



1175 CHURCH STREET • BOHEMIA, LONG ISLAND, NEW YORK 11716
AREA CODE 631 589-6300

23 March 2021
416365-00-L18-0925,
Revision A

LN1
67 Mariner Drive
Southampton, NY 11968

Attention: Mr. Christopher Gray (Christopher@nillbuildingsolutions.com)

Subject: Tensile Strength of Anchor Assemblies

References: (a) LN1 Purchase Order No.: 1805001
(b) Dayton T. Brown, Inc. Quote No.: 18-0861
(c) ASTM D1761-12

Enclosures: (1) Drawings – 2 Pages
(2) Tensile Data – 7 Pages
(3) Test Equipment List – 1 Page
(4) Photographs – 4 Pages

Mr. Gray,

This report, which consists of two pages and four enclosures, presents the results of tensile testing of Anchor Assemblies under reference (a) in accordance with (IAW) reference (b). The test items were received 11 June 2018 and testing was completed 14 June 2018. The reason for this Revision A is to add product codes to the configuration descriptions, which were provided by the customer, in the report.

A total of 21 test items (7 configurations, 3 samples per configuration) were assembled IAW Drawing 416365-3-110, Revision 1 (Enclosure 1) by LN1 and provided to DTB for testing. The tensile testing was performed on an Instron Universal Tensile Tester, Model 5569 with an 11,240-lbf load cell. A test fixture was assembled and installed IAW Drawing 416365-2-001, Revision 1. Testing was performed using the loading procedures outlined in reference (c). Each test item was aligned in the test fixture and attached to the crosshead with a suitably sized bolt. The load was applied by moving the crosshead at a uniform rate of 0.10 in/min until failure. Each test was video recorded. The maximum load and crosshead extension at max load were recorded.

A summary of the average tensile properties of each configuration is provided in Table 1 and the complete results are provided in Enclosure 2. It was observed that all test items failed by withdrawal of the fastener through the wood. No failures were observed in the anchor assemblies or fasteners.



Table 1. Summary of tensile test data.

Configuration	Average Maximum Load (lbf)	Average Extension at Max. Load (in)
NB4 with King Insert (Aluminum Raised with King Insert)	2,933.49	0.14
NB4 (Aluminum Raised)	3,211.61	0.15
NB1C (Flush Anchor, 3/4 in Bolt)	1,937.84	0.56
NB1 (Flush Anchor, 1/2 Bolted from Underneath)	4,003.76	0.17
NB1AC (Lightning, 5x5)	2,057.00	0.60
NB3 (Small Anchor Flange Flush)	2,083.34	0.15
NB2 (Small Anchor Flange Raised)	2,111.88	0.14

The test items completed all phases of testing. The test results recorded in this report relate only to those items tested. This test report shall not be reproduced, except in full, without written approval of Dayton T. Brown, Inc.

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.

