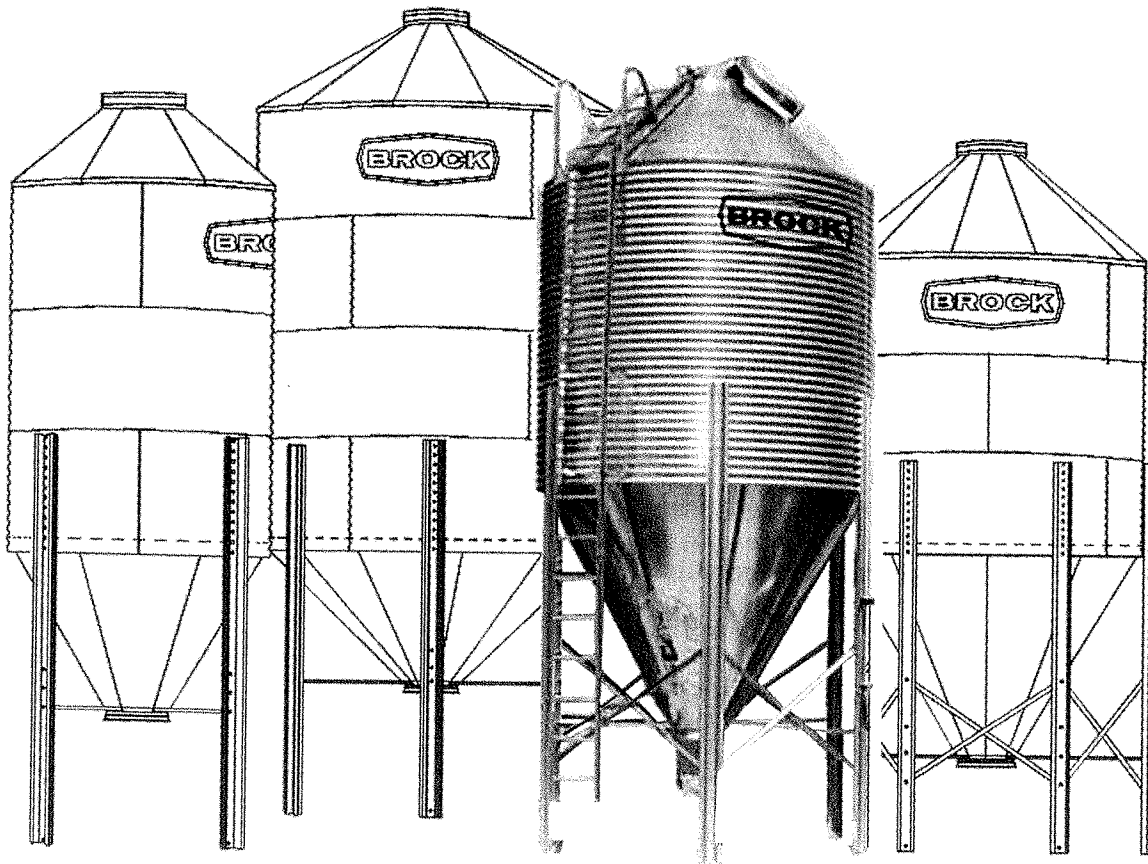


# CONSTRUCTION MANUAL



6', 7', and 9'  
[1 829, 2 134, and 2 743 mm] Dia.  
**HOPPER BINS**



# Foundations



The Foundation shall be placed on undisturbed soil of bearing capacity of at least 3000 psf [14 647 kg/m<sup>2</sup>] or special modification of foundation must be considered. If questions arise, contact a qualified soil engineer.

The Foundation shall be appropriately designed for local soil and frost depth conditions. Sizes given are adequate for resisting 1.5 times the overturning due to a 90 mph [145 km/h] wind acting on 0.6 times the area of bin and seismic zone 1.

The Foundation should be smooth and level to within 1/4" [6.4].

**Concrete in footings** shall have a minimum compressive strength,  $f_c' = 3000$  psi (pounds per square inch) [20 684 kPa] at 28 days.

