



ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

Legacy report on the 1997 *Uniform Building Code*™

DIVISION: 03—CONCRETE
Section: 03151—Concrete Anchoring

Division: 04—MASONRY
Section: 04081—Masonry Anchoring

PRO-POXY 300 AND PRO-POXY 300 FAST EPOXY
ADHESIVE ANCHORS

UNITEX
3101 GARDNER AVENUE
KANSAS CITY, MISSOURI 64120

SIKA CANADA, INC.
601 DELMAR AVENUE
POINTE CLAIRE, QUEBEC H9R 4A9
CANADA

1.0 SUBJECT

Pro-Poxy 300 and Pro-Poxy 300 Fast Epoxy Adhesive Anchors.

2.0 DESCRIPTION

2.1 General:

Pro-Poxy 300 and Pro-Poxy 300 Fast epoxy adhesive anchors described in this report are stud-type adhesive anchors for use in concrete. Pro-Poxy 300 Fast epoxy adhesive anchors are also used as stud-type adhesive anchors in unreinforced brick walls. The anchors consist of a two-part epoxy adhesive and threaded steel rod, deformed steel reinforcement bar or smooth steel dowel. For installations in unreinforced brick walls, the anchors consist of adhesive; threaded steel rods or deformed steel reinforcement bars; screen tubes; steel sleeves; and steel plates.

2.2 Materials:

2.2.1 Adhesive: Pro-Poxy 300 and Pro-Poxy 300 Fast are two-component (resin and hardener) epoxy adhesives, supplied in dual, side-by-side cartridges separating the resin and hardener, which are combined in a 1:1 ratio by volume when dispensed through a static mixing nozzle. The adhesive components are also available in bulk packaging in 1-, 2-, 10- and 110-gallon (3.8, 7.6, 37.8 and 416 L) quantities. The bulk-packaged components must be dispensed with automatic proportioning equipment that combines the components in a 1:1 ratio by volume, and that dispenses them through a 24-element static mixing nozzle or XLS static mixing nozzle supplied by UNITEX. The adhesive product names and corresponding company names are as shown in Table 1. Pro-Poxy 300 and Pro-Poxy 300 Fast each have a two-year shelf life when stored in the manufacturer's unopened containers at temperatures between 40°F (4.4°C) and 100°F (37.7°C).

2.2.2 Threaded Rods: The threaded steel rods range from 3/8 inch through 1 1/4 inches (9.5 mm through 31.7 mm) in diameter, and must conform to ASTM A 307 [$F_u = 60,000$ psi

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(415 MPa), minimum]; ASTM A 193, Grade B7 [$F_u = 125,000$ psi (860 MPa), minimum]; ASTM F 593, Grade F593A (Alloy Type 304) [$F_u = 115,000$ psi (795 MPa), minimum]; or ASTM F 593, Grade F593E (Alloy Type 316) [$F_u = 115,000$ psi (795 MPa), minimum].

2.2.3 Rebar: Deformed reinforcement bars range from No. 3 to No. 8 and must conform to ASTM A 615, A 616, A 617 or A 706, Grade 40 or 60.

2.2.4 Plain Dowels: Plain steel dowels must comply with ASTM A 36.

2.2.5 Concrete: Normal-weight concrete must have the minimum compressive strength noted in Tables 2 through 7.

2.3 Concrete Anchors:

2.3.1 Design:

Allowable static loads for anchors installed in accordance with this report are shown in Tables 2 through 7 and 10. These values must be adjusted for in-service temperatures in accordance with Figure 1 or 2, and for spacing and edge effects in accordance with Table 8 for Tables 2 through 7. Allowable loads for anchors subjected to combined shear and tension forces are determined by the following equation:

$$\left(\frac{P_s}{P_t}\right)^{5/3} + \left(\frac{V_s}{V_t}\right)^{5/3} \leq 1$$

where:

P_s = Applied service tension load.

P_t = Allowable service tension load.

V_s = Applied service shear load.

V_t = Allowable service shear load.

Anchors are permitted for dead load, live load, seismic load, and wind load applications, as noted in the applicable tables.

2.3.2 Installation: A hole is drilled into the concrete using a drill bit complying with ANSI B212.15-1994 or a matched-tolerance diamond core bit. The hole is cleaned of dust and debris using a nylon brush and oil-free compressed air. During anchor installation, the hole and surrounding area are permitted to be dry, damp, or filled with water. The hole diameter, depth, spacing and concrete edge distance must comply with requirements in Tables 2 through 8. Before insertion into the hole, the adhesive is dispensed from the static mixing nozzle until a uniform grey material is produced. Holes are then filled approximately one-half full with the mixed adhesive. The threaded rod, rebar or smooth dowel, which is free of oil, rust and scale, is inserted into the hole and turned slightly, to ensure complete coverage of the anchor surface, while the anchor is pushed to the bottom of the hole. The adhesive must be flush with the concrete surface. The installed anchor is left undisturbed for the minimum curing time shown in Table 10.

2.4 Unreinforced Brick Wall Anchors:

2.4.1 General: Anchors installed with Pro-Poxy 300 Fast in existing unreinforced brick walls are designed to resist seismic and wind loads only. The existing unreinforced brick walls must have a minimum thickness of 13 inches (330 mm). The anchor is recognized for installation in the three configurations shown in Figure 3. The adhesive, threaded rod and screen tube are used in all anchor installations. Configuration A has a straight threaded rod embedded 8 inches (203 mm) into the wall. Configuration B has a threaded rod bent and installed 13 inches (330 mm) into the wall at a 22.5-degree angle. Configuration C uses a through-bolt, a steel sleeve and a steel plate.