Donald Landwehrle for
Michael Hemphill
Project Engineer

Warren Halbig
Department Manager

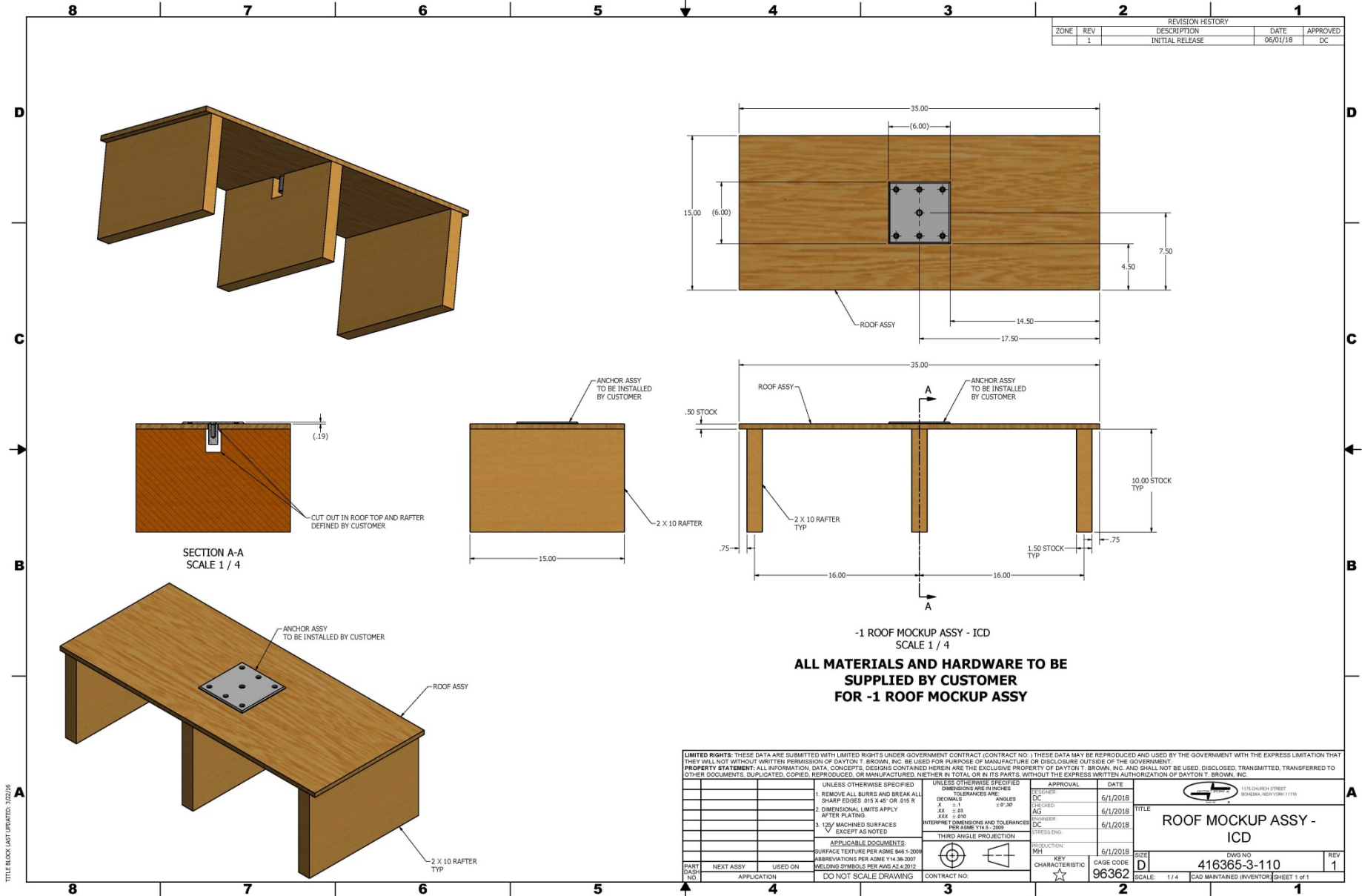
MH:rb

cc: Mr. Lance Nill (lancenillinc@yahoo.com)



