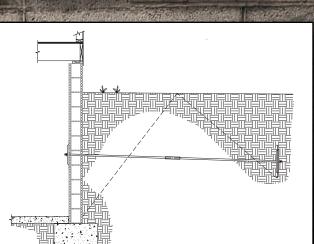
# Grip-life Foundation Systems PRODUCT PROPERTIES

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# Introduction

Grip-Tite has been manufacturing high-quality, earth anchoring and foundation repair products in Winterset, IA continuously since 1921. We can proudly state that all of our products are "Made in the USA". Certified welders, constant quality improvement programs and exacting quality control procedures ensures the highest quality products with proven performance for over 89 years.

A network of certified installers/dealers, effectively cover all 50 states, Canada and Mexico. These installers undergo an extensive, in-house training and certification in order to provide safe and effective product installations. Those products are tested inhouse, at third party, independent, certified laboratories and in the field before they are put into production. You can be assured of a pre-engineered, reliable solution to your earth anchoring and foundation repair needs with Grip-Tite.

Grip-Tite has obtained, and maintained, ICC Legacy Evaluation Service Reports for the patented, Wall Anchor System and the Foundation Pier System. We have also tested our helical products in accordance with ICC Test Criteria AC358 through an ICC certified laboratory.

Our support staff provides engineering, product and customer support to the dealer network and the engineering and building communities. Our field support includes job site and installation oversight, load tests and product development. We look forward to the opportunity to serve your earth anchoring and foundation repair needs.

Grip-Tite performance.....89 years and counting!

**Grip-Tite® Foundation Push Pier Properties** 

**Grip-Tite® Foundation Push Pier Specifications** 

**Grip-Tite® Foundation Brackets** 

**Grip-Tite® Foundation Helical Pier Properties** 

Grip-Tite® Foundation Helical Pier GTRDS2875-0262 SERIES ROUND SHAFT HELICAL PILES

Grip-Tite® Foundation Helical Pier GTRDS3500-0300 SERIES ROUND SHAFT HELICAL PILES

Grip-Tite® Foundation Helical Pier GTRDS4500-0337 SERIES ROUND SHAFT HELICAL PILES

Grip-Tite® Foundation Helical Pier/Tiebacks GTRDS150 SERIES SQUARE SHAFT HELICAL PILES/TIEBACKS

Grip-Tite® Foundation Helical Pier/Tiebacks GTRDS175 SERIES SQUARE SHAFT HELICAL PILES/TIEBACKS

**Grip-Tite® Foundation Tiebacks** 

**Grip-Tite® WalkWay Bracket** 

**Grip-Tite® Wall Anchore System** 

Note: All helical piles should be installed to an appropriate depth into a suitable load bearing stratum capable of providing the recommended capacity as determined by a geotechnical engineer, experience or accepted local practice. Maximum allowable capacity is based on installation to maximum recommended torsional strength. Ultimate capacity is limit state. The New Construction Bracket should have minimum embedment and concrete clearance as required by code and to achieve desired capacities. A minimum factor of safety of 2 is recommended for determining allowable capacity from correlations with final installation torque and an accepted capacity-to-torque ratio, K. Load tests are recommended when practical or when a site specific capacity-to-torque ratio is sought to determine a more economical solution. Information subject to change without notice.

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# Grip-Tite<sup>®</sup> Foundation Push Pier Properties

## Standard and Heavy Duty Series

For existing homes, Grip-Tite® Foundation Systems manufactures foundation repair products for fixing problems like foundation settlement, bowed basement walls, sagging floors and cracked concrete floor slabs. Current foundation problems can be repaired with these foundation repair methods.

| Ultimate Compression System<br>Capacity P <sub>ult</sub> <sup>2</sup> |
|-----------------------------------------------------------------------|
|                                                                       |
| 45 kips                                                               |
| 60 kips                                                               |
|                                                                       |

Retrofit

Bracket

Standard Duty

## Standard Duty Push Pier: 3.00" OD x 0.120" Wall x 36" Long (GTFP300120 SD Series)

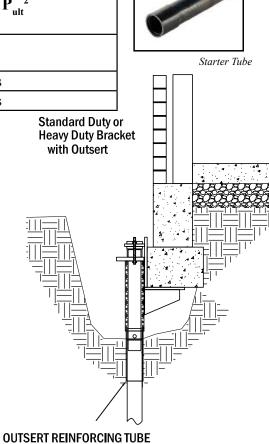
ERW Structural Steel Tubing per ASTM A513; Grade 1026, High Strength Low Alloy, HR, BLK; Minimum yield strength 70 ksi, minimum tensile strength 80 ksi.

