



Solid Foundations
1910 SW Main Blvd
Lake City, FL 32025

5/6/2026

Re: Steve Mathis
3283 SW Sisters Welcome Road
Lake City, FL 32024



Structural Engineering Report for Residential Underpinning:

Project Information:

Vista Specialty Engineering, LLC (VSE) was asked to provide structural engineering design for the helical pier system to be installed at the above-referenced address. The subject building is a single-story, wood-framed w/ brick veneer, single-family residence. During a site inspection conducted by Solid Foundations, it was observed that a portion of the foundation had undergone foundation settlement. In order to prevent further foundation settlement, eight (8) 2-7/8" diameter helical piers (2000 Helical Design and Manufacturing) have been proposed to voluntarily stabilize the foundation. The location of these piers are shown on the plans attached.

Code Requirements:

- All design and construction shall conform to the 2023 Florida Building Code, Residential 8th Edition, and the 2023 Florida Building Code, Existing Building 8th Edition.

Installation Criteria:

Based on the calculations attached (w/ FS = 2.5), helical piers shall be installed to the minimum specifications:

- Installation Torque: 2,500 ft-lb. Install to **1,000 psi w/ Digga 12ALS Drive Head** (equivalent to 4,148 ft-lb)
- Pile Depth: **10'-0"**
- Worst Case Design Load (Allowable): **9.8k**

Installation shall be performed by a qualified contractor experienced in helical pier systems. The first pier installed shall be evaluated as a production test pier installed to a maximum of 25' below grade. If the specified installation pressure is not met within the first 25' of pier embedment, the GC shall contact VSE for further recommendations. During installation, the GC shall record the installation depth and pressure for each pier.

Allowable Pile System Capacity (as published by 2000 Helical Design and Manufacturing):

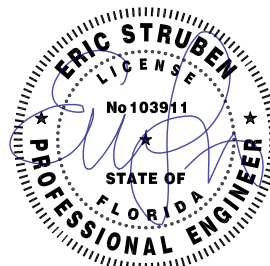
- Standard Duty Bracket = 35.0k
- Helical Lead (L7 NG 10 12) = 36.0k

Limitations:

This report is based on information provided by the contractor. Vista Specialty Engineering, LLC did not perform a site visit and makes no guarantee regarding in-situ soil conditions or existing framing capacities/conditions. It is the contractor's responsibility to consult VSE in the event that field conditions vary from those shown in this report. This report is not in place of a site-specific geotechnical engineering report. VSE has been retained solely for the purpose of vertical (gravity) analysis and foundation stabilization. No subsurface exploration or testing was performed to evaluate the presence or potential for geologic hazards, including slope instability or sinkhole activity, as defined by Florida Statute § 627.70. VSE assumes no responsibility for sinkhole formation, subsurface void migration, or ground loss occurring before, during, or after construction.

Sincerely,

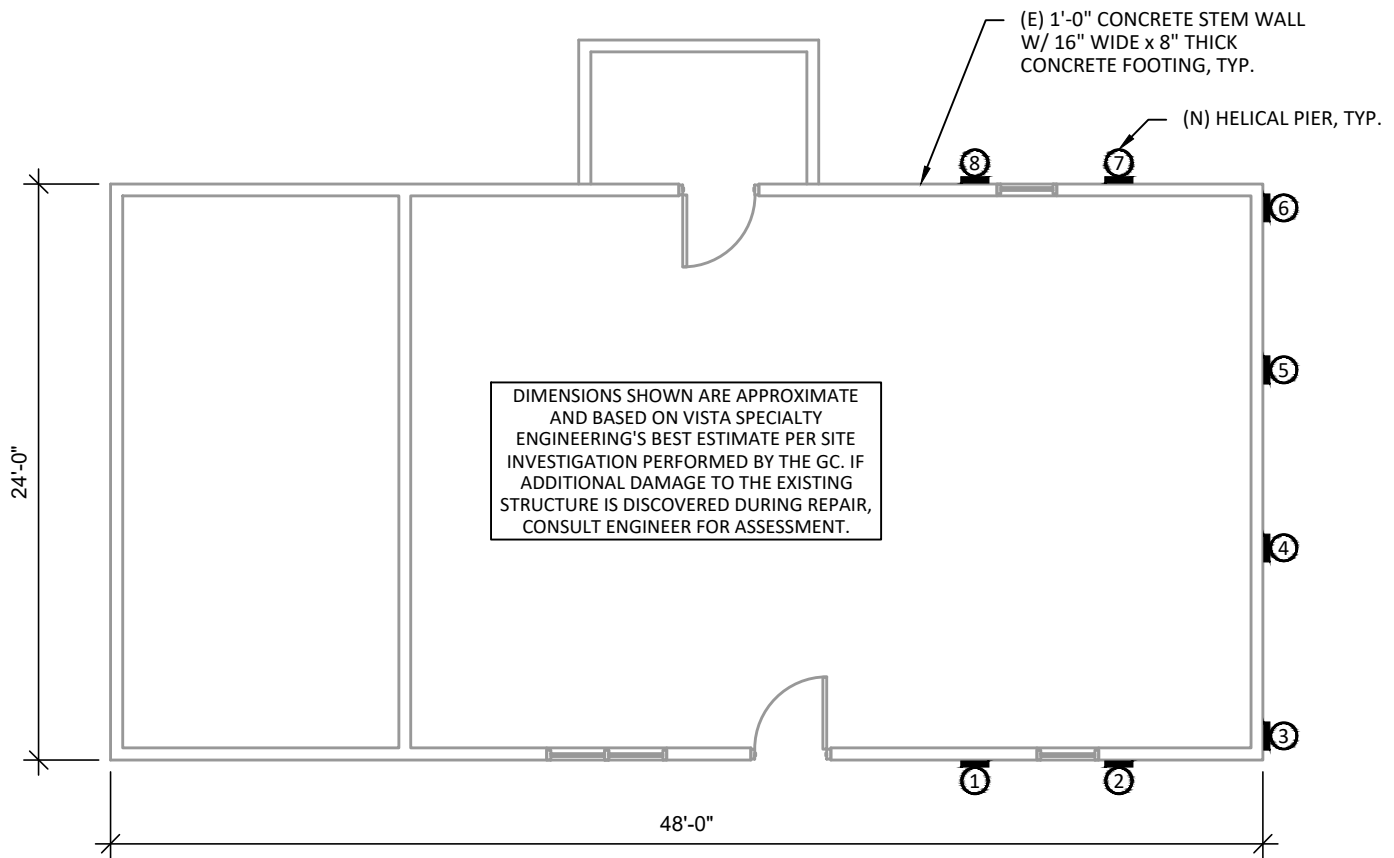
Vista Specialty Engineering, LLC
Eric Struben, P.E. as Owner of Vista Specialty Engineering, LLC