Enclosure 1

Drawings

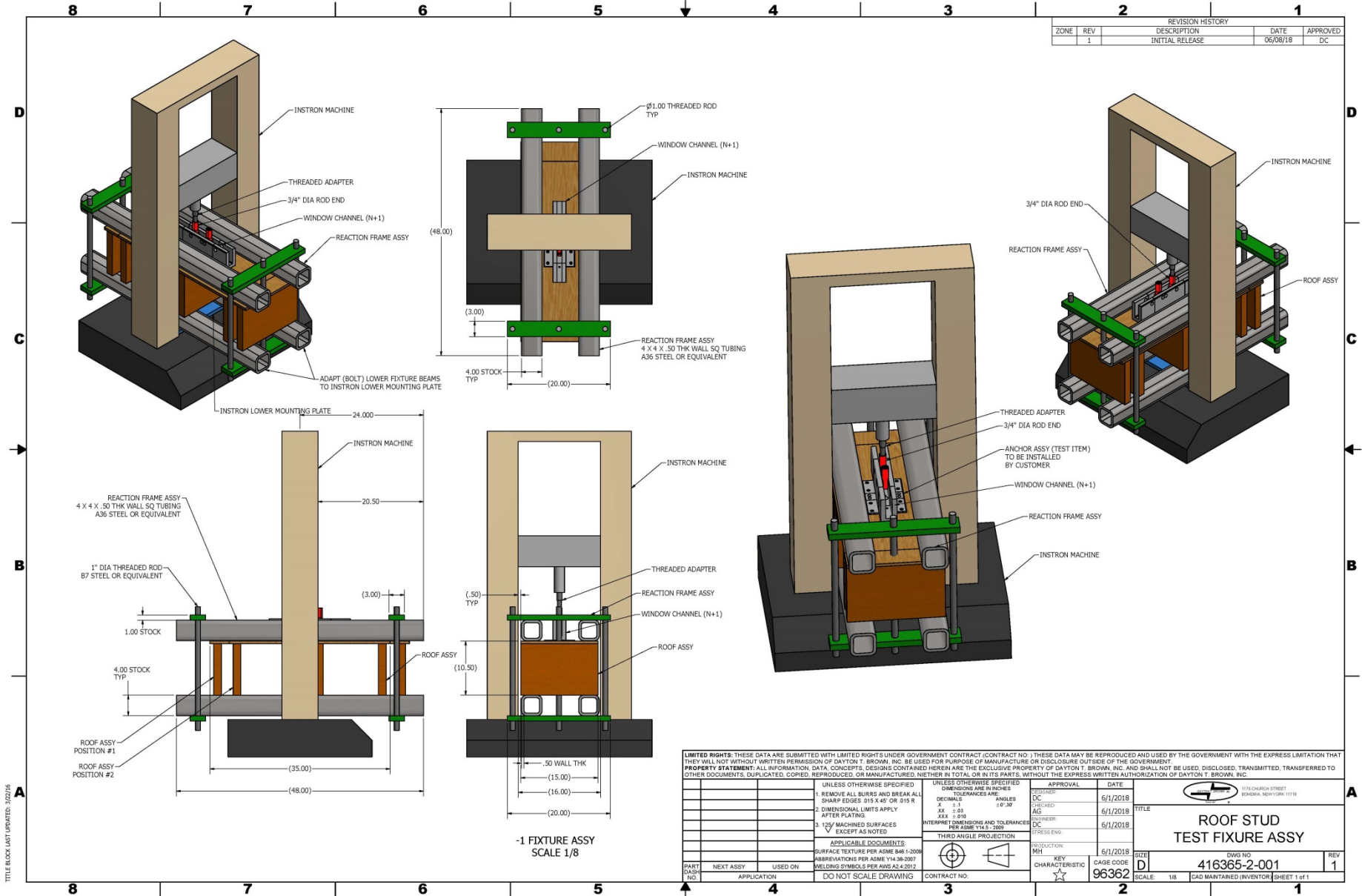


-1 ROOF MOCKUP ASSY - ICD
SCALE 1 / 4
ALL MATERIALS AND HARDWARE TO BE SUPPLIED BY CUSTOMER FOR -1 ROOF MOCKUP ASSY


REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL RELEASE	06/01/18	DC

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	UNLESS OTHERWISE SPECIFIED	UNLESS OTHERWISE SPECIFIED	APPROVAL	DATE
	1. REMOVE ALL BURRS AND BREAK ALL SHARP EDGES: .015 X 45° OR .015 R	DIMENSIONS ARE IN INCHES	DESIGNED: DC	6/1/2018
	2. DIMENSIONAL LIMITS APPLY AFTER PLATING	TOLERANCES ARE:	DRAWN: DC	6/1/2018
	3. 1/32" MACHINED SURFACES EXCEPT AS NOTED	DECIMALS X ± .1	ENGINEER: AG	6/1/2018
		ANGLES X ± .01	STRESS ENG:	
		XXX ± .010		
		INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-2009		
	APPLICABLE DOCUMENTS:	THIRD ANGLE PROJECTION		
	SURFACE TEXTURE PER ASME B46.1-2009			
	ABBREVIATIONS PER ASME Y14.38-2007			
	WELDING SYMBOLS PER AWS A2.4-2012			
PART NO.	NEXT ASSY	USED ON	PRODUCTION MH	6/1/2018
	APPLICATION	DO NOT SCALE DRAWING	KEY CHARACTERISTIC A	SIZE D
			STAR	CAGE CODE 96362
				DWG NO 416365-3-110
				REV 1
				SCALE: 1/4 CAD MAINTAINED INVENTOR SHEET 1 of 1