Heavy Duty Push Pier: 3.00" OD x 0.188" Wall x 36" Long (GTFP300188 HD Series)

ERW Structural Steel Tubing per ASTM A513; Grade1026, High Strength Low Alloy, HR, BLK 60 ksi Minimum yield strength 50 ksi, minimum tensile strength 60 ksi.

1) Lu, unbraced length = 0. Concentric Loading, Pult = AgFy.

2) Systems capacities were determined by physical testing utilizing an unsupported length Lu, of 5 feet in general accordance with AC-358 (4.1.1). The allowable capacity should include an adequate Factor of Safety. Capacities should be verified in the field.



Retrofit

Bracket

Heavy Duty

# Specifications

## **Standard Duty Pier Tube**

3-in OD x 0.120-in wall mechanical steel tubing conforming to ASTM A513, Grade 1026 HSLA. Min. Yield Strength 70 ksi, Min. Tensile Strength 80 ksi.

#### **Tube Reinforcing Insert**

2.75-in OD x 0.120-in wall x 30 in mechanical steel tubing conforming to ASTM A513, Grade 1026 HSLA. Min. Yield Strength 70 ksi, Min. Tensile Strength 80 ksi.

### STANDARD DUTY BRACKET

Standard Duty Bracket CapacitiesThe allowable capacities of the Standard Duty Bracket have beenestimated by an ICC Certified testing laboratory and calculated inaccordance to AISC, AC-358 and ACI.Allowable Compression Capacity:30 kipsAllowable Uplift Capacity:20 kipsAllowable Lateral Capacity:10 kips

#### Bracket Tube

3.875-in OD x 0.375-in wall x 12-in DOM mechanical steel tubing conforming to ASTM A513, Type 5/Grade 1026 HSLA. Min. Yield Strength 70 ksi, Min. Tensile Strength 80 ksi.

#### Seating Angle Bracket

The  $90^{\circ}$  seating angle bracket consists of a  $10 \ge 14 \ge 0.5$ -in flat plate welded to an  $8 \ge 10 \ge 0.5$ -in flat plate conforming to ASTM A36 hot rolled steel. Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

#### Angle Bracket Gusset Plates

Two 2 x 5 x 8-in wedges manufactured from 0.375-in thick ASTM A36 hot rolled steel. Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

#### **Top Plate**

5 x 9.5 x 0.75-in thick flat hot rolled steel plate conforming to ASTM A36. Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

#### Cap Plate

4 x 8 x 1-in thick flat hot rolled steel plate conforming to ASTM A36. Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

#### **Threaded Rods**

All-thread rods are  $\frac{3}{4}$ -in $\Phi$  x 12-in conforming to ASTM A311, Class B/Grade 8 and are zinc plated conforming to ASTM B633. Min. Yield Strength 130 ksi, Min. Tensile Strength 150 ksi.

#### **Concrete Anchors**

Four  $\frac{1}{2}$ -in $\Phi$  x 5.5-in Titen HD anchors, or equivalent.

#### Weld

ER70S-3, Min. Tensile Strength 72 ksi. All welds are performed by an AWS certified welder.

| i the field. | •              | (Heavy Duty Bracket Only)<br>Fy = 70 ksi, Fu = 80 ksi |          |  |  |  |
|--------------|----------------|-------------------------------------------------------|----------|--|--|--|
| oss Cross    | Circumference, | Moment of                                             | Section  |  |  |  |
| ectional     | C (in)         | Ineria,                                               | Modulus, |  |  |  |

| Pier<br>Product             | Nominal<br>Shaft Size,<br>OD (in) | Nominal<br>Wall<br>Thickness,<br>t (in) | Mechanical<br>Capacity,<br>P <sub>ult</sub> (kips) <sup>1</sup> | Gross Cross<br>Sectional<br>Area,<br>A <sub>g</sub> (in <sup>2</sup> ) | Circumference,<br>C (in) | Moment of<br>Ineria,<br>I (in <sup>4</sup> ) | Section<br>Modulus,<br>S (in3)<br>$S_{x-x}, S_{y-y}$ | Section<br>Modulus,<br>S (in3)<br>S <sub>x-y</sub> | Gyration,<br>r (in) |
|-----------------------------|-----------------------------------|-----------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------|--------------------------|----------------------------------------------|------------------------------------------------------|----------------------------------------------------|---------------------|
| Standard Duty<br>GTFP300120 | 3.00                              | 0.120                                   | 76                                                              | 1.086                                                                  | 9.43                     | 1.13                                         | 0.75                                                 | 0.75                                               | 1.02                |
| Heavy Duty<br>GTFP300188    | 3.00                              | 0.188                                   | 83                                                              | 1.657                                                                  | 9.43                     | 1.65                                         | 1.10                                                 | 1.10                                               | 1.00                |

## **Heavy Duty Pier Tube**

3-in OD x 0.188-in wall mechanical steel tubing conforming to ASTM A513, Grade 1026 HSLA. Min. Yield Strength 50 ksi, Min. Tensile Strength 60 ksi.