The threaded rod for Configurations A and B is a $3/4$ -inch-diameter (19.1 mm), ASTM A 307 rod. A $5/8$ -inch-diameter (15.9 mm), ASTM A 307 threaded rod is used in Configuration C. No. 5 and No. 6 deformed steel reinforcement bars, complying with ASTM A 615, Grade 60, are alternates to the threaded rod used in Configuration A.

The screen tube consists of steel screen formed into a tube having a $31/32$ -inch (24.6 mm) outside diameter. The steel screen is manufactured from 0.014-inch-thick (0.36 mm) AISI 1010 steel wire woven into a mesh with 0.021-inch-by-0.023-inch (0.53 mm by 0.58 mm) openings. The screen tubes come in 8-inch and 13-inch (203 mm or 330 mm) lengths. The 8-inch-long (203 mm) screen tube is used in Configurations A and C. The 13-inch-long (330 mm) screen tube is used in Configuration B.

The steel sleeve used in the through-bolted connection of Configuration C is manufactured by Hilti (Part No. 00275362). The steel sleeve is 8 inches (203 mm) long and has a plastic plug in one end. A 6-inch-by-6-inch-by- $3/8$ -inch-thick (152 mm by 152 mm by 9.5 mm) ASTM A 36 steel plate is located on the back face of the wall, at the end of the threaded rod of the through-bolted connection.

The allowable shear value for Configuration A is 1,000 pounds (4450 N) for anchors using $3/4$ -inch-diameter (19.1 mm) threaded rod or No. 6 rebar. The allowable shear values for Configurations B and C are 1,000 and 750 pounds (4450 and 3336 N), respectively.

The allowable tension value for Configurations B and C is 1,200 pounds (5338 N).

Allowable values are for short-duration seismic and wind loads, and cannot be increased. The adhesive must be protected from direct weather exposure.

2.4.2 Installation: The anchors are installed in 1-inch-diameter (25 mm) holes that are drilled using rotary drill bits designed for use in concrete or masonry, and a rotary drill or a rotary hammer drill used in the "rotation only" mode. The hole is drilled perpendicular to the wall face, with a depth of 8 inches (203 mm), for Configurations A and C. The hole for the Configuration B anchor is at the angle and embedment described in Section 2.4.1, and is drilled using a guide that is hand-held or attached to the drill. The holes are cleaned with oil-free compressed air and a nylon brush.

The mixed adhesive is injected into the screen tube until the tube is completely full. The tube is then placed into the drilled hole. The threaded rod or rebar of either Configuration A or B, or the steel sleeve of Configuration C, is slowly pushed into the screen tube, forcing the adhesive through the screen and into the hole. Before load application to Configuration A or B can occur, and before installation of the Configuration C anchor can continue, the adhesive must be cured at the temperatures and for the time periods noted in Table 10. After the adhesive on the Configuration C anchor has cured, a $5/8$ -inch-diameter (15.9 mm) standard rotary drill bit is used to drill a hole through the plastic plug in the end of the steel sleeve and completely through the wall. The $5/8$ -inch-diameter (15.9 mm) threaded rod is inserted through the hole, and is attached to the other side of the wall using the metal plate and a nut.

2.4.3 Miscellaneous: Anchor installations require the following:

- Use of the anchors must be approved by the project engineer.
- The anchors must be installed under special inspection in accordance with Section 1701 of the 1997 *Uniform Building Code*TM (UBC) and Section 2.6 of this report.

- c. Edge distances and spacings of anchors must comply with Table 9.
- d. Only wind or seismic loads are imposed on the anchors.
- e. Allowable tension and shear loads are applicable only where in-place shear tests indicate a minimum average net ultimate shear strength of 50 psi (345 kPa).
- f. The ratio of actual shear to allowable shear, plus the ratio of actual tension to allowable tension, must be less than or equal to 1 for Configuration B and C anchors subject to combined shear and tension forces.
- g. One-fourth (25 percent) of the anchors must be tested by a special inspector using a calibrated torque wrench set at a minimum torque of 40, 50 or 60 foot-pounds (54, 60 or 81 N-m) for $1/2$ -, $5/8$ -, or $3/4$ -inch-diameter (12.7, 15.9 or 19.1 mm) reinforcement or threaded rod, respectively. Steel sleeves for anchors in Configuration C are tested prior to installation of threaded rod, using an expansion bolt inserted into the sleeve. No visible deflection or deformation of anchorage is permitted with these torque tests.
- h. Five percent of the tension-resisting anchors must be tested, with a minimum of two tests being required. Where the wall thickness varies, at least one test must be performed on an anchor that has the least embedment. Tests must indicate that bolts can sustain a tension load of 3,000 pounds (13 344 N) for a five-minute period.
- i. For each job, the project engineer or contractor must submit a report to the local building department, verifying that the requirements of Sections 2.4.3.5, 2.4.3.7 and 2.4.3.8 of this report have been met. Tests must be conducted under the supervision of the project engineer or an approved independent testing laboratory. At a minimum, the test report must include:
 1. Test location(s).
 2. Brick/mortar condition.
 3. Bolt movement/elongation.
 4. Embedment depth.
 5. Applied load.

