



ATLAS ANCHOR

PULL TESTING

**Nil Building Solutions
Products Pull/Shear
Test Report**

**Nil Building Solutions
04/18/23**

**Atlas Anchor LLC
9531 sw 6th Ct Pembroke Pines, FL 33025
(347) 537-9994
Info@AtlasAnchorTesting.Com**

Company of the products being tested

Name: Nill Building Solutions
Contact: Lance Nill, Christopher Gray

Address: 67 Mariner Drive Southampton, NY 11968
Phone number: (631) 494 - 6000
Email: Lance@NillBuildingSolutions.Com, Christopher@NillBuildingSolutions.Com

Statement of Qualification

Atlas Anchor L.L.C. is an expert in the following testing methods:

- Anchor pull & shear testing
 - o in accordance with ASTM E 488 (for pull only)
 - o NYC D.O.B 2016-005,
- Rock bolt anchors, grouted/soil temporary/permanent anchors, guy wire anchors, and helical anchors
 - o In accordance of ASTM D4435-13 for Rock anchors
 - o In accordance with state DOT specific standards with grouted/soil temporary/permanent anchors (completed projects include NYS DOT)
- Roof anchor, balcony, guard rail and fall protection systems which are specific to each project and under the guidance of P.E.

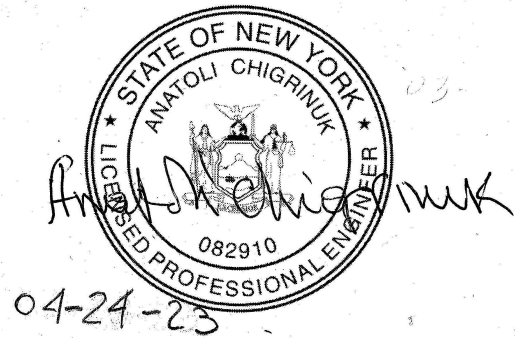
Nicholas Barona was a regional sales manager with DeWalt from 2014 to 2016 & ITW Commercial Construction from 2016 to 2021. He has worked in NYC since 2015 and is an expert in concrete anchoring in 19th to 20th century construction and historical buildings. His expert experience involves the following concrete types: cinder-crete, ash-crete, hollow terra-cotta brick, high psi concrete with river rock aggregate from the 19th and 20th century, CMU block, brick, masonry and modern concrete of various PSI's. Atlas Anchor L.L.C. was formed in 2018 to service the NYC construction and engineering market in all aspects of post installed anchoring. Nicholas Barona has completed over 3,000 pull tests under various applications and conditions. Atlas Anchor L.L.C.'s equipment is serviced and calibrated per industry standards.

Certifications

- Hilti Adhesive Anchor Installer Certification Program
- DEWALT Adhesive Anchor training program

New York Licensed Professional Engineer

Name: Anatoli Chigrinuk
Phone number: (631) 356 - 3420
Email: AlmaxLLC@Gmail.Com
State of License: New York
License Number: 082910
Qualification: Licensed Professional Engineer



Background

On Wednesday 01/28/22 Atlas Anchor LLC performed pull testing at Nill Building Solutions on the various Nill Building Solutions products. Follow up pull/shear testing was done on the NB3C2 products on 3/31/23. Three concrete slabs were used during testing: the first one is labeled sample ID "Drive wall" and had a compressive strength of 1742 psi (Used for testing of NB3C2 products on 3/31/23). The second concrete slab is labeled sample ID "Shop" had 1,140 psi compressive strength. Concrete core samples were taken from both of these slabs and concrete compression tests were done by Metallurgical Engineering Services in Richardson, TX. The lab report is at the end of this report. The third slab was a slab poured 28 days prior to the testing on 01/28/22 and is of unknown compressive strength. The following concrete products tested and installed with the corresponding anchors were (Refer to the manufacturers' catalog for the listed herein products design applications and description):

- NB3C1 ½" x 1 ¾" concrete thread– Patent pending
- NB5 standoff & Marksmen Thundermate anchor ½" X 3 ½" lg. – Patent pending
- NB1C 5"X 5" flange fastened with Confast ¼" x 2 ¾" lg. concrete screw (CSFS14234) – Patented
- NB1A2 5"X5 flange with threaded post fastened with Confast ¼" x 2 ¾" lg. concrete screw (CSFS14234) – Patent pending
- NB3C ½" X 1 ¾" concrete thread – Patent pending
- NB3C2 ¾" X 4" lg. flush mount anchor flange – Patent pending

Pull Test Procedure

1. Fasten Nill attachment
2. Connect machine
3. Increase load every minute
4. Check anchor for movement
5. Hold for one minute.
6. Take photo of gauge and attachment
7. End test
8. Remove machine

