TITAN BUILDING PRODUCTS
THE ART OF BUILDING

Builder Guide

Load Planning & Engineer Sign-Off



Deck Foot Anchor

The right footing for the right project.

PROUDLY MADE IN CANADA

For professional builders who want footing-by-footing load data for deck projects.

WHY TITAN?

Sized for deck loads, installed by hand, and **backed by independent lab testing** — with a clear path to a local engineer's sign-off.

1 RIGHT-SIZED FOR DECKS

A typical deck footing carries 1,000 to 2,500 lb. Commercial helical piles are built and priced for building loads several times higher. Titan anchors cover the deck range without paying for capacity you won't use.

2 SELF-INSTALLED

No hydraulic rig, no concrete, no curing time. Drive it with a 1/2" impact wrench and a two-person crew can set the anchors and frame the same day.

3 TEST-BACKED

TIGA600 and TIGA900 were tested by CTL|Thompson, an IAS-accredited lab, using ICC-ES test methods (AC358 torsion, AC336 / ASTM D1143 compression, ASTM D3689 tension). TIGA125025 and TIGA-10-14224 were load tested by Nolan Structural Products (Richard Nolan, PE).

4 VERIFIABLE ON SITE

Capacity is tied to installation torque, so each footing is checked with a torque wrench and recorded on a Titan Helical Pier Installation Report. Floating system code compliance: Intertek CCRR-0495.

WHAT WE DON'T CLAIM

Titan anchors are not intended to support houses, additions or other buildings. They are not a substitute for an engineer's judgement on soil, frost or unusual loads. This guide is how a builder reaches a sealed, inspector-ready record with a local engineer instead of a manufacturer-certified installer.

No approval is guaranteed. Titan cannot promise that any engineer or inspector will accept this process, and some may decline it for any reason. If engineer or inspector approval is essential to your project, take our engineering reports and supporting documents to a local engineer for guidance **before** you spend any money or commit to this as your solution.

FIVE STEPS TO A SIGNED-OFF FOOTING

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
Work out each footing load	Soil, model & required torque	Line up engineer & inspector	Install & measure torque	Report & sign-off

CODE COMPLIANCE
Intertek
CCRR-0495

BRING THE PAPERWORK

Give your engineer and inspector the test report for your model: CTL|Thompson Report 1605 Rev. 2 (TIGA600 / TIGA900 / TIGA12502) or the Nolan Structural Products test report (TIGA125025 / TIGA-10-14224), plus Intertek CCRR-0495 and the Installation Report at the back of this guide. All reports are on Titan's Engineering Reports page.

About CCRR-0495: it covers the floating Deck Foot Anchor system — TIGA600 or TIGA900 with the load plate — including the post saddles, screws and post wood density. It is a system-level report whose conclusions apply directly to TIGA600 and TIGA900.



Floating: TIGA + load plate

LOAD RATINGS

Safe load at any footing = **0.75 × Kt × installation torque**, capped at the model's max suggested load for the soil type.

MODEL	SHAFT	LENGTH	BLADE(S)	KT SAND (/FT)	KT CLAY (/FT)	MAX SAFE SAND (LB)	MAX SAFE CLAY (LB)	MAX TORQUE (FT-LB)	TEST BASIS
TIGA600	3/4″	23.62″	2-3/8″ + 3-1/4″	65	42	4,700[1]	850	100	CTL, 0.5″ defl.
TIGA900	3/4″	35.43″	2-3/8″ + 3-1/4″	65	42	4,700	1,000	100	CTL, 0.5″ defl.
TIGA12502	3/4″	49.2″	2-3/8″ + 3-1/4″	65	42	4,700[3]	1,000[3]	100	= TIGA900 (untested)
TIGA125025	3/4″	49.2″	5″	85.7	—[2]	4,350	2,000[2]	70	Nolan, 1″ defl., sand
TIGA-10-14224	1″	56″	5″	123	—[2]	5,850	2,500[2]	70	Nolan, 1″ defl., sand

1. TIGA600 was tested in clay only. Its sand rating uses the TIGA900 sand result (same shaft and blades), so verify it by torque on every footing.
2. TIGA125025 and TIGA-10-14224 were tested in sand only. Their clay values are the testing engineer's suggested limits, not test results. In clay, have your engineer confirm the required torque.
3. TIGA12502 was not tested by CTL|Thompson. It has the same tube and blade diameters as the TIGA900 with a longer tube, so its load values are at least equal to the TIGA900's.