#### **Bracket Tube Reinforcing Outsert**

3.5-in OD x 0.188-in wall x 42 in mechanical steel tubing conforming to ASTM A513, Grade 1026 HSLA.Min. Yield Strength 70 ksi, Min. Tensile Strength 80 ksi.

#### HEAVY DUTY BRACKET

Heavy Duty Bracket CapacitiesThe allowable capacities of the Heavy Duty Bracket have beenestimated by an ICC Certified testing laboratory and calculated inaccordance to AISC, AC-358 and ACI.Allowable Compression Capacity:45 kipsAllowable Uplift Capacity:20 kipsAllowable Lateral Capacity:10 kips

#### **Bracket Tube**

4.5-in OD x 0.375-in wall x 14-in DOM mechanical steel tubing conforming to ASTM A513, Type 5/Grade 1026 HSLA. Min. Yield Strength 70 ksi, Min. Tensile Strength 80 ksi.

#### **Seating Angle Bracket**

The 90° seating angle bracket consists of a 10 x 14 x 0.5-in flat plate welded to an 8 x 12 x 0.5-in flat plate conforming to ASTM A36 hot rolled steel.

Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

#### Angle Bracket Gusset Plates

Two 2 x 5 x 8-in wedges manufactured from 0.375-in thick ASTM A36 hot rolled steel. Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

## Top Plate

5.5 x 9.5 x 0.75-in thick flat hot rolled steel plate conforming to ASTM A36. Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

#### **Top Plate**

4 x 8 x 1.5-in thick flat hot rolled steel plate conforming to ASTM A36. Min. Yield Strength 36 ksi, Min. Tensile Strength 58 ksi.

#### **Threaded Rods**

All-thread rods are  $\frac{7}{8}$ -in $\Phi$  x 12-in conforming to ASTM A311, Class B/Grade 8 and are zinc plated conforming to ASTM B633. Min. Yield Strength 130 ksi, Min. Tensile Strength 150 ksi.

#### **Concrete Anchors**

Four  $\frac{1}{2}$ -in $\Phi$  x 5.5-in Titen HD anchors, or equivalent.

#### Weld

ER70S-3, Min. Tensile Strength 72 ksi. All welds are performed by an AWS certified welder.

# **Grip-Tite Standard, Heavy Duty** and New Construction Brackets

## **RETROFIT FP3BA (STANDARD DUTY) BRACKET CAPACITIES**

| Ultimate Capacity- Compression   | 60 kips                      |
|----------------------------------|------------------------------|
| Allowable Capacity - Compression | 30 kips                      |
| Ultimate Capacity - Tension*     | 38 kips (helical piles only) |
| Allowable Capacity - Tension*    | 19 kips (helical piles only) |
| Ultimate Capacity - Lateral*     | 20 kips                      |
| Allowable Capacity - Lateral*    | 10 kips                      |

## **RETROFIT FP3BAH (HEAVY DUTY) BRACKET CAPACITIES**

| Ultimate Capacity- Compression   | 90 kips                              |
|----------------------------------|--------------------------------------|
| Allowable Capacity - Compression | 45 kips                              |
| Ultimate Capacity - Tension*     | 38 kips (3.5" OD helical piles only) |
| Allowable Capacity - Tension*    | 38 kips (3.5" OD helical piles only) |
| Ultimate Capacity - Lateral*     | 20 kips                              |
| Allowable Capacity - Lateral *   | 10 kips                              |

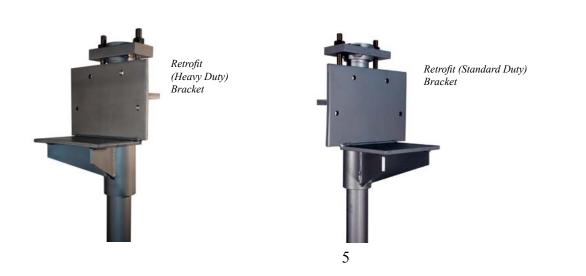
\* Responsibility of the designer to verify (strength of concrete and concrete anchores)

