBON STEEL AND STAINLESS STEEL ANCHORS)

Length ID marking on stud	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Length of anchor min ≥ (in.)	2 ½	3	3 ½	4	4 ½	5	5 ½	6	6 ½	7	7 ½	8	8 ½	9	9 ½	10	11	12	13	14	15
Length of anchor max < (in.)	3	3 ½	4	4 ½	5	5 ½	6	6 ½	7	7 ½	8	8 ½	9	9 ½	10	11	12	13	14	15	16

ANCHOR CHARACTERISTIC TENSION STRENGTH DESIGN INFORMATION[1]

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER			
			$^1/_4$ **inch**	$^3/_8$ **inch**	$^1/_2$ **inch**	
Anchor Category	1,2 or 3	-				
Embedment Depth	h_{nom}	in. (mm)	1 3/4 (44)	2 3/8 (60)	2 1/2 (64)	3 3/4 (95)
Steel Strength in Tension (ACI 318 D.5.1)						
Specified Yield Strength (Carbon Steel)	f_{ya}	psi (N/mm²)	50,000 (344)	50,000 (344)	50,000 (344)	
Specified Tensile Strength (Carbon Steel)	f_{uta}	psi (N/mm²)	75,000 (517)	75,000 (517)	75,000 (517)	
Effective Tensile Stress Area	A_{se}	in² (mm²)	0.0220 (14.2)	0.0531(34.3)	0.1018 (65.7)	
Tension Resistance of Steel (Carbon Steel)	N_{sa}	lbf (kN)	1,650 (7.33)	3,982 (17.7)	7,635 (34)	
Strength Reduction Factor-Steel Failure [2]	Φ_{sa}	-	0.75	0.75	0.75	
Concrete Breakout Strength in Tension (ACI 318 D.5.2)						
Effective Embedment Depth	h_{ef}	in. (mm)	1 1/8(29)	1 1/2(38)	1 7/8 (48)	3 1/4 (83)
Critical Edge Distance	c_{ac}	in. (mm)	2 3/4	4	5	6
Effectiveness Factor-Uncracked Concrete	k_{uncr}	-	24(10)	24(10)	24(10)	
Strength Reduction Factor-Concrete Breakout Failure [3]	Φ_{cb}	-	0.65	0.65	0.65	
Pull-Out Strength in Tension (ACI 318 D.5.3)						
Pull-Out Resistance Uncracked Concrete (f''_c = 2,500 psi) [5]	$N_{pn,uncr}$	lbf (kN)	N/A	2,870 (12.8)	3,220 (14.3)	5,530 (24.6)
Strength Reduction Factor-Pullout Failure [6]	Φ_p	-	0.65	0.65	0.65	

For **SI**: 1 inch = 25.4mm, 1lbf = 4.45N, 1 lb/in = 0.175 N/mm, 1 psi = 0.00689 MPa = 0.00689 N/mm², 1 in² = 645 mm², 1 lb/in = 0.175 N/mm.

[1] The information presented in this table must be used in conjunction with the design requirements of ACI 318 Appendix D.

[2] The tabulated value of Φ_{sa} applies when the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used. If the load combinations of Section 1909.2 of the UBC or ACI 318 Appendix C are used, the appropriate value of Φ_{sa} must be determined in accordance with ACI 318 D.4.5. The $^3/_8$ inch, $^1/_2$ inch and $^5/_8$ inch diameter anchors are ductile steel elements as defined in ACI 318 D.1.

[3] The tabulated value of Φ_{cb} applies when both the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. For installations where complying supplementary reinforcement can be verified, the Φ_{cb} factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4 for Condition A are satisfied, the appropriate value of Φ_{cb} must be determined in accordance with ACI 318 D.4.4(c). If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ_{cb} must be determined in accordance with ACI 318 D.4.5.

[4] As described in Section 4.1.3 of this report, N/A (Not Applicable) denotes that pullout resistance is not critical and does not need to be considered.

[5] The characteristic pull-out resistance for greater concrete compressive strengths may be increased by multiplying the tabular value by $(f''_c / 2,500)^{0.5}$.

[6] The tabulated value of Φ_p or Φ_{eq} applies when both the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. Condition B applies where supplementary reinforcement is not provided or where pullout strength governs. For installations where complying supplementary reinforcement can be verified, the Φ factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of ACI 318 Appendix C are used, appropriate value of Φ must be determined in accordance with ACI 318 D.4.5.