Products

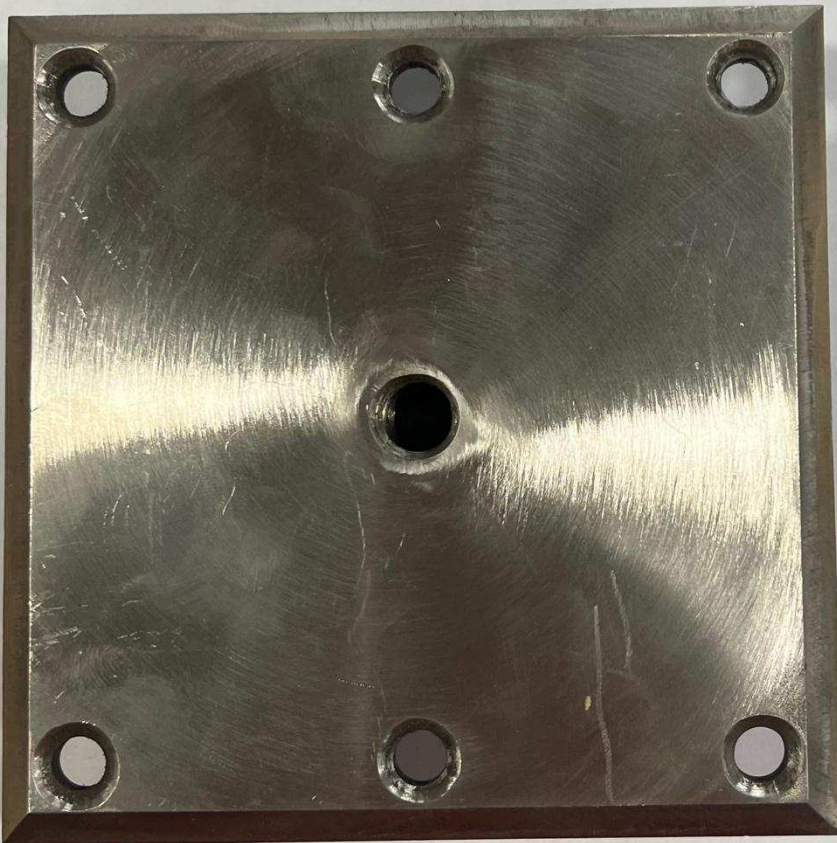


Figure 1



67 Mariner Drive, Southampton, NY 11968
www.NillBuildingSolutions.com Office: 631.494.000 Cell: 631-283.2020
Christopher@NillBuildingSolutions.com

NB1C Patented



Nill Building Solutions products are protected by U.S. Patent No. 10,501,939 and/or other U.S. and Foreign patents pending

Figure 2



67 Mariner Drive, Southampton, NY 11968
www.NillBuildingSolutions.com Office: 631.494.000 Cell: 631-283.2020
Christopher@NillBuildingSolutions.com

NB1A2 Patent Pending



Nill Building Solutions products are protected by U.S. Patent No. 10,501,939 and/or other U.S. and Foreign patents pending

Figure 3



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Christopher@NillBuildingSolutions.com

NB3C Patent Pending



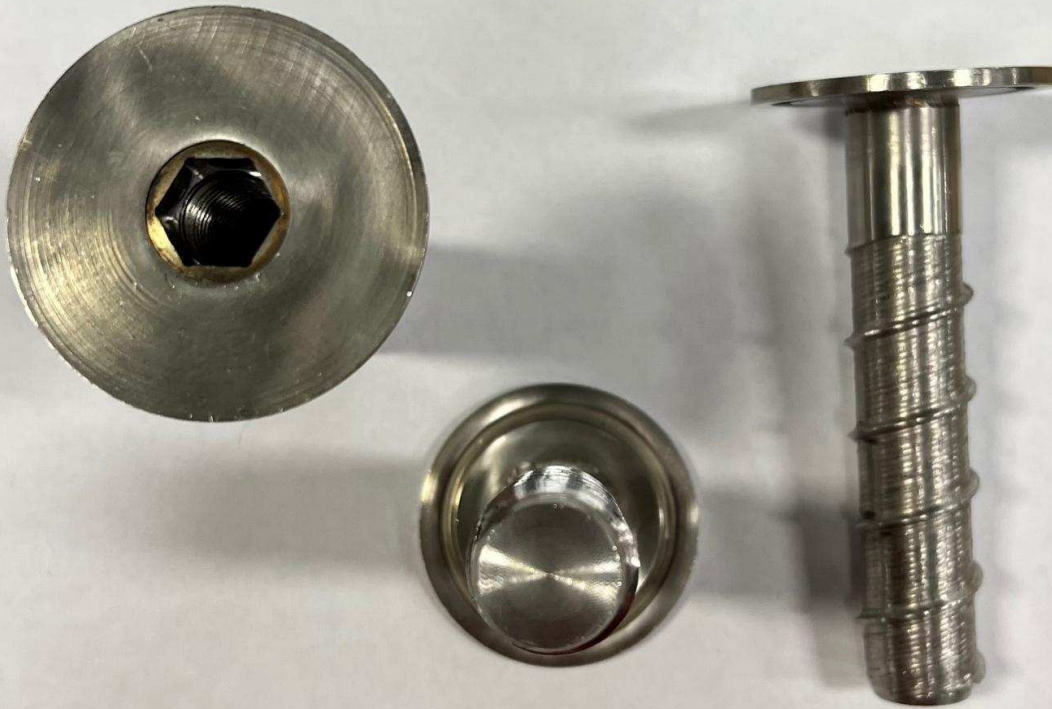
Nill Building Solutions products are protected by U.S. Patent No. 10,501,939 and/or other U.S. and Foreign patents pending

Figure 4



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Christopher@NillBuildingSolutions.com

NB3C2 Patent Pending



Nill Building Solutions products are protected by U.S. Patent No. 10,501,939 and/or other U.S. and Foreign patents pending

Figure 5



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Christopher@NillBuildingSolutions.com

