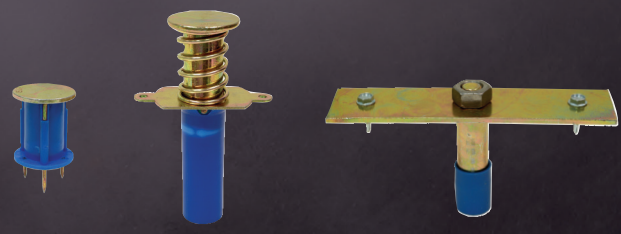




Blue Banger Hanger[®]



Cast-In-Place Internally-Threaded Rod Hangers

(800) 999-5099
www.strongtie.com

Multi-thread, cast-in-place wood-form and metal-deck inserts for cracked and uncracked concrete maximize jobsite efficiency and reduce inventory commitment. Also available in metal-roof-deck insert version, offering a low-profile design that does not interfere with roofing material.



Speed

- Before the concrete pour, Blue Banger Hangers® mount on forms or decking quickly and easily, speeding up installation.
- The 3" blue sleeve on the Metal-Deck insert makes it easy to locate the insert after the pour, even after fireproofing has been applied to the underside of the deck. It also protects the threads, so the rod installs easily every time.
- On the Wood-Form insert, the blue ring acts as a locator after the pour and creates a countersunk recess to protect the threads.



Performance

- Large flanged head provides high tension loads for overhead attachments.
- Full thread engagement prevents the rod from stripping out of the insert.
- Positive connection to the form or deck keeps the insert vertical and in the correct position before and during the pour, ensuring that the insert stays where you put it.



Full thread engagement provides maximum performance.



"No Equal" head stamp allows easy identification before the concrete pour.

Versatility

- Patented multi-thread design allows each insert to accept multiple diameters of threaded rod. Three sizes of Blue Banger Hanger can handle most applications, reducing contractor and distributor inventories.
- Multi-thread design allows threaded rod size to be changed after the anchor is in the concrete.



Multiple rod diameters are no problem with the Blue Banger Hanger.

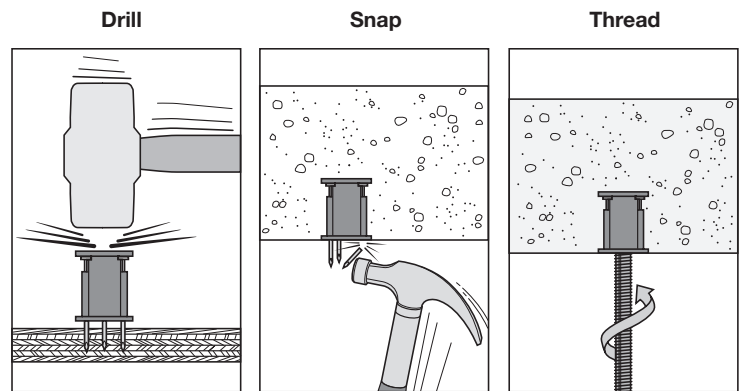


Features

- Code-listed under the 2012 IBC/IRC in accordance with AC446 for cracked and uncracked concrete applications, per ICC-ES ESR-3707
- Blue plastic ring acts as an insert locator when forms are removed
- Plastic ring creates a countersunk recess to keep internal threads clean from concrete residue
- Nails snap off with the swipe of a hammer after the forms are removed
- Multi-thread design allows insert to accept multiple rod diameters



Installation



Drill
Strike the top of the hanger and drive the 3 mounting nails into the forming material until the bottom of the hanger is flush with the bottom of the plywood. The hanger should be sitting 90° from the forming material.

Snap
Once concrete is hardened and forms are stripped, strike the mounting nails to break them off.

Thread
Insert the rod into the sleeve and thread it into the hanger.