UPLIFT (TIGA600 / TIGA900)

CTL measured maximum tension of **3,762 / 4,001 lb in sand** and **638 / 1,244 lb in clay**. These are ultimate test values; your engineer applies the safety factor.

WHY SAND AND CLAY DIFFER

At the same torque, a footing in clay carries roughly two-thirds of what it carries in sand (Kt 42 vs 65). Always read the column for the soil you actually have.

QUICK LOOKUP: SAFE LOAD BY INSTALLATION TORQUE (LB)

TORQUE (FT-LB)	TIGA600 / 900 / 12502 SAND	TIGA900 / 12502 CLAY	TIGA600 CLAY
20	975	630	630
30	1,463	945	850 (max)
40	1,950	1,000 (max)	850 (max)
50	2,438	1,000 (max)	850 (max)
60	2,925	—	—
80	3,900	—	—
100	4,700 (max)	—	—

Linear interpolation is allowed. Clay values stop at 50 ft-lb, the edge of the tested range. For TIGA125025 and TIGA-10-14224, use the torque table on their Installation Reports. **Extensions:** a 24″ auger/pier extension fits any TIGA anchor for deeper installation. Capacity is still set by the torque you measure over the last 6″; the tests above were run without extensions, so tell your engineer when you use them.

1 PLAN — Work out the load on each footing

Each footing carries the deck area it supports (its tributary area) times the design load. Write the result in the **Required Compression Capacity** column of the Installation Report.

> **Footing load (lb)** = post spacing (ft) × (joist span ÷ 2 + cantilever) (ft) × design load (psf)

Use your local design load: commonly 40 psf live + 10 psf dead, higher where snow load governs. The example below uses 60 psf.

EXAMPLE A deck on a ledger, joists spanning 10 ft to a beam, beam posts 6 ft apart, no cantilever, 60 psf.

FOOTING	TRIBUTARY AREA	LOAD
Interior beam post	6 ft × 5 ft = 30 sq ft	**1,800 lb**
End beam post	3 ft × 5 ft = 15 sq ft	**900 lb**

If a footing load is more than the model's clay or sand limit, add posts or shorten spans until every footing is within the limit. A freestanding deck (no ledger) puts more load on each footing, so run the numbers for both beams.

2 SIZE — Identify the soil, pick the model, set the torque

Soil type decides which column of the torque table you use, and clay cuts the capacity at a given torque by about a third. Get it right before you order.

SOIL

A quick hand test gives a first read: **sand** feels gritty and crumbles when squeezed moist; **clay** is sticky and rolls into a ribbon. Your engineer confirms it (Step 3). Stop and call the engineer for fill, organic or peat soils, standing water, or cobbles and rock.

FROST DEPTH

TIGA600 sits about 2 ft deep, TIGA900 about 3 ft, and TIGA12502 and TIGA-10-14224 about 4 ft. To go deeper, add a **24" auger/pier extension** to any TIGA anchor. Check the local frost depth and confirm the model and extensions with the engineer and inspector.

REQUIRED TORQUE

Divide the footing load by 0.75 × Kt and round up. Write it in the **Required Torque** column.

> **Required torque (ft-lb)** = footing load (lb) ÷ (0.75 × Kt)

EXAMPLE **1,800 lb interior post**

- **TIGA900 in sand:** 1,800 ÷ (0.75 × 65) = 37 ft-lb → install to at least **40 ft-lb**.
- **TIGA900 in clay:** 1,800 lb is over the 1,000 lb clay limit. Move the posts to 3 ft apart (900 lb each): 900 ÷ (0.75 × 42) = 29 ft-lb → at least **30 ft-lb**.

3 ARRANGE — Line up the engineer and inspector first

Agree the sign-off method up front so the record you produce is the one they will accept.

ASK THE INSPECTOR

- Will they accept helical deck anchors with an engineer-sealed installation report in place of concrete footings?
- Do they want to inspect the anchors before framing, or is the sealed report enough?
- Is the local frost depth met by the model you plan to use?

CHOOSE THE ENGINEER

Use a professional engineer licensed in the province or state where the deck is. Once an engineer has seen your process on a few jobs, remote review keeps the cost per deck low.