This item has been digitally signed and sealed by Eric Struben, PE, on the date adjacent to the seal.

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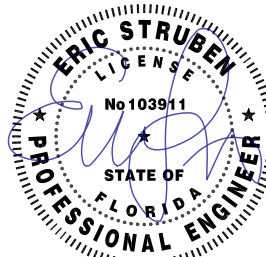
05/06/2026



PLAN NOTES

- CONTRACTOR TO NOTIFY ENGINEER OF DISCREPANCIES BETWEEN FIELD CONDITIONS AND THOSE SHOWN IN THESE DOCUMENTS PRIOR TO CONSTRUCTION/INSTALLATION OF PIERS.
- ALL WORK & MATERIALS SHALL CONFORM TO 2023 FLORIDA BUILDING CODE, RESIDENTIAL 8TH EDITION, AND THE 2023 FLORIDA BUILDING CODE, EXISTING BUILDING 8TH EDITION.
- ALL PILES, HELICAL BLADES, FOUNDATION BRACKETS, HARDWARE, ETC., SHALL BE MANUFACTURED BY 2000 HELICAL DESIGN AND MANUFACTURING.
- HELICAL PIER INSTALLATION NOTES:
 - L7 NG 10 12 (2.875"Ø (O.D.) x 0.217" THICK WALL)
 - STANDARD DUTY BRACKET
 - E7 EXTENSIONS (7' LONG 0.217" THICK WALL)
 - 0.38" THICK 10/12" HELIX CONFIGURATION W/ 1/4" FILLET WELDS EACH SIDE OF HELIX TO PIER.
 - MINIMUM **10'-0"** INSTALLATION DEPTH REQUIRED AND FINAL INSTALLATION PRESSURE OF **1,000 PSI w/ THE DIGGA 12ALS DRIVE HEAD.**
- PIERS HAVE BEEN DESIGNED BASED ON 3'-0" MAX SPACING FROM CORNERS AND 8'-0" MAX SPACING BETWEEN PIERS.
- PIER SPACING SHALL NOT BE LESS THAN 3D (D = MAX HELIX DIAMETER).
- CONTRACTOR TO NOTIFY ENGINEER IF (E) FOUNDATION CRACK IS PRESENT IN THE SPAN BETWEEN FOUNDATION BRACKETS.
- CONTRACTOR TO NOTIFY ENGINEER WITH ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE PLANS/SPECIFICATIONS NOTED.
- CONTRACTOR TO CONTACT ENGINEER IF ANY VOIDS FORM BELOW EXISTING FOUNDATION DURING PIER INSTALLATION.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY ALL UTILITIES AND PROTECT AS REQUIRED DURING THE COURSE OF CONSTRUCTION.

Eric Struben



05/06/2026

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DRAWING TITLE

FOUNDATION PLAN

ENGINEER: EWS CHECKED BY: EWS
DATE: 05-06-2026 DRAWN BY: TSF

SHEET NUMBER

S0.1

CLIENT: SOLID FOUNDATIONS
JOB TITLE: MATHIS RESIDENCE
RESIDENCE
3283 SW SISTERS
WELCOME ROAD

Vista Specialty Engineering
engineer@vistaspecialtyengineering.com
971-233-6098
vistaspecialtyengineering.com



Design Criteria

Vista Specialty Engineering
engineer@vistaspecialtyengineering.com
971-233-6098
vistaspecialtyengineering.com



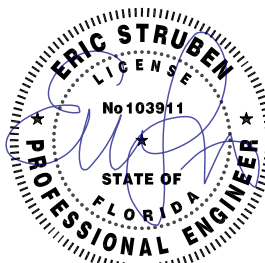
Design Loads

Dead Loads:

Roof Dead Load =	20	psf
Attic Dead Load =	5	psf
Floor Dead Load =	15	psf
Exterior Wall Dead Load (CMU w/ Stucco) =	55	psf
Exterior Wall w/ Brick Veneer =	45	psf
Concrete Weight =	150	pcf
Masonry Weight =	78	psf
Chimney Weight =	45	psf
Deck Weight =	10	psf
Garage Slab Weight (4" Assumed) =	50	psf

Live Loads:

Roof (Live) =	20	psf
Floor =	40	psf
Deck =	40	psf
Garage Live Load =	50	psf



05/06/2026

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Project Loading

FS = 2.5

Vertical Design Loads:

Tributary Widths:

Worst Case Loading (REF: S0.1)

Roof	13	ft	260	plf
Deck	0	ft	0	plf
Second Floor	0	ft	0	plf
First Floor	2	ft	100	plf
Garage Floor	0	ft	0	plf
Walls (Exterior)	0	ft	0	plf
Walls (w/ Brick Veneer)	8	ft	360	plf
Foundation (Footing)				
W =	1.33	ft		
T =	0.67	ft	134	plf
Foundation (Stemwall)				
H _s =	1.000	ft		
W _s =	0.67	ft		
			101	plf
			<u>954</u>	plf
			Σ _{DL} =	

Live:

