Cool and Cobb Engineering Company

Job: Geoff Casner Date: 3/10/2026

Location: 375 SW Minter Rd., Lake City, Fl. 32024 Project: 26-1081

HELICAL PILE DESIGN

Design Scope Notes:

1. This design is developed per field assessment and layout provided by licensed foundation contractor. Cool and Cobb Engineering Co. has not performed an on-site assessment of the structure.
2. Location and quantity of supplemental supports has been determined by owner/contractor agreement.
3. The design intent offers supplemental support to stabilize the existing foundation in depicted area(s) only and will reduce the total pressures on existing soils. The structure may require additional stabilization to other affected areas not addressed in this design.
4. This design is based on the estimated load of the structure placed on shallow soils. No deep soils geotechnical testing information was provided for this design.
5. Cool and Cobb is not responsible for on-site engineering evaluations or inspections. If on-site inspection is required, contractor to obtain an approved 3rd party to inspect and provide Cool and Cobb Engineering inspection certification details and report.
6. This design does not address any possible sink hole activity as defined in Florida Statute § 627.706.

General Notes:

1. Contractor to ensure all piles are installed in accordance with ICC ES AC 358.
2. The first pile installed on site will be considered a test pile. If the minimum psi is not achieved within **25'** or if voids or soft soil conditions are found, the contractor shall stop the installation and notify the engineer, for re-evaluation.
3. In the event stabilization results in any void below foundation, chemical grout should be applied to provide continuous support below concrete foundation and/or slab. Contractor shall use caution as any lift could damage below slab utilities.
4. At completion of the installation, Cool and Cobb Engineering Co. shall be supplied with a signed and dated Installation Log to include final location, final depth, and installation torque psi of each pile along with any design changes (with reason for field changes), for Engineer approval and completion of the "As Built Certification".

LOADING ANALYSIS

The loadings were determined for each pile specifically. The support locations and type are provided in the attached plan. Calculated total loadings, including both dead and live loads are provided in Attachment "A". Based on the total loading requirements, the Digga 12ALS driver is to be used to achieve a minimum gauge pressure of 1,000 psi, which will provide pile capacity, including 2 to 1 safety factor of 37,330 lbs., which is greater than the maximum calculated load of 12,750 lbs. which occurs on pile No. 1. This design is based on a maximum of 8' pile spacing with no piles under windows or door openings. Any piles installed less than 48" apart are to be battered 10° away from each other.

Contractor to certify installation meets above calculated psi by extending 2' past the design pressure, and a minimum pile depth of Ten (10') feet which is certified as meeting the requirements of the Florida Building Code 2023, 8th Edition, and good standard engineering practice.

POLY (Chemical Grout) DESIGN

The loadings were determined to level/raise/fill the identified areas by applying chemical grout to provide continuous support below concrete foundation and/or slab. The selected injection areas for the application are identified on the Plan attached. The calculated loading of 90 lbs/ ft2 , is certified as meeting good engineering practice.

This item has been digitally signed and sealed by Kenneth F. Wheeler, P.E. on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

3/10/2026
Kenneth F. Wheeler, P.E.
State of Florida
Professional Engineer No. 60417

KENNETH F. WHEELER LICENSE No 60417 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Kenneth F Wheeler
Date: 2026.03.10 16:31:54 -04'00'

203 W. Main St.
Avon Park, FL 33825
Office: (863) 657-2323

Contractor: **Solid Foundations**

Solid Foundations
1910 SW Main Blvd
Lake City, FL 32025
855-227-0300
www.solidfoundations.com

SF Representative: Jimbo Willis
Cell: (386)288-3240
Email: Jimmie@solidfoundations.com

CONTRACT DATE: 12/1/2025
SUBMITTED TO: Geoff Casner
ADDRESS: 375 SW Minter Rd.

EMAIL: gcasner59@att.net
Phone: 321-289-5070

1-Story block Home with Stucco and Brick Finish onand Shingle Roof on Conc Foundation.

Digitally signed by Kenneth F Wheeler
Date: 2026.03.10 16:32:14 -04'00'

This item has been digitally signed and sealed by Kenneth F. Wheeler, P.E. on the date adjacent to the seal.

