

REPORT OF RESULTS  
OF  
GRAB BAR FASTENER TESTS

Tested In Accordance With  
ASTM F446-85  
for  
GRAB BARS and ACCESSORIES  
INSTALLED in BATHING AREAS

Prepared For:  
Pinnacle Innovations  
8 Martin Ave  
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Materials Tested:  
WingIt Grab Bar Fastener

Tested By:  
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## **I. PURPOSE**

Many modern bathtubs and shower stalls incorporate grab bars to provide support to users. These bars may be mounted vertically or horizontally at various heights within the plumbing fixture. The bars can either be integral with the plumbing fixture or fastened to structural framing members through the walls of the fixture. The purpose of this test is to determine if the WingIt grab bar fastener, utilized with an ASTM F-462 approved grab bar, allows for performance in accordance with the requirements of the ASTM F-462 standard without fastening the grab bar to either the plumbing fixture or structural support behind the tub or shower. The WingIt is designed to be installed anywhere on the wall and to provide adequate support for the grab bar.

The standard procedures for evaluating the quality of grab bars installed in bathing areas are defined in the ASTM F446-85 Standard entitled, *Standard Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area*. This Standard requires grab bars that are installed horizontally to withstand an applied downward load of 250 pounds. This 250 pound load is applied over a 3½ inch area in the center of the bar for a period of five minutes. The bar must not exhibit any permanent visible damage during loading. This test was run to evaluate the structural integrity of the WingIt fastening system.

## **II. BACKGROUND**

Pinnacle Innovations requested that the NAHB Research Center conduct tests on grab bars installed utilizing WingIt fasteners. Pinnacle Innovations assembled two walls of varying materials and construction methods to evaluate the WingIt fastener.

The first 32" x 48" wall, identified in this report as #1, consisted of 1/2" greenboard screwed to 25 gauge steel studs 16" on center. Ceramic tile, 4" x 4" contractor grade, was attached to the wall in accordance with ANSI A108.4 using standard adhesive and grout. Two WingIt fasteners were installed through the tile and in the center of the wall cavity. A standard 18" long, 1 1/4" diameter, stainless steel grab bar, manufactured by BOBRICK was attached to the WingIt fasteners.

The second 32" x 48" wall, identified in this report as #2, consisted of 5/8" standard greenboard screwed to 25 gauge steel studs 16" on center. Ceramic tile, 4" x 4" contractor grade, was attached to the wall in accordance with ANSI A108.4 using standard adhesive and grout. Two WingIt fasteners were installed through the tile and in the center of the wall cavity. A standard 18" long, 1 1/2" diameter, stainless steel grab bar, manufactured by Taymor was attached to the WingIt fasteners.

All of the samples were received by the Research Center on May 28, 1998. The samples were tested on May 28, 1998. Purchase order number NAHBRC-02 was referenced for this work.

### **III. TEST METHODOLOGY (ASTM F446-85)**

#### **Sample Preparation and Testing:**

The Standard requires all grab bars to be free of exposed burrs, sharp edges, and pinch points when mounted in their functional positions. The Standard requires horizontally mounted grab bars to be subjected to a 250 pound downward load. This load must be applied over a 3½ inch wide section of the bar centered between the supports and must be applied within a 30 minute period.

#### **Performance Requirement:**

The 250 pound load must be maintained for at least five minutes. During this time, the bar must not break or fail. Break or failure is defined as a condition experienced during the test in which the bar is affected in such a way that it ceases to provide the safety characteristics required to maintain balance, to prevent falling or to aid in exit or entry.

#### IV. TEST RESULTS

##### Summary of Test Results:

Test #	Description	Test Result
1	1/2" Greenboard, Tile, Standard Installation	PASS
2	5/8" Greenboard, Tile, Standard Installation	PASS

All of the grab bars were mounted horizontally on the samples. The samples were then subsequently mounted on the compression table of a Baldwin Universal Test Machine with a 200,000 pound capacity. The crosshead speed of the universal test machine was adjusted to apply a compressive load to the bar at 0.5 inches per minute. A load of 250 pounds was applied to each bar and maintained for 5 minutes. At the end of the 5 minute period the WingIt fasteners and wall substrate were checked for damage.

The grab bars were then subjected to a load of 300 pounds for five minutes. Many code bodies require grab bars to withstand a 300 pound load. The WingIt fasteners and wall substrate were checked for cracking at the end of the 5 minute, 300 pound load.

The greenboard was damaged during the installation of the WingIts. The drywall was broken during the drilling process to determine the effects of a "worse case scenario" installation of the WingIt fasteners.

## **V. DISCUSSION OF RESULTS**

All of the two configurations met the requirements of ASTM F446-85 standard. No breaking or failure of the WingIt fastener or the wall substrate was observed during or after the 250 lb and 300 lb loading.

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