ANCHOR CHARACTERISTIC SHEAR STRENGTH DESIGN INFORMATION[1]

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER			
			$^1/_4$ **inch**	$^3/_8$ **inch**	$^1/_2$ **inch**	
Anchor Category	1,2 or 3	-				
Embedment Depth	h_{nom}	in.	1 3/4 (44)	2 3/8 (60)	2 1/2 (64)	3 3/4 (95)
Steel Strength in Shear (ACI 318 D.6.1)						
Specified Yield Strength for Shear (Carbon Steel)	f_{ya}	psi (N/mm²)	50,000 (344)	50,000 (344)	50,000 (344)	
Specified Tensile Strength for Shear (Carbon Steel)	f_{uta}	psi (N/mm²)	75,000 (517)	75,000 (517)	75,000 (517)	
Effective Shear Stress Area	A_{se}	in² (mm²)	0.0220 (14.2)	0.0531(34.3)	0.1018 (65.7)	
Shear Resistance of Steel (Carbon Steel)	V_{sa}	lbf (kN)	1105 (4.9)	2,668 (11.9)	5,115 (22.7)	
Strength Reduction Factor-Steel Failure [2]	Φ_{sa}	-	0.65	0.65	0.65	
Concrete Breakout Strength in Shear (ACI 318 D.6.2)						
Nominal Diameter	d_0	in.	1/4 (6.4)	3/8 (9.5)	1/2 (12.7)	
Load Bearing Length of Anchor in Shear	l_e	in.	1 1/4(32)	1 7/8(48)	2(51)	
Strength Reduction Factor-Concrete Breakout Failure[3]	Φ_{cb}	-	0.7	0.7	0.7	
Concrete Pryout Strength in Shear (ACI 318 D.6.3)						
Coefficient for Pryout Strength	k_{cp}	-	2	2	2	
Strength Reduction Factor-Concrete Pryout Failure [4]	Φ_{cp}	-	0.7	0.7	0.7	

For **SI:** 1 inch = 25.4mm, 1 lbf = 4.45 N, 1 psi = 0.00689 MPa = 0.00689 N/mm², 1 in² = 645 mm².

[1] The information presented in this table must be used in conjunction with the design criteria of ACI 318 Appendix D.

[2] The tabulated value of Φ_{sa} applies when the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ_{sa} must be determined in accordance with ACI 318 D.4.5. The $^3/_8$ inch, ½ inch and $^5/_8$ inch diameter anchors are ductile steel elements as defined in ACI 318 D.1.1.

[3] The tabulated value of Φ_{cb} applies when both the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. Condition B applies where supplementary reinforcement is not provided or where pryout strength governs. For installations where complying supplementary reinforcement can be verified, the Φ factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of Section 1605.2.1 of the IBC or ACI 318 9.2 are used and the requirements of ACI 318 D.4.4 for Condition A are satisfied, the appropriate value of Φ must be determined in accordance with ACI 318 D.4.4(c). If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ must be determined in accordance with ACI 318 D.4.5.
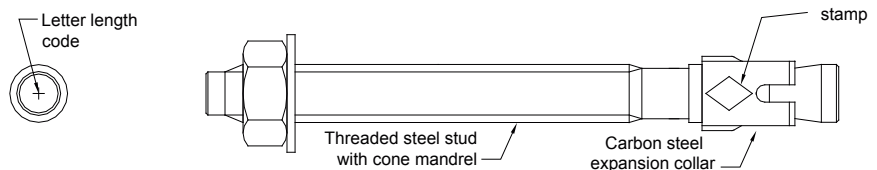
[4] The tabulated value of Φ_{cp} applies when both the load combinations of Section 1605.2.1 of the IBCor ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. Condition B applies where supplementary reinforcement is not provided or where pryout strength governs. For installations where complying supplementary reinforcement can be verified, the Φ factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of ACI 318 Appendix C the appropriate value of Φ must be determined in accordance with ACI 318 D.4.5.
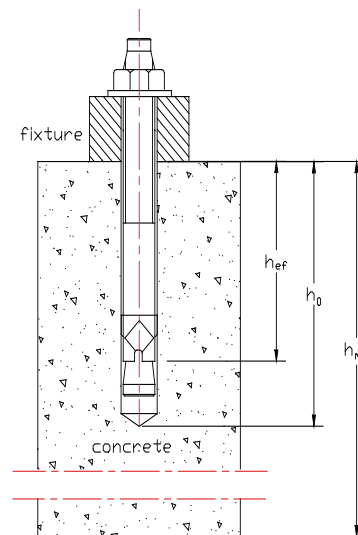
ANCHOR INSTALLATION INFORMATION[1]