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3/10/2026
Kenneth F. Wheeler, PE #60417
Cool and Cobb Engineering Co.
203 W. Main St.,
Avon Park, FL 33825

CCEC # 26-1081

Push Pier Model 300:	Interior Pier:	NCFI-24-120
Push Pier Model 250:	Low Profile Bracket:	NCFI-24-003
Helical Pier:	Porch Bracket:	Windows/Doors:
Crawl Space Pier:	4x6 Wood Beam:	Floor Joist:

Cool and Cobb Engineering Company

Job: Geoff Casner
Location: 375 SW Minter Rd., Lake City, Fl. 32024

Date: 3/10/2026
Project # 26-1081

Attachment "A"

Total Load on Support (Live Load + Dead Load)

SUPPORT NO.	TOTAL CALCULATE LOAD
1	12,750 lbs
2	12,000 lbs
3	12,000 lbs
4	9,600 lbs
5	6,000 lbs
6	6,000 lbs
7	6,000 lbs
8	6,600 lbs
9	9,000 lbs
10	7,500 lbs
11	9,000 lbs
12	9,000 lbs
13	9,300 lbs

Maximum Total Load on Pile: 12,750 lbs

Digitally signed by Kenneth F Wheeler
Date: 2026.03.10 16:32:29 -04'00'

3/10/2026
Kenneth F Wheeler, P.E.
State of Florida
Professional Engineer No. 60417

This item has been digitally signed and sealed by Kenneth F. Wheeler, P.E. on the date adjacent to the seal.

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203 W. Main St.
Avon Park, FL 33825
Office: (863) 657-2323

PLANETARY ANCHOR DRIVES
9,000 FT LBS - 12,000 FT LBS

Developed in conjunction with the leading Screw Anchor/Pile installers around the world. The only true Anchor Drives available, designed & manufactured inhouse by Digga, specifically for the rigours of the application. Host machine operates in the most efficient HP range, minimizing wear & tear, to optimize performance & ensure highest returns.

FEATURES

- High efficiency EATON/DIGGA bell geroler hydraulic motors with integrated Pressure Relief Valve ensures max volumetric effeciency for consistent & efficient pile installation throughout your working day
- More linear feet in the ground = greater returns
- ECV (Energy Control Valve) to prevent rapid decompression of oil, caused by the reverse energy created by Pile Kick-back
- Engineered hood & ears for maximum strength
- Extreme duty shaft retaining system
- No Case Drain required
- 3yr Gearbox & 2yr Motor Warranty

Need Torque from a lower pressure? No problem.

Two pressure series are available to suit your requirements.
Standard pressure series, for machines with 3500 PSI. Low Pressure series, for machines with 3000 PSI

PREMIUM ANCHOR DRIVES

	STANDARD PRESSURE - 3500 PSI		LOW PRESSURE - 3000 PSI	
MODEL	**9ADS**	**12ADS**	**9ALS**	**12ALS**
Nominal Torque (FT LBS)	9,112	11,542	9,893	12,445
Max Pressure - Do Not Exceed	3500psi @ 29gpm	3500psi @ 29gpm	3000psi @ 29gpm	3000psi @ 29gpm
Max Flow - Do Not Exceed	55gpm @ 1800psi	55gpm @ 1800psi	55gpm @ 1800psi	55gpm @ 1800psi
Max Horse Power	60	60	60	60
Pressure Relief Valve	Included	Included	Included	Included
Energy Control Valve	Included	Included	Included	Included
Standard Output Shaft	2.5" Hex	2.5" Hex	2.5" Hex	2.5" Hex
Weight (lbs)	351	351	351	351
Overall Length (in)	37.2"	37.2"	37.2"	37.2"
Diameter (in)	11.4"	11.4"	11.4"	11.4"

OPTIONAL EXTRAS

- Ryno Piling cradle
- Drive Linkages
- Excavator Mounts/Hitch
- Diggalign - Pile/Auger Alignment system
- Torque Monitoring - Pressure Differential Guage
- Torque Logic - Pile Alignment / Data Logging system

3/10/2026
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PLANETARY ANCHOR DRIVES
9,000 FT LBS - 12,000 FT LBS