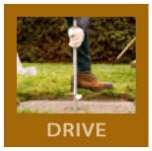
METHOD	ENGINEER DOES	BUILDER DOES	BEST FOR
Site observation	Confirms soil on site; witnesses torque on all or a sample of footings; seals the report	Installs and records each footing	First jobs with a new engineer, mixed or doubtful soils, larger decks
Remote review	Confirms soil from a site visit, test-hole photos or a soil report; reviews the log and video; seals the report	Records each footing with a short video of the torque reading and a photo of the installed anchor	Repeat work with an engineer who knows your process and the local soils

4 INSTALL — Install and measure torque

Record the torque it takes to keep the anchor turning over its last 6 inches. That is how the lab measured it, and it is what the load tables are based on.

Tools. A 1/2″ impact wrench to drive the anchor, a calibrated hand torque wrench (dial or digital reads best) covering at least 10 to 120 ft-lb for the final reading, a socket adapter for the anchor head, and a phone for video. Impact tools and drills do not give usable torque readings.

1. Lay out and mark each footing; check for buried utilities.
2. Install the anchor per Titan's instructions, keeping it plumb.
3. For the last 6 inches, turn it with the torque wrench at a slow, steady pace. Read the torque at several points and record the average. Video the readings for remote review.
4. Met or exceeded the required torque? Record it and move on. Short? Don't count the footing: relocate it, add a footing to cut the load, or call the engineer.
5. Never exceed the max torque: **100 ft-lb** (TIGA600 / TIGA900), **70 ft-lb** (TIGA125025 / TIGA-10-14224).
6. Fill in Torque Achieved and Achieved Compression Capacity for each pier as you go.







LAST 6″ = THE READING THAT COUNTS

Drive with the impact wrench. Finish and read with the torque wrench.

5 SIGN-OFF — Complete the report and get sign-off

The finished Installation Report, sealed by your engineer, is the record you hand to the inspector and the owner.

1. Complete the header: installer, address, date, project, soil type and anchor model.
2. Check every pier row has required load, required torque, torque achieved and achieved capacity — with achieved at or above required.
3. Send the engineer the report, photos and videos (or have them on site).
4. The engineer reviews it, adds notes if needed and seals it.
5. Give the sealed report to the inspector, and a copy to the owner with the permit documents. Keep a copy in your job file.

The result: a **footing-by-footing torque record**, tied to tested capacity, **signed off by an engineer**.

WHEN TO BRING THE ENGINEER IN FOR DESIGN, NOT JUST SIGN-OFF

The load tables cover vertical load on a single anchor in sand or clay. Have the engineer design the foundation when any of these apply:

- Footing loads above the model's limit for the soil, or decks that carry hot tubs, planters, roofs or enclosures.
- Elevated decks that need lateral bracing, or decks where uplift (wind, roofs) governs. Titan anchors were not tested for lateral load.
- Fill, organic soil, high water table, slopes or retaining walls nearby.
- Frost depth deeper than the anchor plus 24″ extensions can reach.
- Corrosive soils or coastal sites.

JOB CHECKLIST

SEND THE ENGINEER BEFORE THE JOB

- [ ] Deck plan with post locations, spans and design load
- [ ] Footing loads and required torque per footing
- [ ] Soil information: test-hole photos, hand-test notes or a soil report
- [ ] Titan test report for the model + Intertek CCRR-0495
- [ ] Titan Installation Report for the model (back of this guide)

ON THE JOB

- [ ] Inspector's requirements confirmed
- [ ] Calibrated torque wrench on site
- [ ] Torque recorded (and videoed) for every pier
- [ ] Report completed and sent to the engineer
- [ ] Sealed report to the inspector and the owner

BUILDING IN CANADA

Two applications, **two sets of evidence**.
Show your engineer and inspector the one that matches your deck.

FLOATING



Free-standing decks, walkways and shed platforms on the load plate

EVIDENCE

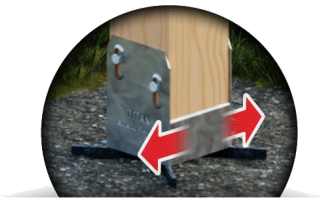
Vriend Engineering Inc. structural review, Project S349-25 (July 3, 2025), pages 14–16. It confirms the floating Deck Foot Anchor (TIGA600 or TIGA900 with the load plate) for small free-standing structures under **2024 Ontario Building Code 9.12.2.2(7)** and municipal allowances, when installed exactly per Titan's instructions.

