High-Strength Doweling Epoxy

Doweling

ULTRABOND® 1300

Product Description

ULTRABOND® 1300 is a two-component structural epoxy system that offers exceptional strength in anchoring and doweling applications in uncracked concrete using threaded rod and rebar. It may be used in temperatures between 40 °F to 110 °F (4 °C to 43 °C) and this specially formulated nonabrasive epoxy system works extremely well in bulk dispensing pumps.

General Uses & Applications

- Adhering dowel bars and tie bars for full depth concrete pavement repairs
- Short term tensile anchoring and shear loading conditions in accordance with Allowable Stress Design (ASD)
- Bonding raised pavement markers to concrete or asphalt
- Smooth bulk dispensing flowability for efficient application
- Bonding agent for fresh to hardened concrete and hardened to hardened concrete

Advantages & Features

- Moisture insensitive allowing installation and curing in damp environments
- Little or no odor
- Non-sag
- High modulus
- Non-abrasive formulation
- Convenient bulk mix ratio of 1:1 by volume
- Bulk components clearly indicated by container lid color, Resin (white) and Hardener (black)
- Made in the USA in accordance with CFR 49 section 50101

Availability: Adhesives Technology Corp. (ATC) products are available online and through select distributors providing all your construction needs. Please contact ATC for a distributor near you or visit www.atcepoxy.com for online purchasing options or to search for a distributor by zip code.

STANDARDS & APPROVALS

AASHTO M235 / ASTM C881-15
Type I, II, IV & V Grade 3 Class B & C

(See ATC website for current Department of Transportation approvals throughout the United States)

Color & Ratio: Part A (Resin) White: Part B (Hardener) Black, Mix Ratio 1:1 by volume, Mixed Color - Gray

Storage & Shelf Life: 24 months when stored in unopened containers in dry conditions. Store between 40 °F (4 °C) and 95 °F (35 °C).

Installation & Estimation: Manufacturer's Printed Installation Instructions (MPII) are available within this Technical Data Sheet (TDS). Due to occasional updates and revisions, always verify the most current MPII usage. In order to achieve maximum results, proper installation is imperative. An estimating guide for product usage may be found at www.atcepoxy.com.

Clean-Up: Clean uncured materials from tools and equipment with mild solvents. Cured material can only be removed mechanically.

Limitations & Warnings:

- Do not thin with solvents, as this will prevent cure
- For anchoring applications, concrete must be a minimum of 21 days old prior to anchor installation
- Not recommended for any application where there may be a sustained tensile load, including overhead applications

Safety: Please refer to the Safety Data Sheet (SDS) for ULTRABOND 1300. Call ATC for more information at 1 - 800-892-1880.

Specification: Adhesive shall be a two-component, 1:1 ratio by volume, non-sag, epoxy system supplied in pre-measured cartridges or bulk. Adhesive must meet the requirements of ASTM C881 Type I, II, IV & V Grade 3 Class B & C. Adhesive must have a minimum compressive yield strength of 10,520 psi (72.5 MPa) and a minimum compressive modulus of 591,500 psi (4,078 MPa) at 75 °F (24 °C) after a 7 day cure per ASTM D695. Shelf life must be a minimum of 24 months. Adhesive shall be ULTRABOND 1300 from Adhesives Technology Corp., Pompano Beach, Florida.

ORDERING INFORMATION

TABLE 1: ULTRABOND 1300 Adhesive Packaging, Dispensing Tools and Mixing Nozzles[1,2]

Package Size	8.6 fl. oz. (254 ml) Cartridge	21.2 fl. oz. (627 ml) Cartridge	53 fl. oz. (1.6 L) Cartridge	102 fl. oz. (3.0 L) Kit	2 Gallon (7.6 L) Kit	10 Gallon (38 L) Kit	100 Gallon (379 L) Kit
Part #	A9-1300HN	A22-1300N	A53-1300N	BUG-1300	B2G-1300	B5G-1300S-A B5G-1300S-B	B50G-1300S-A B50G-1300S-B
Recommended Mixing Nozzle	T12			N/A		T34HF	
Manual Dispensing Tool	TM9HD	TM22HD	N/A				
Pneumatic Dispensing Tool	N/A	TA22HD-A	TA53HD-A	N/A		Pump[3]	
Case Qty.	12		6	1			
Pallet Qty.	1,116	432	252	75 kits		12 kits	2 kits
Pallet Weight (lb.)	1,725	1,578	1,368	965	2,230	1,650	2,758
SDS Brush Adaptor	BR-SDS						
Brush Extension	BR-EXT						
Nozzle Extension Tubing	TUBE916-EXT						
Retention Wedge	WEDGE						

1. Each cartridge is packaged with one mixing nozzle.
2. Call for bulk packaging availability and lead times.
3. For bulk dispensing pumps, contact ATC for recommended manufacturers.