OUTPUT SPEED & TORQUE

9ADS - STANDARD PRESSURE - 3500 PSI				12ADS - STANDARD PRESSURE - 3500 PSI			
OUTPUT SPEED		OUTPUT TORQUE		OUTPUT SPEED		OUTPUT TORQUE	
GPM	RPM	PSI	FT-LBS	GPM	RPM	PSI	FT-LBS
8	9	1,500	3,905	8	7	1,500	4,945
10	12	1,700	4,425	10	9	1,700	5,605
12	14	1,900	4,945	12	11	1,900	6,265
14	16	2,100	5,465	14	13	2,100	6,925
16	19	2,300	5,990	16	15	2,300	7,585
18	21	2,500	6,510	18	17	2,500	8,245
20	24	2,700	7,030	20	19	2,700	8,905
24	26	2,900	7,550	24	20	2,900	9,565
26	28	3,200	8,070	26	22	3,200	10,225
28	31	3,300	8,590	28	24	3,300	10,880
30	33	3,500	9,100	30	26	3,500	11,500
32	38			32	30		
34	40			34	32		
36	42			36	33		
38	45			38	35		
40	47			40	37		
42	49			42	39		
44	52			44	41		
46	54			46	43		

9ALS - LOW PRESSURE - 3000 PSI				12ALS - LOW PRESSURE - 3000 PSI			
OUTPUT SPEED		OUTPUT TORQUE		OUTPUT SPEED		OUTPUT TORQUE	
GPM	RPM	PSI	FT-LBS	GPM	RPM	PSI	FT-LBS
8	7	1 000	3 298	8	6	1 000	4 148
12	11	1 200	3 957	12	9	1 200	4 978
16	15	1 400	4 617	16	12	1 400	5 808
20	19	1 600	5 276	20	15	1 600	6 637
24	22	1 800	5 936	24	18	1 800	7 467
28	26	2 000	6 596	28	21	2 000	8 296
32	30	2 200	7 255	32	24	2 200	9 126
36	33	2 400	7 915	36	27	2 400	9 956
40	37	2 600	8 574	40	30	2 600	10 785
44	41	2 800	9 234	44	33	2 800	11 615
48	42	3 000	9 893	48	35	3 000	12 445

3/10/2026
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Output speed and torque specifications are THEORETICAL. Speed and torque output are dependent on the overall system efficiencies associated with the prime movers hydraulic system.
This document should be used for information and comparative purposes only. When determining criteria, & application specific information is required, please contact DIGGA.

Do Not Scale

FOUNDATION SYSTEMS SUPPLY

Leads

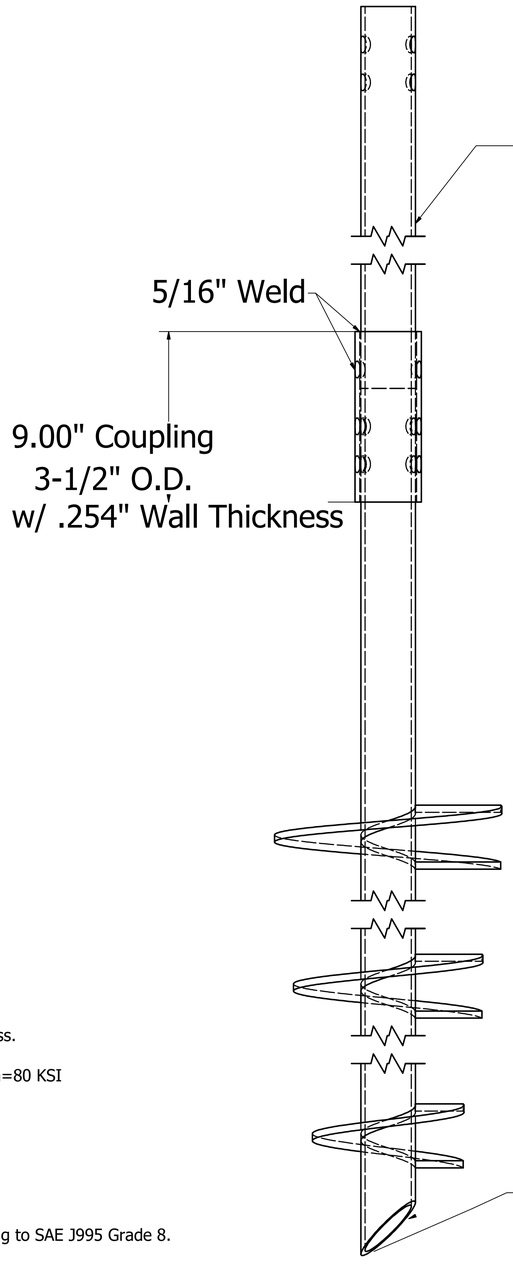
Leads				
Part NO.	"A"	"B"	"C"	"D"
L5 NG 8	60"	8"		
L7 NG 10	84"	10"		
L5 NG 10 12	60"	8"	10"	
L7 NG 10 12	84"	10"	12"	
L7 NG 8 10 12	84"	8"	10"	12"