TITLE BLOCK LAST UPDATED: 3/22/16



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1	INITIAL RELEASE	06/08/18	DC

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UNLESS OTHERWISE SPECIFIED	UNLESS OTHERWISE SPECIFIED	APPROVAL	DATE	
1. REMOVE ALL BURRS AND BREAK ALL SHARP EDGES .015 X .45 OR .015 R	DIMENSIONS ARE IN INCHES	DESIGNED: DC	6/1/2018	
2. DIMENSIONAL LIMITS APPLY AFTER PLATING	TOLERANCES ARE: DECIMALS .005 ANGLES .1 X ± .1 XX ± .01 XXX ± .010	CHECKED: AC	6/1/2018	
3. 1/32" MACHINED SURFACES EXCEPT AS NOTED	INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-2009	ENGINEER: DC	6/1/2018	
APPLICABLE DOCUMENTS:	THIRD ANGLE PROJECTION	DESIGNER: DC	6/1/2018	
SURFACE TEXTURE PER ASME A46.1-2009		PRODUCTION: MH	6/1/2018	
ABBREVIATIONS PER ASME Y14.36-2007		KEY CHARACTERISTIC: *	SIZE: D	
WELDING SYMBOLS PER AWS A2.4-2012	DO NOT SCALE DRAWING	CONTRACT NO.:	CAGE CODE: 96362	
			SCALE: 1/8	
			CAD MAINTAINED INVENTOR: DC	
			SHEET 1 of 1	

TITLE BLOCK LAST UPDATED: 3/22/16



Enclosure 2

Tensile Data

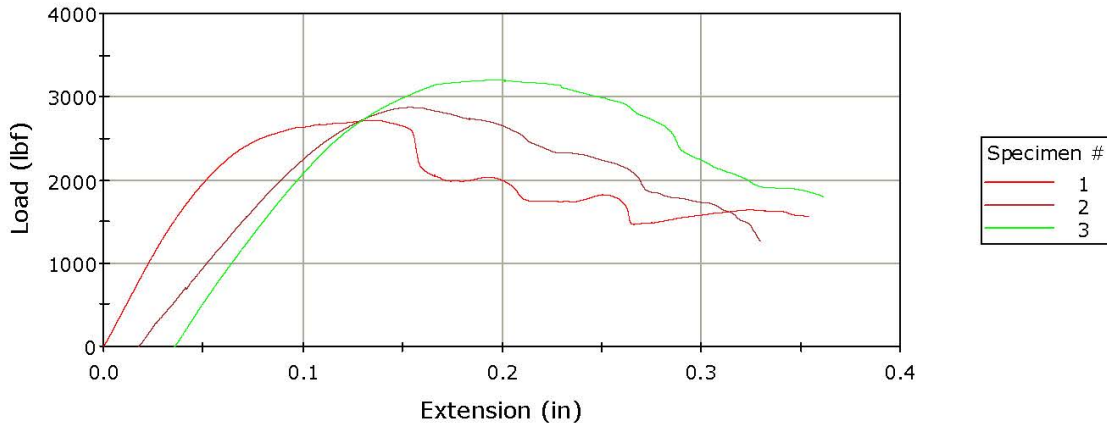


NB4 with King Insert
(Aluminum Raised with King Insert)