NB5 (patent pending) & Thundermate



Figure 6

ThunderStud®

WEDGE ANCHORS

TECHNICAL DATA

ULTIMATE LOAD VALUES								
ANCHOR DIAMETER (IN)	EMBEDMENT DEPTH (IN)	TORQUE FT/LB	2000 PSI		4000 PSI		6000 PSI	
			TENSION (LBS.)	SHEAR (LBS.)	TENSION (LBS.)	SHEAR (LBS.)	TENSION (LBS.)	SHEAR (LBS.)
1/4	1-1/8	5-10	1170	1443	1771	1813	2773	2635
	1-3/4		1841	1443	2408	1813	2773	2635
	2-3/4		1975	1443	2748	1813	2830	2635
3/8	1-1/2	25-30	1631	4318	3636	5121	4448	6232
	3		3229	4318	5653	5121	5975	6232
	5		4074	4318	6328	5121	6360	6232
1/2	2-1/4	50-60	3999	7419	6714	9377	9616	9888
	4		6336	7419	8942	9377	10192	9888
	6		6902	7419	10175	9377	12064	9888
5/8	3-3/4	75-90	4999	8264	8747	12928	9760	16373
	5		8854	8264	15590	12928	16802	16373
	7		9381	8264	16710	12928	17732	16373
3/4	3-1/4	150-175	6638	12504	11314	17050	16230	22965
	6		10084	12504	18408	17050	21092	22965
	8		11170	12504	19805	17050	22522	22965
7/8	3-7/8	200-250	8392	18250	16354	20234	16801	23980
	5-3/4		12064	18250	18250	20234	23404	23980
	8-3/4		12784	18250	16850	20234	25575	23980
1	4-1/2	250-300	9773	23617	18250	27605	27460	28909
	7-1/2		11890	23617	26726	27605	34960	28909
	10		15590	23617	30491	27605	37840	28909
1-1/4	5-1/2	400-450	17550	32275	22971	42690	32368	55566
	7		21050	32275	27845	42690	48366	55566
	10		27893	32275	34788	42690	61272	55566

Values shown are average ultimate values and are offered only as a guide and are not guaranteed in any way. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. * Tested by ATEC in accordance with ASTM E488-90 and ICBO ES AC01. Minimum embedment for satisfactory anchor performance is 4 1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.

ANCHOR MATERIAL COMPOSITION					
MATERIAL	STEEL	STAINLESS STEEL	SPECIFICATION	STEEL	STAINLESS STEEL
STUD	AISI C12L14	303, 304, 316	ASTM	A 108, A 510	A 276, A 479
CLIP	AISI C1010-1018 1037	304, 316	FEDERAL	FF-S-325, GROUP II TYPE 4, CLASS 1	A 581, A 582 FF-S-325
WASHER	AISI C1010-1018	TYPE 18-8, 316	PLATING	ZINC QQ-Z-325C	GROUP II
NUT	LOW CARBON STEEL ASTM A 563, GRADE A	TYPE 18-8, 316	GALVANIZED	TYPE II, CLASS 3 ASTM A 153 CLASS C	TYPE 4, CLASS 1 PASSIVATED

Length Identification System

Stamp On Anchor	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
From	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	11	12	13	14	15	16	17	18
Length Of Anchor (Inches) Up to But Not Including	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	11	12	13	14	15	16	17	18	19

Figure 7 Thundermate submittal

Tension/Pull Testing

1.

- a. Product: **NB3C ½" x 1 ¾"** concrete thread – Patent pending (Refer to figure 4)
- b. Result: At **4,225** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



2.

- d. Product: **NB3C ½" x 1 ¾"** concrete thread – Patent pending (Refer to figure 4)
- e. Result: At **4,125** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- f. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



3.

- g. Product: **NB3C ½" x 1 ¾"** concrete thread – Patent pending (Refer to figure 4)
- h. Result: At **4,025** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- i. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



4.

- j. Product: **NB3C1 ½" x 1 ¾"** concrete thread – Patent pending (Refer to figure 1)
- k. Result: At **4,000** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- l. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



5.

- m. Product: **NB3C2 3/4" X 4" flush mount anchor flange – Patent pending (Refer to figure 5)**
- n. Result: At **11,050** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- o. Installed at “Drive wall” ID concrete slab of 1,742 psi compressive strength (see report page 34 and 35)



6.

- p. Product: **NB3C2 3/4" X 4" flush mount anchor flange – Patent pending (Refer to figure 5)**
- q. Result: At **11,000** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- r. Installed at “Drive wall” ID concrete slab of 1,742 psi compressive strength (see report page 34 and 35)



i.

7.

- s. Product: **NB3C2 3/4" X 4" flush mount anchor flange – Patent pending (Refer to figure 5)**
- t. Result: At **10,975** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- u. Installed at “Drive wall” ID concrete slab of 1,742 psi compressive strength (see report page 34 and 35)



8.

- v. Product: **NB1A2 5"x5" flange with threaded post fastened with Comfast 1/4"x2 3/4" lg. – Patent pending (Refer to figure 3)**
- w. Result: At **2,225** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- x. Installed at concrete slab of unknown compressive strength



9.

- y. Product: **NB1A2 5"x5" flange with threaded post fastened with Comfast 1/4"x2 3/4" lg. – Patent pending (Refer to figure 3)**
- z. Result: At **2,275** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- aa. Installed at concrete slab of unknown compressive strength



10.

bb. Product: NB1A2 5"x5" flange with threaded post fastened with Comfast 1/4"x2 3/4" lg. – Patent pending (Refer to figure 3)

cc. Result: At 2,000 pounds the attachment did not show any signs of movement or dislodging after being held for one minute.

dd. Installed at concrete slab of unknown compressive strength



11.

ee. Product: **NB1C 5"x5" flange fastened with Comfast 1/4"x2 3/4" lg. concrete screw (CSFS14234)– Patent pending (Refer to figure 2)**

ff. Result: At **5,150** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.

gg. Installed at concrete slab of unknown compressive strength



12.

hh. Product: **NB1C 5"x5" flange fastened with Comfast 1/4"x2 3/4" lg. concrete screw (CSFS14234)– Patent pending (Refer to figure 2)**

ii. Result: At **5,725** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.

jj. Installed at concrete slab of unknown compressive strength



13.

kk. Product: **NB5 standoff with Marksmen Thundermate anchor 1/2" x 3 1/2" lg.– Patent pending (Refer to figure 6)**

ll. Result: At **3,250** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.

mm. Installed at concrete slab of unknown compressive strength



14.

nn. Product: **NB5 standoff with Marksmen Thundermate anchor 1/2" x 3 1/2" lg.– Patent pending (Refer to figure 6)**

oo. Result: At **2,375** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.