Brush Extension
BR-EXT


Retention Wedge
WEDGE


Brush
Adaptor
BR-SDS


Nozzle Extension Tubing
TUBE916-EXT

10 in. (254 mm)
T12 Nozzle


15 3/4 in. (400 mm)
T34HF Nozzle


Manual Brush Handle

Small Wire Brush
(See Table 3 part #'s)

Large Wire Brush
(See Table 3 part #'s)


BUG-1300


B5G1300S-A B5G1300S-B


TM9HD


TM22HD


TA22HD-A


One tool, dual grip configurations

TABLE 2: Milwaukee Vacuum Drill Components[1]

Part #	Drill Type	Drill Bit Size in.	Overall Length in.	Useable Length in.
48-20-2102	SDS+	7/16	13	7-7/8
48-20-2106		1/2	13	7-7/8
48-20-2110		9/16	14	9-1/2
48-20-2114		5/8	14	9-1/2
48-20-2118		3/4	14	9-1/2
48-20-2152	SDS-MAX	5/8	23	15-3/4
48-20-2156		3/4	23	15-3/4
48-20-2160		7/8	23	15-3/4
48-20-2164		1	25	17-1/2
48-20-2168		1-1/8	35	27
48-20-2172		1-3/8	35	27
8960-20	8 Gallon Dust Extractor Vacuum			

1. Vacuum drill accessories available from Milwaukee distributors nationwide.

TABLE 3: ULTRABOND 1300 Installation Parameters and Brushes

Threaded Rod in.	Rebar	Drill Bit Diameter in.	Maximum Installation Torque ft-lbs. (N-m)	Brush Part #	Brush Length in.
3/8	----	7/16	15 (20)	B716	6
----	#3	1/2	----	B12	
1/2	----	9/16	30 (41)	B916	
----	#4	5/8	----	B58	
5/8	#5	3/4	60 (82)	B34	
3/4	#6	7/8	105 (142)	B78	
7/8	#7	1	125 (170)	B100	9
1	#8	1 1/8	165 (224)	B118	
----	#10	1 1/2	----	B112	

Revision 9.0

MATERIAL SPECIFICATIONS

ATC has tested and recommends Milwaukee Tool's OSHA compliant, commercially available dust extraction products for use in combination with ULTRABOND 1300 installations in dry concrete (see Table 2 for details). When used in accordance with the manufacturer's instructions, and in conjunction with ULTRABOND 1300, these Vacuum Drill Bits along with the Dust Extractor with HEPA filter as specified by Milwaukee Tool, can completely replace the traditional blow-brush-blow cleaning method used to install threaded rod or rebar (see Installation Instructions (MPII) for more detail). **Important:** Prior to injecting the adhesive, the hole must always be clean, either by using self-cleaning vacuum bits or by using the blow-brush-blow cleaning method with a traditional hammer drill bit and dust shroud. Only vacuuming out a hole drilled with a standard masonry bit is NOT acceptable and will yield lower performance than published for the anchoring/doweling adhesive. For more information, see Respirable Crystalline Silica White Paper at www.atcepoxy.com.