Product Data

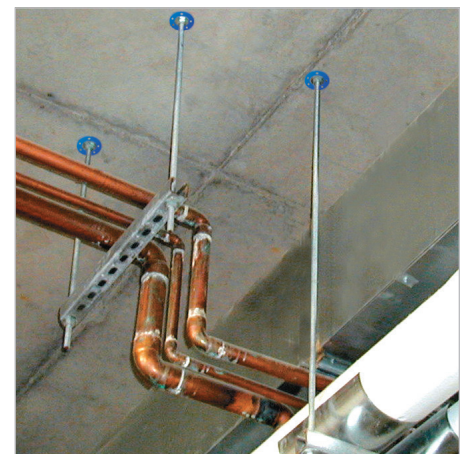
Hanger Type	For Rod Diameter (in)	Model Number	Carton Qty.
Wood-Form Insert	1/4, 3/8, 1/2	BBWF2550	200
	3/8, 1/2, 5/8	BBWF3762	150
	5/8, 3/4	BBWF6275	150

CODES: ICC-ES ESR-3707; Factory Mutual 3024378 (see pipe size limit tables); Underwriters Laboratories File Ex3605 (see pipe size limit tables)



62L1 PIPE HANGER

MATERIAL: Carbon steel
FINISH: Yellow zinc dichromate coating

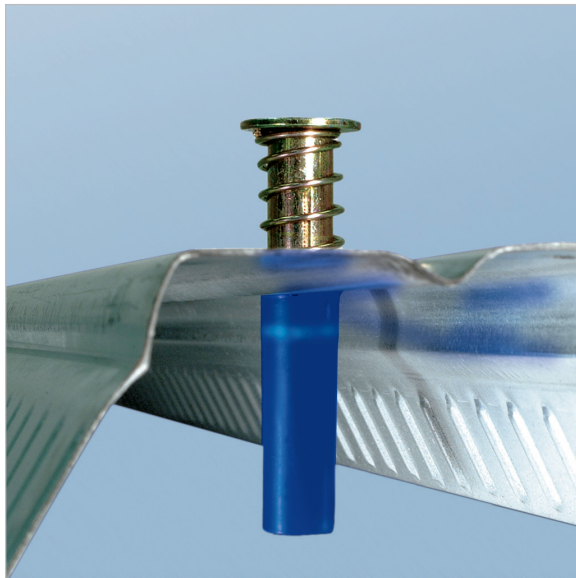


Features

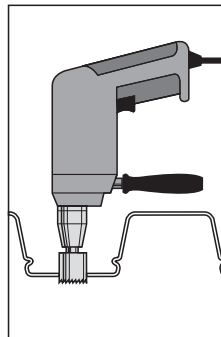
- Code-listed under the 2012 IBC/IRC in accordance with AC446 for cracked and uncracked concrete applications, per ICC-ES-ESR-3707
- 3" plastic sleeve keeps internal threads clean and provides guidance to align threaded rod with the internal threads
- Extended sleeve length allows easy location of insert even with fireproofing on the underside of the deck
- Installed height of 2" allows insert to be used on top of or between deck flutes
- Compression spring keeps insert perpendicular to deck, even if bumped or stepped on after installation
- Multi-thread design allows insert to accept multiple rod diameters



Installation

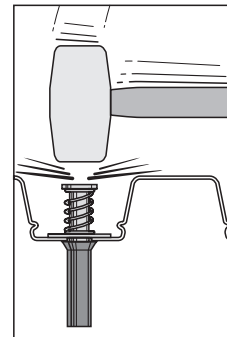


Drill



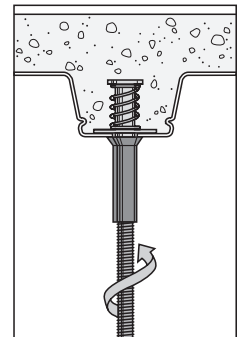
Drill a hole in the metal deck using the appropriate diameter bit as referenced in the table.

Bang



Insert the hanger in the hole and strike the top so that the plastic sleeve is forced through the hole and expands against the bottom side of the deck. The anchor can also be installed by stepping on it.

Thread



Insert the rod into the sleeve and thread it into the hanger.

