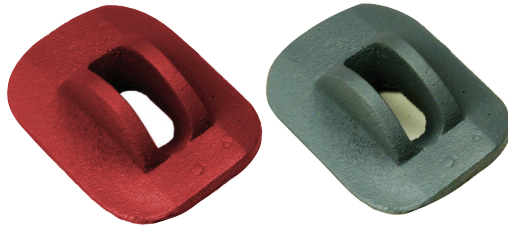


## Flanged Washer Base Dimensions

Washer Size	Max Rod Size	Length	Width
1/2"-5/8"	5/8"	4.00"	3.00"
3/4"-7/8"	7/8"	4.00"	3.00"
1"-1-1/8"	1-1/8"	4.00"	3.00"
1-1/4"	1-1/4"	4.00"	3.08"
1-1/2"	1-1/2"	4.875"	3.687"



## Flanged Hillside Washers

Washer Size	Web Thickness	Slot Length	Slot Width	Rod Size	Rod Tensile Strength (lbs)	Load (lbs) Ultimate	Failure Mode
1/2"-5/8"	3/16"	2-5/8"	1-5/16"	1/2"	10,750	16,600	1
1/2"-5/8"	3/16"	2-5/8"	1-5/16"	5/8"	14,500	20,750	1
3/4"-7/8"	3/16"	2-5/8"	1-5/16"	3/4"	20,200	30,000	1
3/4"-7/8"	1/4"	2-5/8"	1-5/16"	3/4"	20,500	30,300	1
3/4"-7/8"	1/4"	2-5/8"	1-5/16"	7/8"	31,300	43,000	1
3/4"-7/8"	5/16"	2-5/8"	1-5/16"	7/8"	31,200	44,450	1
1"-1-1/8"	5/16"	2-5/8"	1-5/16"	1"	43,500	50,500	1,2
1"-1-1/8"	5/16"	2-5/8"	1-5/16"	1-1/8"	64,000	69,000	1,3
1"-1-1/8"*	1/4"	2-5/8"	1-5/16"	1"	39,500	51,100	1,3
1"-1-1/8"*	5/16"	2-5/8"	1-5/16"	1-1/8"	60,000	66,000	1,3

Failure Modes: 1. x-bracing 2. Slight web deformation 3. Web plate reached ultimate strength.  
Dr. Sinno's full test report is available upon request.

All items must be purchased in even box quantities

14030 Bolsa Lane  
Cerritos, CA 90703  
(714) 676-8200

711 W. Booneslick Rd  
Jonesburg, MO 63351  
(636) 488-5811

4475 Alicia Lane  
Cumming, GA 30040  
(770) 844-1515

5275 Barker Cypress Rd  
Houston, TX 77084  
(832) 802-4200

## PATENTED U.S. Patent No. 8740534

Tengco's patented Flanged Hillside Washer achieves complete loading of the web and rod allowing you to eliminate backup plates and welding. They have been tested and approved by R. Ralph Sinno, PH.D.; Professional Engineer & Professor of Civil Engineering at Mississippi State University.

Tengco offers both "Made in USA" and Imported Washers. They are made with Ductile Iron per ASTM 536-84 Grade 65-45-12 with ultimate tensile strength of 65,000 PSI.

Each size is offered in four finishes: Plain, Red Primer, Grey Primer and Hot Dipped Galvanized.

### Load Test Data Results (see table below)

Tests were conducted using 30-60 degree angles between the x-bracing rods and the beam/column sections. Certain tests were repeated using hillside washers that can be used for x-bracing at 45°, and the results were the same. Those results are noted by an asterisk. A heavy duty hex nut with a single heavy duty flat washer was used to lock the x-bracing rod against the flanged hillside washer.