## **2 7/8 NEW CONSTRUCTION BRACKET**

|                             | 4" x 8" x 1" thick, 6" x 6" x 1" thick, 8" x 8" x 1 " thick<br>ASTM A36; $F_y = 36$ ksi, $F_u = 58$ ksi |
|-----------------------------|---------------------------------------------------------------------------------------------------------|
| Coupler (ASTM A500)         | 3.5" OD x 7.0" x 0.300" wall, ASTM A500; $F_y = 70$ ksi, $F_u = 80$ ksi                                 |
| Bolt (Zinc Plated ASTM 354) | 1 - 3/4" diam. SAE, J429 Grade 8, ASTM A354; $F_y = 130$ ksi; $F_u = 150$ ksi                           |

New Construction Bracket

|                                  | BLACK   | GALVANIZED |
|----------------------------------|---------|------------|
| Ultimate Capacity - Compression  | 80 kips | 84 kips    |
| Allowable Capacity - Compression | 40 kips | 42 kips    |
| Ultimate Capacity - Tension      | 66 kips | 72 kips    |
| Allowable Capacity - Tension     | 33 kips | 36 kips    |



# **Grip-Tite**<sup>®</sup> Foundation **Helical Pier Properties**

# Standard and Heavy Duty Series

Helical piers (aka helical piles) are either manufactured with square or round shafts and one or more helix bearing plates welded to the shaft. Helical piers are hydraulically "screwed" into load bearing soils. Grip-Tite's helical piers have a true helix, meaning the helix and helix spacing along the pile shaft allows the second and/or third helical plate to follow the same general path as the first helix when "screwed" into the soil. This minimizes the disruption of soil.

Helical piers are used to repair an existing structure or used for to provide foundation support for new structures as an alternative to micropiles, caissons, Geopiers or other deep foundation systems. They can also be used instead of over- excavation and soil replacement remediations. The helical pier can be both time and cost effective.

When helical piers are used to repair an existing structure, they are "screwed" into the soil until a pre-determined torque is reached. A bracket is then placed on the steel shaft and secured to the structure's foundation, transferring the load of the structure to the helical piers. The structure can then be stabilized or lifted back level.

Helical piers have been in use for almost 200 years, and more recently have become more popular with engineers and contractors and used often in place of more costly alternatives.



# **GTRDS2875-0262 SERIES ROUND SHAFT HELICAL PILES**

80 kips Ultimate Compressive Capacity From Torque

New Construction and Retrofit Construction

## STEEL SPECIFICATIONS

| Shaft (ASTM A500)                     | HSS 2.875" OD x 0.262" wall<br>$F_y = 50 \text{ ksi min.}, F_u = 58 \text{ ksi min.}$                |
|---------------------------------------|------------------------------------------------------------------------------------------------------|
| Cross section area, A nominal         | 2.00 in <sup>2</sup>                                                                                 |
| Moment of intertia, I                 | 1.76 in <sup>4</sup>                                                                                 |
| Sectional modulus, S                  | 1.22 in <sup>3</sup>                                                                                 |
| Circumference, c                      | 9.0 in                                                                                               |
| Radius of gyration, r                 | 0.93 in                                                                                              |
| Coupling (ASTM A500)                  | 3.5" OD x 7" x 0.300" wall<br>$F_y = 50$ ksi min., $F_u = 58$ ksi min.                               |
| Bolts (Zinc plated ASTM B633) Grade 8 | 3 - $3/4$ ° diam. ASTM A354 or A490<br>F <sub>y</sub> = 130 ksi min., F <sub>u</sub> = 150 ksi min.  |
| Helices (ASTM A36)                    | Thickness - 0.375"; 8", 10", 12", 14" Diam.<br>$F_y = 36 \text{ ksi min.} F_u = 58 \text{ ksi min.}$ |
| Coating                               | Hot-Dip Galvanization to ASTM A123 Optional                                                          |

# **COMPRESSION AND TENSION ICC-ES AC358 CAPACITIES**

### MIN 50 YEAR DESIGN LIFE

| Ultimate Capacity-to-Torque Ratio, K <sub>t</sub> | Compression 9 ft <sup>-1</sup> , Tension 7 ft <sup>-1</sup> |
|---------------------------------------------------|-------------------------------------------------------------|
| Recommended Torsional Strength, T                 | 9,495 ft-lbs +/- 228 ft-lbs                                 |
| Ultimate Mechanical Compression Capacity          | 100 kips <sup>(1)</sup>                                     |
| Allowable Mechanical Compression Capacity         | 50 kips <sup>(1)(2)</sup>                                   |
| Ultimate Capacity -<br>Compression and Tension    | Compression 80 kips, Tension 60 kips                        |
| Allowable Capacity -<br>Compression and Tension   | Compression 40 kips, Tension 30 kips (2)                    |

| HELIX DIAMETER (in) | NET HELIX AREA (ft <sup>2</sup> ) |
|---------------------|-----------------------------------|
| 8                   | 0.30                              |
| 10                  | 0.50                              |
| 12                  | 0.75                              |
| 14                  | 1.0                               |

(1) Load test may be required to verify actual geotechnical capacities. A factor of safety greater than 2 may be necessary to meet project settlement tolerances. Settlements are estimated to be less than 1/2 inch for helical piles designed using the above allowable capacities.