3/10/2026
Kenneth F. Wheeler, P.E.
PE #60417

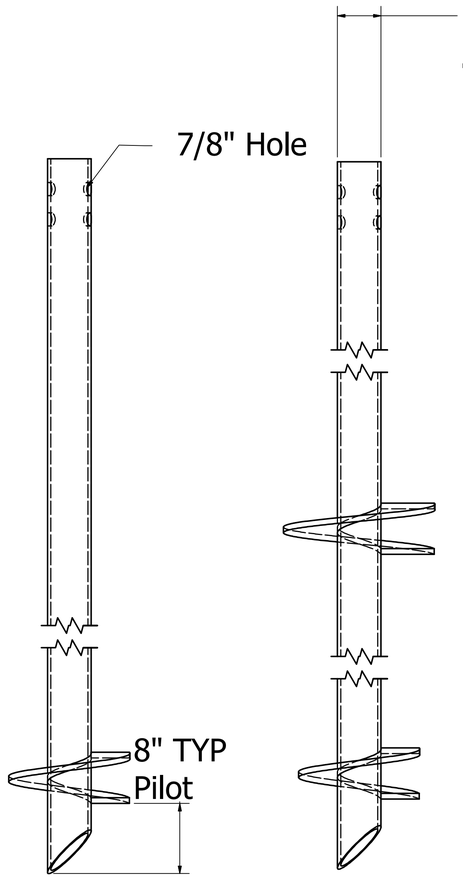
Cool and Cobb Engineering Co.
203 W. Main St.
Avon Park, FL 33825

-NOTES-

1. Hot-dipped galvanized in accordance with ASTM A123.
2. New Construction Bracket, Repair Bracket, Shaft Coupler, Lead Shafts, and Extensions have a nominal wall thickness.
3. Helical pile lead Shafts and Extensions Are carbon steel piles that conform to API 5 CT L80. Minimum yield strength=80 KSI
4. Shaft couplers are carbon steel pipes that conform to API 5 CT L80. Minimum yield strength= 80 KSI
5. Helix plates are carbon steel plates conforming to ASTM A572, Grade 50. Minimum yield strength=68 KSI.
6. Nominal spacing between helical plates is three times the diameter of the preceding helix plate.
7. Coupling bolts: diameter X 4 long Hex Bolt conforming to SAE J429 Grade 8 with matching hex nuts conforming to SAE J995 Grade 8.
8. 2000 Helical Design & Manufacturing has industry recognized written quality control for all incoming materials, and manufacturing processes.
9. All welding to be done by welders certified under Section 4 of the AWS D1.1/D1, 1M Structural Welding Code-Steel.