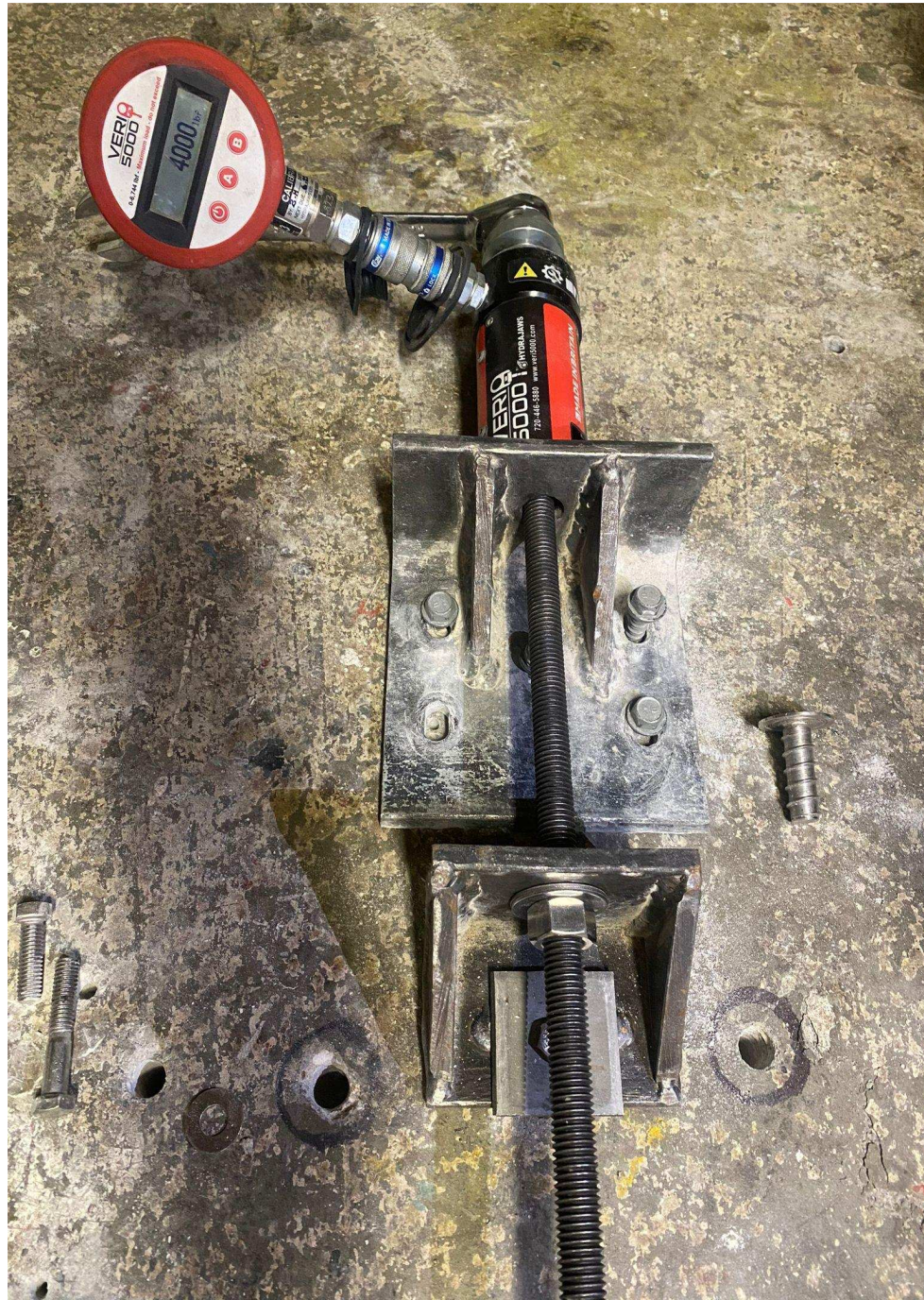
pp. Installed at concrete slab of unknown compressive strength



Shear testing

15.