SETTING INFORMATION	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER			
			$^5/_8$ inch		$^3/_4$ inch	
Nominal Diameter	d_0	in. (mm)	5/8 (15.9)		3/4 (19)	
Drill Bit Diameter	d_{bit}	in. (mm)	5/8		3/4	
Minimum Hole Depth	h_0	in. (mm)	3 3/4 (95)	5 (127)	4 1/4 (108)	6 (152)
Minimum Base Plate Clearance Hole Diameter [2]	d_c	in. (mm)	11/16 (17.5)		13/16 (20.6)	
Installation Torque (Carbon Steel)	T_{inst}	ft-lbf (N-m)	100 (136)		120 (163)	
Embedment Depth	h_{nom}	in. (mm)	3 3/8 (86)	4 5/8 (117)	4 (102)	5 3/4 (146)
Effective Embedment Depth	h_{ef}	in. (mm)	2 3/4 (70)	4 (102)	3 1/8 (79)	5 (127)
Minimum Edge Distance	c_{min}	in. (mm)	6 (152)	4 1/4 (108)	5 (127)	4 1/2 (114)
Minimum Spacing	s_{min}	in. (mm)	11 (279)	4 1/4 (108)	6 (152)	5 (127)
Minimum Concrete Thickness	h_{min}	in. (mm)	6 (152)	7 (178)	6 (152)	8 1/2 (216)

For **SI:** 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.

[1]The information presented in this table must be used in conjunction with the design requirements of ACI 318 Appendix D.
The clearance must comply with applicable code requirements for the connected element.

FIGURE 1—ANCHOR

FIGURE 2—ANCHOR (INSTALLED)

LENGTH IDENTIFICATION SYSTEM (CARBON STEEL AND STAINLESS STEEL ANCHORS)

Length ID marking on stud	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
Length of anchor min ≥ (in.)	2 ½	3	3 ½	4	4 ½	5	5 ½	6	6 ½	7	7 ½	8	8 ½	9	9 ½	10	11	12	13	14	15
Length of anchor max < (in.)	3	3 ½	4	4 ½	5	5 ½	6	6 ½	7	7 ½	8	8 ½	9	9 ½	10	11	12	13	14	15	16

ANCHOR CHARACTERISTIC TENSION STRENGTH DESIGN INFORMATION[1]

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER				
			$5/8$ inch		$3/4$ inch		
Anchor Category	1,2 or 3	-					
Embedment Depth	h_{nom}	in. (mm)	3 3/8 (86)	4 5/8 (117)	4 (102)	5 3/4 (146)	
Steel Strength in Tension (ACI 318 D.5.1)							
Specified Yield Strength (Carbon Steel)	f_{ya}	psi (N/mm²)	50,000 (344)		50,000 (344)		
Specified Ultimate Strength (Carbon Steel)	f_{uta}	psi (N/mm²)	75,000 (517)		75,000 (517)		
Effective Tensile Stress Area	A_{se}	in² (mm²)	0.1626 (104.9)		0.2376 (150.9)		
Tension Resistance of Steel (Carbon Steel)	N_{sa}	lbf (kN)	12,195 (54.2)		17,820 (79.2)		
Strength Reduction Factor-Steel Failure [2]	Φ_{sa}	-	0.75		0.75		
Concrete Breakout Strength in Tension (ACI 318 D.5.2)							
Effective Embedment Depth	h_{ef}	in. (mm)	2 3/4 (70)	4 (102)	3 1/8 (79)	5 (127)	
Critical Edge Distance	c_{ac}	in. (mm)	6	7	7	8	
Effectiveness Factor-Uncracked Concrete	k_{uncr}		24(10)		24(10)		
Strength Reduction Factor-Concrete Breakout Failure [3]	Φ_{cb}		0.65		0.65		
Pull-Out Strength in Tension (ACI 318 D.5.3)							
Pull-Out Resistance Uncracked Concrete (f'_c = 2,500 psi) [5]	$N_{pn,uncr}$	lbf (kN)	N/A		N/A		
Strength Reduction Factor-Pullout Failure [6]	Φ_p	-	0.65		0.65		

For **SI:** 1 inch = 25.4mm, 1lbf = 4.45N, 1 lb/in = 0.175 N/mm, 1 psi = 0.00689 MPa = 0.00689 N/mm², 1 in² = 645 mm², 1 lb/in = 0.175 N/mm.

[1] The information presented in this table must be used in conjunction with the design requirements of ACI 318 Appendix D.

[2] The tabulated value of Φ_{sa} applies when the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used. If the load combinations of Section 1909.2 of the UBC or ACI 318 Appendix C are used, the appropriate value of Φ_{sa} must be determined in accordance with ACI 318 D.4.5. The $3/8$ inch, $1/2$ inch and $5/8$ inch diameter anchors are ductile steel elements as defined in ACI 318 D.1.