Roof (Snow)	13	ft	260	plf
Deck	0	ft	0	plf
Second Floor	0	ft	0	plf
First Floor	2	ft	80	plf
Garage Floor	0	ft	0	plf
			0	plf
			<u>340</u>	plf
			Σ _{LL} =	

Max Pier Trib. = 8 ft

Pier Working Loads:

P _{DL} =	7633	lbs
P _S =	2080	lbs
P _{TL} =	<u>9713</u>	lbs

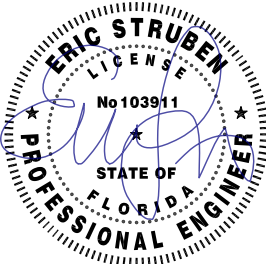
F _S =	2.5	
P _{TL} =	24283	lbs = P _{TL} F _S

Torque Correlation Factor

K_t = 9

Installation Torque Req'd

T_{install} = 2698 ft-lb (Ultimate) = (Q_{ult} / K_t) · 1000
 Install to min. 1,000 psi with Digga 12ALS Drive Head



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The axial capacity of each helical pier is determined using the torque correlation method consistent with industry standards.

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 efficiency 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 Gauge
- Torque Logic - Pile Alignment / Data Logging system

PLANETARY ANCHOR DRIVES

9,000 FT LBS - 12,000 FT LBS

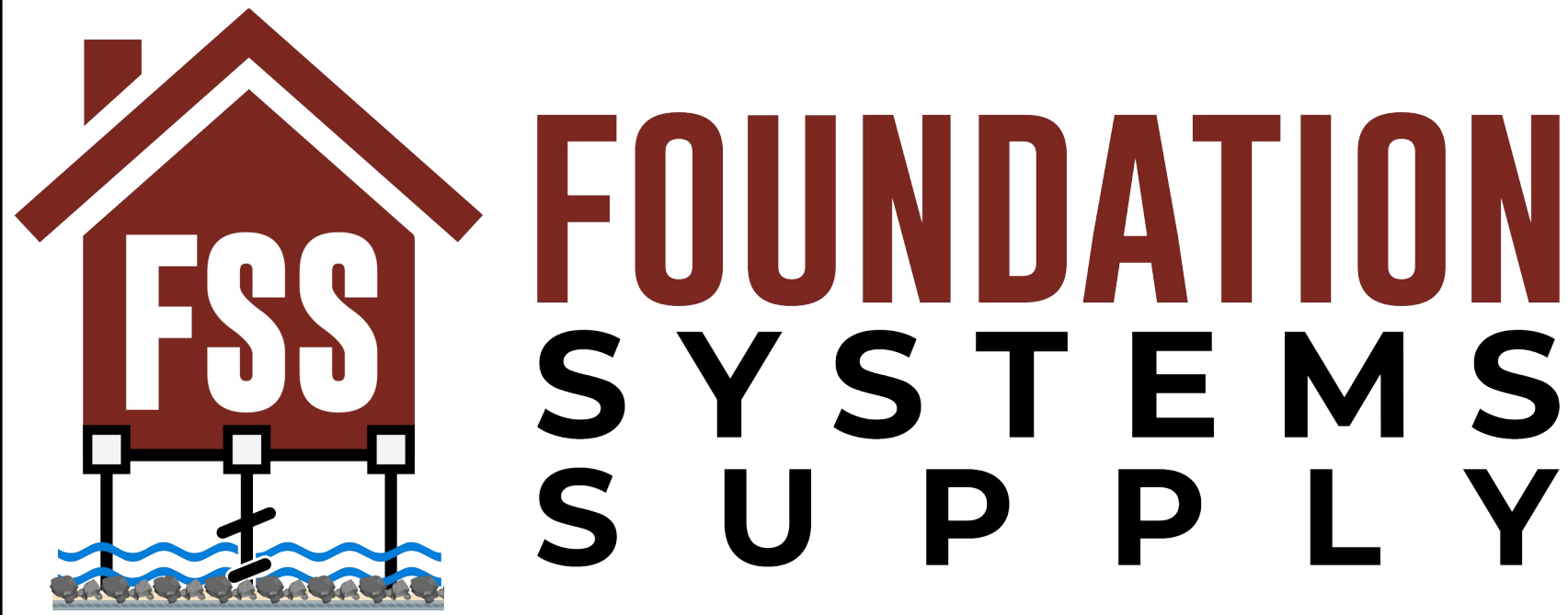


OUTPUT SPEED & TORQUE

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		

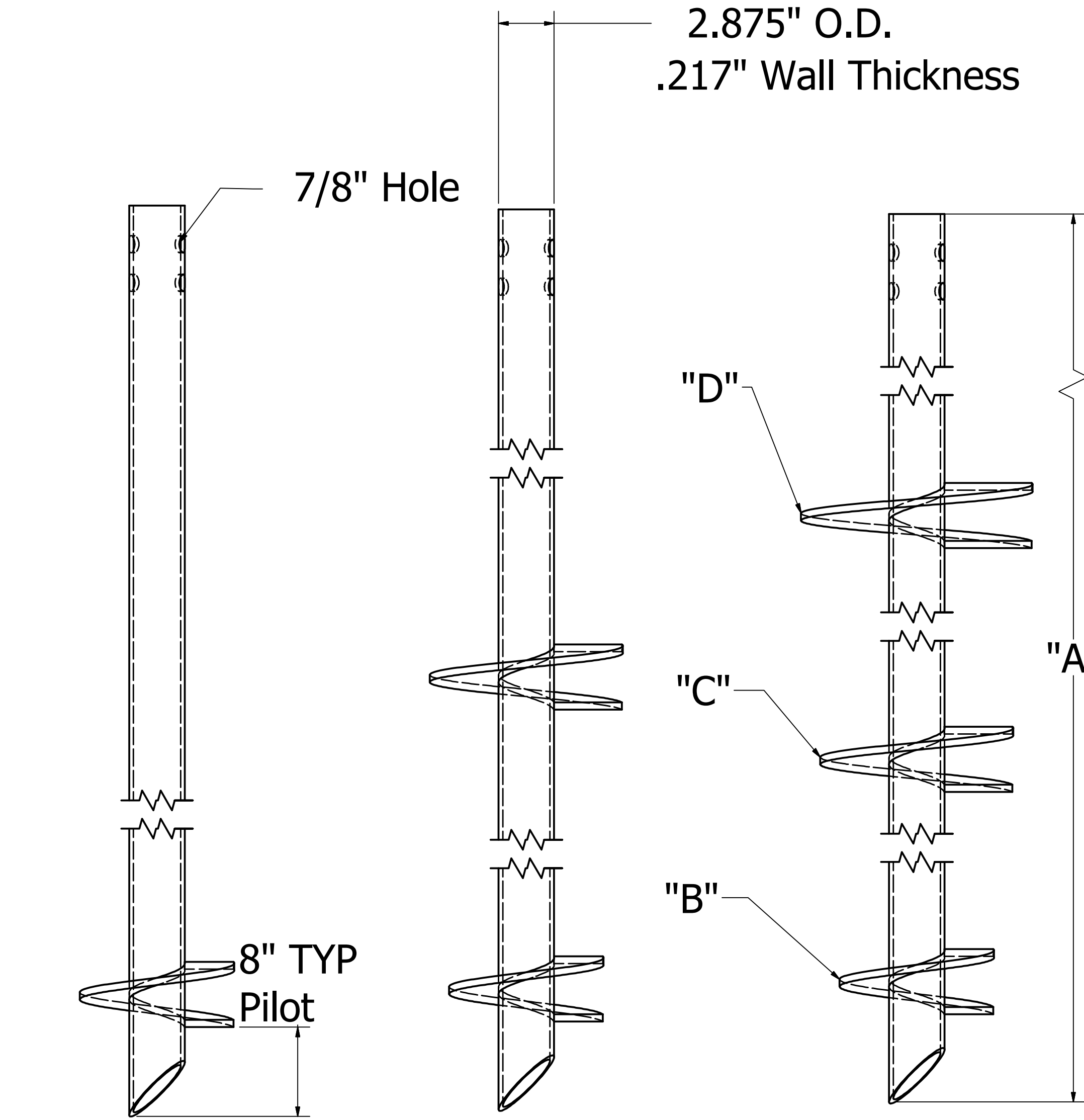
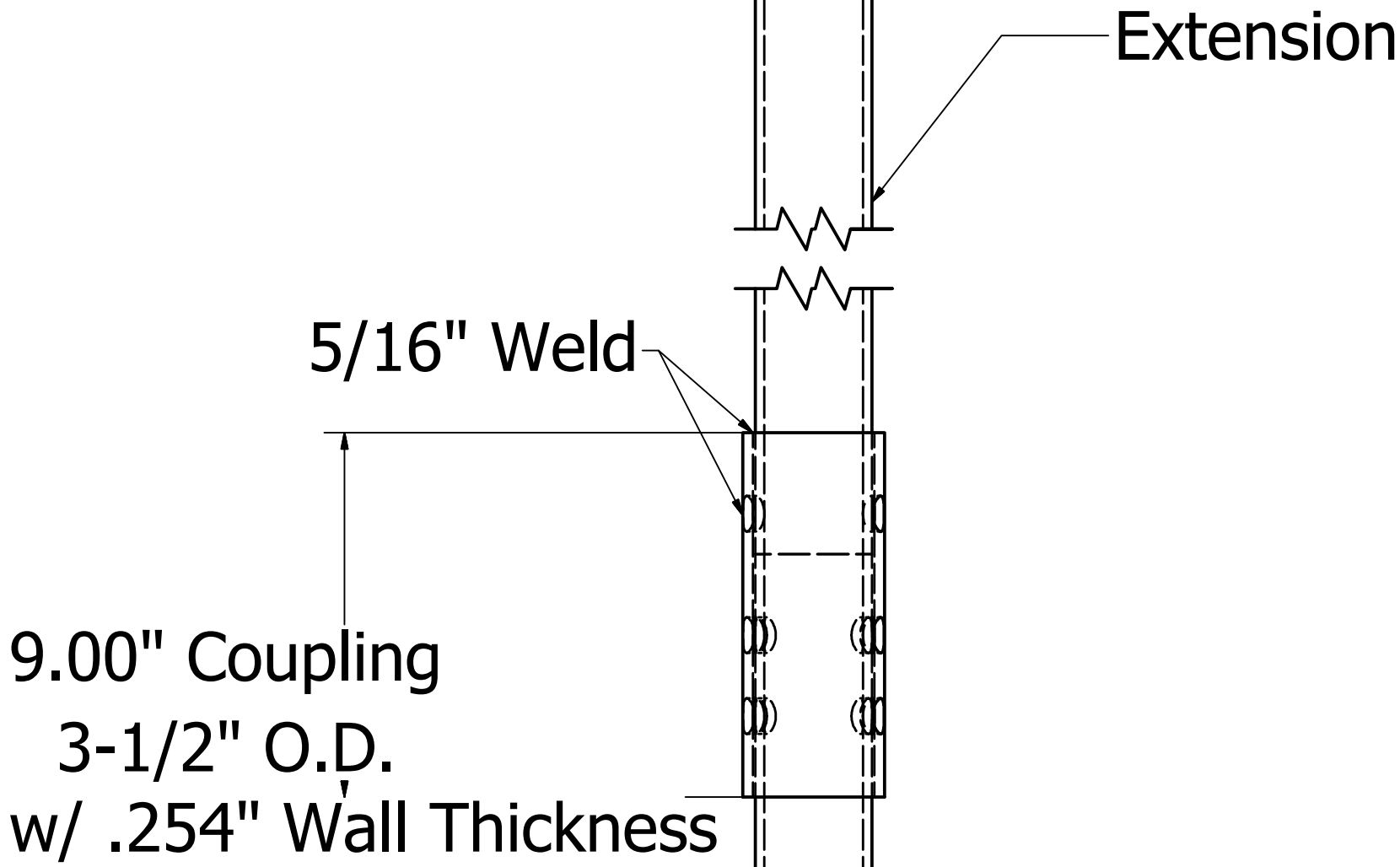
9ALS - LOW PRESSURE - 3000 PSI				12ALS - LOW PRESSURE - 3000 PSI			
OUTPUT SPEED		OUTPUT TORQUE		OUTPUT SPEED		OUTPUT TORQUE	
GPM	RPM	PSI	FT-LBS	GPM	RPM	PSI	FT-LBS
8	7	1 000	3 298	8	6	1 000	4 148
12	11	1 200	3 957	12	9	1 200	4 978
16	15	1 400	4 617	16	12	1 400	5 808
20	19	1 600	5 276	20	15	1 600	6 637
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