Test date: Tuesday, June 12, 2018

RB 3/18/21

Specimen 1 to 3

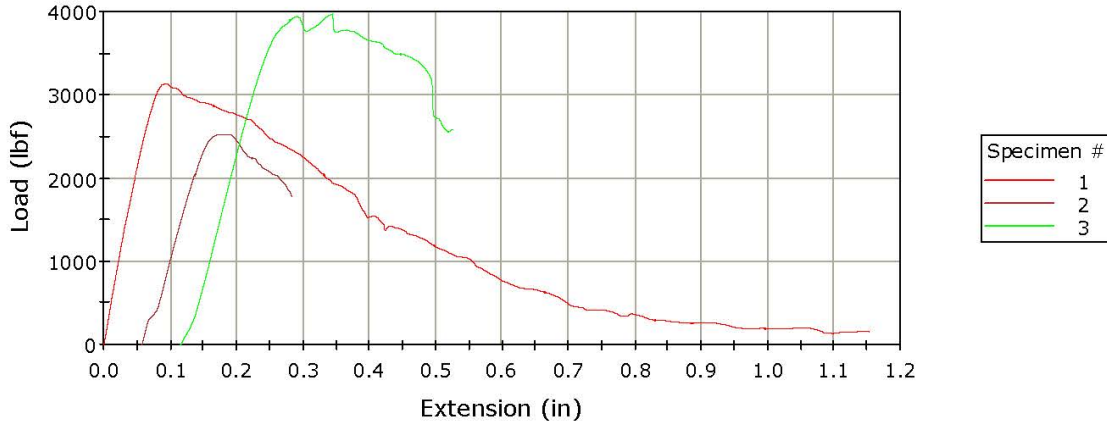


	Maximum Load (lbf)	Extension at Maximum Load (in)
1	2718.45	0.14
2	2877.49	0.14
3	3204.52	0.16
Mean	2933.49	0.14

NB4
(Aluminum Raised)

RB 3/18/21

Specimen 1 to 3

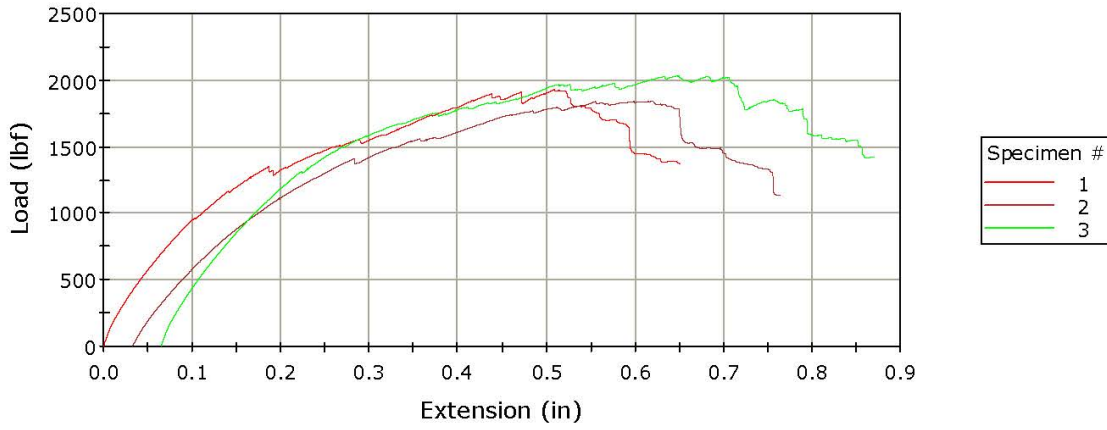


	Maximum Load (lbf)	Extension at Maximum Load (in)
1	3135.26	0.09
2	2528.42	0.12
3	3971.13	0.23
Mean	3211.61	0.15