[3] The tabulated value of Φ_{cb} applies when both the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. For installations where complying supplementary reinforcement can be verified, the Φ_{cb} factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4 for Condition A are satisfied, the appropriate value of Φ_{cb} must be determined in accordance with ACI 318 D.4.4(c). If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ_{cb} must be determined in accordance with ACI 318 D.4.5.

[4] As described in Section 4.1.3 of this report, N/A (Not Applicable) denotes that pullout resistance is not critical and does not need to be considered.

[5] The characteristic pull-out resistance for greater concrete compressive strengths may be increased by multiplying the tabular value by $(f'_c / 2,500)^{0.5}$.

[6] The tabulated value of Φ_p or Φ_{eq} applies when both the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. Condition B applies where supplementary reinforcement is not provided or where pullout strength governs. For installations where complying supplementary reinforcement can be verified, the Φ factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of ACI 318 Appendix C are used, appropriate value of Φ must be determined in accordance with ACI 318 D.4.5.

ANCHOR CHARACTERISTIC SHEAR STRENGTH DESIGN INFORMATION[1]

CHARACTERISTIC	SYMBOL	UNITS	NOMINAL ANCHOR DIAMETER				
			$^5/_8$ **inch**		$^3/_4$ **inch**		
Anchor Category	1,2 or 3	-					
Embedment Depth	h_{nom}	in.	3 3/8 (86)	4 5/8 (117)	4 (102)	5 3/4 (146)	
Steel Strength in Shear (ACI 318 D.6.1)							
Specified Yield Strength for Shear (Carbon Steel)	f_{ya}	psi (N/mm²)	50,000 (344)		50,000 (344)		
Specified Ultimate Strength for Shear (Carbon Steel)	f_{uta}	psi (N/mm²)	75,000 (517)		75,000 (517)		
Effective Shear Stress Area	A_{se}	in² (mm²)	0.1626 (104.9)		0.2376 (150.9)		
Shear Resistance of Steel (Carbon Steel)	V_{sa}	lbf (kN)	8,170 (36.3)		11.940 (53.1)		
Strength Reduction Factor-Steel Failure [2]	Φ_{sa}	-	0.65		0.65		
Concrete Breakout Strength in Shear (ACI 318 D.6.2)							
Nominal Diameter	d_0	in.	5/8 (15.9)		3/4 (19)		
Load Bearing Length of Anchor in Shear	l_e	in.	2 7/8(73)		3 1/2(88.9)		
Strength Reduction Factor-Concrete Breakout Failure[3]	Φ_{cb}	-	0.7		0.7		
Concrete Pryout Strength in Shear (ACI 318 D.6.3)							
Coefficient for Pryout Strength	k_{cp}	-	2		2		
Strength Reduction Factor-Concrete Pryout Failure [4]	Φ_{cp}	-	0.7		0.7		

For **SI:** 1 inch = 25.4mm, 1 lbf = 4.45 N, 1 psi = 0.00689 MPa = 0.00689 N/mm², 1 in² = 645 mm².

[1] The information presented in this table must be used in conjunction with the design criteria of ACI 318 Appendix D.

[2] The tabulated value of Φ_{sa} applies when the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ_{sa} must be determined in accordance with ACI 318 D.4.5. The $^3/_8$ inch, ½ inch and $^5/_8$ inch diameter anchors are ductile steel elements as defined in ACI 318 D.1.1.

[3] The tabulated value of Φ_{cb} applies when both the load combinations of Section 1605.2.1 of the IBC or ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. Condition B applies where supplementary reinforcement is not provided or where pryout strength governs. For installations where complying supplementary reinforcement can be verified, the Φ factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of Section 1605.2.1 of the IBC or ACI 318 9.2 are used and the requirements of ACI 318 D.4.4 for Condition A are satisfied, the appropriate value of Φ must be determined in accordance with ACI 318 D.4.4(c). If the load combinations of ACI 318 Appendix C are used, the appropriate value of Φ must be determined in accordance with ACI 318 D.4.5.

[4] The tabulated value of Φ_{cp} applies when both the load combinations of Section 1605.2.1 of the IBCor ACI 318 Section 9.2 are used and the requirements of ACI 318 D.4.4(c) for Condition B are satisfied. Condition B applies where supplementary reinforcement is not provided or where pryout strength governs. For installations where complying supplementary reinforcement can be verified, the Φ factors described in ACI 318 D.4.4 for Condition A are allowed. If the load combinations of ACI 318 Appendix C the appropriate value of Φ must be determined in accordance with ACI 318 D.4.5.