OBC 9.12.2.2(7) LIMITS

- Not more than one storey
- Not more than 55 m^2 (592 sq ft)
- Not more than 600 mm (23-5/8″) from finished ground to the underside of the joists
- Not supporting a roof
- Not attached to another structure

Used where you might consider a pre-cast deck block, with the added stability of the concrete foundation it replaces. The auger does not reach frost depth, so the anchor may move with freeze–thaw. Municipal height allowances vary, so check locally. Outside the tested soil conditions and loads, a professional engineer should confirm soil capacity and footing load for each project.

LEDGER



Frost footings for ledger-attached decks and other structures

EVIDENCE

Not covered by the Vriend letter. Each footing is justified by the five steps in this guide: auger at or below your area's required frost depth, footing load within the capacity for the soil type, and installation torque that proves it — signed off by a local engineer.

LOAD DATA BY MODEL

MODEL	USE LOAD DATA FROM
TIGA600 / TIGA900	CTL|Thompson Report 1605 Rev. 2
TIGA12502	Not tested: use the lower TIGA900 / TIGA9002 values
TIGA125025	Nolan Structural Products New York State test report, Rev 0
TIGA-10-14224	Nolan Structural Products New York State test report, Rev 0 (1″ auger)

Check your municipality's required frost depth. TIGA12502 and TIGA-10-14224 reach about 4 ft; add 24″ extensions to go deeper.

WHICH ONE AM I BUILDING?

Free-standing, low, small, no roof? Use the floating anchor and give the inspector the Vriend letter. **Attached to the house, higher, larger, or needs frost protection?** Use a frost-depth auger and follow Steps 1–5 with a local engineer. If you're unsure, ask the engineer before you buy.

TITAN BUILDING PRODUCTS
THE ART OF BUILDING

Reference Installation Reports

The load tables behind this guide, one form per model.

PAGE	MODEL	DESCRIPTION	LOAD DATA FROM
9	TIGA600	3/4″ dia. tube, 23.62″ long, 3-1/4″ blade	CTL|Thompson Report 1605 Rev. 2
10	TIGA900	3/4″ dia. tube, 35.43″ long, 3-1/4″ blade	CTL|Thompson Report 1605 Rev. 2
11	TIGA12502	3/4″ dia. tube, 49.2″ long, 3-1/4″ blade	CTL|Thompson Report 1605 Rev. 2 (TIGA900 values)
12	TIGA125025	3/4″ dia. tube, 49.2″ long, 5″ blade	Nolan Structural Products, Rev 0
13	TIGA-10-14224	1″ dia. tube, 56″ long, 5″ blade	Nolan Structural Products, Rev 0

Pages 14–16: Vriend Engineering Inc. structural review letter, Project S349-25 (July 3, 2025).

HOW TO USE THEM

1. Print the report for the model you are installing; use one report per project.
2. Fill in the header and the required load and torque for each pier before you install (Steps 1–2).
3. Record torque achieved and achieved capacity for each pier as you install (Step 4).
4. Send the completed report to your engineer for review and seal (Step 5).

ENGINEERING RESOURCES

Scan, or visit titanbp.com/resources/engineering-reports-new. Click a title to open the PDF.

- Deck Foot Anchor Compression Loads (Intertek, 2015)
- Compression / Tension in Soil (CTL|Thompson Report 1605 Rev. 2)
- Code Compliance Research Report CCRR-0495 (Intertek)
- Code Compliance Product Evaluation (PEV)
- Compression in Soil, 5″ Blade (Nolan Structural Products)
- Structural Review Letter S349-25 (Vriend Engineering, 2024 OBC)

The right footing for the right project.