NB1C
 (Flush Anchor 3/4 Inch Bolt)
 RB 3/18/21

Test date: Wednesday, June 13, 2018

Specimen 1 to 3



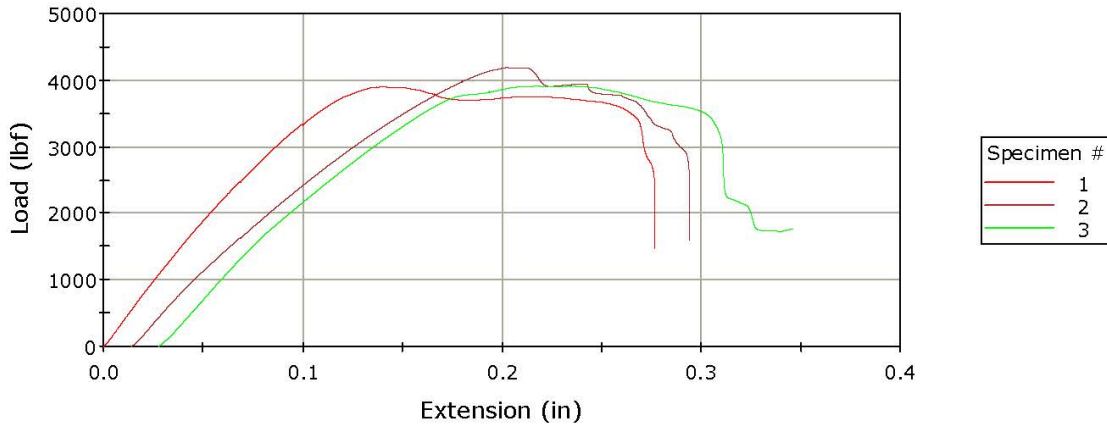
	Maximum Load (lbf)	Extension at Maximum Load (in)
1	1933.85	0.51
2	1845.61	0.59
3	2034.05	0.58
Mean	1937.84	0.56

NB1 (Flush Anchor, 1/2 Bolted from Underneath)
 Flush Anchor Half Inch Bolt

Test date: Wednesday, June 13, 2018

RB 3/18/21

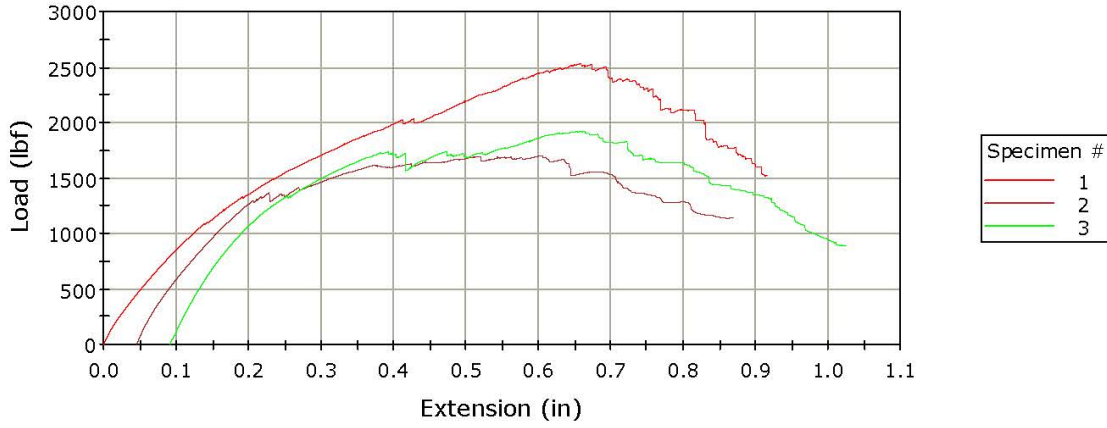
Specimen 1 to 3



	Maximum Load (lbf)	Extension at Maximum Load (in)
1	3903.20	0.14
2	4194.04	0.19
3	3914.05	0.19
Mean	4003.76	0.17