**Concrete reinforcing steel** shall have a minimum yield strength of 33,000 psi [227 527 kPa].

Concrete should be cured seven days before building bin and 28 days before filling the bin.

## Standard Anchoring

A 5/8" x 8" x 2" Bolt (Part No. 39-20075)\* is available from Brock Grain Systems. Bolts must be embedded 6 1/2" [165].

\* The following bins use 5/8 x 13" Gr. 5 Heavy Hex Head Bolt, embedded 11" [279], with Heavy Nut and Heavy Washer. These are included in the parts kit.

- 6' [1 829] 7 and 8 ring
- 7' [2 134] 6, 7 and 8 ring
- 9' [2 743] 45° 11 ring

**CAUTION!**



**Measure between opposite and adjacent Anchors to be sure they are an equal distance apart before securing. Failure to do so may cause damage to the Bin.**

Item	Description
1	6 x 6 - W1.4 x W1.4 WWF [152 x 152 - MW9 x MW9 WWF] (WWF=Welded Wire Fabric) should be placed at one-half the depth of the concrete
2	6 1/2" [165]
3	2" [50.8]

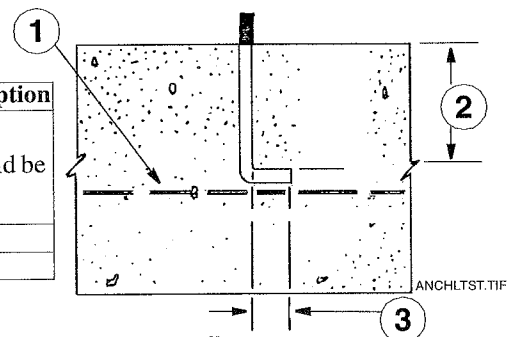


Figure 10. Anchor Bolt Detail

### Alternate Anchoring

**IMPORTANT:** *The alternate anchoring presented on this page is not for 7' [2 134] 67° 6-ring bins, nor for the 9' [2 743] 60° 7-ring bins.*

Install Anchor Bolts before setting bin to insure proper location.

- 1) A 5/8 x 9" Heavy Hex Gr. 2 Bolt embedded to a depth of 7 1/2" [191].

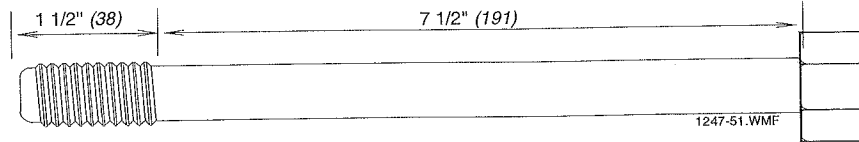


Figure 11. 5/8 x 9" Heavy Hex Gr. 2 Bolt

- 2) HILTI® Kwik-Bolt II 3/4 x 6 1/2" or equivalent. Each Bolt must have a minimum embedment of 4 3/4" [121].

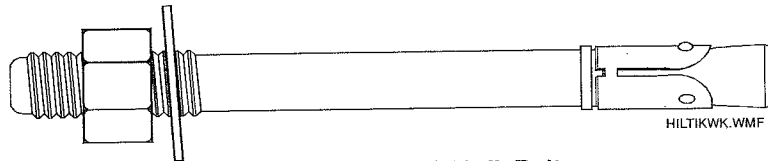


Figure 12. Hilti® Kwik Bolt

- 3) HILTI® HVA Adhesive anchor 5/8" x 6 1/2" Gr. 2 or equivalent. Each Bolt must have a minimum embedment of 5" [127].