Milwaukee Tool Dust Extraction System

TABLE 4: ULTRABOND 1300 performance to **ASTM C881-15**[1,2,3]

Property	Cure Time	ASTM Standard	Units	Sample Conditioning Temperature	
				Class B	Class C
				40 °F (4) °C	75 °F (24) °C
Gel Time - 60 Gram Mass	----	C881	min	30	23
Pot Life (102 fl.oz.)[4]		----		----	9
Consistency or Viscosity		C881	----	Non-sag	
Compressive Yield Strength	7 day	D695	psi (MPa)	10,490 (72.3)	10,520 (72.5)
	8 hr[5]		psi (MPa)	----	6,370 (43.9)
Compressive Modulus	7 day		psi (MPa)	575,000 (3,964)	591,500 (4,078)
	8 hr[5]		psi (MPa)	----	453,800 (3,129)
Bond Strength Hardened to Hardened	2 day	C882	psi (MPa)	2,520 (17.4)	2,850 (19.7)
	14 day		psi (MPa)	3,070 (21.2)	3,220 (22.2)
Bond Strength Fresh to Hardened			psi (MPa)	1,720 (11.9)	
Tensile Strength[6]	7 day	D638	psi (MPa)	4,140 (28.5)	
Tensile Elongation[6]			%	1.7	
Heat Deflection Temperature		D648	°F (°C)	143 (61.7)	
Water Absorption	14 day	D570	%	0.10	
Linear Coefficient of Shrinkage	48 hr	D2566		0.0006	

1. Results based on testing conducted on a representative lot(s) of product. Average results will vary according to the tolerances of the given property.
2. Full cure is listed above to obtain the given properties for each product characteristic.
3. Results may vary due to environmental factors such as temperature, moisture and type of substrate.
4. Pot life mixed for 3 minutes with a Jiffy Mixer at 75 °F (24 °C). Property not referenced in ASTM C881.
5. Optional eight hour performance testing per ASTM D695.
6. Optional testing for ASTM C881 Grade 3.

TABLE 5: ULTRABOND 1300 **CURE SCHEDULE**[1,2,3]

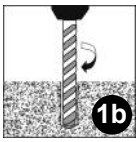
Base Material Temperature °F (°C)	Working Time min	Full Cure Time hr
40 (4)	28	72
75 (24)	20	24
110 (43)	12	18

1. Working and full cure times are approximate, may be linearly interpolated between listed temperatures and are based on cartridge/nozzle system performance.
2. Application Temperature: Substrate and ambient air temperature should be between 40 - 110 °F (4 - 43 °C).
3. When ambient or base material temperature falls below 70 °F (21 °C), condition the adhesive to 70 - 75 °F (21 - 24 °C) prior to use.

INSTALLATION INSTRUCTIONS (MPII)

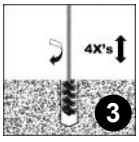
Drilling and Cleaning

Recommended Dust Extractor System for drilling into dry concrete - Attach appropriate size drill bit to the Dust Extractor Vacuum System (see Table 2). The drill bit should conform to ANSI B212.15 and be the appropriate size for the anchor diameter to be installed. Drill the hole to the specified embedment depth. **Skip to Step 5 if using Dust Extractor System.**

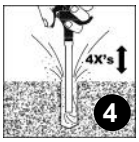


Traditional Drilling Method for dry and damp concrete - Using a rotary hammer drill, and a bit which conforms to ANSI B212.15 and is the appropriate size for the anchor diameter to be installed, drill the hole to the specified embedment depth. **CAUTION:** Always wear appropriate personal protection equipment (PPE) for eyes, ears and skin and avoid inhalation of dust during the drilling and cleaning process.

NOTE: Remove any standing water from hole prior to beginning the cleaning process. If removal of standing water is not possible, please contact ATC for application specific installation instructions. Using oil free compressed air with a minimum pressure of 80 psi (5.5 bar), insert the air wand to the bottom of the drilled hole and blow out the debris with an up/down motion for a minimum of 4 seconds each cycle (4X).



Select the correct wire brush size for the drilled hole diameter (see Table 3), making sure that the brush is long enough to reach the bottom of the drilled hole. Reaching the bottom of the hole, brush in an up/down and twisting motion for 4 cycles (4X). **CAUTION:** The brush should contact the walls of the hole. If it does not, the brush is either too worn or small and should be replaced with a new brush of the correct diameter.



Blow the hole out once more to remove brush debris using oil free compressed air with a minimum pressure of 80 psi (5.5 bar). Insert the air wand to the bottom of the drilled hole and blow out the debris with an up/down motion for a minimum of 4 seconds/cycles (4X). Visually inspect the hole to confirm it is clean. **NOTE:** If installation will be delayed for any reason, cover cleaned holes to prevent contamination.