(2) Minimum factor of safety of 2 is recommended.



95 kips Ultimate Compressive Capacity From Torque

# STEEL SPECIFICATIONS

| Shaft (ASTM A500)                     | HSS 3.50                             |
|---------------------------------------|--------------------------------------|
|                                       | $F_y = 50 \text{ ks}$                |
| Cross section area, A nominal         | 2.82 in <sup>2</sup>                 |
| Moment of intertia, I                 | 3.69 in <sup>4</sup>                 |
| Sectional modulus, S                  | 2.11 in <sup>3</sup>                 |
| Circumference, c                      | 11.0 in                              |
| Radius of gyration, r                 | 1.14 in                              |
| Coupling (ASTM A500)                  | 4.25" OD<br>$F_y = 50 \text{ ks}$    |
| Bolts (Zinc plated ASTM B633) Grade 8 | 3 - 3/4" d<br>F <sub>y</sub> = 130 k |
| Helices (ASTM A36)                    | Thickness<br>$F_y = 36 \text{ ks}$   |
| Coating                               | Hot-Dip (                            |

# **COMPRESSION AND TENSION ICC-ES AC358 CAPACITIES**

### MIN 50 YEAR DESIGN LIFE

| Ultimate Capacity-to-Torque Ratio, K <sub>t</sub> | Compressi     |
|---------------------------------------------------|---------------|
| Recommended Torsional Strength, T                 | 13,500 ft-1   |
| Ultimate Mechanical Compression Capacity          | 150 kips (1)  |
| Allowable Mechanical Compression Capacity         | 75 kips (1)(2 |
| Ultimate Capacity -                               | Compressi     |
| Compression and Tension                           | 1             |
| Allowable Capacity -                              | Compressi     |
| Compression and Tension                           |               |

| HELIX DIAMETER (in) | NET HE |
|---------------------|--------|
| 8                   | 0.30   |
| 10                  | 0.50   |
| 12                  | 0.75   |
| 14                  | 1.0    |

(1) Load test may be required to verify actual geotechnical capacities. A factor of safety greater than 2 may be necessary to meet project settlement tolerances. Settlements are estimated to be less than 1/2 inch for helical piles designed using the above allowable capacities. (2) Minimum factor of safety of 2 is recommended.



# **ROUND SHAFT HELICAL PILES**

00" OD x 0.300" wall ksi min.,  $F_{\mu} = 58$  ksi min.

0 x 7" x 0 334" wall si min., F<sub>u</sub> = 58 ksi min.

diam. ASTM A354 or A490 ksi min.,  $F_{\mu} = 150$  ksi min.

ss - 0.375"; 8", 10", 12", 14" Diam. si min.,  $F_{\mu} = 58$  ksi min.

Galvanization to ASTM A123 Optional

sion 7 ft<sup>-1</sup>, Tension 6 ft<sup>-1</sup>

sion 95 kips, Tension 80 kips

sion 47 kips, Tension 40 kips<sup>(2)</sup>

## ELIX AREA (ft<sup>2</sup>)





# **GTRDS4500-0337 SERIES ROUND SHAFT HELICAL PILES**

150 kips Ultimate Compressive Capacity From Torque

# STEEL SPECIFICATIONS

| Shaft (ASTM A500)                        | HSS 4.500" OD x 0.337" wall<br>$F_y = 50$ ksi min., $F_u = 58$ ksi min.                               |
|------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Cross section area, A <sub>nominal</sub> | 4.12 in <sup>2</sup>                                                                                  |
| Moment of intertia, I                    | 9.08 in <sup>4</sup>                                                                                  |
| Sectional modulus, S                     | 4.04 in <sup>3</sup>                                                                                  |
| Circumference, c                         | 14.1 in                                                                                               |
| Radius of gyration, r                    | 1.14 in                                                                                               |
| Coupling (ASTM A500)                     | 4.25" OD x 7" x 0.334" wall<br>$F_y = 50$ ksi min., $F_u = 58$ ksi min.                               |
| Bolts (Zinc plated ASTM B633) Grade 8    | 3 - $3/4$ " diam. ASTM A354 or A490<br>F <sub>y</sub> = 130 ksi min., F <sub>u</sub> = 150 ksi min.   |
| Helices (ASTM A36)                       | Thickness - 0.375"; 8", 10", 12", 14" Diam.<br>$F_y = 36 \text{ ksi min.}, F_u = 58 \text{ ksi min.}$ |
| Coating                                  | Hot-Dip Galvanization to ASTM A123 Optional                                                           |