2.5 Special Inspection:

Adhesive anchor installations require special inspection in accordance with Section 1701 of the UBC. The special inspector must record product description (including product name), adhesive expiration date, anchor diameter and steel grade, compliance of drill bit with this report, hole diameter, cleanliness of hole and anchor, adhesive application, anchor embedment, and verification that anchor installation is in accordance with the manufacturer's published installation instructions and this report.

2.6 Identification:

The packaging for the adhesive bears the product designation, name and address of one of the companies noted in this report, lot number traceable to a production date, shelf life, evaluation report number (ICBO ES ER-5000), and installation instructions.

3.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Adhesive Anchors in Concrete and Masonry Elements (AC58), dated November 2001, including creep, in-service temperature, dampness, freezing and thawing, and seismic tests; and data in accordance with the ICC-ES Acceptance Criteria for Unreinforced Masonry Anchors (AC60), dated January 1995, revised May 1995.

4.0 FINDINGS

That the Pro-Poxy 300 and Pro-Poxy 300 Fast epoxy adhesive anchors described in this report comply with the 1997 *Uniform Building Code*™ (UBC), subject to the following conditions:

- 4.1 Anchors are installed in accordance with this report and the manufacturer's installation instructions. Anchor size, embedment, spacings, and edge distances must conform to the pertinent tables in this report.
- 4.2 Anchors are installed in holes predrilled into the substrate using a carbide-tipped masonry drill bit manufactured within the range of the maximum and minimum drill-bit dimensions of ANSI B212.15-1994 for the allowable values set forth in this report.
- 4.3 Special inspection in accordance with Sections 2.4.3.2 and 2.5 is provided for all anchor installations.
- 4.4 Maximum allowable shear and tension loads are as set forth in this report. Allowable loads must be adjusted for temperature in accordance with Figure 1 or Figure 2.
- 4.5 Calculations and details showing compliance with this report are submitted to the building official for approval.
- 4.6 Anchors are not permitted for use in conjunction with fire-resistive construction. Exceptions would be:
 - Anchors resist wind or seismic loading only.
 - For other than wind or seismic loading, special consideration is given to fire exposure conditions.
- 4.7 Adhesive anchors may be used to resist tension and shear forces in overhead or wall installations only if consideration is given to the effects of elevated temperature conditions on anchor performance. Figure 1 and Figure 2 describe load reduction factors for elevated temperatures.
- 4.8 Since an ICC-ES acceptance criteria for evaluating data to determine the performance of adhesive anchors subjected to fatigue or shock loading is unavailable at this time, the use of these anchors under these conditions is beyond the scope of this report.
- 4.9 Adhesive anchors in unreinforced brick walls resist seismic or wind forces only.
- 4.10 Use of anchors in concrete to resist earthquake loads, wind loads, dead loads and live loads is permitted, as noted in the tables. The tabulated allowable load values in Tables 2 and 3 may only be increased for short-term loads, such as wind or earthquake loads, in accordance with Section 1612.3.3 of the UBC.
- 4.11 Since an ICC-ES acceptance criteria for evaluating the performance of adhesive anchors in cracked concrete is unavailable at this time, the use of the anchors is limited to installation in uncracked concrete. Cracking occurs when $f_t > f_r$ due to service loads or deformations.

4.12 The anchors are limited to interior use, except that installation in concrete in severe, moderate or negligible exterior weathering locations, in accordance with Figure 21-1-1 of UBC Standard 21-1, is permitted when stainless steel threaded rods are installed.

4.13 Anchors are permitted in dry-hole, damp-hole, or water-filled-hole installations.

4.14 Adhesives are manufactured in Kansas City, Missouri, under a quality control program with inspections by CEL Consulting (AA-639).

This report is subject to re-examination in two years.

TABLE 1—COMPANY AND PRODUCT NAMES

COMPANY NAME	PRODUCT NAME	
Unitex	Pro-Poxy 300	Pro-Poxy 300 Fast
Sika Canada, Inc.	Sika AnchorFix 4 ^{CA}	Sika AnchorFix 3 ^{CA}

This table has been modified to reflect only those products associated with Sika Canada Inc.

**TABLE 2—PRO-POXY 300 AND PRO-POXY 300 FAST ALLOWABLE TENSION VALUES
FOR THREADED ROD INSTALLED IN NORMAL-WEIGHT CONCRETE^{1,2,3,5,6,7,8}**