PROUDLY MADE IN CANADA

HELICAL PIER INSTALLATION REPORT

Model TIGA600

Installer Name	
Installed Address	
Installed Date	
Description of Project	
Soil Type (Sand / Clay)	
Deck Foot Anchor Model	**TIGA600 (3/4" dia. tube, 23.62" long, 3-1/4" blade)**

Pile Number	Required Compression Capacity (#)	Required Torque (ft.#)	Torque Achieved (ft.#)	Achieved Compression Capacity (#)
Pier 1				
Pier 2				
Pier 3				
Pier 4				
Pier 5				
Pier 6				
Pier 7				
Pier 8				
Pier 9				
Pier 10				
Pier 11				
Pier 12				
Pier 13				

Torque (ft lbs)	NON-COHESIVE (SAND)		COHESIVE (CLAY)	
	Ultimate Load (Pounds)	Safe Load (75% of Ult.) (Pounds)	Ultimate Load (Pounds)	Safe Load (75% of Ult.) (Pounds)
0	0	0	0	0
10	650	488	420	315
20	1,300	975	840	630
30	1,950	1,463	1,260	945
40	2,600	1,950	1,680	1,260
50	3,250	2,438	2,100	1,575
60	3,900	2,925	—	—
70	4,550	3,413	—	—
80	5,200	3,900	—	—
90	5,850	4,388	—	—
100	**6,500**	**4,875**	—	—

Torque vs Compression/Load Table

Model TIGA600. Kt (sand) = 65 / ft, Kt (clay) = 42 / ft, from CTL|Thompson Report 1605 Rev. 2 (load at 0.5" deflection ÷ installation torque). Safe Load = 0.75 x Kt x T. Linear interpolation is allowed. Do not exceed 100 ft lbs installation torque (torsional capacity 128.3 ft lbs).

Clay values shown only within tested torque range. TIGA600 sand values use TIGA900 sand Kt (identical shaft and helix; TIGA600 not load tested in sand). Max suggested installed load: 4,700 lbs sandy, 850 lbs clay.

Engineer's Seal

Torque Measuring Instructions

1. Identify site soil type (sand or clay) and record it above.
2. Use the torque table at the left (column for the site soil type) to find the minimum torque for the required compression capacity.
3. Drive the anchor to within 6" of final depth.
4. Turn the last 6" with a calibrated hand torque wrench at a slow, steady pace. Record the average torque reading.
5. If the recorded torque is below the minimum, do not count the pier: relocate it, add a pier, or contact Engineer.

HELICAL PIER INSTALLATION REPORT

Model TIGA900

Installer Name	
Installed Address	
Installed Date	
Description of Project	
Soil Type (Sand / Clay)	
Deck Foot Anchor Model	**TIGA900 (3/4" dia. tube, 35.43" long, 3-1/4" blade)**

Pile Number	Required Compression Capacity (#)	Required Torque (ft.#)	Torque Achieved (ft.#)	Achieved Compression Capacity (#)
Pier 1				
Pier 2				
Pier 3				
Pier 4				
Pier 5				
Pier 6				
Pier 7				
Pier 8				
Pier 9				
Pier 10				
Pier 11				
Pier 12				
Pier 13				

Torque (ft lbs)	NON-COHESIVE (SAND)		COHESIVE (CLAY)	
	Ultimate Load (Pounds)	Safe Load (75% of Ult.) (Pounds)	Ultimate Load (Pounds)	Safe Load (75% of Ult.) (Pounds)
0	0	0	0	0
10	650	488	420	315
20	1,300	975	840	630
30	1,950	1,463	1,260	945
40	2,600	1,950	1,680	1,260
50	3,250	2,438	2,100	1,575
60	3,900	2,925	—	—
70	4,550	3,413	—	—
80	5,200	3,900	—	—
90	5,850	4,388	—	—
100	**6,500**	**4,875**	—	—

Torque vs Compression/Load Table

Model TIGA900. Kt (sand) = 65 / ft, Kt (clay) = 42 / ft, from CTL|Thompson Report 1605 Rev. 2 (load at 0.5" deflection ÷ installation torque). Safe Load = 0.75 x Kt x T. Linear interpolation is allowed. Do not exceed 100 ft lbs installation torque (torsional capacity 128.3 ft lbs).

Clay values shown only within tested torque range. Max suggested installed load: 4,700 lbs sandy, 1,000 lbs clay.

Engineer's Seal

Torque Measuring Instructions

1. Identify site soil type (sand or clay) and record it above.
2. Use the torque table at the left (column for the site soil type) to find the minimum torque for the required compression capacity.
3. Drive the anchor to within 6" of final depth.
4. Turn the last 6" with a calibrated hand torque wrench at a slow, steady pace. Record the average torque reading.
5. If the recorded torque is below the minimum, do not count the pier: relocate it, add a pier, or contact Engineer.