# **COMPRESSION AND TENSION ICC-ES AC358 CAPACITIES**

### MIN 50 YEAR DESIGN LIFE

| Ultimate Capacity-to-Torque Ratio, K <sub>t</sub> | Compression 6 ft <sup>-1</sup> , Tension 5 ft <sup>-1</sup> |
|---------------------------------------------------|-------------------------------------------------------------|
| Recommended Torsional Strength, T                 | 25,000 ft-lbs                                               |
| Ultimate Mechanical Compression Capacity          | 200 kips <sup>(1)</sup>                                     |
| Allowable Mechanical Compression Capacity         | 100 kips (1)(2)                                             |
| Ultimate Capacity -<br>Compression and Tension    | Compression 150 kips, Tension 125 kips                      |
| Allowable Capacity -<br>Compression and Tension   | Compression 75 kips, Tension 62 kips (2)                    |

| HELIX DIAMETER (in) | NET HELIX AREA (ft <sup>2</sup> ) |
|---------------------|-----------------------------------|
| 8                   | 0.25                              |
| 10                  | 0.40                              |
| 12                  | 0.65                              |
| 14                  | 0.95                              |

(1) Load test may be required to verify actual geotechnical capacities. A factor of safety greater than 2 may be necessary to meet project settlement tolerances. Settlements are estimated to be less than 1/2 inch for helical piles designed using the above allowable capacities.

(2) Minimum factor of safety of 2 is recommended.

# GTRDS150 SERIES SQUARE SHAFT HELICAL PILES/TIEBACKS

50 kips Ultimate Compressive Capacity From Torque

## STEEL SPECIFICATIONS

| Shaft (AISI 1060)             | RCS1.50'<br>$F_y = 85 \text{ ks}$  |
|-------------------------------|------------------------------------|
| Cross section area, A nominal | 2.12 in <sup>2</sup>               |
| Moment of intertia, I         | 0.39 in <sup>4</sup>               |
| Sectional modulus, S          | 0.41 in <sup>3</sup>               |
| Radius of gyration, r         | 0.42 in                            |
| Coupling (AISI 1060)          | UPFORG                             |
| Bolts (Grade 8)               | 1 - 3/4"<br>$F_y = 130 \text{ k}$  |
| Helices (ASTM A36)            | Thickness<br>$F_y = 36 \text{ ks}$ |
| Coating                       | Hot-Dip (                          |

# **COMPRESSION AND TENSION CAPACITIES**

MIN 50 YEAR DESIGN LIFE

| Ultimate Capacity-to-Torque Ratio, K <sub>t</sub> | 10 ft <sup>-1</sup>       |
|---------------------------------------------------|---------------------------|
| Maximum Torsional Strength, T                     | 7,000 ft-lbs              |
| Ultimate Mechanical Compression Capacity          | 70 kips <sup>(1)</sup>    |
| Allowable Mechanical Compression Capacity         | 35 kips <sup>(1)(2)</sup> |
| Ultimate Capacity -<br>Compression and Tension    | 70 kips                   |
| Allowable Capacity -<br>Compression and Tension   | 35 kips <sup>(2)</sup>    |
| Allowable Shear Capacity                          | 30 kips (2)               |

| HELIX DIAMETER (in) | NET HE |
|---------------------|--------|
| 8                   | 0.30   |
| 10                  | 0.50   |
| 12                  | 0.75   |
| 14                  | 1.0    |

(1) Load test may be required to verify actual geotechnical capacities. A factor of safety greater than 2 may be necessary to meet project settlement tolerances. Settlements are estimated to be less than 1/2 inch for helical piles designed using the above allowable capacities.
(2) Minimum factor of safety of 2 is recommended.

P'' X 1.50''ksi min.,  $F_u = 120$  ksi min.

GED 2.5" X 2.5" X 0.45" wall

X 3 1/2 ASTM A490 ksi min.,  $F_u = 150$  ksi min.

ss - 0.375"; 8", 10", 12", 14" Diam. ssi min., F<sub>u</sub> = 58 ksi min.

