

**PTS HELICAL PIERS  
INSTALLATION SPECIFICATIONS**

**NOTICE**

The following suggested specifications are written as a guide to assist the specifier in writing his own specifications. Specific circumstances involving the structure, the soils and other factors must be considered on each project to assure an adequate installation specification. Please consult state and local building codes and authorities to ascertain and verify compliance to their rules, regulations and requirements.

PTS shall not be responsible or liable for the adoption, revision, implementation use or mis-use of these suggested specifications.

\*\* ALL ENCLOSED  
SPECIFICATIONS SUBJECT TO  
CHANGE WITHOUT NOTICE

## FOUNDATION NOTES

1. All piles shall be helical piles and appurtenances as furnished by Premium Technical Services Corp., 2487 North Jerusalem Road, East Meadow, NY 11554 (516) 409-6000.
2. **Helical pile lead section** shall be Cat. # \_\_\_\_\_ with a \_\_\_\_\_ square shaft with one \_\_\_\_\_ diameter helix and one \_\_\_\_\_ diameter helix: lead section shall be \_\_\_\_\_ feet long.
3. **Helical pile extensions** shall be either:  
Cat. # \_\_\_\_\_ with a \_\_\_\_\_ square shaft and shall be \_\_\_\_\_ feet long, or  
Cat. # \_\_\_\_\_ with a \_\_\_\_\_ square shaft and shall be \_\_\_\_\_ feet long, or  
Cat. # \_\_\_\_\_ with a \_\_\_\_\_ square shaft and shall be \_\_\_\_\_ feet long.
4. Helical piles shall be installed to achieve an ultimate bearing capacity of \_\_\_\_KIPS. The design capacity of the piles is \_\_\_\_ KIPS providing a safety factor of \_\_\_\_.
5. All helices shall be installed below the fill level.
6. All piles shall be installed by a certified P.T.S. installer only.
- 6A. When required by owner P.T.S. shall have a representative present during helical pile installation.
7. Helical piles, extension and appurtenances shall be hot-dipped galvanized in accordance with ASTM A153.
8. All pile installation operations shall be supervised by a licensed engineer providing controlled inspection as per 27-721 and 27-132 of the building code of the City of New York. The inspector shall keep a complete record of pile installation operations and a pile installation record shall be filed with the Building Department of the City of New York. No concrete for the pile caps shall be placed until the pile installation is approved by the Building Department.
9. CONCRETE (Pile Caps & Sonotubes)
  - A) Design, materials and method of construction shall comply with the requirements ACI of the American Concrete Institute.
  - B) Ultimate design strength at 28 days for all reinforced concrete shall be a minimum 3500PSI.
  - C) Concrete materials shall conform to the following standards:
    - a) Portland cement as per ASTM C150-67.
    - b) Air entraining for portland cement as per ASTM C175-67.
    - c) Concrete aggregates as per ASTM C33-67.

- d) Water shall be clean and free from injurious amounts of oils, acids, alkalis, salt organic materials and deleterious substances.
- e) The minimum number of bags of cement for each cubic yard of concrete (all aggregates) shall be 5.75 for 3000 PSI concrete.
- f) Maximum permissible water cement ratio shall be 7 1/2 gals. per sack of cement for non-air entrained concrete and 6 1/2 gals. per sack of cement for air entrained concrete.
- g) Slump shall not exceed 5" plus or minus 1" for gravel or stone aggregate concrete.
- h) Test cylinders: Three test cylinders shall be molded for each 50 cu. yards or fraction thereof for each class of concrete placed in any one 1 day. Samples to be taken directly from the mixer as per ASTM C-172-1954, cured as per ASTM C39-1966. Tests shall be performed by Licensed Testing Laboratory reports to be filed with the engineer.

#### 10. REINFORCING STEEL

- A) Reinforcing bars to be deformed and conform to ASTM A615 grade 40 with basis design stress of 20,000 PSI.
- B) All bars shall be securely held in proper position while placing concrete. If required additional bars shall be provided by the contractor to furnish support for all bars.
- C) Minimum concrete protection for reinforcement: Footings or other principal structural members deposited against ground -3".

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## SPECIFICATIONS

### HELICAL STEEL PIERS

#### **PART I GENERAL**

##### **1.01      SUMMARY**

- A. Provided all required supervision labor material, tools and equipment for installation of helical steel Anchor piers as indicated on drawings.
  
- B. Related work specified in other sections:
  - 1. Excavating and Backfilling.
  - 2. Reinforced concrete.

##### **1.02      SUBMITTAL**

- A. Field record of Helical Pier Log: The owner shall engage the services of a licensed N.Y. State surveyor to accurately locate the installation point of each foundation anchor and to record this information on paper suitable for reproduction.

Drawing shall include the following information:

- 1. Pier layout.
  - 2. Each pier identified by a separate number.
  - 3. Elevation of each anchor tip.
  - 4. Elevation of each cut-off.
  - 5. Description of lead section and extension installed.
  - 6. Distance in inches, to the nearest 1/2 inch, showing location of center of anchor as driving in relation to its designed location.
  - 7. Name of P.T.S. representative who witnessed the installation.
- B. All pier installation operations shall be supervised by a licensed engineer providing controlled inspection as per 27-721 and 27-132 of the building code of the city of New York. The inspector shall keep a complete record of pier installation operations and a pier installation record shall be filed with the Building Department of the City of New York. No concrete for the pile caps shall be placed until the pier installation record is approved by the Building Department.
  