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.

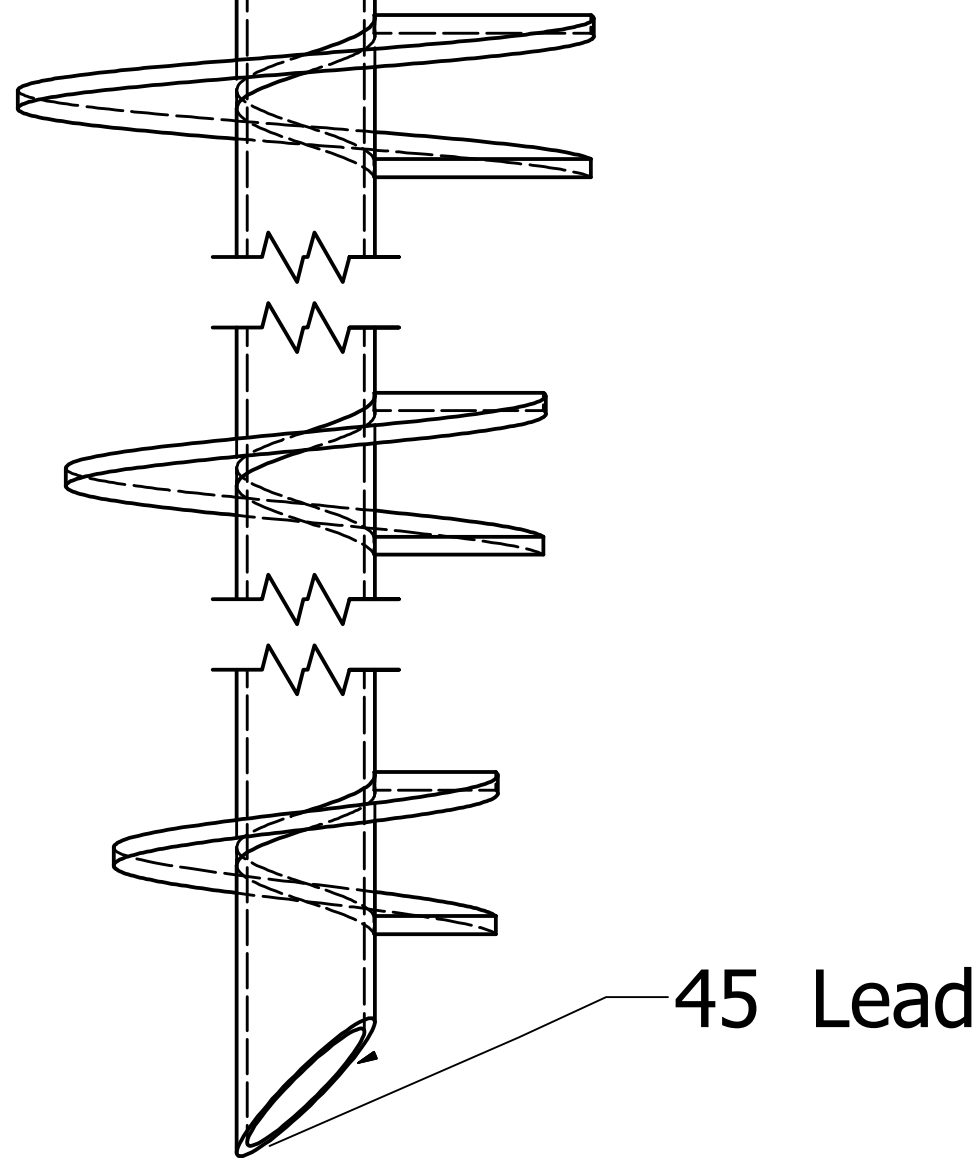
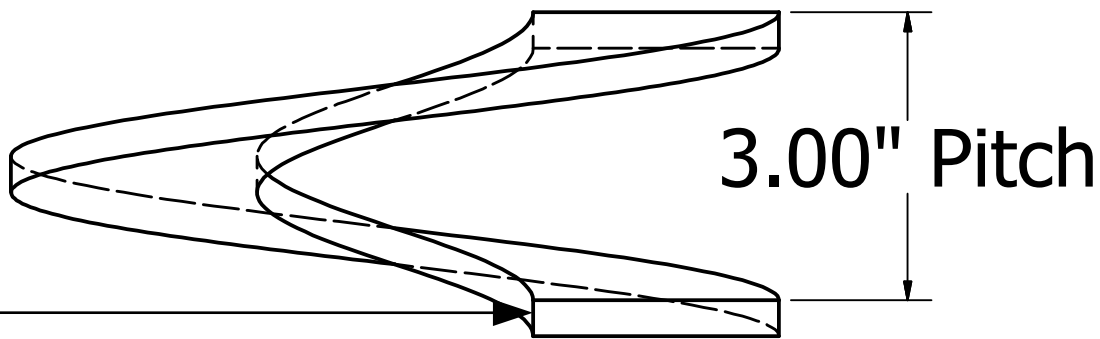


Leads

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"



Single Helix Lead Section Double Helix Lead Section Triple Helix Lead Section



Typical Pier Assembly

-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.