Galvanization to ASTM A123 Optional

## ELIX AREA (ft<sup>2</sup>)





# **GTRDS175 SERIES SQUARE SHAFT HELICAL PILES/TIEBACKS**

110 kips Ultimate Compressive Capacity From Torque

## STEEL SPECIFICATIONS

| Shaft (AISI 1060)             | RCS 1.75" X 1.75"<br>$F_y = 85$ ksi min., $F_u = 120$ ksi min.                          |
|-------------------------------|-----------------------------------------------------------------------------------------|
| Cross section area, A nominal | 3.00 in <sup>2</sup>                                                                    |
| Moment of intertia, I         | $0.75 \text{ in}^4$                                                                     |
| Sectional modulus, S          | 0.78 in <sup>3</sup>                                                                    |
| Radius of gyration, r         | 0.50 in                                                                                 |
| Cast Coupling (AISI 1060)     | 2.85" X 2.85" X 0.5" wall                                                               |
| Bolts (Grade 8)               | 2 - 1" diam. ASTM A490<br>$F_y = 130$ ksi min., $F_u = 150$ ksi min.                    |
| Helices (ASTM A36)            | Thickness - 0.375"; 8", 10", 12", 14" Diam.<br>$F_y = 36$ ksi min., $F_u = 58$ ksi min. |
| Coating                       | Hot-Dip Galvanization to ASTM A123                                                      |

# **COMPRESSION AND TENSION ICC-ES AC358 CAPACITIES**

| MIN 50 YEAR DESIGN LIFE |
|-------------------------|
|-------------------------|

| Ultimate Capacity-to-Torque Ratio, K <sub>t</sub> | 10 ft <sup>-1</sup>    |
|---------------------------------------------------|------------------------|
| Recommended Torsional Strength, T                 | 6,000 ft-lbs           |
| Ultimate Mechanical Compression Capacity          | 60 kips <sup>(1)</sup> |
| Allowable Mechanical Compression Capacity         | 30 kips (1)(2)         |
| Ultimate Capacity -<br>Compression and Tension    | 50 kips                |
| Allowable Capacity -<br>Compression and Tension   | 25 kips (2)            |
| Allowable Shear Capacity                          | 30 kips (2)            |

| HELIX DIAMETER (in) | NET HELIX AREA (ft <sup>2</sup> ) |
|---------------------|-----------------------------------|
| 8                   | 0.30                              |
| 10                  | 0.50                              |
| 12                  | 0.75                              |
| 14                  | 1.0                               |

(1) Load test may be required to verify actual geotechnical capacities. A factor of safety greater than 2 may be necessary to meet project settlement tolerances. Settlements are estimated to be less than

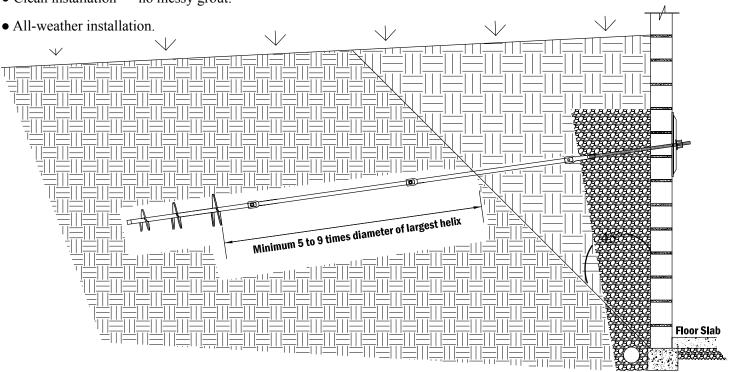
1/2 inch for helical piles designed using the above allowable capacities.

(2) Minimum factor of safety of 2 is recommended.

# GTRDS150/ **GTRDS175 SERIES SQUARE SHAFT HELICAL TIEBACKS**

# **ADVANTAGES**

- Predictable capacity.
- No excavation required on the high-grade side of concrete foundation or concrete retaining walls.
- Extensions added as necessary to achieve pre-determined capacity.
- Installs with either portable or "small" equipment.
- Installs in areas of limited or tight access.
- Proof test can be conducted immediately after installation.
- Generates no spoils.
- Clean installation no messy grout.