ANCHOR DIAMETER (inches)	BIT DIAMETER (inches)	EMBEDMENT, h_v (inches)	ALLOWABLE BOND STRENGTH (pounds)				ALLOWABLE STEEL STRENGTH (pounds)		
			Concrete Strength, f'_c ^{1,4}				A 36 A 307	A 193 Grade B7	F 593A, F 593E
			2,000 psi	2,500 psi	4,000 psi	5,500 psi			
$\frac{3}{8}$	$\frac{7}{16}$	$3\frac{3}{8}$	1,635	1,825	2,065	2,300	2,110	4,550	3,630
$\frac{3}{8}$	$\frac{7}{16}$	$5\frac{5}{8}$	2,455	2,745	2,840	2,935	2,110	4,550	3,630
$\frac{1}{2}$	$\frac{9}{16}$	$4\frac{1}{2}$	2,360	2,635	2,935	3,230	3,750	8,100	6,470
$\frac{1}{2}$	$\frac{9}{16}$	$7\frac{1}{2}$	3,280	3,665	4,255	4,840	3,750	8,100	6,470
$\frac{5}{8}$	$\frac{3}{4}$	$5\frac{5}{8}$	3,310	3,700	4,720	5,735	5,870	12,655	10,130
$\frac{5}{8}$	$\frac{3}{4}$	$9\frac{3}{8}$	4,820	5,390	6,565	7,740	5,870	12,655	10,130
$\frac{3}{4}$	$\frac{7}{8}$	$6\frac{3}{4}$	5,005	5,595	6,470	7,340	8,460	18,220	12,400
$\frac{3}{4}$	$\frac{7}{8}$	$11\frac{1}{4}$	6,780	7,580	8,585	9,590	8,460	18,220	12,460
$\frac{7}{8}$	1	$7\frac{7}{8}$	9,675	10,820	10,820	10,820	11,500	24,800	16,860
1	$1\frac{1}{8}$	9	12,440	13,915	13,915	13,915	15,020	32,400	22,020
$1\frac{1}{4}$	$1\frac{3}{8}$	$11\frac{1}{4}$	17,405	19,465	19,465	19,465	23,480	50,610	34,420

For **SI**: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa, °C = $\frac{5}{9}$ (°F - 32).

¹Allowable load must be the lesser of the bond strength tabulated above and the steel strength tabulated above.

²The allowable tension capacities may be increased for duration of load in accordance with Section 1612.3.3 of the UBC for resistance to earthquake loads or wind loads.

³The tabulated values are for anchors installed at the critical spacing (s) and edge (c) distances described in Table 8. Critical spacing is the least anchor spacing distance at which the tabulated allowable load capacity of an anchor is applicable such that the anchor is not influenced by neighboring anchors. Critical edge distance is the least edge distance at which the tabulated allowable load capacity of an anchor is applicable without applying a load-reduction factor.

⁴The tabulated values are for anchors installed in concrete having the designated compressive strength or higher at the time of installation.

⁵Adhesive anchors experience a reduction in tensile and shear capacity with increased ambient temperatures. The load factors noted in Figure 1 or 2 must be applied to the values noted in the table above when the anchors are installed in locations in which the ambient temperatures may exceed 70°F.

⁶Special inspection in accordance with Section 2.5 must be provided for all anchor installations.

⁷Bond strength loads are based on a safety factor of 4.00.

⁸Minimum member or slab thickness is $1.5 h_v$.

**TABLE 3—PRO-POXY 300 AND PRO-POXY 300 FAST ALLOWABLE SHEAR VALUES
FOR THREADED ROD INSTALLED IN MINIMUM 2,500 psi NORMAL-WEIGHT CONCRETE^{1,2,3,4,5,6,7,8}**

ANCHOR DIAMETER (inches)	BIT DIAMETER (inches)	EMBEDMENT, h_v (inches)	ALLOWABLE BOND STRENGTH (pounds)	ALLOWABLE STEEL STRENGTH (pounds)		
				A 36 or A 307	A 193 Grade B7	F 193A, F 193E
$\frac{3}{8}$	$\frac{7}{16}$	$3\frac{3}{8}$	1,185	710	2,345	1,870
$\frac{1}{2}$	$\frac{9}{16}$	$4\frac{1}{2}$	2,175	1,270	4,170	3,330
$\frac{5}{8}$	$\frac{3}{4}$	$5\frac{5}{8}$	3,530	1,985	6,520	5,220
$\frac{3}{4}$	$\frac{7}{8}$	$6\frac{3}{4}$	5,290	2,860	9,390	6,390
$\frac{7}{8}$	1	$7\frac{7}{8}$	7,355	3,895	12,780	8,680
1	$1\frac{1}{8}$	9	9,645	5,085	16,690	11,340
$1\frac{1}{4}$	$1\frac{3}{8}$	$11\frac{1}{4}$	15,575	7,950	26,070	17,730

For **SI**: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa, °C = $\frac{5}{9}$ (°F - 32).

¹Allowable load must be the lesser of the bond strength tabulated above and the steel strength tabulated above.

²The allowable shear capacities may be increased for duration of load in accordance with Section 1612.3.3 of the UBC for resistance to earthquake loads or wind loads.

³The tabulated values are for anchors installed at the critical spacing (s) and edge (c) distances described in Table 8. Critical spacing is the least anchor spacing distance at which the tabulated allowable load capacity of an anchor is applicable such that the anchor is not influenced by neighboring anchors. Critical edge distance is the least edge distance at which the tabulated allowable load capacity of an anchor is applicable without applying a load-reduction factor.

⁴The tabulated values are for anchors installed in concrete having the designated compressive strength or higher at the time of anchor installation.

⁵Adhesive anchors experience a reduction in tensile and shear capacity with increased ambient temperatures. The load factors noted in Figures 1 or 2 must be applied to the values noted in the table above when the anchors are installed in locations in which the ambient temperatures may exceed 70°F.

⁶Special inspection in accordance with Section 2.5 must be provided for all anchor installations.

⁷Bond strength loads are based on a safety factor of 4.00.

⁸Minimum member or slab thickness is $1.5 h_v$.