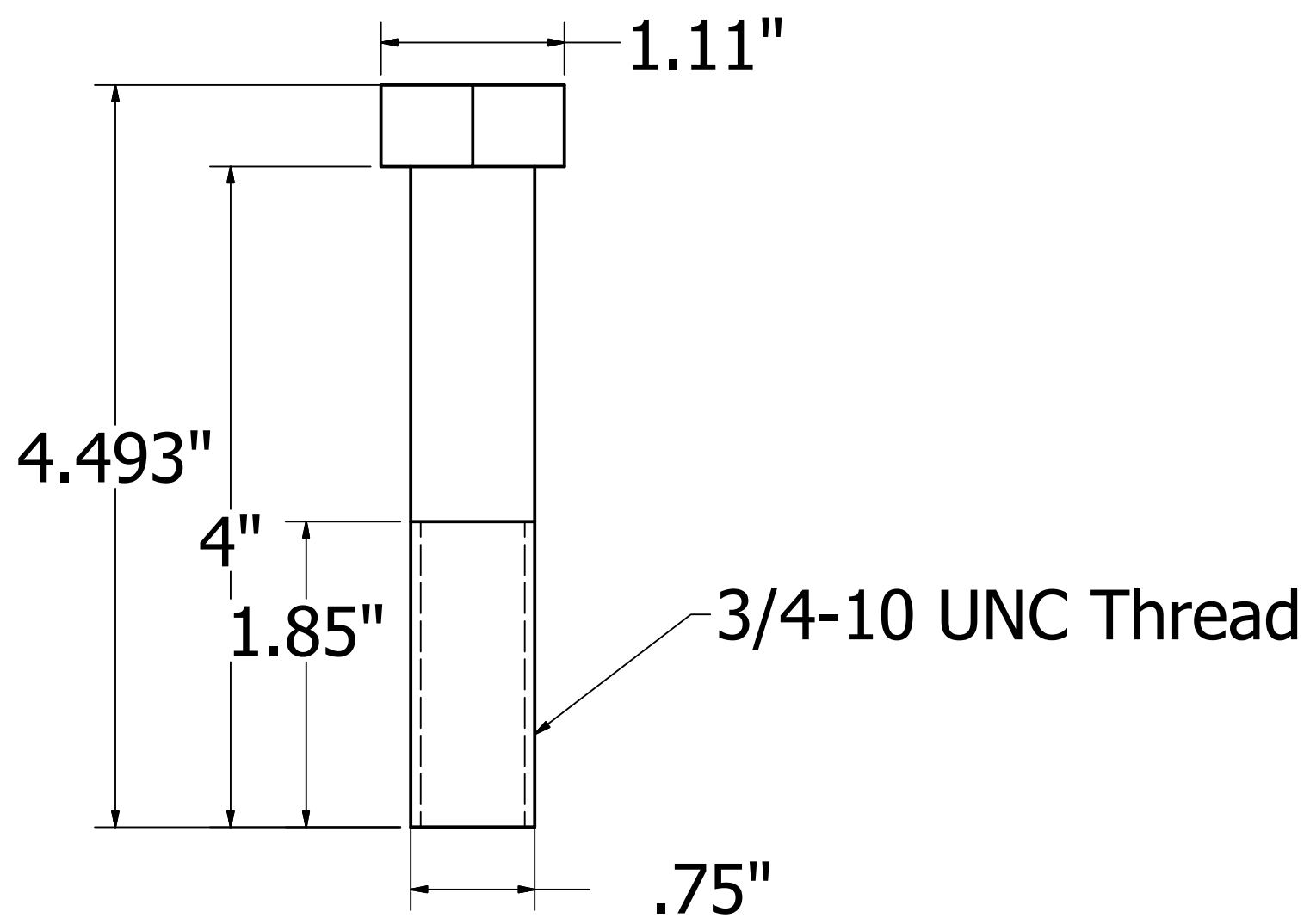
2000 HELICAL DESIGN AND MANUFACTURING

L5, L7 - Leads

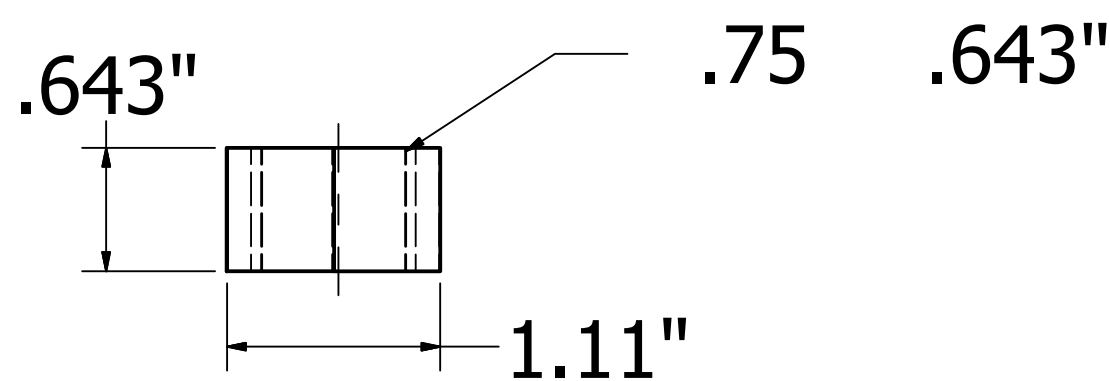
DATE 7/12/2017	DRAWN BY AK	DWG NO. HDM-5781012	REV -
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Torque Strength Rating - 9,281 Ft-Lbs
Ultimate Capacity (Tension/Compression) - 83.53 Kip
* Based On A Torque Factor (Kt)=9