  - C. The contractor shall submit as-built drawings prepared, signed and sealed by a N.Y. professional engineer approval of all pier work.

**PART II PRODUCTS**

**2.01 MATERIALS**

- A. Each helical pier shall consist of \_\_\_\_\_ square galvanized steel shaft anchor helical lead and extension sections supplied by Premium Technical Services Corp., 2487 North Jerusalem Road, East Meadow, NY 11554, (516) 409-6000.
- B. The foundation lead section consists of \_\_\_\_\_ square shaft with \_\_\_\_\_ helical formed plate(s) welded to it. The shaft shall be solid steel with ASTA 153 hot dipped galvanized coating. The helix sizes shall be \_\_\_\_\_. The lead section unit is the load carrying element of the foundation that transfers the load to the soil.
- C. The termination end of extension consists of \_\_\_\_\_ sq. stock, \_\_\_\_\_ ksi steel, with hot dipped galvanized coating. Each extension is to be provided with a means for coupling to the lead or to another extension. Each coupling is to be provided with the proper bolts and nuts.
- D. The following lead and extension sections are required per anchor pier as supplied by Premium Technical Services Corp.

<b><u>PTS CAT #</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>NO REQD. PER PIER</u></b>
PTS- _____	_____ Helical Plates on _____ sq. shaft x _____ lead section	one
PTS- _____	_____ sq. x _____ extension	as required
PTS- _____	_____ sq. x _____ extension	as required
PTS- _____	_____ sq. x _____ extension	as required

- E. All foundation anchors shall have a minimum total installation depth of \_\_\_\_\_ below existing grade and minimum installation torque of \_\_\_\_\_ ft. lbs.
- F. All welding shall be done by certified welders in accordance with ASW D1.1
- G. All material shall be hot dipped galvanized in accordance with ASTM A153. All galvanizing of welded areas shall be cleaned and coated with approved galvanizing compound.

H. A torque indicator by (PTS) shall be used for all installations.

Min. Torque - \_\_\_\_\_ Ft.-lbs.

Max. Torque - \_\_\_\_\_ Ft.-lbs.

### **PART 3 EXECUTION**

#### **A. Installing Unit**

1. Installation of all helical steel anchor piers shall be done under the supervision of Premium Technical Services Corp, 2487 North Jerusalem Road, East Meadow, NY 11554, (516) 409-6000 or an approved installer.
2. Installation equipment shall be able to install helical steel anchor piers with low overhead clearance and shall have a maximum torque capability. Installation units shall consist of rotary type, torque motor with forward and reverse capability. Installation equipment shall be in good working order and safe to operate. must be approved by P.T.S.
3. Installation equipment must be grounded with a minimum 4/0 flexible insulated copper cable to the nearest station ground where required.

#### **B. Installation Tooling**

1. Adapters approved by Premium Technical Services shall be employed to safely connect the installation units to the helical steel anchor piers.

#### **C. Torque Monitoring Devices**

1. The torque being applied by the installing units shall be monitored throughout the installation process. These torque monitoring devices must be approved and calibrated by Premium Technical Services Corp. or an authorized agent.

#### **D. Installation Procedure**

1. Installation of helical anchor piers shall begin in vertical position. Throughout the installation, constant down pressure shall be maintained and torque shall be applied in a smooth, continuous manner. The rate of anchor pier rotation shall be in the range of 3 to 20 revolutions per minute.
  - a. If the minimum torque requirement has not been satisfied at the minimum depth, the installer shall continue installation using additional extension material until specified minimum torque level is obtained.

- b. If the minimum torque rating has been satisfied prior to satisfying the minimum depth requirement, the installer shall continue installation to minimum depth requirement or terminate installation if maximum torque is recorded prior to reaching minimum depth. (Depending on field conditions as approved by an engineer).

**F. Bids**

1. Helical steel anchor piers shall be driven to the specified minimum torque and minimum installation depth. (see paragraph 3E of this section).
2. If underground obstructions are encountered during installation, contractor shall remove and relocate the anchor pier. If anchor pier is damaged and cannot be reused as determined by P.T.S. representative, additional pier shall be driven at new location. The owner shall pay for additional pier in accordance with price per lead and extension section installed. The owners' engineer shall provide the new location of anchor pier.
3. Piers which are damaged due to mishandling during installation by the contractor shall be replaced with new piers at the contractor's expense.
4. When piers are installed out of design location without approval or out of plumb in excess of that allowed by Code or Specification: and/or are rejected by the Professional Engineer, the contractor shall without cost to owner, perform all extra work required to make the installation comply with the requirements of the Local or N.Y.C. Building Code and/or Project Specification. This may require additional piers and/or increases or changes in the size and shape of the pier cap. The costs to be borne by the contractor in addition to the new piers shall include all extra excavation, backfill, forms, rebar, concrete, equipment, etc. Redesign, including calculations and drawing revisions shall be made by and the costs borne by the owner.