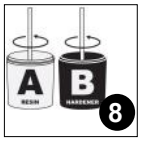
Cartridge Preparation

CAUTION: Check the expiration date on the cartridge to ensure it is not expired. **Do not use expired product!** Remove the protective cap from the adhesive cartridge and insert the cartridge into the recommended dispensing tool. Before attaching mixing nozzle to the cartridge, it is necessary to balance the cartridge by dispensing a small amount of material until both components are flowing evenly. For a cleaner environment, hand mix the two waste components and let cure prior to disposal in accordance with local regulations.

After the cartridge has been prepared, screw on the proper ATC mixing nozzle to the cartridge (see Table 1). Do not modify mixing nozzle. Confirm that internal mixing element is in place prior to dispensing the adhesive. Take note of the air and base material temperatures and review the working/full cure time chart (see Table 5) prior to starting the injection process.

Dispense and waste enough material to ensure uniform gray color before injecting into hole. NOTE: The adhesive must be properly mixed in order to perform as published. **CAUTION:** When changing cartridges, never re-use nozzles. A new nozzle should be used with each new cartridge and steps 5 - 7 should be repeated accordingly.

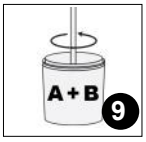
Bulk Preparation



CAUTION: Check the expiration date on each container to ensure it is not expired. **Do not use expired product!** Epoxy materials may separate. This is normal and may be expected when stored over a period of time. Mix only the amount of material that can be used before the pot life expires (see Table 4). Thoroughly mix Part B Hardener prior to pouring and mixing the two components together. **BUG Packaging (102 fl. oz. kit):** After thoroughly mixing Part B Hardener, pour contents of Part B Hardener into Part A Resin component pail. Make certain to scrape the sides of the pail so that you completely empty the contents of component B. **GALLON Packaging (B2G, B10G, B100G):** Pour Part A Resin and Part B Hardener equally at a 1:1 ratio into a third container, adding Part A first then Part B. Mix thoroughly.

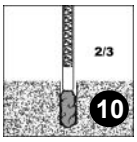
INSTALLATION INSTRUCTIONS (MPII)

Bulk Preparation (continued)

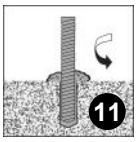


Mix thoroughly with a low speed drill (400 – 600 rpm) with a mix paddle attachment (i.e. Jiffy Mixer). **CAUTION:** mixing the epoxy on high speed may cause air bubbles which may cause application problems. Keep the paddle speed on low and the mix paddle below the surface of the material to avoid entrapping air. Carefully scrape the sides and the bottom of the container while mixing. Proper mixing will take 2 – 3 minutes and when well mixed the material will be uniform in color and free of streaks or lumps. **NOTE:** Due to the high viscosity/ non-sag consistency of this product, a bulk dispensing pump should be used to ensure mixed epoxy is placed to the deepest end of anchor hole and that threaded rod/rebar is fully encapsulated.

Installation and Curing (Vertical Down and Horizontal)



NOTE: The engineering drawings must be followed. For any applications not covered by this document, or if there are any installation questions, please contact Adhesives Technology Corp. Insert the mixing nozzle to the bottom of the hole and fill from the bottom to the top approximately two-thirds full, being careful not to withdraw the nozzle too quickly as this may trap air in the adhesive. Use extension tubing (see Table 1) as necessary to ensure that adhesive is injected at the bottom of the hole first. **NOTE:** When using a pneumatic dispensing tool, ensure that pressure is set at 90 psi (6.2 bar) maximum.



Prior to inserting the threaded rod or rebar into the hole, make sure it is clean and free of oil and dirt and that the necessary embedment depth is marked on the anchor element. Insert the anchor element into the hole while turning 1 - 2 rotations prior to the anchor reaching the bottom of the hole. Excess adhesive should be visible on all sides of the fully installed anchor. For horizontal installations, wedges should be used to center and support the anchor while the adhesive is curing. **CAUTION:** Use extra care with deep embedment or high temperature installations to ensure that the working time has not elapsed prior to the anchor being fully installed.

Do not disturb, torque or apply any load to the installed anchor until the specified full cure time has passed. The amount of time needed to reach full cure is base material temperature and moisture dependent - refer to Table 5 for appropriate full cure time.