Extensions



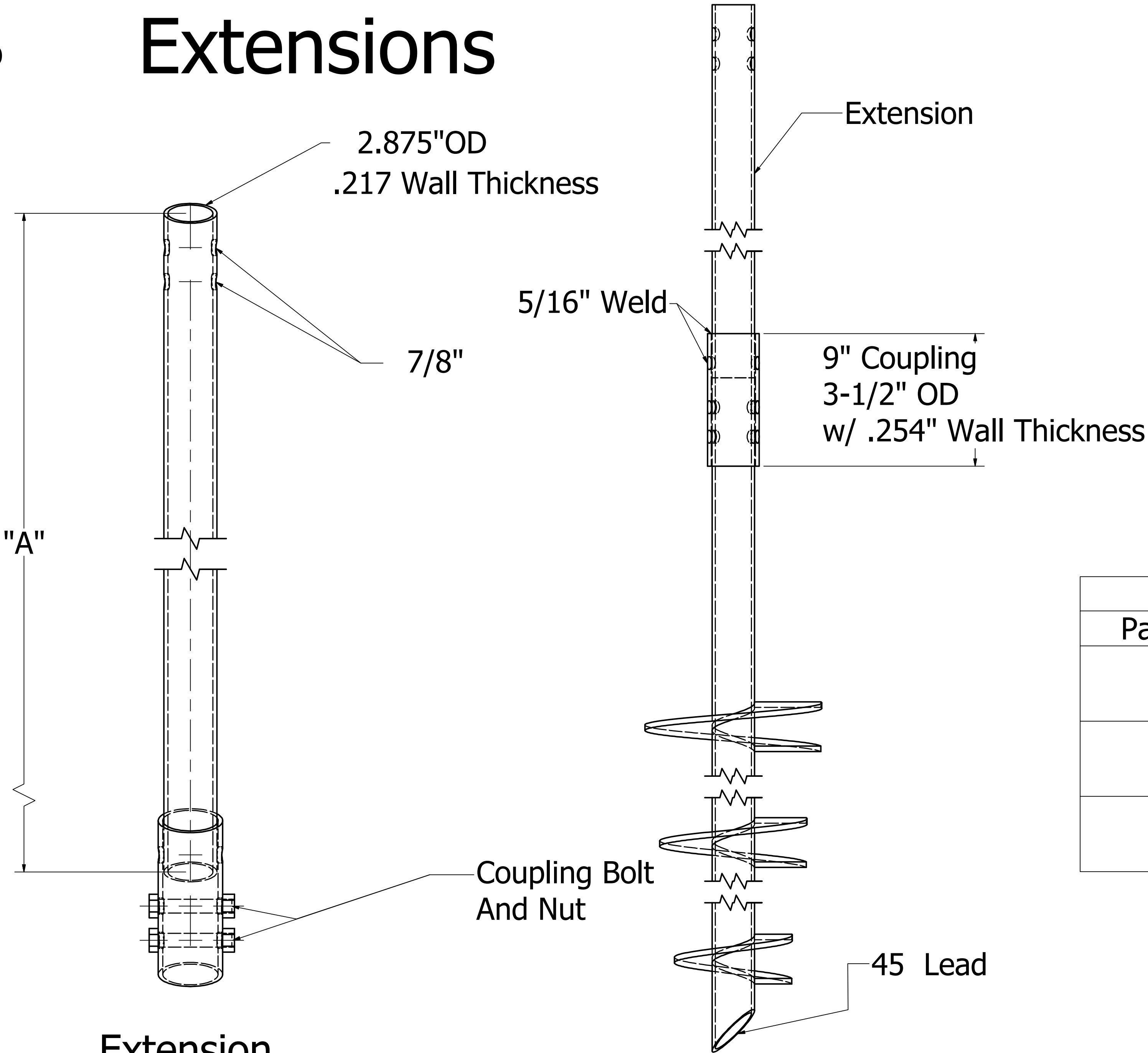
Extension
3/4x4 Bolt



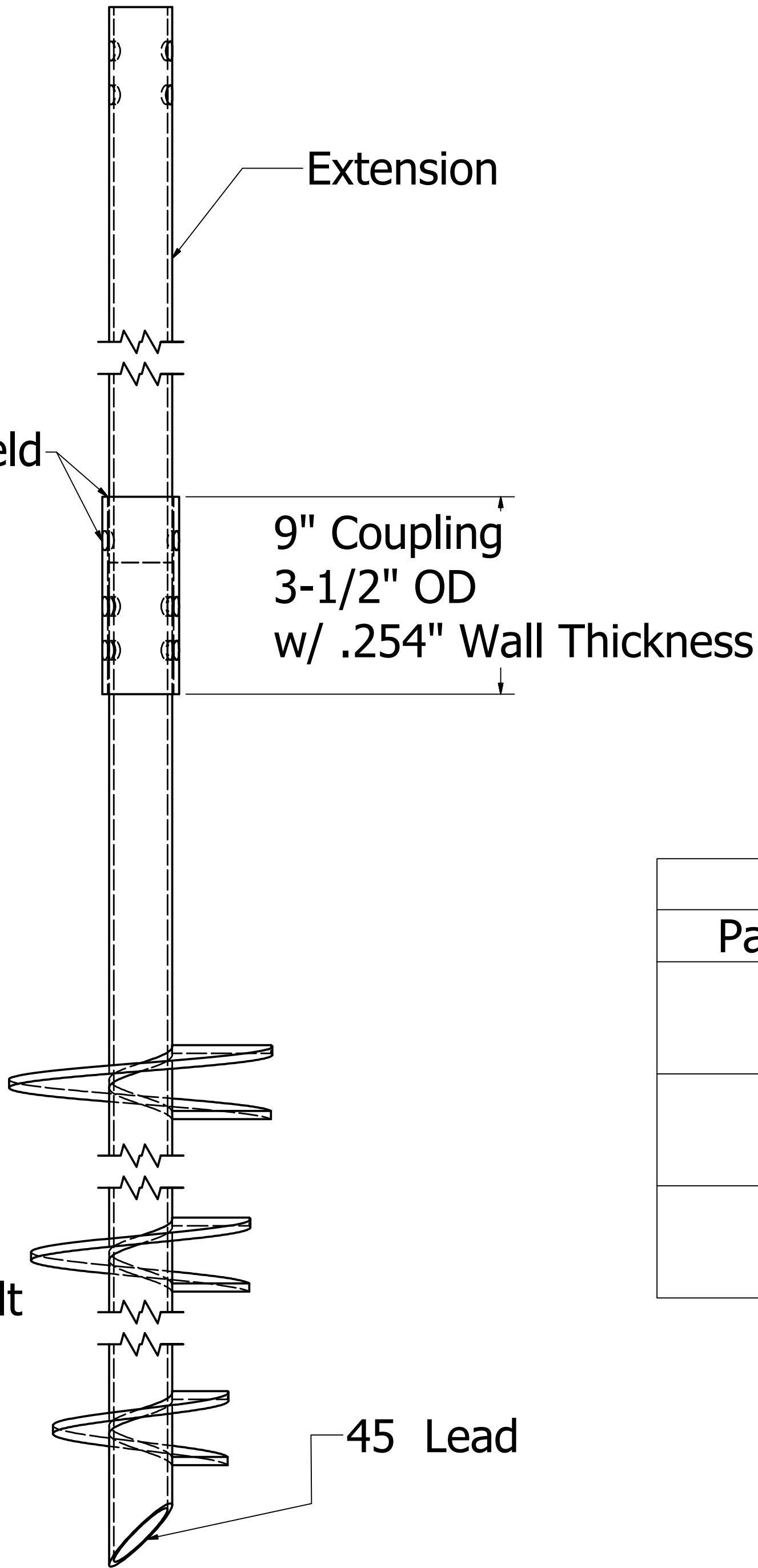
Extension
3/4 Nut

-NOTES-

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Extension



Typical Pier
Assembly

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