**TABLE 4—PRO-POXY 300 AND PRO-POXY 300 FAST ALLOWABLE TENSION VALUES
FOR REINFORCING STEEL INSTALLED IN NORMAL-WEIGHT CONCRETE^{1,2,3,5,6,7,8}**

BAR SIZE	BIT DIAMETER (inches)	EMBEDMENT, h_v (inches)	ALLOWABLE BOND STRENGTH (pounds)				ALLOWABLE STEEL STRENGTH (pounds)	
			Concrete Strength, $f_c'^4$				Tension (pounds)	
			2,000 psi	2,500 psi	4,000 psi	5,500 psi	Grade 40	Grade 60
#3	$\frac{1}{2}$	$3\frac{3}{8}$	1,580	1,770	2,260	2,755	2,200	2,640
#4	$\frac{5}{8}$	$4\frac{1}{2}$	2,750	3,075	3,680	4,290	4,000	4,800
#5	$\frac{3}{4}$	$5\frac{5}{8}$	3,575	4,000	4,700	5,405	6,200	7,440
#6	1	$6\frac{3}{4}$	8,725	9,755	9,755	9,755	8,800	10,560
#7	$1\frac{1}{8}$	$7\frac{7}{8}$	8,210	9,185	9,185	9,185	12,000	14,440
#8	$1\frac{1}{4}$	9	9,535	10,665	10,665	10,665	15,600	18,720

For **SI**: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa, °C = $\frac{5}{9}$ (°F - 32).

¹Allowable load must be the lesser of the bond strength tabulated above and the steel strength tabulated above.

²The allowable tension capacities shall not be increased for duration of load in accordance with Section 1612.3.3 of the UBC for resistance to wind loads. Resistance to earthquake loads is beyond the scope of this report.

³The tabulated values are for anchors installed at the critical spacing (s) and edge (c) distances described in Table 8. Critical spacing is the least anchor spacing distance at which the tabulated allowable load capacity of an anchor is applicable such that the anchor is not influenced by neighboring anchors. Critical edge distance is the least edge distance at which the tabulated allowable load capacity of an anchor is applicable without applying a load-reduction factor.

⁴The tabulated values are for anchors installed in concrete having the designated compressive strength or higher at the time of installation.

⁵Adhesive anchors experience a reduction in tensile and shear capacity with increased ambient temperatures. The load factors noted in Figure 1 or 2 must be applied to the values noted in the table above when the anchors are installed in locations in which the ambient temperatures may exceed 70°F.

⁶Special inspection in accordance with Section 2.5 must be provided for all anchor installations.

⁷Bond strength loads are based on a safety factor of 4.00.

⁸Minimum member or slab thickness is $1.5 h_v$.

**TABLE 5—PRO-POXY 300 AND PRO-POXY 300 FAST ALLOWABLE SHEAR VALUES
FOR REINFORCING STEEL INSTALLED IN MINIMUM 2,500 psi NORMAL-WEIGHT CONCRETE^{1,2,3,4,5,6,7,8}**

BAR SIZE	BIT DIAMETER (inches)	EMBEDMENT, h_v (inches)	ALLOWABLE BOND SHEAR STRENGTH (pounds)	ALLOWABLE STEEL SHEAR STRENGTH (pounds)	
				Grade 40	Grade 60
#3	$\frac{1}{2}$	$3\frac{3}{8}$	1,925	2,200	2,640
#4	$\frac{5}{8}$	$4\frac{1}{2}$	3,425	4,000	4,800
#5	$\frac{3}{4}$	$5\frac{5}{8}$	4,370	6,200	7,440
#6	1	$6\frac{3}{4}$	7,735	8,800	10,560
#7	$1\frac{1}{8}$	$7\frac{7}{8}$	10,510	12,000	14,400
#8	$1\frac{1}{4}$	9	13,740	15,600	18,720

For **SI**: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa, °C = $\frac{5}{9}$ (°F - 32).

¹Allowable load must be the lesser of the bond strength tabulated above and the steel strength tabulated above.

²The allowable shear capacities shall not be increased for duration of load in accordance with Section 1612.3.3 of the UBC for resistance to wind loads. Resistance to earthquake loads is beyond the scope of this report.

³The tabulated values are for anchors installed at the critical spacing (s) and edge (c) distances described in Table 8. Critical spacing is the least anchor spacing distance at which the tabulated allowable load capacity of an anchor is applicable such that the anchor is not influenced by neighboring anchors. Critical edge distance is the least edge distance at which the tabulated allowable load capacity of an anchor is applicable without applying a load-reduction factor.

⁴The tabulated values are for anchors installed in concrete having the designated compressive strength or higher at the time of anchor installation.

⁵Adhesive anchors experience a reduction in tensile and shear capacity with increased ambient temperatures. The load factors noted in Figure 1 or 2 must be applied to the values noted in the table above when the anchors are installed in locations in which the ambient temperatures may exceed 70°F.

⁶Special inspection in accordance with Section 2.5 must be provided for all anchor installations.

⁷Bond strength loads are based on a safety factor of 4.00.

⁸Minimum member or slab thickness is $1.5 h_v$.