HELICAL PIER INSTALLATION REPORT

Model TIGA12502

Installer Name	
Installed Address	
Installed Date	
Description of Project	
Soil Type (Sand / Clay)	
Deck Foot Anchor Model	**TIGA12502 (3/4" dia. tube, 49.2" long, 3-1/4" blade)**

Pile Number	Required Compression Capacity (#)	Required Torque (ft.#)	Torque Achieved (ft.#)	Achieved Compression Capacity (#)
Pier 1				
Pier 2				
Pier 3				
Pier 4				
Pier 5				
Pier 6				
Pier 7				
Pier 8				
Pier 9				
Pier 10				
Pier 11				
Pier 12				
Pier 13				

Torque (ft lbs)	NON-COHESIVE (SAND)		COHESIVE (CLAY)	
	Ultimate Load (Pounds)	Safe Load (75% of Ult.) (Pounds)	Ultimate Load (Pounds)	Safe Load (75% of Ult.) (Pounds)
0	0	0	0	0
10	650	488	420	315
20	1,300	975	840	630
30	1,950	1,463	1,260	945
40	2,600	1,950	1,680	1,260
50	3,250	2,438	2,100	1,575
60	3,900	2,925	—	—
70	4,550	3,413	—	—
80	5,200	3,900	—	—
90	5,850	4,388	—	—
100	**6,500**	**4,875**	—	—

Torque vs Compression/Load Table

Model TIGA12502. Kt (sand) = 65 / ft, Kt (clay) = 42 / ft, from CTL|Thompson Report 1605 Rev. 2 (load at 0.5" deflection ÷ installation torque). Safe Load = 0.75 x Kt x T. Linear interpolation is allowed. Do not exceed 100 ft lbs installation torque (torsional capacity 128.3 ft lbs).

Clay values shown only within tested torque range. Max suggested installed load: 4,700 lbs sandy, 1,000 lbs clay. TIGA12502 was not tested by CTL|Thompson; it has the same tube and blade diameters as the TIGA900 / TIGA9002 with a longer tube, so its load values are at least equal to theirs.

Engineer's Seal

Torque Measuring Instructions

1. Identify site soil type (sand or clay) and record it above.
2. Use the torque table at the left (column for the site soil type) to find the minimum torque for the required compression capacity.
3. Drive the anchor to within 6" of final depth.
4. Turn the last 6" with a calibrated hand torque wrench at a slow, steady pace. Record the average torque reading.
5. If the recorded torque is below the minimum, do not count the pier: relocate it, add a pier, or contact Engineer.

HELICAL PIER INSTALLATION REPORT

Model TIGA125025

Installer Name	
Installed Address	
Installed Date	
Description of Project	
Deck Foot Anchor Model	**TIGA125025 (3/4" dia. tube, 49.2" long, 5" blade)**

Pile Number	Required Compression Capacity (#)	Required Torque (ft.#)	Torque Achieved (ft.#)	Achieved Compression Capacity (#)
Pier 1				
Pier 2				
Pier 3				
Pier 4				
Pier 5				
Pier 6				
Pier 7				
Pier 8				
Pier 9				
Pier 10				
Pier 11				
Pier 12				
Pier 13				

Torque (ft lbs)	Ultimate Load (Pounds)	Safe Load (75% of Ultimate) (Pounds)
0	0	0
10	857	643
20	1,714	1,286
30	2,571	1,929
40	3,429	2,571
50	4,286	3,214
60	5,143	3,857
70	**6,000**	**4,500**

Torque vs Compression/Load Table

Model TIGA125025. Kt = 6000 lb / 70 ft lb = 85.7 / ft from Nolan Structural Report Rev 0. Safe Load = 0.75 x 85.7 x T. Linear interpolation is allowed. Do not exceed 70 ft lbs / 6,000 lb ultimate. Table applies to non-cohesive soil (sandy). Max suggested installed load: 4,350 lbs sandy, 2,000 lbs clay.

Engineer's Seal

Torque Measuring Instructions

1. Use the torque table at the left to find the minimum torque for the required compression capacity (sandy soil; in clay, contact Engineer).
2. Drive the anchor to within 6" of final depth.
3. Turn the last 6" with a calibrated hand torque wrench at a slow, steady pace. Record the average torque reading.
4. If the recorded torque is below the minimum, do not count the pier: relocate it, add a pier, or contact Engineer.