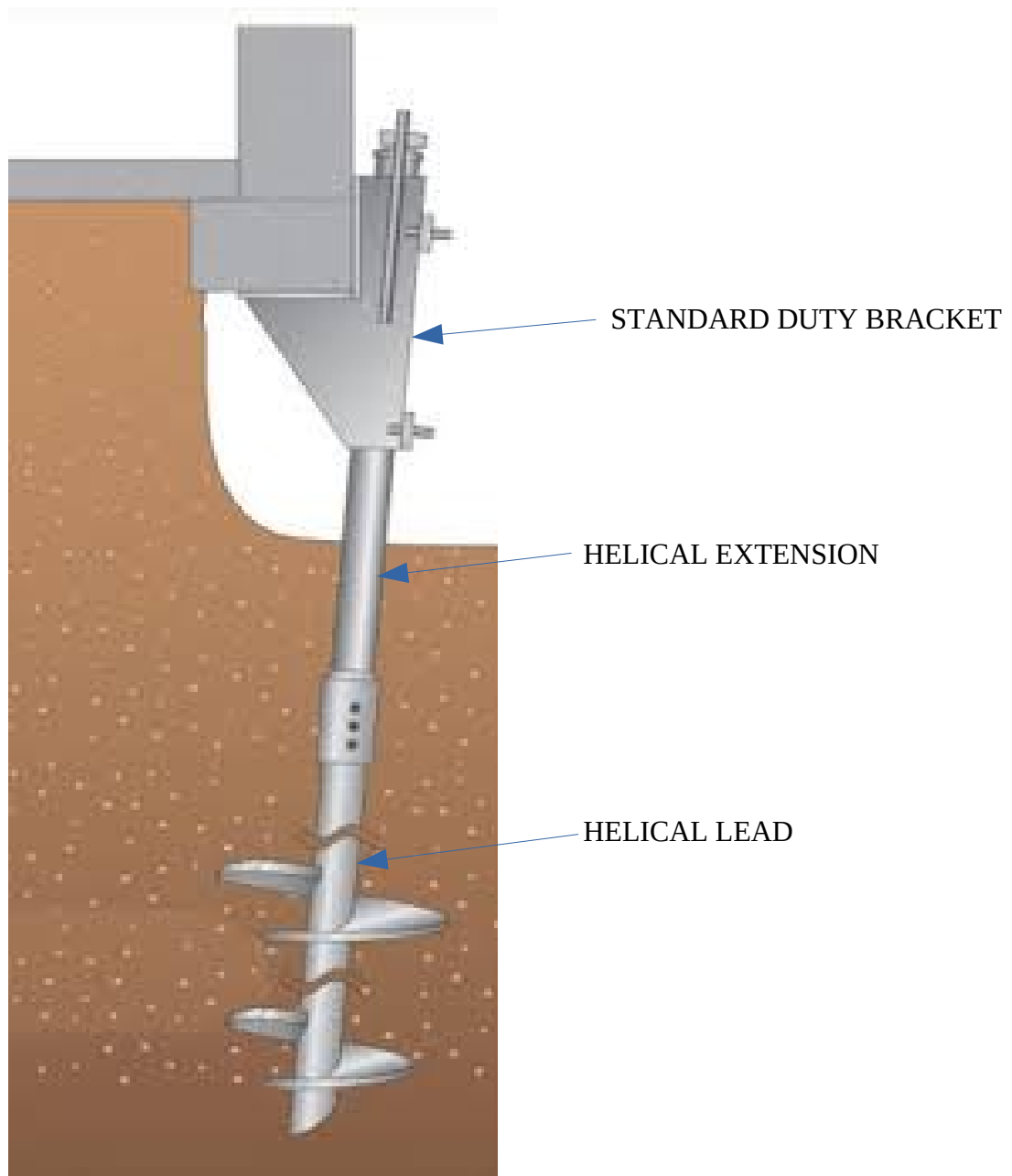
FOUNDATION
SYSTEMS
SUPPLY



2000 HELICAL DESIGN AND MANUFACTURING

E3, E5, E7 - Extensions

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



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



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813-930-2846