NB1AC
(Lightning 5X5)
RB 3/18/21

Specimen 1 to 3

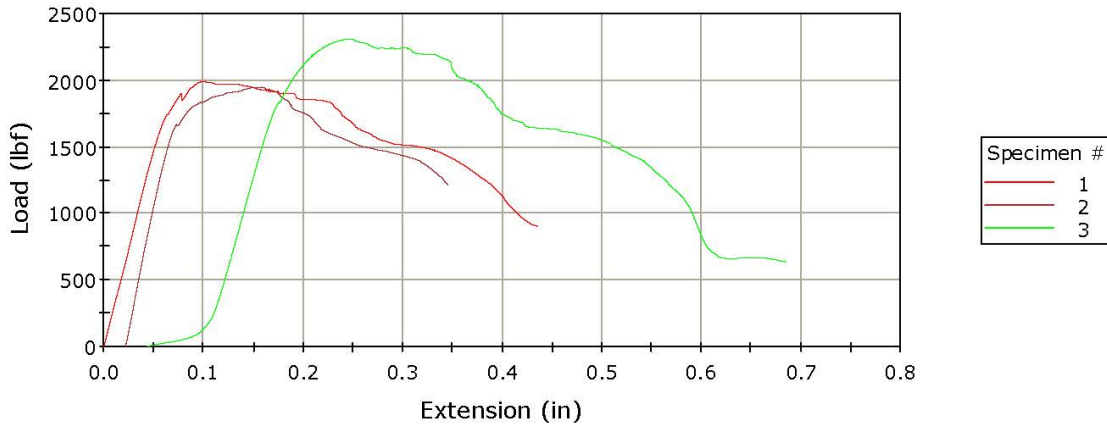


	Maximum Load (lbf)	Extension at Maximum Load (in)
1	2537.94	0.66
2	1707.58	0.56
3	1925.49	0.57
Mean	2057.00	0.60

NB3
 (Small Anchor Flange Flush)
 RB 3/18/21

Test date: Wednesday, June 13, 2018

Specimen 1 to 3

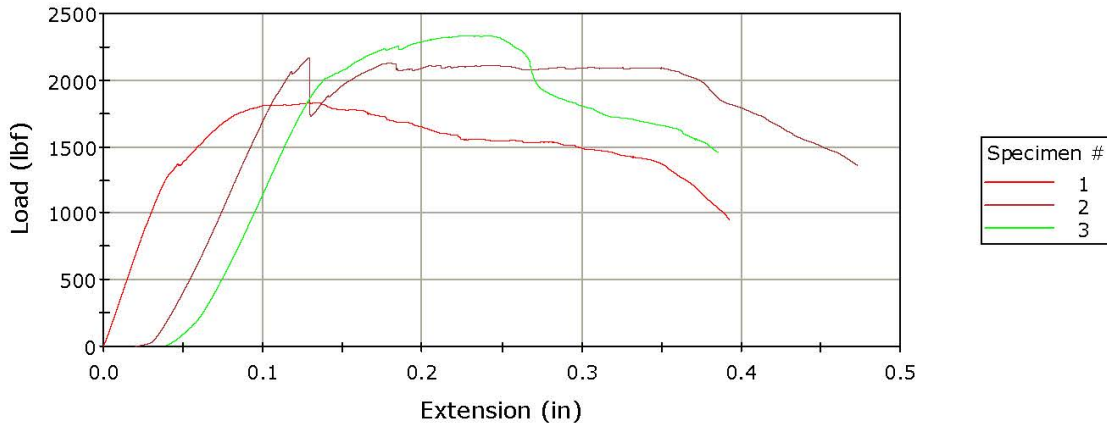


	Maximum Load (lbf)	Extension at Maximum Load (in)
1	1991.91	0.10
2	1948.77	0.14
3	2309.35	0.20
Mean	2083.34	0.15

NB2
 (Small Anchor Flange Raised)
 RB 3/18/21

Test date: Wednesday, June 13, 2018

Specimen 1 to 3



	Maximum Load (lbf)	Extension at Maximum Load (in)
1	1831.92	0.13
2	2170.44	0.11
3	2333.29	0.19
Mean	2111.88	0.14



Enclosure 3
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: 416365-00

TEST EQUIPMENT LIST					
ITEM	MANUFACTURER	MODEL	DTB NO.	ACCURACY	CAL DUE DATE
TESTER, UNIVERSAL TENSILE W/STATIC LOAD CELLS (2)	INSTRON	5569	29-2	± 1% of reading	07/14/2019



Enclosure 4

Photographs



Photo 1 – Test fixture and setup.