**TABLE 6—PRO-POXY 300 AND PRO-POXY 300 FAST ALLOWABLE TENSION VALUES
FOR SMOOTH DOWELS INSTALLED IN MINIMUM 3,000 psi NORMAL-WEIGHT CONCRETE^{1,2,3,4,5,6,7,8}**

DOWEL DIAMETER (inch)	BIT DIAMETER (inches)	EMBEDMENT, h_v (inches)	ALLOWABLE BOND STRENGTH (pounds)	ALLOWABLE STEEL STRENGTH (pounds)
$\frac{1}{2}$	$\frac{9}{16}$	$4\frac{1}{2}$	1,510	3,750
$\frac{5}{8}$	$\frac{3}{4}$	$5\frac{5}{8}$	1,690	5,880
$\frac{3}{4}$	$\frac{7}{8}$	$6\frac{3}{4}$	3,000	8,460
$\frac{7}{8}$	1	$7\frac{7}{8}$	3,555	11,500
1	$1\frac{1}{8}$	9	5,820	15,020

For **SI**: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa.

¹Allowable load must be the lesser of the bond strength tabulated above and the steel strength tabulated above.

²The allowable tension capacities shall not be increased for duration of load in accordance with Section 1612.3.3 of the UBC for resistance to wind loads. Resistance to earthquake loads is beyond the scope of this report.

³The tabulated values are for anchors installed at the critical spacing (s) and edge (c) distances described in Table 8. Critical spacing is the least anchor spacing distance at which the tabulated allowable load capacity of an anchor is applicable such that the anchor is not influenced by neighboring anchors. Critical edge distance is the least edge distance at which the tabulated allowable load capacity of an anchor is applicable without applying a load-reduction factor.

⁴The tabulated values are for anchors installed in concrete having the designated compressive strength or higher at the time of anchor installation.

⁵Adhesive anchors experience a reduction in tensile and shear capacity with increased ambient temperatures. The load factors noted in Figure 1 or 2 must be applied to the values noted in the table above when the anchors are installed in locations in which the ambient temperatures may exceed 70°F.

⁶Special inspection in accordance with Section 2.5 must be provided for all anchor installations.

⁷Bond strength loads are based on a safety factor of 4.00.

⁸Minimum member or slab thickness is $1.5 h_v$.

**TABLE 7—PRO-POXY 300 AND PRO-POXY 300 FAST ALLOWABLE SHEAR VALUES
FOR SMOOTH DOWELS INSTALLED IN MINIMUM 2,500 psi NORMAL-WEIGHT CONCRETE^{1,2,3,4,5,6,7,8}**

ANCHOR DIAMETER (inch)	BIT DIAMETER (inches)	EMBEDMENT, h_v (inches)	ALLOWABLE BOND STRENGTH (pounds)	ALLOWABLE STEEL STRENGTH (pounds)
$\frac{1}{2}$	$\frac{9}{16}$	$4\frac{1}{2}$	2,140	1,930
$\frac{5}{8}$	$\frac{3}{4}$	$5\frac{5}{8}$	3,285	3,030
$\frac{3}{4}$	$\frac{7}{8}$	$6\frac{3}{4}$	4,730	4,360
$\frac{7}{8}$	1	$7\frac{7}{8}$	6,430	5,930
1	$1\frac{1}{8}$	9	8,400	7,740

For **SI**: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa, °C = $\frac{5}{9} (°F - 32)$.

¹Allowable load must be the lesser of the bond strength tabulated above and the steel strength tabulated above.

²The allowable tension capacities shall not be increased for duration of load in accordance with Section 1612.3.3 of the UBC for resistance to wind loads. Resistance to earthquake loads is beyond the scope of this report.

³The tabulated values are for anchors installed at the critical spacing (s) and edge (c) distances described in Table 8. Critical spacing is the least anchor spacing distance at which the tabulated allowable load capacity of an anchor is applicable such that the anchor is not influenced by neighboring anchors. Critical edge distance is the least edge distance at which the tabulated allowable load capacity of an anchor is applicable without applying a load-reduction factor.

⁴The tabulated values are for anchors installed in concrete having the designated compressive strength or higher at the time of anchor installation.

⁵Adhesive anchors experience a reduction in tensile and shear capacity with increased ambient temperatures. The load factors noted in Figure 1 or 2 must be applied to the values noted in the table above when the anchors are installed in locations in which the ambient temperatures may exceed 70°F.

⁶Special inspection in accordance with Section 2.5 must be provided for all anchor installations.

⁷Bond strength loads are based on a safety factor of 4.00.

⁸Minimum member or slab thickness is $1.5 h_v$.

TABLE 8—PRO-POXY 300 AND PRO-POXY 300 FAST ALLOWABLE SPACING AND EDGE DISTANCE FOR ANCHORS INSTALLED IN CONCRETE^{1,2}

PARAMETER		CRITICAL DISTANCE FOR FULL ANCHOR CAPACITY	MINIMUM DISTANCE FOR REDUCED ANCHOR CAPACITY	REDUCTION FACTOR, R^3
Spacing between anchors, s		$24D$	$8D$	0.90
Edge distance, c	Tension loads	$12D$	See Table 8A	See Table 8A
	Shear loads—threaded rod	$12D$	$4D$	0.21
	Shear loads—smooth dowels	$12D$	$4D$	0.21
	Shear loads—rebar	$16D$	$4D$	0.15

D = Anchor diameter.