Product Data

Hanger Type	For Rod Diameter (in)	Deck Hole Diameter (in)	Model Number	Carton Qty.
Metal-Deck Insert	1/4, 3/8, 1/2	13/16 - 7/8	BBMD2550	100
	3/8, 1/2, 5/8	1 1/8 - 1 3/16	BBMD3762	50
	5/8, 3/4	1 3/16 - 1 1/4	BBMD6275	50

CODES: ICC-ES ESR-3707; Factory Mutual 3024378 (see pipe size limit tables); Underwriters Laboratories File Ex3605 (see pipe size limit tables)



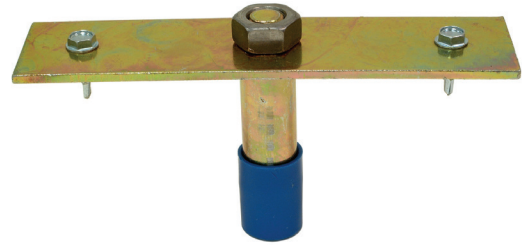
MATERIAL: Carbon steel

FINISH: Yellow zinc dichromate coating

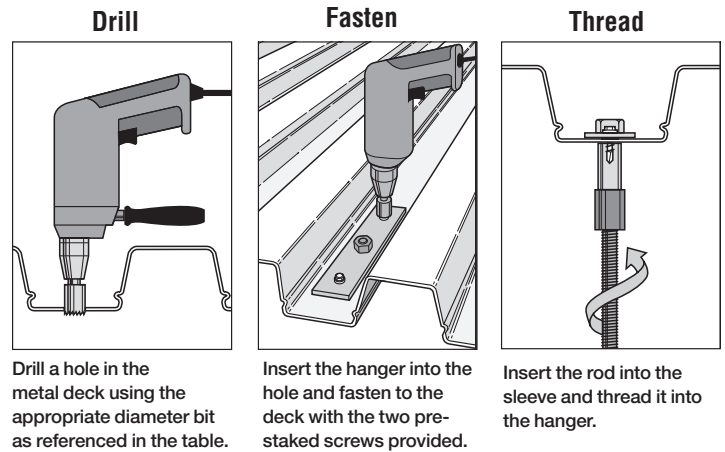
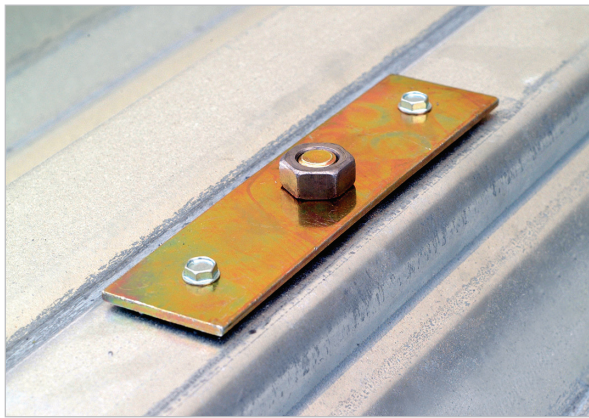


Features

- Low-profile design does not interfere with roofing material.
- Positive attachment to the roof deck prevents spinning and keeps the hanger in position.
- Pre-staked, self-drilling screws allow quick installation.
- Multi-thread design: The insert accepts 3 different rod diameters.



Installation



Product Data

Hanger Type	For Rod Diameter (in.)	Deck Hole Diameter (in.)	Model Number	Carton Qty.
Roof-Deck Insert	¼, ⅜, ½	⅞	BBRD2550	50

MATERIAL: Carbon steel

FINISH: Yellow zinc dichromate coating

Installed Cost Comparison

Blue Banger Hanger® for Wood Forms vs. Drop-In Anchor

Type of Anchor	Time Required to Install the Anchor	Total Cost of Installation*	Savings per 100 Installations when Using BBH Instead	Savings per 1000 Installations when using BBH Instead	% Saved by Using BBH
⅜" Dia. Drop-In	2 min., 8 sec.	\$2.10	\$90.00	\$900.00	43%
½" Dia. Drop-In	2 min., 19 sec.	\$2.36	\$116.00	\$1,160.00	49%
BBWF2550 (Wood-Form version for use with ¼", ⅜" and ½" rod)	10 sec.	\$1.20	—	—	—

Comparison assumes a \$55.00/hour labor rate.

* Includes the cost of the anchor.