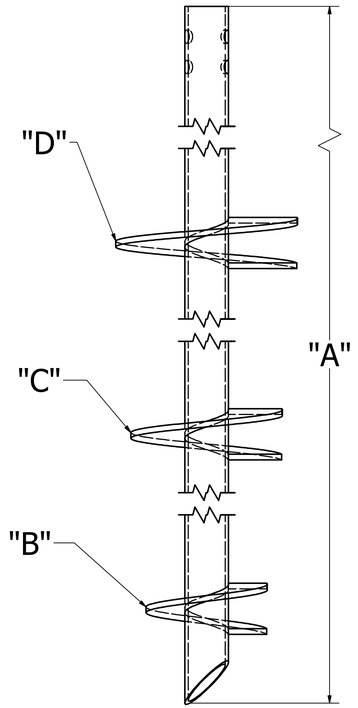


Typical Pier Assembly

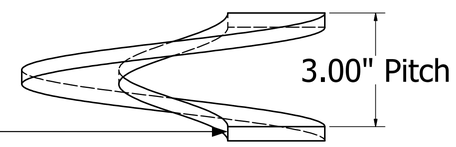


Single Helix Lead Section

Double Helix Lead Section



Triple Helix Lead Section



2000 HELICAL DESIGN & MANUFACTURING

2000 HELICAL DESIGN AND MANUFACTURING

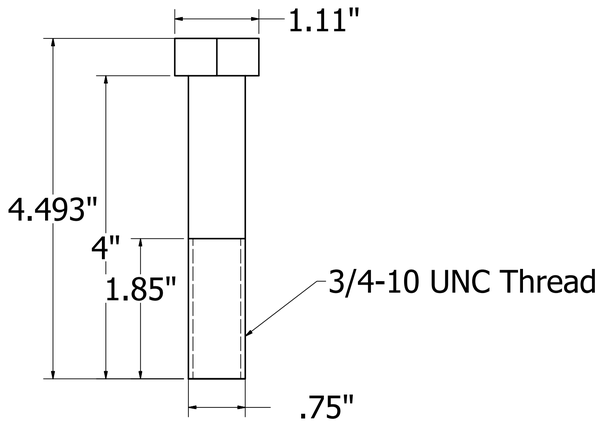
L5, L7 - Leads

DATE	DRAWN BY	DWG NO.	REV
7/12/2017	AK	HDM-5781012	-

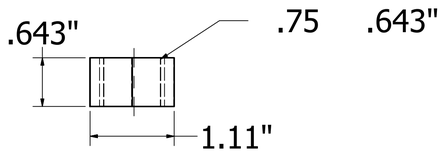
Do Not Scale

Extensions

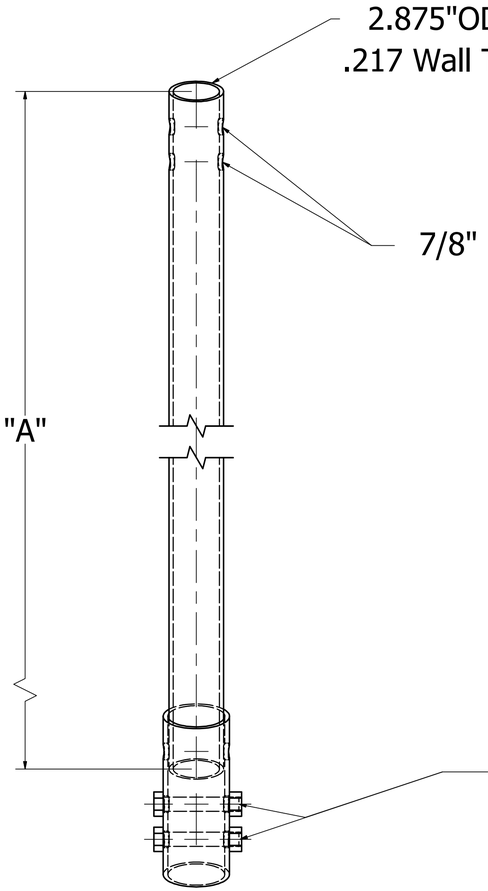
Torque Strength Rating - 9,281 Ft-Lbs
Ultimate Capacity (Tension/Compression) - 83.53 Kip
* Based On A Torque Factor (Kt)=9



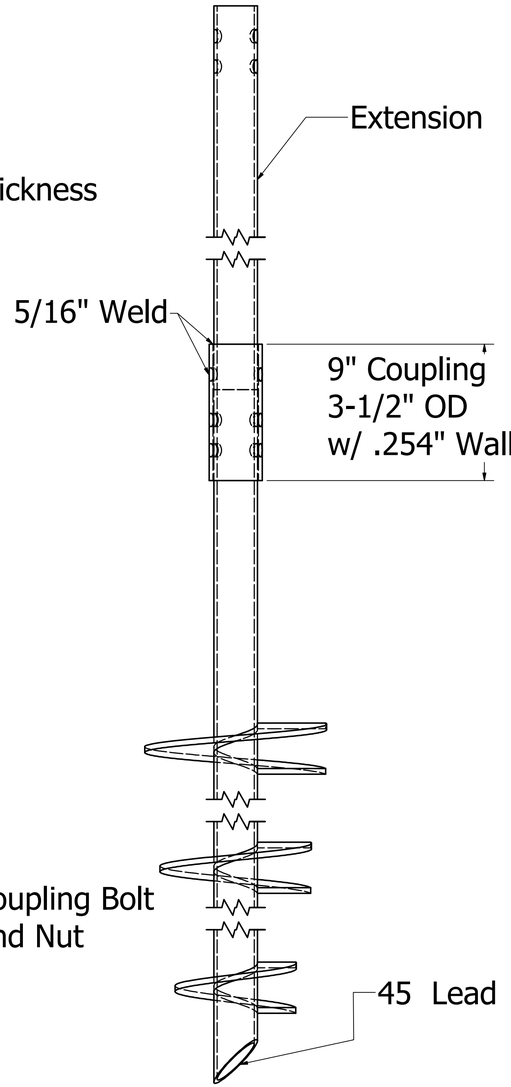
Extension
3/4x4 Bolt



Extension
3/4 Nut



Extension



Typical Pier
Assembly

Extension	
Part NO.	"A"
E3	36"
E5	60"
E7	84"

3/10/2026
Kenneth F. Wheeler, P.E.
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Avon Park, FL 33825

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9. All welding to be done by welders certified under Section 4 of the AWS D1.1/D1, 1M Structural Welding Code-Steel.