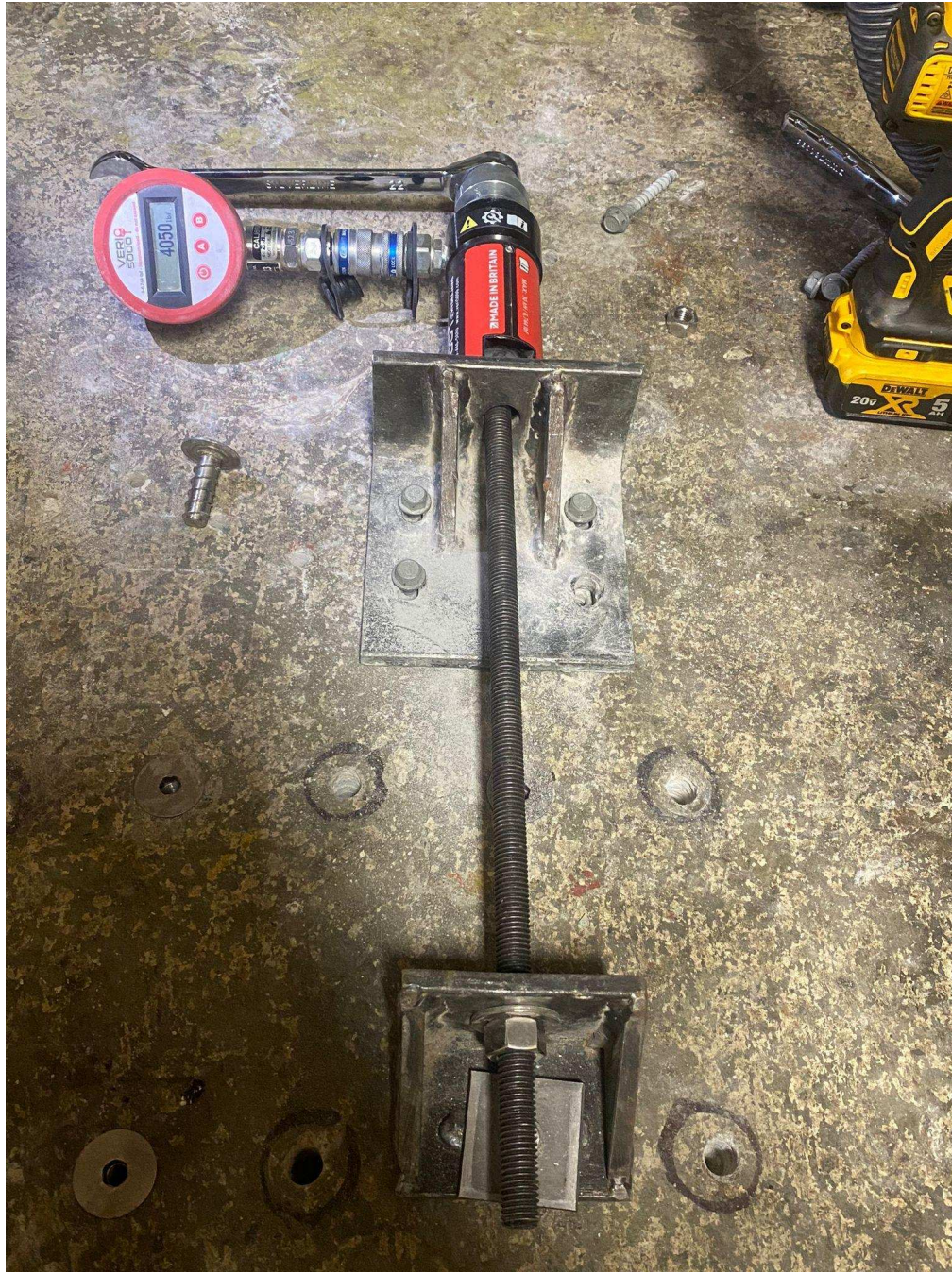
- a. Product: **NB3C ½" x 1 ¾" concrete thread – Patent pending (refer to figure 4)**
- b. Result: At **4,000** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



i.

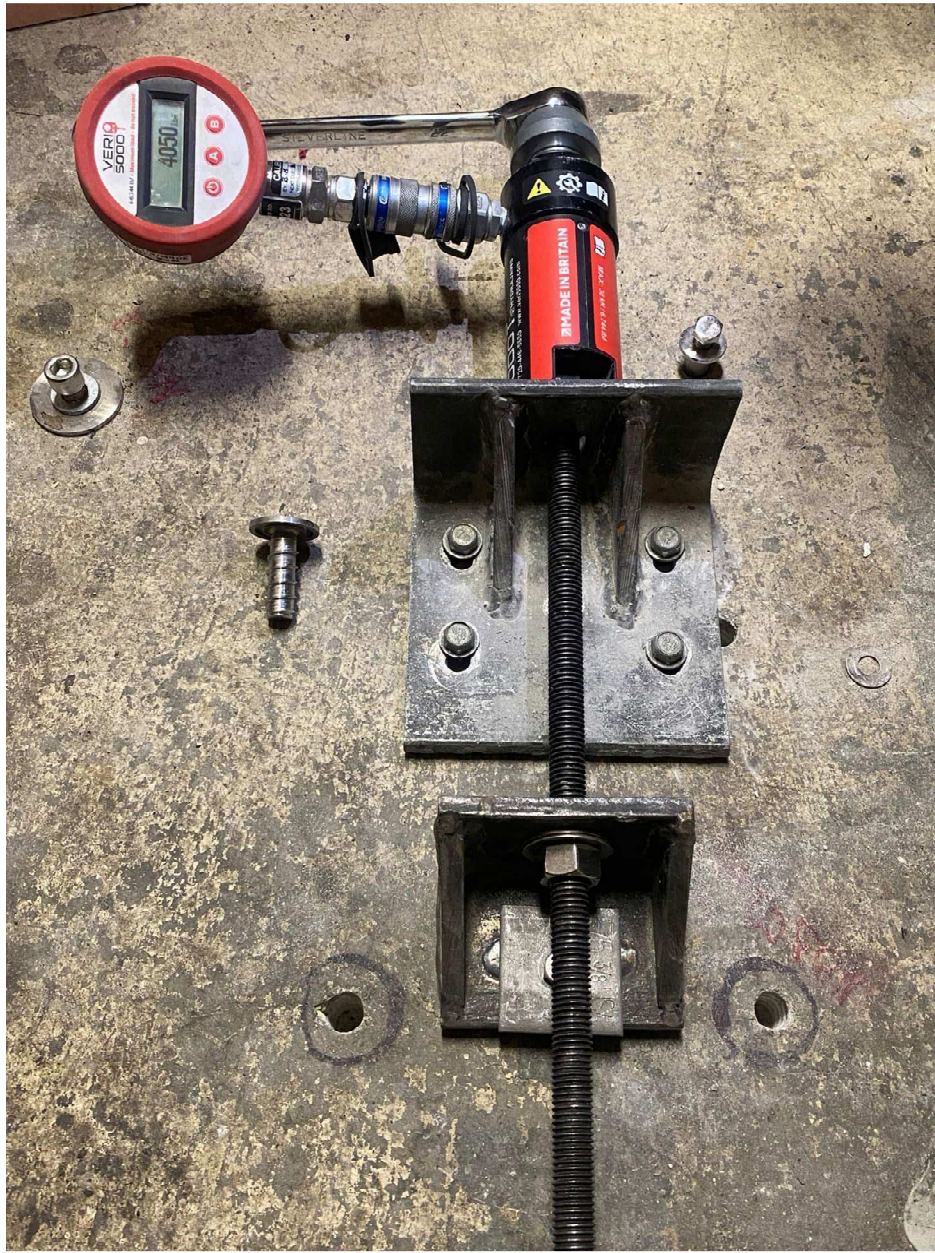
16.