Blue Banger Hanger® for Metal Deck vs. Drop-In Anchor

Type of Anchor	Time Required to Install the Anchor	Total Cost of Installation*	Savings per 100 Installations when Using BBH Instead	Savings per 1000 Installations when using BBH Instead	% Saved by Using BBH
⅜" Dia. Drop-In	2 min., 19 sec.	\$2.27	\$24.00	\$240.00	11%
½" Dia. Drop-In	2 min., 30 sec.	\$2.53	\$50.00	\$500.00	20%
BBMD2550 (Metal-Deck version for use with ¼", ⅜" and ½" rod)	18 sec.	\$2.03	—	—	—

Comparison assumes a \$55.00/hour labor rate.

* Includes the cost of the anchor.

Save Time and Reduce Worker Fatigue!

Working on top of the forms or metal deck before concrete is poured is easier and faster than installing drop-in anchors from underneath after the concrete is in place. Consider the realities of working overhead:

- Drilling overhead is hard work, contributing to worker fatigue.
- Moving ladders or maneuvering scissor-lifts slows down work.
- Working overhead poses inherent safety risks.

- Installing anchors after the pour means you may have to deal with fixtures installed by other trades.



No overhead drilling!

Blue Banger Hanger® Cast-In-Place, Internally-Threaded Wood-Form Insert for Cracked and Uncracked Concrete: Tension and Shear Strength Design Data^{1,2,3,4,5,6,8}

Design Information	Symbol	Units	Catalog Number		
			BBWF2550	BBWF3762	BBWF6275
Insert outside diameter ⁷	$d_a(d_o)$	in.	0.811	1.00	1.102
Effective embedment depth	h_{ef}	in.	1.875	1.954	1.875
Insert steel characterization	–	–	Non-ductile		
Modification factor for insert tension strength for inserts located in a region of a concrete member where analysis indicates no cracking at service load levels	$\Psi_{c,N}$	–	1.25	1.25	1.25
Nominal tension strength of single insert in tension as governed by steel strength	$N_{sa,insert}$	lb.	8,415	16,755	18,685
Nominal seismic tension strength of single insert in tension as governed by steel strength	$N_{sa,insert,eq}$	lb.	7,695	8,195	7,695
Nominal steel shear strength of single insert	V_{sa}	lb.	6,810	8,210	8,760
Nominal steel shear strength of single insert for seismic loading	$V_{sa,eq}$	lb.	6,810	8,210	8,760

- Concrete must be normal-weight or lightweight concrete with $f'c$ of **3,000** psi minimum.
- Only the largest size of threaded rod specified for each insert must be used for applications resisting shear loads.
- Design of headed cast-in specialty inserts shall be in accordance with the provisions of ACI 318 Appendix D for cast-in headed anchors. The value of k_c shall be in accordance with the value for cast-in anchors in D.5.2.2.
- Strength reduction factors shall be taken from ACI 318-11 D.4.3 for cast-in headed anchors.
- Strength reduction factor for load combinations of ACI 318 Section 9.2 governed by steel strength shall be taken as 0.65 for tension and 0.60 for shear.
- The concrete tension strength of headed cast-in specialty inserts shall be calculated in accordance with ACI 318 Appendix D.
- Insert OD is the outside diameter of the plastic sleeve.
- The strengths shown in the table are for inserts only. Design professional is responsible for checking threaded rod strength in tension, shear and combined tension and shear, as applicable.

Blue Banger Hanger® Cast-In-Place Internally-Threaded Metal-Deck Insert for Cracked and Uncracked Concrete: Tension and Shear Strength Design Data^{1,2,3,4,5,6,8}

