



10 November 2020
417541-99-02-L20-0775,
Revision A

Nill Building Solutions
67 Mariner Drive
Southampton, NY 11968

Attention: Mr. Christopher Gray

Subject: Proof and Ultimate Load Testing Performed on Nine Anchoring Brackets

References: (a) Purchase Order No. 053049
(b) Dayton T. Brown, Inc. Quote # 20-1496, dated 16 October 2020
(c) E-Mail Correspondence between D. Landwehrle of Dayton T. Brown, Inc. and C. Gray of Nill Building Solutions, dated 30 October 2020

Enclosure: (1) Test Equipment List – 1 Page
(2) Photographs – 2 Pages
(3) Representative Proof Load Graphs – 3 Pages

Mr. Gray,

This test report details the events and calibrated test equipment used for the proof and ultimate load testing of the two types of Anchoring Brackets in three configurations. The reason for this Revision A is to describe how the Anchoring Brackets were supplied for testing and to include representative graphs as an enclosure. Three NB1C and three NB1S Anchoring Brackets were supplied bolted to a section of 3/8-inch tube steel for testing. The NB1C steel configuration utilized six 1.5-inch x 1/4-20 bolts into tapped holes in the tube steel to secure the NB1C Anchoring Bracket. No nuts were used on the back side of the tube steel. The NB1S steel configuration utilized a thru hole at the center of the tube steel for a 7/8-9 bolt which was welded to the back side of the NB1S Anchoring Bracket. A 7/8-9 nut was then used to secure the NB1S Anchoring Bracket from the back side of the tube steel. Three NB1C were supplied affixed to two stacked pieces of wood using (6) 3-inch x 1/4-13 lag screws.

Testing was performed on 30 October 2020 under reference (a) to the requirements of references (b) and (c). Proof load testing was performed by applying a 250-lbf lateral load, at a distance of 48 inches from the top surface of each Anchoring Bracket tested. The load was applied in 20% increments up to at least 250 lbf as shown in graphs of Enclosure 3. Once the 250-lbf load was reached, the load was then decreased in 20% increments. A visual inspection was performed after each test which checked for any damage or deformation of the Anchoring Brackets. None of the Anchoring Brackets showed evidence of damage, deformation, or failure of attachment after being subjected to the proof load test, as summarized in the table below.

Ultimate load testing was performed by applying the largest lateral load possible, at a distance of 48 inches from the top surface of each Anchoring Bracket. For both tests, the load was applied through a 1/2-inch steel panel. The panel was secured to the Unit Under Test (UUT) utilizing a piece of steel 90° angle.

The Anchoring Brackets were originally delivered with “aluminum shoes” to secure the steel panel to the UUT. During the first proof load test of Serial No. NB1C-S-1, it was found that the aluminum shoe was failing prematurely at approximately 164.3 lbf due to the aluminum material deforming around the bolt that secures the shoe to the Anchoring Bracket. As the aluminum shoe was not part of the UUTs, the shoes were removed from each Anchoring Bracket and replaced with the steel 90° angle. Serial No. NB1C-S-1 showed no evidence of damage or deformation and was subjected to a second proof load test utilizing the steel 90° angle.

Proof Load Test Results

Part No.	Serial No.	Max Load Applied (lbf)	Visual Damage/ Deformation
NB1C	NB1C-S-1	254.7	None
NB1C	NB1C-S-2	256.0	None
NB1C	NB1C-S-3	256.4	None
NB1S	NB1S-S-1	258.1	None
NB1S	NB1S-S-2	255.5	None
NB1S	NB1S-S-3	252.2	None
NB1C	NB1C-W-1	252.8	None
NB1C	NB1C-W-2	254.3	None
NB1C	NB1C-W-3	254.5	None

Ultimate Load Test Results

Part No.	Serial No.	Max Load Applied (lbf)	Visual Damage/ Deformation
NB1C	NB1C-W-3	588.5	Yes, see Note 1
NB1C	NB1C-S-3	561.9	Yes, see Note 1
NB1S	NB1S-S-3	631.0	None

Note 1: For Serial Nos. NB1C-S-3 and NB1C-W-3, there was concave shape deformation at the center of the Anchoring Bracket while the anchoring screws remained secured. It was also noted that the stainless steel bolt that secured the steel 90° angle to the Anchoring Bracket was bent in the applied load direction.

The test results recorded in this report apply only to the sample(s) as received and relate only to those items tested.



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If you have any questions, please do not hesitate to contact the undersigned at (631) 589-6300 ext. 4571.

Very truly yours,

DAYTON T. BROWN, INC.

A handwritten signature in black ink, appearing to read "Don Landwehrle".

Don Landwehrle
Engineer

A handwritten signature in black ink, appearing to read "Warren Halbig".

Warren Halbig
Department Manager

DL:rb



Enclosure 1
Test Equipment List

Test equipment utilized for the program reported herein was within its assigned interval of calibration. Details are on file at Dayton T. Brown, Inc. and will be made available upon request.



Job Sub: 417541-01

TEST: PROOF AND ULTIMATE LOAD

<u>ITEM</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>DTB NO.</u>	<u>ACCURACY</u>	<u>CAL DUE DATE</u>
CONTROL SYSTEM, AERO ST 32 CH. CONTROL, 64 CH. DATA	MTS	493.10/793.00	10-228	Mfr	10/10/2021
TAPE MEASURE, 25'	STANLEY	33-725	15-78	± 1/16"	05/23/2021
LOAD CELL, 2K LB 5/8 X 18 THREAD	INTERFACE	1210-AF-2K-B	62-769	± 0.1% of F.S.	04/03/2022
LEVEL, DIGITAL 10" MULTI- FUNCTION WITH LASER TRAC	CRAFTSMAN	320.48292	67-22	± 0.1°	09/26/2021



Enclosure 2

Photographs



Photo 1 – File No. PA300968
Test Setup with Aluminum Shoe



Photo 2 – File No. PA300986
Typical Test Setup with Steel 90° Angle



Photo 3 – File No. PA300990
Serial No. NB1C-W-3 Ultimate Test Deformation



Enclosure 3

Representative Proof Load Graphs