1" Threadbar Adapter

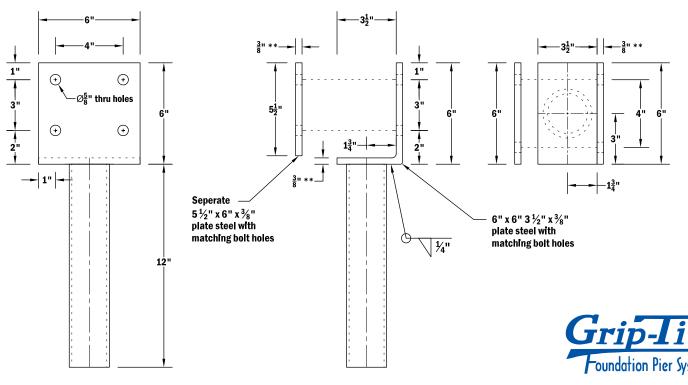


# **GTRDS2875-WWSBG** WALKWAY BRACKET

10 kips Ultimate Compressive Capacity

# STEEL SPECIFICATIONS

| Shaft (ASTM 513)                            | HSS 2.875" OD x 0.262" wall<br>$F_y = 50$ ksi min., $F_u = 58$ ksi min.                                                                           |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Cross section area, A <sub>nominal</sub>    | 2.00 in <sup>2</sup>                                                                                                                              |
| Sectional modulus, S                        | 1.22 in <sup>3</sup>                                                                                                                              |
| Radius of gyration, r                       | 0.93 in                                                                                                                                           |
| Shaft Bolts (Zinc plated ASTM B633) Grade 8 | $3 - \frac{3}{4}$ diam. x $4 \frac{1}{2}$ ASTM A354<br>F <sub>y</sub> = 130 ksi min., F <sub>u</sub> = 150 ksi min.                               |
| Flat Plate (ASTM A36)                       | 6" x 6" x 3/8" x 3 1/2" Bend<br>Separate flat plate 5 $\frac{1}{2}$ " x 6" x $\frac{3}{8}$ " included<br>$F_y = 36$ ksi min., $F_u = 58$ ksi min. |
| Hex Head Bolts or Lag Screws (Recommended)  | 2 - $\frac{1}{2}$ diam. x 4 $\frac{1}{2}$ ASTM A354 or A490<br>F <sub>y</sub> = 130 ksi min., F <sub>u</sub> = 150 ksi min.                       |
| Coating                                     | Hot-Dip Galvanization to ASTM A123                                                                                                                |



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# **Wall Anchor System**

## The Solution for Bowing Basement Walls

The Grip-Tite® Wall Anchor System utilizes proven engineering methods to secure and stabilize deteriorating basement walls. Bowed, cracked or leaning basement walls are a sign that the structural integrity of your property is at risk. This happens when hydrostatic pressure from too much water building up against the walls, saturating the soil around the basement wall causing the soil to swell and exert pressure that forces the foundation wall inward. The system works on any kind of basement wall - concrete block, clay block, poured concrete, timber, or stone.

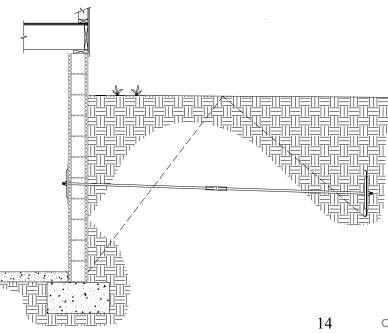
The system consists of an interior wall plate, an exterior soil anchor and a connecting steel rod to stabilize foundation walls by counteracting pressure exerted against the wall.

The system is a property owner's alternative to completely removing and rebuilding basement walls that have become cracked, leaning or bowed as a result of pressures exceeding the capacity of the wall.

The Grip-Tite® Wall Anchors are spaced along a wall and rod extenders can be used to avoid decks, flowerbeds, landscaping or other obstacles.

# **Specifications**

- \* Allowable Rod Capacity = 8,400 lbs.
- \* Wall Plate: 10 gauge (0.134-inch thick) hot-rolled, embossed steel plate. Available in standard plate
- (approx. 195 sq. in.) or large plate (approx. 300 sq. in.).
- \* Earth Anchor: Two cross-plated 10 gauge (0.134-inch thick) hot-rolled, embossed steel plates.
- \* Anchor Rods: nominal diameter 0.734 inch with rolled threads in 6.5 foot sections.
- \* Corrosion Resistant: wall anchor components hot-dipped galvanized in accordance with ASTM A-123 and ASTM A-153.









All Grip-Tite Dealers are independent contractors thoroughly trained and certified in the application of the Grip-Tite® Foundation System and are supported by over 80 years of Grip-Tite Manufacturing Company's earth anchoring experience.

GRIP-TITE MANUFACTURING CO., L.L.C.

WINTERSET, IOWA

## www.GripTite.com