Design Information	Symbol	Units	Catalog Number		
			BBMD2550	BBMD3762	BBMD6275
Insert outside diameter ⁷	$d_a(d_o)$	in.	0.94	1.16	1.29
Effective embedment depth	h_{ef}	in.	1.98	1.98	1.98
Insert steel characterization	–	–	Non-ductile		
Modification factor for insert tension strength for inserts located in a region of a concrete member where analysis indicates no cracking at service load levels	$\Psi_{c,N}$	–	1.25	1.25	1.25
Nominal tension strength of single insert in tension as governed by steel strength	$N_{sa,insert}$	lb.	10,085	16,655	14,200
Nominal seismic tension strength of single insert in tension as governed by steel strength	$N_{sa,insert,eq}$	lb.	7,920	7,920	7,920
Nominal steel shear strength of single insert in the soffit of concrete on metal deck, lower flute	$V_{sa,deck,lower}$	lb.	3,105	2,610	3,345
Nominal steel shear strength of single insert in the soffit of concrete on metal deck, upper flute	$V_{sa,deck,upper}$	lb.	3,500	1,710	5,565
Nominal steel shear strength of single insert in the soffit of concrete on metal deck, for seismic loading, lower flute	$V_{sa,deck,lower,eq}$	lb.	3,105	2,610	3,345
Nominal steel shear strength of single insert in the soffit of concrete on metal deck, for seismic loading, upper flute	$V_{sa,deck,upper,eq}$	lb.	3,500	1,710	5,565

- Concrete must be normal-weight or lightweight concrete with $f'c$ of **3,000** psi minimum.
- Only the largest size of threaded rod specified for each insert must be used for applications resisting shear loads.
- Design of headed cast-in specialty inserts shall be in accordance with the provisions of ACI 318 Appendix D for cast-in headed anchors. The value of k_c shall be in accordance with the value for cast-in anchors in D.5.2.2.
- Strength reduction factors shall be taken from ACI 318-11 D.4.3 for cast-in headed anchors.
- Strength reduction factor for load combinations of ACI 318 Section 9.2 governed by steel strength shall be taken as 0.65 for tension and 0.60 for shear.
- The concrete tension strength of headed cast-in specialty inserts in the soffit of concrete on metal deck assemblies shall be calculated in accordance with ACI 318 Appendix D and Figure 1.
- Insert OD is the outside diameter of the spring.
- The strengths shown in the table are for inserts only. Design professional is responsible for checking threaded rod strength in tension, shear and combined tension and shear, and the influence of bending on tension values when loaded in shear, as applicable.

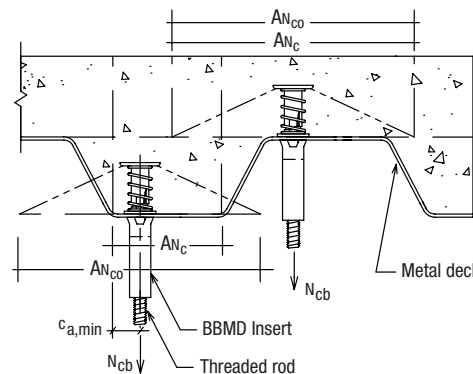


Figure 1. Idealization of concrete on deck; determination of concrete breakout strength in accordance with ACI 318.

Wood-Form Insert: Tension Loads in Normal-Weight or Sand-Lightweight Concrete

Model No.	Threaded Rod Dia. in.	Embed. Depth in. (mm)	Min. Edge Dist. in. (mm)	Min. Spacing in. (mm)	Tension Load Based on Concrete Strength (Normal Weight)		Tension Load Based on Rod Strength (Normal Weight)	Tension Load Based on Concrete Strength (Sand-Lightweight)		Tension Load Based on Rod Strength (Sand-Lightweight)
					f'c ≥ 3,000 psi (20.7 Mpa)		F1554 Grade 36	f'c ≥ 3,000 psi (20.7 Mpa)		F1554 Grade 36
					Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
BBWF2550	¼	2 (51)	7 (178)	8 (203)	6,820 (30.3)	1,705 (7.6)	940 (4.2)	4,280 (19.0)	1,070 (4.8)	940 (4.2)
	⅜						2,105 (9.4)			2,105 (9.4)
	½						3,750 (16.7)			3,750 (16.7)
BBWF3762	⅜	2 (51)	7 (178)	8 (203)	7,360 (32.7)	1,840 (8.2)	2,105 (9.4)	—	—	—
	½						3,750 (16.7)			—
	⅝						5,875 (26.1)			—
BBWF6275	⅝	2 (51)	7 (178)	8 (203)	7,420 (33.0)	1,855 (8.3)	5,875 (26.1)	4,400 (19.6)	1,100 (4.9)	5,875 (26.1)
	¾						8,460 (37.6)			8,460 (37.6)