- a. Product: **NB3C ½" x 1 ¾" concrete thread – Patent pending (refer to figure 4)**
- b. Result: At **4,050** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



17.

- a. Product: **NB3C1 ½" x 1 ¾" concrete thread – Patent pending (refer to figure 1)**
- b. Result: At **4,050** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



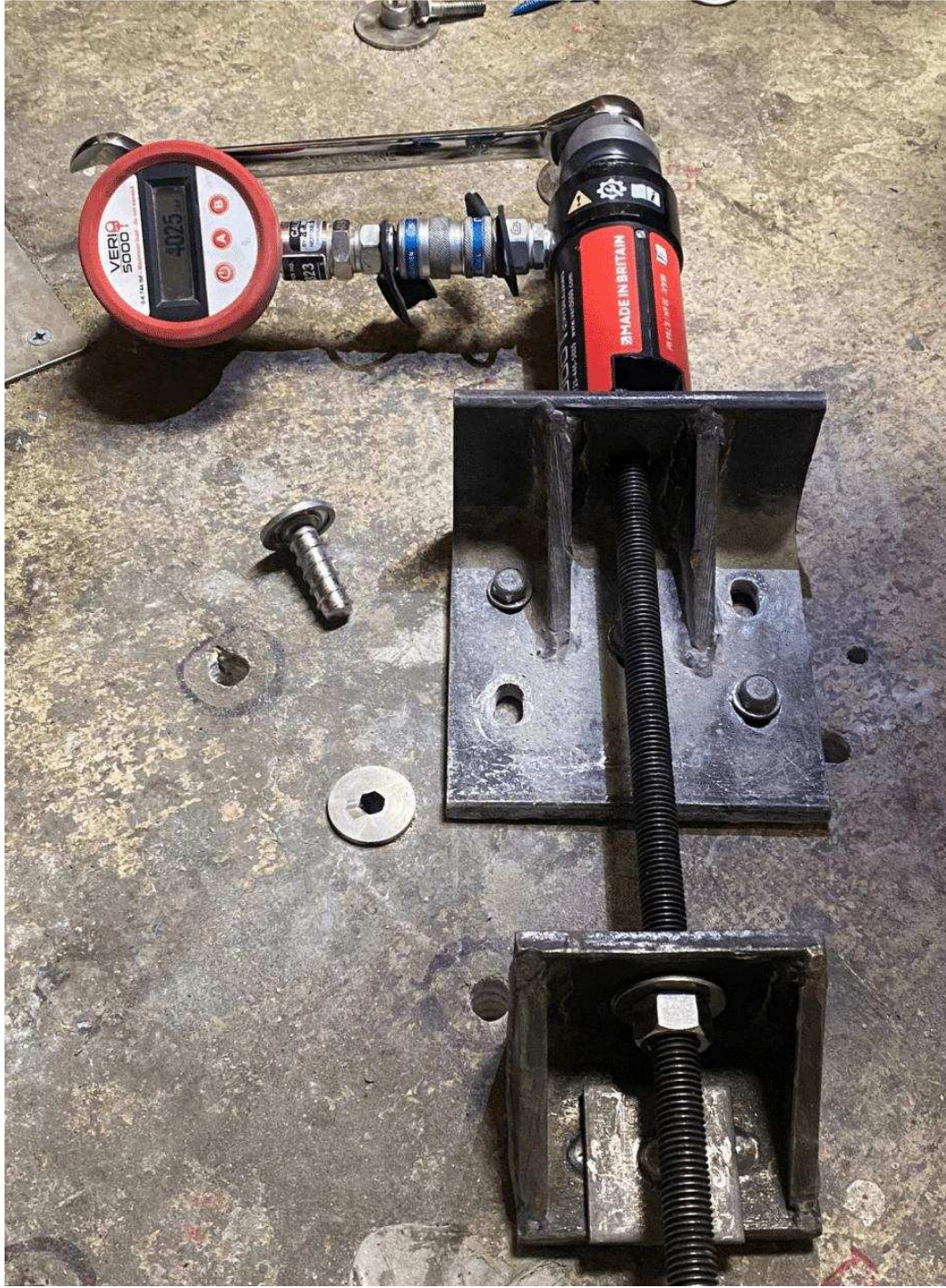
18.