Figure 13. Hilti® HVA Adhesive Anchor and Capsule

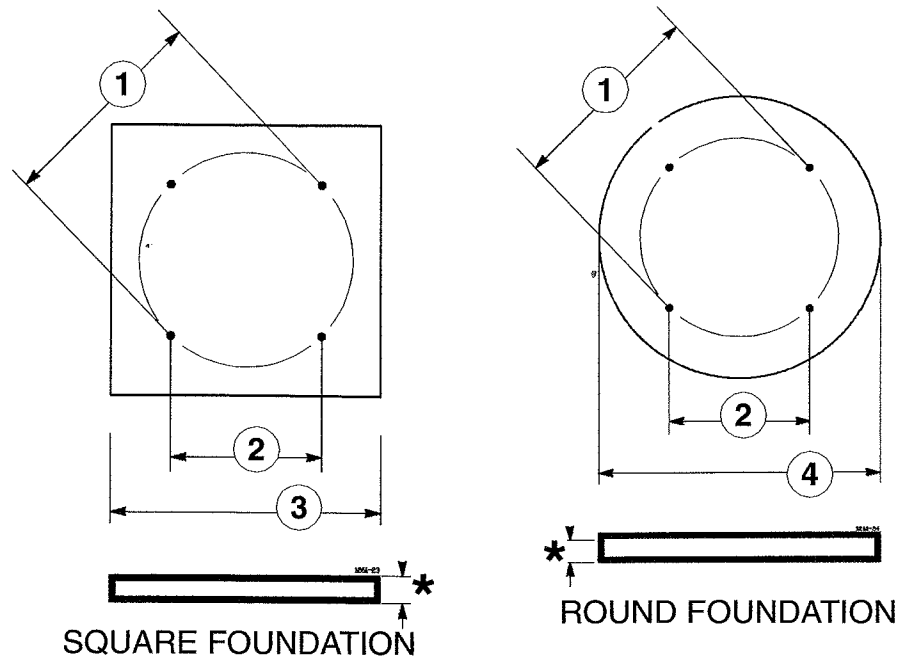
**CAUTION!**



*Layout locations and install anchors before setting the bin to insure proper location. Failure to do so may cause damage to the bin.*

*Do NOT use Legs as a template to drill, because the bin may not be round.*

**6' [1 829] Foundations: Anchor Bolt and Concrete Specifications**

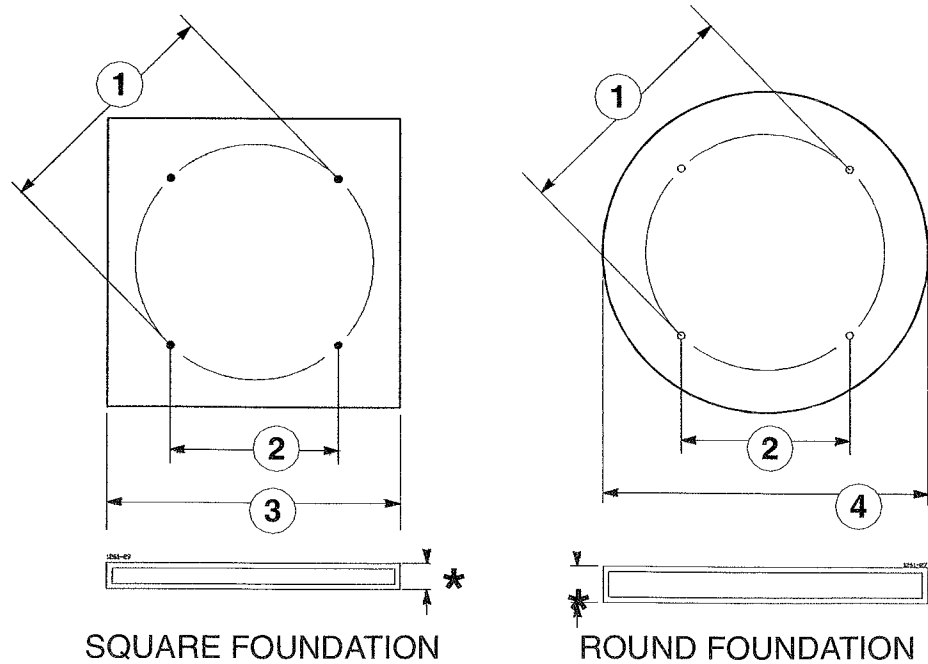


Item	Description
1	76 1/16" [1 932]
2	53 25/32" [1 366]
3	8' [2 438]
4	9' [2 743]

Anchor Bolt dimensions are the same for each diameter foundation, round or square.  
 \*See Thickness Charts on Pages 20 and 21.