Bonding and Coating

Surface Preparation: Surfaces may be prepared by acid etching, shot blasting or other equivalent mechanical means to ensure that bonding surfaces are clean and free of foreign materials and loose particles. It is the user's responsibility to choose the appropriate method of creating the best profile for their specific application (see NACE NO. 6 - SSPC SP13 for reference).

Bonding fresh concrete to hardened concrete: After preparing concrete surfaces described above, use a brush, roller or airless sprayer and apply an even coat of mixed epoxy to the clean and prepared concrete surface. Placement of fresh concrete must be done while epoxy is still tacky. If epoxy hardens prior to concrete placement, epoxy surface will need to be roughened and new epoxy must be mixed and placed.

Bonding hardened concrete to hardened concrete: Using a brush, roller or airless sprayer, apply and even coat of mixed epoxy to both concrete surfaces being sure to fill all gaps between the mating concrete surfaces.

TABLE 6: ULTRABOND 1300 ultimate and allowable **TENSION** loads for **THREADED ROD** in normal-weight concrete[1,2]

Threaded Rod Diameter in.	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Tension Load Based on Bond Strength/Concrete Capacity						Allowable Tension Load Based on Steel Strength[3]		
			f'c ≥ 3,000 psi (20.7 MPa)[4]		f'c ≥ 5,000 psi (34.5 MPa)[4]		f'c ≥ 7,000 psi (48.3 MPa)[4]		ASTM F1554 lbs. (kN) Grade 36	ASTM A193 Grade B7 lbs. (kN)	ASTM F593 304/316 SS lbs. (kN)
			Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)			
3/8	7/16	3 1/2 (89)	9,334 (41.5)	2,334 (10.4)	10,122 (45.0)	2,531 (11.3)	10,937 (48.7)	2,734 (12.2)	2,114 (9.4)	4,556 (20.3)	3,645 (16.2)
1/2	9/16	4 1/2 (114)	14,146 (62.9)	3,537 (15.7)	14,513 (64.6)	3,628 (16.1)	18,400 (81.8)	4,600 (20.5)	3,758 (16.7)	8,099 (36.0)	6,480 (28.8)
5/8	3/4	5 5/8 (143)	19,600 (87.2)	4,900 (21.8)	20,688 (92.0)	5,172 (23.0)	29,286 (130.3)	7,322 (32.6)	5,872 (26.1)	12,655 (56.3)	10,124 (45.0)
3/4	7/8	6 3/4 (171)	25,053 (111.4)	6,263 (27.9)	26,864 (119.5)	6,716 (29.9)	34,762 (154.6)	8,691 (38.7)	8,456 (37.6)	18,224 (81.1)	12,392 (55.1)
7/8	1	7 7/8 (200)	33,374 (148.5)	8,344 (37.1)	34,328 (152.7)	8,582 (38.2)	39,524 (175.8)	9,881 (44.0)	11,509 (51.2)	24,804 (110.3)	16,867 (75.0)
1	1 1/8	9 (229)	41,696 (185.5)	10,424 (46.4)	41,792 (185.9)	10,448 (46.5)	52,143 (231.9)	13,036 (58.0)	15,033 (66.9)	32,398 (144.1)	22,030 (98.0)

1. Allowable bond strength/concrete capacity was calculated using a safety factor of 4.0.
2. The lower value of either the allowable bond strength/concrete capacity or steel strength should be used as the allowable tension value for design.
3. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Tensile = $0.33*F_u*A_{nom}$.
4. Linear interpolation may be used for intermediate concrete compressive strengths.

TABLE 7: ULTRABOND 1300 ultimate and allowable **SHEAR** loads for **THREADED ROD** in normal-weight concrete[1,2]