- a. Product: **NB3C1 ½" x 1 ¾"** concrete thread – Patent pending (refer to figure 1)
- b. Result: At **4,000** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



19.

- a. Product: **NB3C1 ½" x 1 ¾"** concrete thread – Patent pending (refer to figure 1)
- b. Result: At **4,025** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Shop" ID concrete slab of 1,140 psi compressive strength (see report page 34 and 35)



20.

- a. **Product: NB3C2 ¾" X 4" lg. flush mount anchor flange -Patent pending (refer to figure 5)**
- b. Result: At **7,950** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Drive wall" ID concrete slab of 1,742 psi compressive strength (see report page 34 and 35)



21.

- a. **Product: NB3C2 ¾" X 4" lg. flush mount anchor flange -Patent pending (refer to figure 5)**
- b. Result: At **7,650** pounds the attachment did not show any signs of movement or dislodging after being held for one minute.
- c. Installed at "Drive wall" ID concrete slab of 1,742 psi compressive strength (see report page 34 and 35)



22.

- a. **Product: NB3C2 ¾" X 4" lg. flush mount anchor flange -Patent pending (refer to figure 5)**
- b. **Result: At 7,775 pounds the attachment did not show any signs of movement or dislodging after being held for one minute.**
- c. **Installed at "Drive wall" ID concrete slab of 1,742 psi compressive strength (see report page 34 and 35)**



Certificate of Calibration

GAUGE REF. No. MAN-4823
 GAUGE RANGE 0-30 kN
 MODEL No. Digital Bluetooth Gauge

We certify that this gauge has been inspected and calibrated for accuracy and passed within our limits of plus or minus 2% F.S.D. Calibration undertaken using a master test gauge manufactured to BS EN 837-1.

Results obtained are as follows:-

MASTER	kN	5.0	10.0	15.0	20.0	25.0	30.0
ACTUAL	kN	4.9	9.9	15.1	20.1	25.1	30.1

TRACEABILITY
Gauges manufactured to BS EN 837-1

*Calibration undertaken using a Budenberg oil operated dead-weight tester type 280H. Serial number 12127 traceability to UKAS via certificate no.57471. Dated 31.12.19. (valid for 12 months).
 Note: In all accordance with BS EN 837-1 this certificate is valid for a period of 12 months from issue.*

Accuracy of gauges as stated above cannot be guaranteed should the unit be subjected to misuse. Gauge will be permanently damaged should maximum load be exceeded.