FOUNDATION SYSTEMS SUPPLY

2000 HELICAL DESIGN & MANUFACTURING

2000 HELICAL DESIGN AND MANUFACTURING

E3, E5, E7 - Extensions

DATE	DRAWN BY	DWG NO.	REV
7/20/2017	AK	HDM-E357	-

3/10/2026
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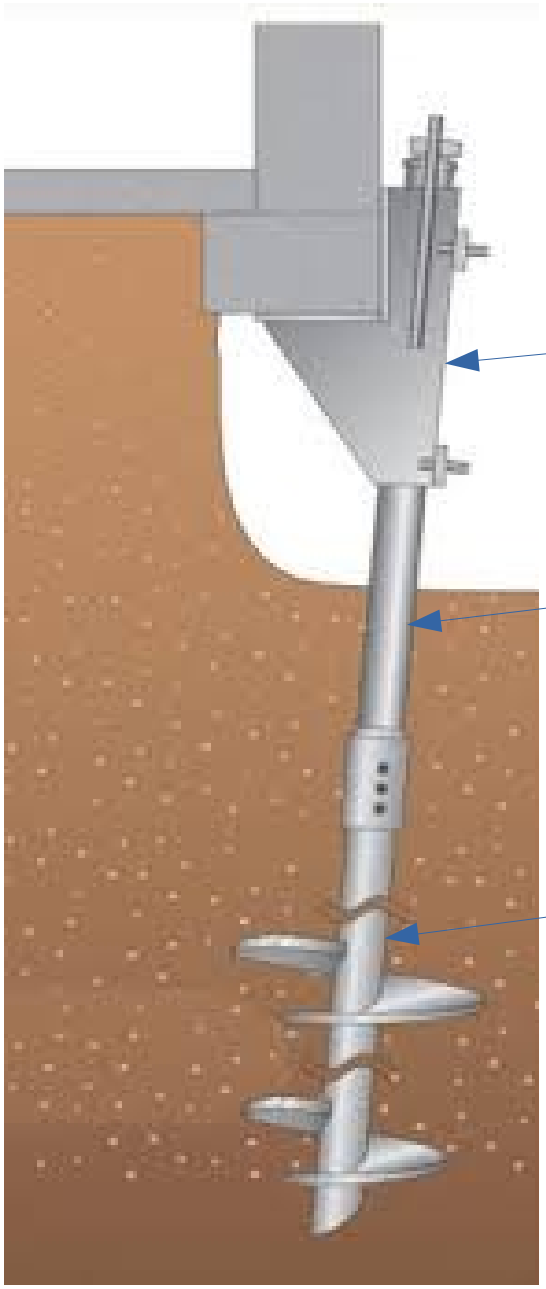

STANDARD DUTY BRACKET (35 KIPS)

HELICAL LEAD – 7’ with 10”/12” Flights, 2 7/8” OD, .217 Wall
(MAXIMUM TORQUE NOT TO EXCEED 10,000 FT LBS. ULTIMATE CAPACITY IS 72 KIPS)

HELICAL EXTENSION – 7’, 2 7/8” OD, .217 Wall

FOUNDATION SYSTEMS SUPPLY

1418 E. Busch Blvd., Suite 311
Tampa FL 33612
813-930-2846

NCFI POLYURETHANES

TECHNICAL DATA SHEET

NCFI Polyurethanes
Div. of Barnhardt Manufacturing Co.
P. O. Box 1528 • Mount Airy, NC 27030
800-346-8229 www.NCFI.com

TerraThane 24-003
Geotechnical Foam System

NCFI Polyurethanes system 24-003 is a hydrophobic/hydro-insensitive, plural component, polymeric MDI-based polymer system designed for concrete lifting/leveling, joint matching, void filling and concrete under-sealing in wet environments. This system has been specially formulated for exceptional flow or spread under concrete road or slab section(s) when water is present. In certain applications this system can be used for deep soil injection applications when soil conditions dictate.