Figure 14. 6' [1 829] Diameter Bins

**7' [2 134] Foundations: Anchor Bolt and Concrete Specifications**



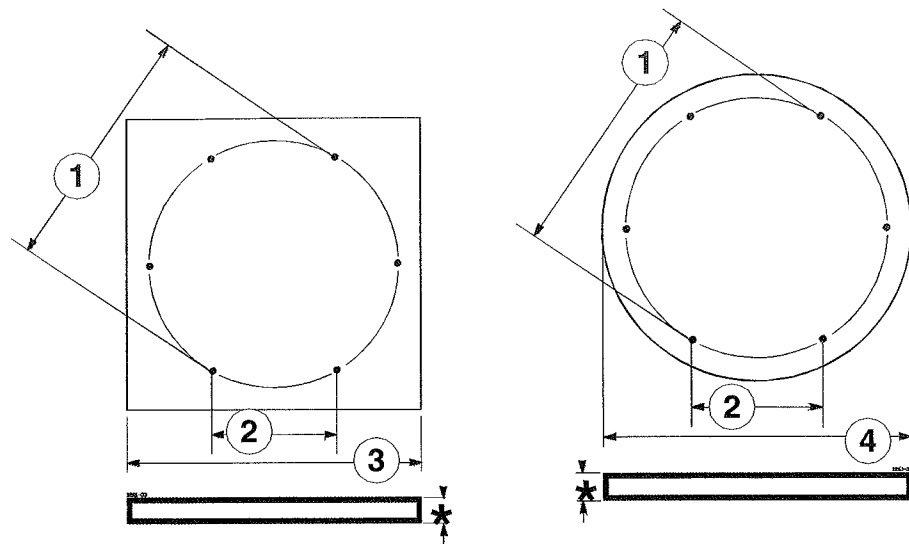
Item	Description
1	88" [2 235]
2	62 1/4" [1 581]
3	9' [2 743]
4	10' [3 048]

Anchor Bolt dimensions are the same for each diameter foundation, round or square.  
 \*See Thickness Charts on Pages 20 and 21.

Figure 15. 7' [2 134] Diameter Bins

### 9' [2 743] Foundations: Anchor Bolt and Concrete Specifications

Anchor Bolt dimensions are the same for each diameter foundation, round or square.



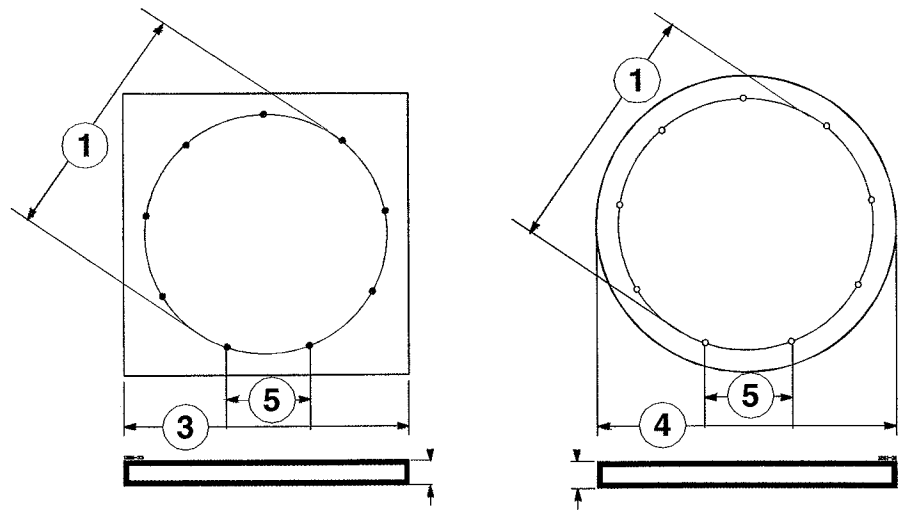
SQUARE FOUNDATION

ROUND FOUNDATION

Figure 16A. 9' [2 743] Diameter Bins (6 Legs)

Item	Description
1	111 7/8" [2 842] diameter
2	55 15/16" [1 421] 6-Leg Chord (45° 1-7 Rings; 60° 1-10 Rings)
3	11' [3 353]
4	12' [3 658]
5	38 1/4" [972] 9-Leg Chord (45° 8-11 Rings)

\*See Thickness Charts on Pages 20 and 21.