Wood-Form Insert: Shear Loads in Normal-Weight or Sand-Lightweight Concrete

Model No.	Threaded Rod Dia. in.	Embed. Depth in. (mm)	Min. Edge Dist. in. (mm)	Min. Spacing in. (mm)	Shear Load Based on Concrete Strength (Normal Weight)		Shear Load Based on Rod Strength (Normal Weight)	Shear Load Based on Concrete Strength (Sand-Lightweight)		Tension Load Based on Rod Strength (Sand-Lightweight)
					f'c ≥ 3,000 psi (20.7 Mpa)		F1554 Grade 36	f'c ≥ 3,000 psi (20.7 Mpa)		F1554 Grade 36
					Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
BBWF2550	½	2 (51)	7 (178)	8 (203)	8,750 (38.9)	2,185 (9.7)	1,930 (8.6)	8,600 (38.2)	2,150 (9.6)	1,930 (8.6)
BBWF3762	⅝	2 (51)	7 (178)	8 (203)	10,700 (47.6)	2,675 (11.9)	3,025 (13.4)	—	—	—
BBWF6275	¾	2 (51)	7 (178)	8 (203)	10,460 (46.5)	2,615 (11.6)	4,360 (19.4)	9,260 (41.2)	2,315 (38.9)	4,360 (19.4)

1. Allowable load must be the lesser of the concrete or steel strength.
2. The allowable loads based on concrete strength are based on a factor of safety of 4.0.
3. Allowable loads may not be increased for short-term loading due to wind or seismic forces.

4. Mechanical and plumbing design codes may prescribe lower allowable loads. Verify with local codes.
5. Minimum concrete slab thickness = 2x embedment depth.

Metal-Deck Insert: Tension Loads in Normal-Weight or Sand-Lightweight Concrete over Metal Deck

Model No.	Drill Bit Dia. in.	Threaded Rod Dia. in.	Embed. Depth in. (mm)	Min. Edge Dist. in. (mm)	Min. Spacing in. (mm)	Tension Load Based on Concrete Strength (Install in High Flute)		Tension Load Based on Concrete Strength (Install in Low Flute)		Tension Load Based on Rod Strength
						f'c ≥ 3,000 psi (20.7 Mpa)		f'c ≥ 3,000 psi (20.7 Mpa)		F1554 Grade 36
						Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
BBMD2550	1⅜ - 7/8	¼	2 (51)	7½ (191)	8 (203)	9,320 (41.5)	2,330 (10.4)	3,210 (14.3)	800 (3.6)	940 (4.2)
		⅜								2,105 (9.4)
		½								3,750 (16.7)
BBMD3762	1⅝ - 1⅜	⅜	2 (51)	7¼ (191)	8 (203)	10,540 (46.9)	2,635 (11.7)	3,440 (15.3)	860 (3.8)	2,105 (9.4)
		½								3,750 (16.7)
		⅝								5,875 (26.1)
BBMD6275	1⅜ - 1⅝	⅝	2 (51)	7½ (191)	8 (203)	12,360 (55.0)	3,090 (13.7)	3,445 (15.3)	860 (3.8)	5,875 (26.1)
		¾								8,460 (37.6)

See notes under "Metal-Deck Insert: Shear Loads" on page 8.

Metal-Deck Insert: Shear Loads in Normal-Weight or Sand-Lightweight Concrete over Metal Deck