Typical Properties of Components

Component	B-24-003	A2-000
Appearance	Transparent liquid	Transparent liquid
Brookfield Viscosity @ 30 rpm	500 cps at 72°F	200 cps at 72°F
Specific Gravity	1.07	1.24
Storage Temperature	50ºF – 100ºF	50ºF – 110ºF

Mix Ratio

By weight.....100 parts poly : 116 parts iso
By volume.....100 parts poly : 100 parts iso

Typical Properties of Hand-Mixed System at 72ºF and thru HPIM equipment

	at 72ºF	at 110ºF thru equipment
Cream Time	22 seconds	9 seconds
Tack Free Time	60 seconds	23 seconds
Rise Time	90 seconds	25 seconds
Free Rise Core Density	4 pcf	4 pcf

Process Parameters

Iso Temperature	100ºF to 120ºF
Poly Temperature	100ºF to 120ºF
Mixing Pressure	Minimum 800 static, 600 dynamic psi, 1000/800 preferred

TERRATHANE™ GEOTECHNICAL POLYURETHANE FOAM

3/10/2026
Kenneth F. Wheeler, P.E.# 60417
Cool and Cobb Engineering Co.
203 W. Main St.,
Avon Park, FL 33825

Typical Foam Physical Properties

In-Place Density (ASTM D-1622)			5 - 6 pcf
Compressive Strength (ASTM D-1621), parallel to rise			80 - 100 psi
Compressive Modulus (ASTM D-1621), parallel to rise			2400 - 3200 psi
Tensile Strength (ASTM D-1623), parallel to rise			100 – 120 psi
Flexural Strength (ASTM D790)			387 psi
Flexural Modulus (ASTM D790)			13502 psi
Shear Strength (ASTM C273)			90 psi
Shear Modulus (ASTM C273)			677 psi
Closed cell content			> 92%
Water Absorption (ASTM D-2842)			$\leq$ 0.04 lbs/ft^2
NYDOT Hydro-Insensitivity test, GTP-9			> 96% density retention
			>93% comp str retention
Dimensional stability, % volume change (ASTM D-2126)			
	Heat age at 158°F	**Freezer at -20°F**	**Humid age at 100%RH & 120°F**
28 day aging	-1.5%	-0.1%	-1.0%
Resistance to Solvents			Excellent
Resistance to Mold and Mildew			Excellent
Maximum service temperature			200°F

Storage and Handling

Store the poly from 50°F to 100°F. Avoid moisture contamination during storage, handling, and processing. For both components, pad containers and day tanks with either nitrogen or dry air (desiccant cartridge or air dryer @ -40°F dew point). For optimum shelf life, the recommended storage temperature for iso is 50°F to 110°F. Do not expose iso to lower temperatures – freezing may occur. Shelf life is 6 months for factory sealed containers. To insure handling safety, consult the Safety Data Sheets associated with this product.

Application Cautions

Careful consideration should be given to selection and application of any NCFI Polyurethane foam system, including injection under concrete slabs and/or into void areas (cavities), where excessive foam mass build-up can occur. Excessive polyurethane foam lift thickness will result in high internal temperatures within the injected foam. These high temperatures can result in degraded foam properties, or in extreme cases, spontaneous combustion. Single lift thickness should be limited to a maximum of 6 inches, allowing at least 15 minutes before an additional lift. Please consult NCFI Polyurethanes for safety considerations, polyurethane system selection and application recommendations.

Polyurethane products manufactured or produced from this liquid system may present a serious fire hazard if improperly used or allowed to remain exposed or unprotected. The character and magnitude of any such hazard will depend on a broad range of factors which are controlled and influenced by the manufacturing and production process, by the mode of application or installation and by the function and usage of the particular product. ***Any flammability rating contained in this literature is not intended to reflect hazards presented by this or any other material under actual fire conditions. These ratings are used solely to measure and describe the product's response to heat and flame under controlled laboratory conditions.*** Each person, firm or corporation engaged in the manufacture, production, application, installation or use of any polyurethane product should carefully determine whether there is a potential fire hazard associated with such product in a specific usage, and utilize all appropriate precautionary and safety measures.

Original: 04/2002 Revision #10: 07/2019

3/10/2026
Kenneth F. Wheeler, P.E.# 60417
Cool and Cobb Engineering Co.
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Avon Park, FL 33825