¹The listed values are the least distances required to obtain the load values in Tables 2, 3, 4, 5, 6 and 7. When adjacent anchors are different sizes or embedments, use the largest value for D .

²The listed values are the distances at which the anchor can be installed when load values are adjusted in accordance with Footnote 3.

³Load values in Tables 2, 3, 4, 5, 6 and 7 must be multiplied by the reduction factor, R , when anchors are installed at the minimum distance listed. Linear interpolation is permitted for spacing between critical and minimum distances. Multiple reduction factors for more than one spacing or edge distance are calculated separately and multiplied.

TABLE 8A—PRO-POXY 300 AND PRO-POXY 300 FAST MINIMUM EDGE DISTANCE REQUIREMENTS FOR TENSION LOADS FOR ANCHORS INSTALLED IN CONCRETE

ANCHOR DIAMETER (inches)	MINIMUM EDGE DISTANCE, c_{min} (inches) ¹	REDUCTION FACTOR, R^2
$\frac{3}{8}$	$1\frac{1}{2}$	0.70
$\frac{1}{2}$	$1\frac{3}{4}$	0.66
$\frac{5}{8}$	$1\frac{3}{4}$	0.70
$\frac{3}{4}$	$1\frac{3}{4}$	0.70
$\frac{7}{8}$	$3\frac{1}{2}$	0.70
1	4	0.70
$1\frac{1}{4}$	5	0.70

For **SI**: 1 inch = 25.4 mm.

¹The listed values are the minimum distances at which the anchor can be installed when load values are adjusted in accordance with Footnote 3.

²Load values in Tables 2, 3, 4, 5, 6 and 7 are multiplied by the reduction factor, R , when anchors are installed at the minimum edge distance listed. Use linear interpolation for edge distances between critical and minimum distances. Multiple reduction factors for more than one spacing or edge distance are calculated separately and multiplied.

TABLE 9—MINIMUM SPACING AND EDGE DISTANCE FOR ANCHORS INSTALLED IN UNREINFORCED MASONRY

ANCHOR CONFIGURATION	MINIMUM VERTICAL SPACING (inches)	MINIMUM HORIZONTAL SPACING (inches)	MINIMUM EDGE SPACING (inches)
A	18	18	24
B	18	24	16
C	18	18	24

For **SI**: 1 inch = 25.4 mm.

TABLE 10—CURE TIMES FOR ADHESIVE ANCHORS¹

MINIMUM SUBSTRATE TEMPERATURE (°F)	CURE TIMES (hours) ²		MINIMUM CURE TIME (hours) ³	
	Pro-Poxy 300	Pro-Poxy 300 Fast	Pro-Poxy 300	Pro-Poxy 300 Fast
40	NP	48	NP	24
65	48	36	24	8
70	36	24	12	2.5
80	24	12	6	2
100	12	6	4	1

For **SI**: °C = 5/9 (°F - 32).

NP = Not permitted at this temperature.

¹Adhesives shall be installed in substrates at temperatures permitted in this table.

²Cure time is the time required before the epoxy reaches ultimate strength. Minimum cure time is the minimum time required before the design or allowable load may be applied.

³Anchors are to be undisturbed during the minimum cure time.