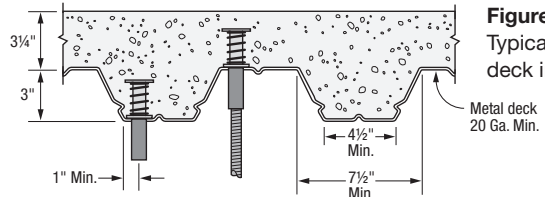


Figure 2. Typical metal deck installation

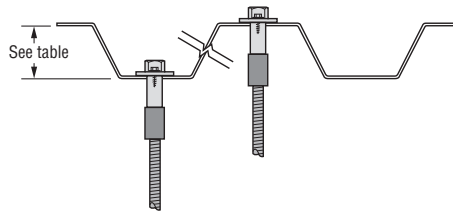
Model No.	Drill Bit Dia. in.	Threaded Rod Dia. in.	Embed. Depth in. (mm)	Min. Edge Dist. in. (mm)	Min. Spacing in. (mm)	Shear Load Based on Concrete Strength (Install in High Flute)		Shear Load Based on Concrete Strength (Install in Low Flute)		Shear Load Based on Rod Strength
						f'c ≥ 3,000 psi (20.7 Mpa)		f'c ≥ 3,000 psi (20.7 Mpa)		F1554 Grade 36
						Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)
BBMD2550	1 3/16 - 7/8	1/2	2 (51)	7 1/2 (191)	8 (203)	9,720 (43.2)	2,430 (10.8)	2,790 (12.4)	700 (3.1)	1,930 (8.6)
BBMD3762	1 1/8 - 1 3/8	5/8	2 (51)	7 1/2 (191)	8 (203)	9,400 (41.8)	2,350 (10.4)	3,360 (14.9)	840 (3.7)	3,025 (13.4)
BBMD6275	1 3/16 - 1 3/8	3/4	2 (51)	7 1/2 (191)	8 (203)	9,720 (43.2)	2,430 (10.8)	3,360 (14.9)	840 (3.7)	4,360 (19.4)

1. Allowable load must be the lesser of the concrete or rod strength.
2. The allowable loads based on concrete strength are based on a factor of safety of 4.0.
3. Allowable loads may not be increased for short-term loading due to wind or seismic forces.
4. Anchors may be installed off-center in the flute, up to 1" from the edge of flute.
5. Shear loads shall be applied flush with metal deck surface.
6. Deck shall be 20-gauge minimum.
7. Mechanical and plumbing design codes may prescribe lower allowable loads. Verify with local codes.

Roof-Deck Insert: Tension Loads in Metal Deck

Model No.	Drill Bit Dia. in.	Threaded Rod Dia. in.	Allowable Tension Based on Deck Strength Load lbs. (kN)		Allowable Tension Load Based on Rod Strength lbs. (kN) F1554 Grade 36
			1 1/2" Deck	3" Deck	
BBRD2550	1 3/16 - 7/8	1/4	150 (0.7)	300 (1.3)	940 (4.2)
		3/8			2,105 (9.4)
		1/2			3,750 (16.7)

Figure 3. Typical roof deck insert installation in metal deck



1. The allowable loads are based on a factor of safety of 4.0.
2. Allowable loads may not be increased for short-term loading due to wind or seismic forces.
3. Acceptability of deck deflection due to imposed loads must be investigated separately.
4. Threaded rod strength must be investigated separately.
5. Anchors may be installed in the top or bottom flute of the metal deck.
6. Deck shall be 20 gauge minimum.

Wood-Form Insert:
Factory Mutual and Underwriters Laboratories Pipe Size Limits

Model No.	Rod Dia. in.	FM Max. Nominal Pipe Size in.	UL Max. Nominal Pipe Size in.
BBWF2550	1/4	N/L	4
	3/8	4	4
	1/2	8	8
BBWF3762	3/8	4	4
	1/2	8	8
	5/8	N/L	8
BBWF6275	5/8	N/L	N/L
	3/4		

1. N/L = Not listed for this pipe size.

Metal-Deck Insert:
Factory Mutual & Underwriters Laboratories Pipe Size Limits

Model No.	Rod Dia. in.	FM Max. Nominal Pipe Size		UL Max. Nominal Pipe Size	
		Install in High Flute in.	Install in Low Flute in.	Install in High Flute in.	Install in Low Flute in.
BBMD2550	1/4	N/L	N/L	4	4
	3/8	4	4	4	4
	1/2	8	N/L	8	4
BBMD3762	3/8	4	4	4	4
	1/2	8	N/L	8	4
	5/8	N/L	N/L	8	4
BBMD6275	5/8	12	N/L	12	N/L
	3/4	12	N/L	12	N/L

1. N/L = Not listed for this pipe size.

Simpson Strong-Tie offers a full line of anchors, adhesives, P.A.T. and drill bits for all of your anchoring and fastening applications. Visit www.strongtie.com or request our full line catalog for complete information.