THIS CERTIFICATE WILL EXPIRE ON June 18, 2022

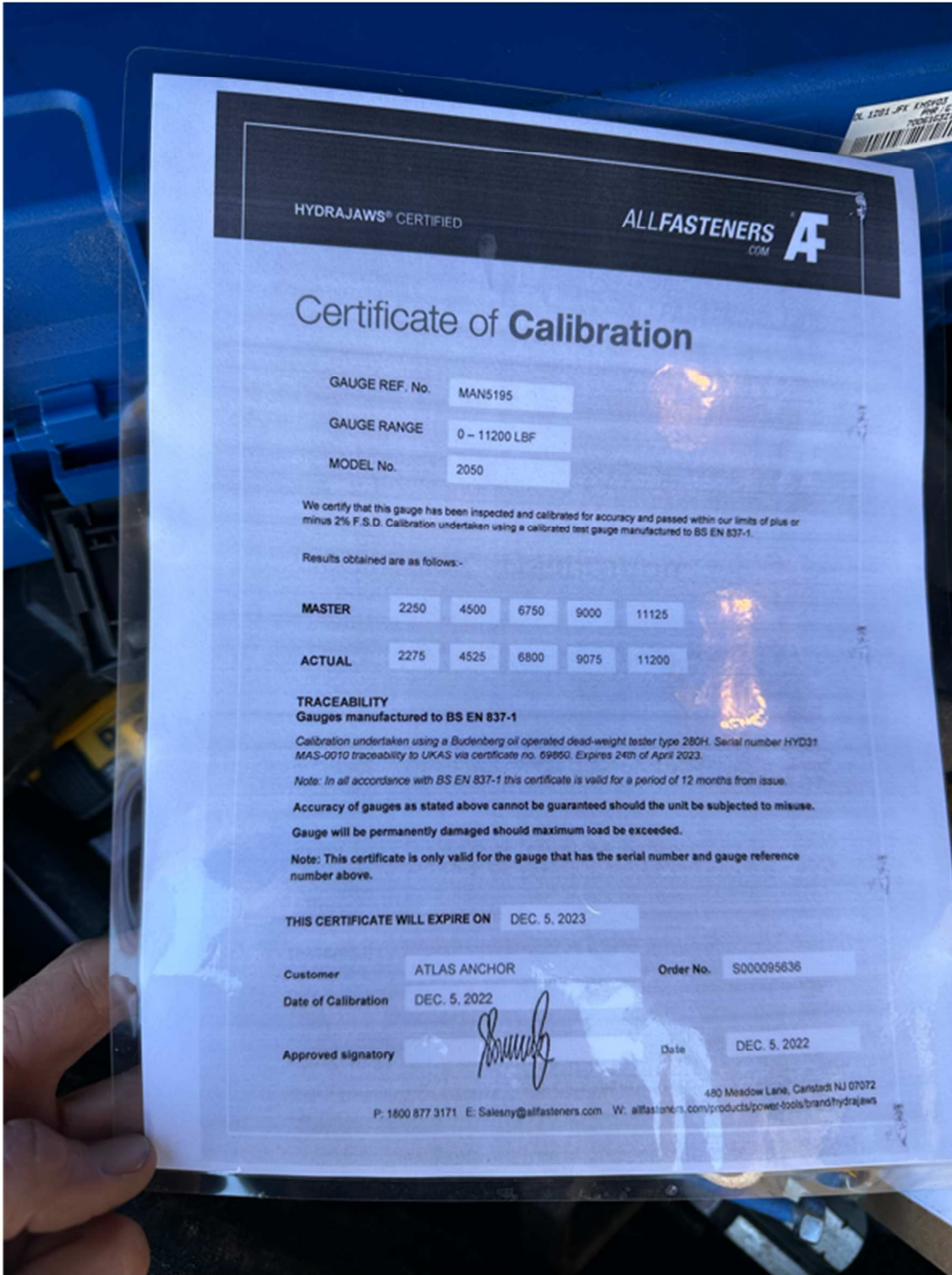
Customer Atlas Anchor Systems

Order No. 2794 Date of Calibration June 18, 2021

Approved Signatory 

Date 6/18/2021

Figure 1 Calibration report for testing on 01/28/22



HYDRAJAWS® CERTIFIED

ALLFASTENERS.COM **AF**

Certificate of Calibration

GAUGE REF. No. **MAN5195**

GAUGE RANGE **0 - 11200 LBF**

MODEL No. **2050**

We certify that this gauge has been inspected and calibrated for accuracy and passed within our limits of plus or minus 2% F.S.D. Calibration undertaken using a calibrated test gauge manufactured to BS EN 837-1.

Results obtained are as follows:-

MASTER	2250	4500	6750	9000	11125
ACTUAL	2275	4525	6800	9075	11200

TRACEABILITY Gauges manufactured to BS EN 837-1

Calibration undertaken using a Budenberg oil operated dead-weight tester type 280H. Serial number HYD31 MAS-0010 traceability to UKAS via certificate no. 69890. Expires 24th of April 2023.

Note: In all accordance with BS EN 837-1 this certificate is valid for a period of 12 months from issue.

Accuracy of gauges as stated above cannot be guaranteed should the unit be subjected to misuse.

Gauge will be permanently damaged should maximum load be exceeded.

Note: This certificate is only valid for the gauge that has the serial number and gauge reference number above.

THIS CERTIFICATE WILL EXPIRE ON **DEC. 5, 2023**

Customer **ATLAS ANCHOR** Order No. **S000095636**

Date of Calibration **DEC. 5, 2022**

Approved signatory  Date **DEC. 5, 2022**

480 Meadow Lane, Carlstadt NJ 07072
P: 1600 877 3171 E: Salesny@allfasteners.com W: allfasteners.com/products/power-tools/brand/hydrajaws

Figure 2 Calibration report from testing done on 3/31/23 (NB3C2)

April 12, 2023

REPORT OF: Material Analysis
REPORT TO: Atlas Anchor Testing
Attn: Nicholas Barona
9531 SW 6th Ct.
Pembroke Pines FL 33025

DATE APPROVED: March 3, 2023
IDENTIFICATION: 1 ea. Drive wall NB3C2
1 ea. Shop

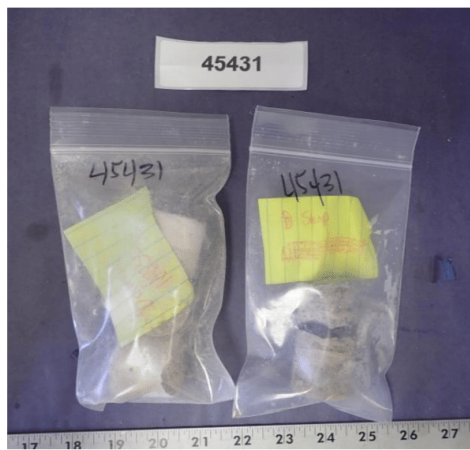


Figure 1: Sample, as received

PROCEDURES

Concrete compression testing was performed per ASTM C39 using a Satec Systems Model: Apex 22EMF, S/N: 1017, with a calibration due date of date of 4/20/2023. Testing was performed on 4/12/2023.

RESULTS: Next Page

Lab No. 45431
Page 1 of 2

NOTE: Submitted material will be retained for 30 days unless otherwise notified in writing. Any interpretations and/or opinions made in our reports are not subject to the accreditation. Our letters and reports are for the exclusive use of the client to whom they are addressed. The use of our name must receive our prior written approval. Our letters and reports apply to the sample tested and/or inspected and are not necessarily indicative of the qualities of apparently identical or similar materials.

(972) 480-0033 • FAX (972) 480-0036 • 845 E. Arapaho Road - Richardson, Texas 75081 • www.metengr.com

Figure 3 PSI report from Metallurgical Engineering

Material Analysis
Atlas Anchor Testing
April 12, 2023

CONCRETE COMPRESSION TESTING

Sample ID	Area, (in ²)	Peak Load, (lbs)	Compressive Strength, (PSI)
Drive wall NB3C2	1.4849	2,586	1,742
Shop	1.4019	1,599	1,140

These results are based on the tests performed and are subject to change upon the receipt of new or additional information.

Respectfully submitted,

METALLURGICAL ENGINEERING SERVICES, INC.
Firm Registration No. F-2674



Daniel A. Stolk, PE, CWI
Principal Engineer

Lab No. 45431
Page 2 of 2

Figure 4 PSI report from Metallurgical Engineering