HELICAL PIER INSTALLATION REPORT

Model TIGA-10-14224

Installer Name	
Installed Address	
Installed Date	
Description of Project	
Deck Foot Anchor Model	**TIGA-10-14224 (1" dia. tube, 56" long, 5" blade)**

Pile Number	Required Compression Capacity (#)	Required Torque (ft.#)	Torque Achieved (ft.#)	Achieved Compression Capacity (#)
Pier 1				
Pier 2				
Pier 3				
Pier 4				
Pier 5				
Pier 6				
Pier 7				
Pier 8				
Pier 9				
Pier 10				
Pier 11				
Pier 12				
Pier 13				

Torque (ft lbs)	Ultimate Load (Pounds)	Safe Load (75% of Ultimate) (Pounds)
0	0	0
10	1,230	923
20	2,460	1,845
30	3,690	2,768
40	4,920	3,690
50	6,150	4,613
60	7,380	5,535
70	8,610	6,458

Torque vs Compression/Load Table

Model TIGA-10-14224. Kt = 8610 lb / 70 ft lb = 123 / ft from Nolan Structural Report Rev 0. Safe Load = 0.75 x 123 x T. Linear interpolation is allowed. Do not exceed 70 ft lbs / 8,610 lb ultimate. Table applies to non-cohesive soil (sandy). Max suggested installed load: 5,850 lbs sandy, 2,500 lbs clay.

Engineer's Seal

Torque Measuring Instructions

1. Use the torque table at the left to find the minimum torque for the required compression capacity (sandy soil; in clay, contact Engineer).
2. Drive the anchor to within 6" of final depth.
3. Turn the last 6" with a calibrated hand torque wrench at a slow, steady pace. Record the average torque reading.
4. If the recorded torque is below the minimum, do not count the pier: relocate it, add a pier, or contact Engineer.

July 3, 2025

Titan Building Products
5390 Canotek Road, Unit 14
Ottawa, ON.
K1J 1H8

ATTENTION: Richard Bergman

SUBJECT: **Titan Building Products – Deck Foot Anchor | Structural Review**
Project Number: S349-25

As requested, Vriend Engineering Inc. has reviewed the deck foot anchor produced by Titan Building Products.

The Titan Deck Foot Anchor is used for free standing decks, walkways and shed platforms. It is composed of 3mm thick x 311mm x 311mm formed galvanized steel deck foot anchor plate complete with a 600mm long (or 900mm) x 19mm diameter galvanized steel anchor rod complete with formed and welded galvanized steel deck post bracket fabricated from 2mm (14 ga) sheet metal. The deck foot anchor can receive either a 4x4 post or a 6x6 post.

The purpose of this report is to confirm the structural suitability of the deck foot anchor for free standing light weight structures such as decks, walkways and shed platforms.

Test Reports:

We are in receipt of the following test reports:

- Intertek Testing Services NA Ltd. Test Report No. 102320204TOR-001, issue date November 16, 2015 for Titan Building Products. The report evaluated the compressive loading capacity of the Titan deck foot anchors.
- CTL Thompson Incorporated Product Testing Report No 1605 (Rev. 2) for Intertek dated October 29, 2021 for Titan Deck Foot Anchors TIGA600 and TIGA900. The report evaluated torsion, compression load bearing and tension load of the Titan deck foot anchors.
- Intertek Testing Services NA Ltd. Test Report No. L4912.01-106-31 R0, issue date 07/12/22 for Titan Building Products. The report evaluated the ASTM A370 / ASTM E8 tensile strength and ASTM F1575 bending yield of fasteners of the Titan deck foot anchors.
- Intertek Testing Services NA Ltd. Test Report No. L4175.01-119-16 R0, issue date 08/25/22 for Titan Building Products. The report evaluated the ASTM D7147 uplift and direct downward load testing of the Titan deck foot anchors.
- Intertek Testing Services NA Ltd. Test Report No. L4912.02-106-31 R1, revision date 05/09/23 for Titan Building Products. The report evaluated the ASTM D2395 specific gravity (method A) and ASTM D4442 Moisture content of treated SPF # 2 lumber for the Titan deck foot anchors.