SQUARE FOUNDATION

ROUND FOUNDATION

Figure 16B. 9' [2 743] Diameter Bins (9 Legs)

## Square Foundations

Footer Concrete Specs (ENGLISH)						
Model Foundation Size	6' dia. 8' x 8'		7' dia. 9' x 9'		9' dia. 11' x 11'	
Rings	Thickness (inches)	Volume (cu. yds.)	Thickness (inches)	Volume (cu. yds.)	Thickness (inches)	Volume (cu. yds.)
1	8"	1.6	8"	2.0	8"	3.0
2	8"	1.6	9"	2.3	9"	3.4
3	8"	1.6	10"	2.5	9"	3.4
4	9"	1.8	11"	2.8	10"	3.7
5	10"	2.0	11"	2.8	10"	3.7
6	13"	2.6	13"	3.3	11"	4.1
7	15"	3.0	16"	4.0	12"	4.5
8	18"	3.6	18"	4.5	14"	5.2
9					16"	6.0
10					18"	6.7
11					17"	6.3

Footer Concrete Specs (METRIC)						
Model Foundation Size	1 829 dia. 2 438 x 2 438		2 134 dia. 2 743 x 2 743		2 743 dia. 3 353 x 3 353	
Rings	Thickness [mm]	Volume [cu. m.]	Thickness [mm]	Volume [cu. m.]	Thickness [mm]	Volume [cu. m.]
1	203	1.2	203	1.5	203	2.3
2	203	1.2	229	1.8	229	2.6
3	203	1.2	254	1.9	229	2.6
4	229	1.4	279	2.1	254	2.8
5	254	1.5	279	2.1	254	2.8
6	330	2.0	330	2.5	279	3.1
7	381	2.3	406	3.1	305	3.4
8	457	2.8	457	3.4	356	4.0
9					406	4.6
10					457	5.1
11					432	4.8

## Round Foundations

Footer Concrete Specs (ENGLISH)						
Model Foundation Size	6' Dia. 9' Dia.		7' Dia. 10' Dia.		9' Dia. 12' Dia.	
	Thickness (inches)	Volume (cu. yds.)	Thickness (inches)	Volume (cu. yds.)	Thickness (inches)	Volume (cu. yds.)
1	8"	1.6	8"	1.9	8"	2.8
2	8"	1.6	9"	2.2	9"	3.1
3	8"	1.6	10"	2.4	10"	3.5
4	9"	1.8	11"	2.7	10"	3.5
5	10"	2.0	12"	2.9	11"	3.8
6	12"	2.4	13"	3.2	12"	4.2
7	14"	2.7	15"	3.6	12"	4.2
8	16"	3.1	17"	4.1	13"	4.5
9					15"	5.2
10					17"	5.9
11					17"	5.9

Footer Concrete Specs (METRIC)						
Model Foundation Size	1 829 dia. 2 438 x 2 438		2 134 dia. 2 743 x 2 743		2 743 dia. 3 353 x 3 353	
	Thickness [mm]	Volume [cu. m.]	Thickness [mm]	Volume [cu. m.]	Thickness [mm]	Volume [cu. m.]
1	203	1.2	203	1.5	203	2.1
2	203	1.2	229	1.7	229	2.4
3	203	1.2	254	1.8	254	2.7
4	229	1.4	279	2.1	254	2.7
5	254	1.5	305	2.2	279	2.9
6	305	1.8	330	2.4	305	3.2
7	356	2.1	381	2.8	305	3.2
8	406	2.4	432	3.1	330	3.4
9					381	4.0
10					432	4.5
11					432	4.5