Photo 2 – Test fixture and setup.



Photo 3 – Overview of the NB4 with King Insert (Aluminum Raised with King Insert) configuration.



Photo 4 – Overview of the NB4 (Aluminum Raised) configuration.



Photo 5 – Overview of the NB1C (Flush Anchor, 3/4 in Bolt) configuration.

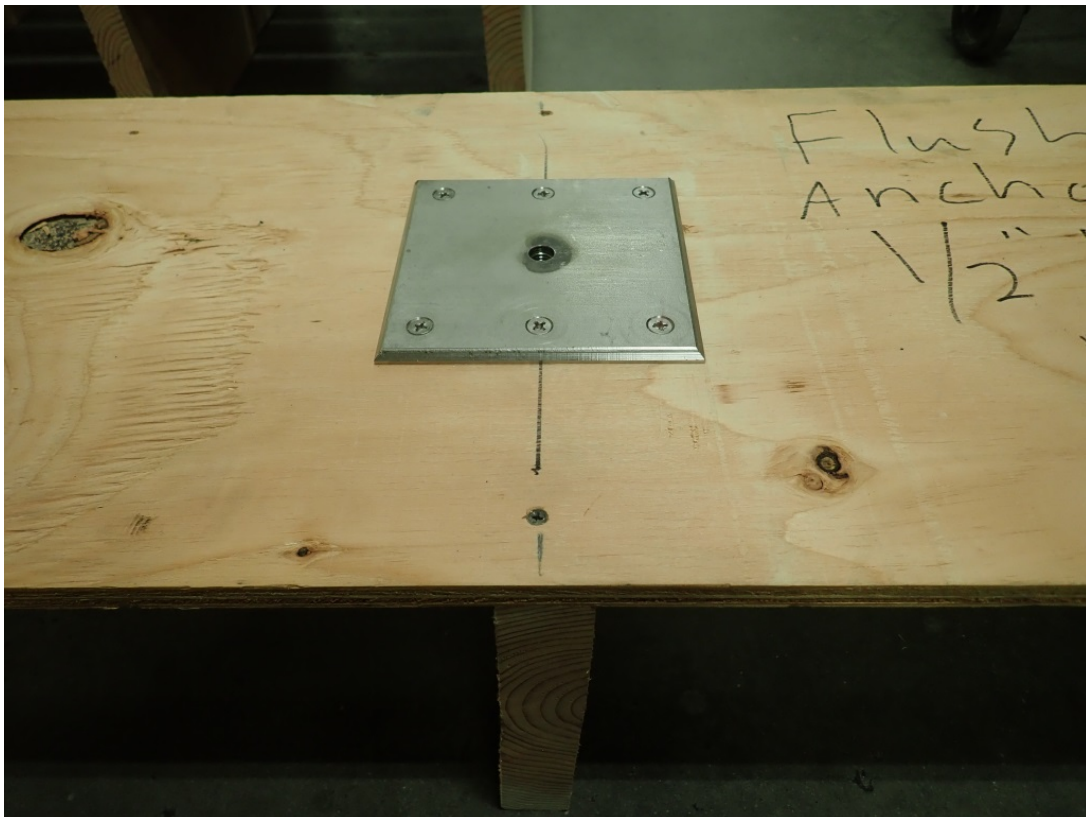


Photo 6 – Overview of the NB1 (Flush Anchor, 1/2 Bolted from Underneath) configuration.



Photo 7 – Overview of the NB3 (Small Anchor Flange Flush) configuration.



Photo 8 – Overview of the NB2 (Small Anchor Flange Raised) configuration.