Foundation Depth:

The 2024 Ontario Building Code, Section 9.12.2.2 (7) indicates that the foundation depths required in sentence (1) do not apply to foundations for decks and other accessible exterior platforms,

(a) That are not more than one storey
(b) That are not more than 55 square metres (592 sqft) in area
(c) Where the distance from the finished ground to the underside of the floor joists is not more than 600 mm (23 5/8")
(d) That are not supporting a roof
(e) That are not attached to another structure, unless it can be demonstrated that differential movement will not adversely affect the performance of that structure.

Please note that different municipalities allow the deck structures to be built from 5' (1.5m) high to 5'-11" (1.8m) high. Consult the local municipality for deck height allowances.

Tested Deck Foot Anchor:

Based on the CTL Thompson Report Number 160 (Rev. 2), the Titan deck foot anchor was tested for compression load bearing and tension loading on clay and sand soils. The tested products included the following:

- TIGA600 – 19mm shaft diameter (600mm long) with an 83mm upper helix 60mm lower helix
- TIGA900 – 19mm shaft diameter (900mm long) with an 83mm upper helix 60mm lower helix

The following is a summary of the test results:

Test	Standard / Section	Result Summary
Torsion	AC358 / 4.2.2	Reported Torque Capacity = 128.3 ft-lbs
Compression Load Bearing	AC336 / 4.3.2 ASTM D1143 / 10.1.3	Clay (TIGA900) Reported Load Capacity (at 0.5" deflection) = 1,391 lbs Clay (TIGA600) Reported Load Capacity (at 0.5" deflection) = 1,146 lbs Sand Reported Load Capacity = 6,285 lbs
Tension Load Test TIGA 600	ASTM D3689 / 8.1.2	Clay Reported Maximum Load Capacity = 638 lbs Sand Reported Maximum Load Capacity = 3,762 lbs
Tension Load Test TIGA 900	ASTM D3689 / 8.1.2	Clay Reported Maximum Load Capacity = 1,244 lbs Sand Reported Maximum Load Capacity = 4,001 lbs

Please refer to the above noted report for the exact testing apparatus.

Based on the latest Intertek Report No. L4175.01-119-16 R0 the Titan deck foot anchor was tested for uplift and compression loading on a steel bearing plate. The following is a summary of test results:

Test	Result Summary
4x4 direct downward load resistance	Average Load 1/8 displacement = 14420 lbf. Average ultimate load = 15992 lbf

4x4 uplift load resistance	Average Load 1/8 displacement = 1476 lbf. Average ultimate load = 2858 lbf
6x6 direct downward load resistance	Average Load 1/8 displacement = 17695 lbf. Average ultimate load = 19227 lbf
6x6 uplift load resistance	Average Load 1/8 displacement = 1345 lbf. Average ultimate load = 2197 lbf

Please refer to the above noted report for the exact testing apparatus.

Discussion and Recommendations:

Although the deck foot anchor has an auger, which is embedded into the soil, the deck foot anchor is not to be used the same as a helical pile. Helical piles are designed to be embedded beyond the frost line in which the structure can be designed to be anchored into an adjacent structure, such as a deck being anchored to a house with a ledger board. The deck foot anchor is to be used only for free-standing structures without any connection to another structure. The auger is primarily used to secure the plate to the ground and to provide the deck foot plate with tensile resistance for wind loading applications. The auger is not used to reach frost cover depth and, consequently, the deck foot anchor will be subject to potential freeze thaw cycle movements. The recommended use of the deck foot anchor would be for similar applications as one might consider using a pre-cast deck block for, but with the additional benefits of additional structural stability traditionally found in concrete foundations which it replaces.

Based on the test results, the deck foot anchor is capable of carrying sufficient loads for small, light-weight, free-standing structures as noted above. Outside these stated and tested soil conditions and equivalent loads discussed here, the soil capacity and load on each deck foot anchor will vary for each project and will need to be determined by a professional structural engineer for each individual project application.

Based on our review, we confirm the deck foot anchors can be used for small free-standing structures in accordance with 2024 Ontario Building Code, Section 9.12.2.2 (7) and municipal allowances, when installed in strict accordance with Titan Building Products installation instructions. Other applications of the deck foot anchor are not permitted.

We trust the preceding is sufficiently clear and acceptable. If you have any questions, please contact the undersigned.

Yours Truly,

VRIEND ENGINEERING INC.



Jason Vriend, P. Eng.