Threaded Rod Diameter in.	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Shear Load Based on Bond Strength/Concrete Capacity						Allowable Shear Load Based on Steel Strength[3]		
			f'c ≥ 3,000 psi (20.7 MPa)[4]		f'c ≥ 5,000 psi (34.5 MPa)[4]		f'c ≥ 7,000 psi (48.3 MPa)[4]		ASTM F1554 Grade 36 lbs. (kN)	ASTM A193 Grade B7 lbs. (kN)	ASTM F593 304/316 SS lbs. (kN)
			Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)			
3/8	7/16	3 1/2 (89)	6,941 (30.9)	1,735 (7.7)	7,034 (31.3)	1,759 (7.8)	7,143 (31.8)	1,786 (7.9)	1,089 (4.8)	2,347 (10.4)	1,878 (8.4)
1/2	9/16	4 1/2 (114)	8,316 (37.0)	2,079 (9.2)	10,379 (46.2)	2,595 (11.5)	13,097 (58.3)	3,274 (14.6)	1,936 (8.6)	4,172 (18.6)	3,338 (14.8)
5/8	3/4	5 5/8 (143)	15,326 (68.2)	3,832 (17.0)	18,056 (80.3)	4,514 (20.1)	19,052 (84.7)	4,763 (21.2)	3,025 (13.5)	6,519 (29.0)	5,216 (23.2)
3/4	7/8	6 3/4 (171)	22,336 (99.4)	5,584 (24.8)	25,733 (114.5)	6,433 (28.6)	26,073 (116.0)	6,518 (29.0)	4,356 (19.4)	9,388 (41.8)	6,384 (28.4)
7/8	1	7 7/8 (200)	29,365 (130.6)	7,341 (32.7)	31,409 (139.7)	7,852 (34.9)	33,093 (147.2)	8,273 (36.8)	5,929 (26.4)	12,778 (56.8)	8,689 (38.7)
1	1 1/8	9 (229)	36,395 (161.9)	9,099 (40.5)	37,085 (165.0)	9,271 (41.2)	40,950 (182.2)	10,238 (45.5)	7,744 (34.4)	16,690 (74.2)	11,349 (50.5)

1. Allowable bond strength/concrete capacity was calculated using a safety factor of 4.0.
2. The lower value of either the allowable bond strength/concrete capacity or steel strength should be used as the allowable shear value for design.
3. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Shear = $0.17*F_u*A_{nom}$.
4. Linear interpolation may be used for intermediate concrete compressive strengths.

TECHNICAL DATA

ASD Allowable Stress Design

TABLE 8: ULTRABOND 1300 ultimate and allowable **TENSION & SHEAR** loads for **REBAR** in normal-weight concrete[1,2]

Rebar Size	Nominal Drill Bit Diameter in.	Embedment Depth in. (mm)	Tension Load Based on Bond Strength/Concrete Capacity		Allowable Load Based on Steel Strength[3]			
			$f'_c \geq 3{,}000$ psi (20.7 MPa)		Tension		Shear	
			Ultimate lbs. (kN)	Allowable lbs. (kN)	ASTM A615 Grade 60 lbs. (kN)	ASTM A615 Grade 75 lbs. (kN)	ASTM A615 Grade 60 lbs. (kN)	ASTM A615 Grade 75 lbs. (kN)
#3	1/2	3 3/8 (86)	10,025 (44.6)	2,506 (11.1)	2,640 (11.7)	3,300 (14.7)	1,683 (7.5)	1,870 (8.3)
#4	5/8	4 1/2 (114)	15,236 (67.8)	3,809 (16.9)	4,800 (21.4)	6,000 (26.7)	3,060 (13.6)	3,400 (15.1)
#5	3/4	5 5/8 (143)	22,285 (99.1)	5,571 (24.8)	7,440 (33.1)	9,300 (41.4)	4,743 (21.1)	5,270 (23.4)
#6	7/8	6 3/4 (171)	32,993 (146.8)	8,248 (36.7)	10,560 (47.0)	13,200 (58.7)	6,732 (29.9)	7,480 (33.3)
#8	1 1/8	9 (229)	48,408 (215.3)	12,102 (53.8)	18,960 (84.3)	23,700 (105.4)	12,087 (53.8)	13,430 (59.7)
#10	1 3/8	11 (279)	63,822 (283.9)	15,956 (71.0)	30,480 (135.6)	38,100 (169.5)	19,431 (86.4)	21,590 (96.0)

1. Allowable bond strength/concrete capacity was calculated using a safety factor of 4.0.
2. The lower value of either the allowable bond strength/concrete capacity or steel strength should be used as the allowable tension or shear value for design.
3. Allowable steel strengths calculated in accordance with AISC Manual of Steel Construction: Tensile = $(F_y * A_{nom})/2.5$, Shear = $0.17 * F_u * A_{nom.}$