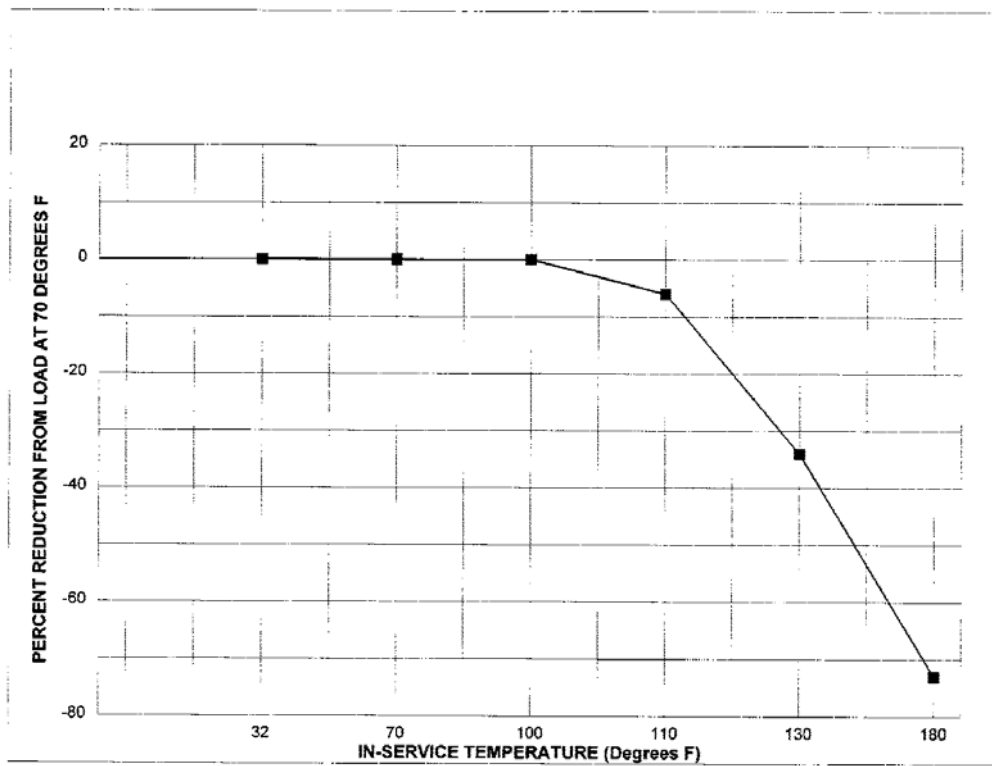


FIGURE 1—LOAD REDUCTION BASED ON IN-SERVICE TEMPERATURE—ANCHORS INSTALLED AT 70°F

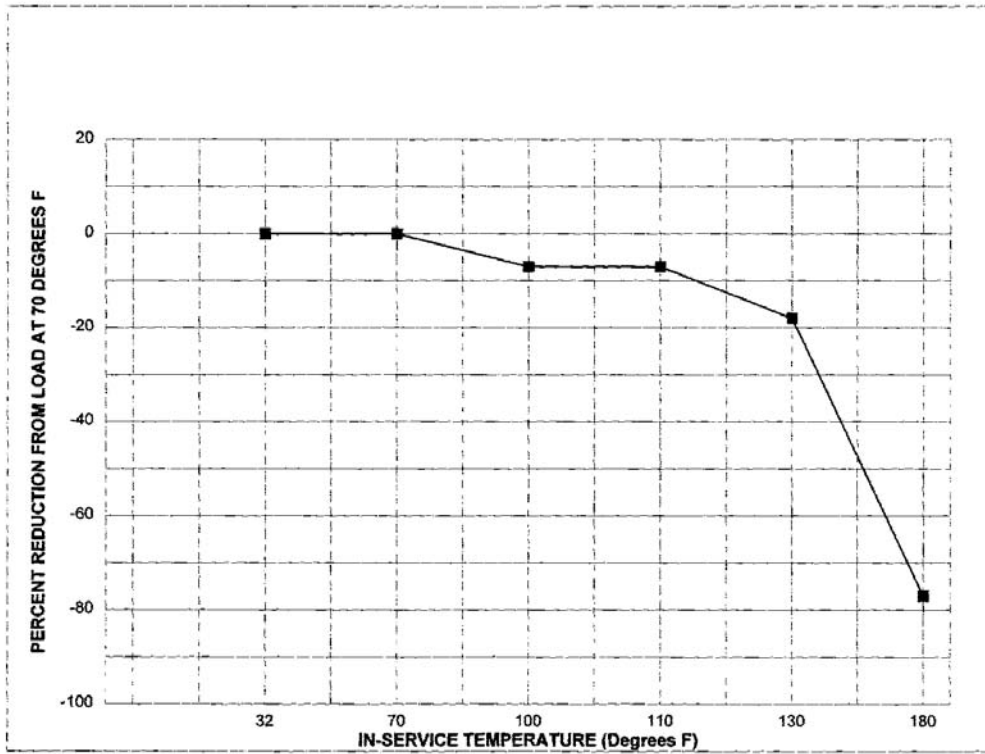


FIGURE 2—LOAD REDUCTION BASED ON IN-SERVICE TEMPERATURE—ANCHORS INSTALLED AT 40°F

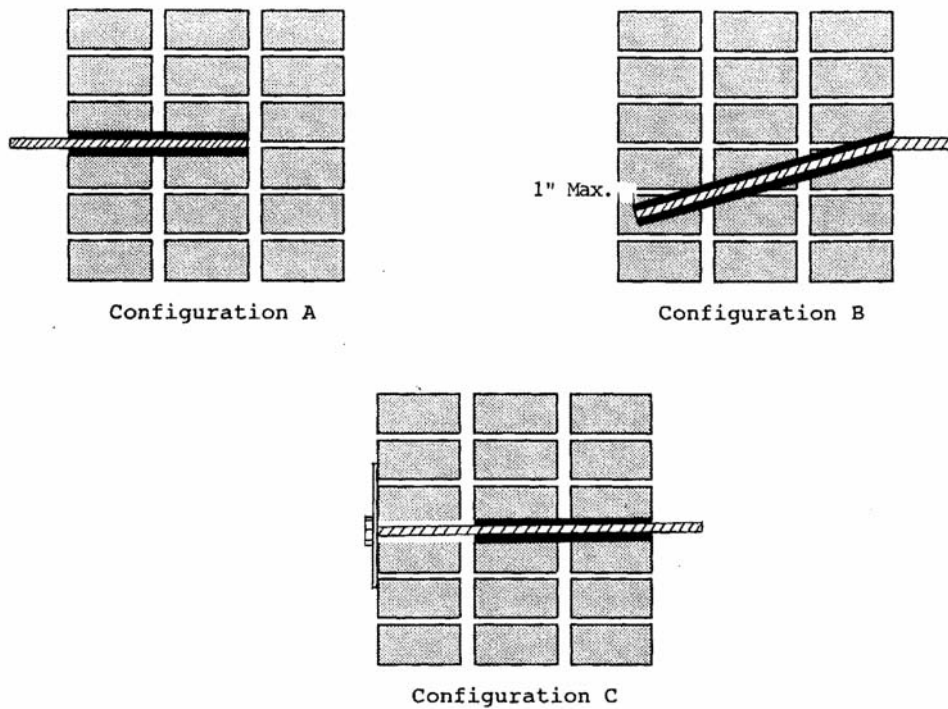


FIGURE 3—INSTALLATION CONFIGURATIONS