

GLOSSARY of TERMS

Alignment Load (AL)	A low magnitude load applied to a pile/anchor at the start of the load test to keep the testing equipment correctly positioned and to remove any slack in the reaction system.
Allowable Capacity	The geotechnical capacity of a pile/anchor or pier as determined by a reduction of the ultimate capacity with an appropriate factor of safety or resistance factor.
Anchor or Anchorage	A combination of anchor and the soil or deeply weathered rock into which it is installed that together resist tension loads applied to the anchor.
ATLAS RESISTANCE® Pier	An assembly of structural steel components that includes a foundation bracket assembly attached to the concrete foundation, which is then mounted to a steel pier that is installed to bedrock or dense bearing stratum via hydraulic jacking of the pipe shaft segments.
Axial Load (P)	An axially oriented compression or uplift (tension) load supported by an pile/anchor or pier resulting from dead, live and seismic loads.
Bearing Load	A load generally regarded as an axial compressive load on a pile or pier.
Bearing Stratum	Soil layers of sufficient strength to be capable of resisting the applied axial load transferred by a pile or pier.
Contractor	The person or firm responsible for performing the required construction, i.e., installation of CHANCE® Helical Piles/Anchors or ATLAS RESISTANCE® Piers.
Coupling	A central steel shaft connection for CHANCE® Type SS and RS helical piles. Couplings may be either separable sleeve couplings or integral forged sockets.
Coupling Bolts	High strength structural steel fasteners used to connect helical anchor/pile segments together. For CHANCE® Type SS segments the coupling bolt transfers axial loads. For CHANCE® Type RS segments the coupling bolt transfers both axial and torsional loads.
Coupling, Pier Sleeve	A steel tubing of suitable outside diameter to fit into a pier starter and extension section to provide a means for attaching the various pier sections together for ATLAS RESISTANCE® Piers. It allows for extending the pier to the required depth.
Creep	The movement that occurs during the Creep Test of a pile/anchor or pier under a constant load.
Dead Load (DL)	Generally, vertical loads comprised of the weight of the structure plus various fixed assets, such as equipment, machinery, walls and other permanent items.

Design Load (Pd)	The maximum anticipated service load applied to a pile or pier, comprised of calculated dead and live loads. Also known as Working Load.
Effective Stress	The total force on a cross section of a soil mass that is transmitted from grain to grain of the soil, divided by the area of the cross section. Also known as Intergranular Stress.
Elastic Movement	The recoverable movement measured during a pile/pier load test resulting from the elastic shortening or lengthening of the pile/pier shaft material.
End Bearing	The transfer of axial loads to the soil at the tip of a helical pile via helix plates or at the tip of a pier.
Evaluation Services Report (ESR)	The evaluation of a manufactured product or building component by the evaluation services of the various model code agencies (ICC). The report outlines the requirements that must be met to satisfy the intent of the Building Code.
Extension Pier Section	With reference to an ATLAS RESISTANCE® Pier, the pipe sections following the starter pier section that extend the starter section to the load bearing stratum. The extension pier sections are equipped with a pier sleeve that allows for coupling the extensions to the starter section or other extensions.
Failure Criteria	A method used to determine the ultimate capacity of a pile/anchor based on a load test. A typical failure criteria for helical piles is the load where the pile head displacement is equal to 10% of the average helix diameter plus the elastic movement.
Foundation Soil Load	The load from soil overburden on the outstanding toe of a footing. This soil load is in addition to the existing structure weight supported by the footing. It increases the dead load used as a reaction to install a push pier and therefore aids the installation. However, it may work to defeat attempts to lift a structure and may require reduction or removal if a lift is required.
Friction Reduction Collar	The enlarged section at the bottom of the pipe starter section of an ATLAS RESISTANCE® Pier. The collar diameter is larger than the following pipe shaft, thus forcing the displaced soil away from the pipe shaft.
Gunite	A dry concrete mixture that is carried to a nozzle in moving air where it is mixed with water. The operator controls the water-cement ratio.
Helical Extension	A helical pile/anchor component installed immediately following the lead section (if required) to increase the bearing area of the foundation. This component consists of one or more helical plates welded to a central steel shaft.
Helical Pile	A bearing type foundation consisting of a lead section, helical extension (if required by site conditions), plain extension section(s) and a pile cap. Also known as a screw pile or helical screw foundation.

HELICAL PULLDOWN® Micropile	A small diameter, soil displacement, cast-in-place helical pile in which the applied load is resisted by both end bearing and friction. The design is protected under United States Patent 5,707,180, Method and Apparatus for Forming Piles In-Situ.
Helix Plate	A round steel plate formed into a ramped spiral. The helical shape provides the downward force used to install a helical pile/anchor, plus the plate transfers the load to the soil in end bearing. Helical plates are available in various diameters and thicknesses.
Impact Driven	A pile driven with a pile hammer.
In-Situ	In the natural or original position. Used in soil mechanics to describe the original state of soil condition prior to disturbance from field testing or sampling methods.
Installation Torque	The resistance generated by a helical pile/anchor when installed into soil. The installation resistance is a function of the soil plus the size and shape of the various components of the helical pile/anchor. The installation energy must equal the resistance to penetrate the soil (penetration energy) plus the energy loss due to friction (friction energy).
Kip	One thousand pounds of force, or a "kilopound."
Lagging	Horizontal members, usually of timber or concrete, spanning between soldier piles to retain the soil between pile locations. They transfer the load directly from the soil to the soldier piles.
Lateral Load (V)	A load applied perpendicular to the longitudinal axis of a pile or pier resulting from live and seismic loads. Also called a shear load.
Lead Section	The first helical pile/anchor component installed into the soil, consisting of single or multiple helix plates welded to a central steel shaft. The helical plates transfer the axial load to bearing stratum.
Live Load (LL)	A load comprised of roof, wind, floor, and in some cases, seismic loads. Floor loads include people, temporary or non-fixed equipment, furniture and machinery. Roof loads include ice and snow.
Load Bearing Stratum	See Bearing Stratum.
Net Settlement	The non-elastic (non-recoverable) movement or displacement of a pile/pier measured during load testing.
Open Specification	An arrangement in which the contractor is given the responsibility for the scope and design of the pile or pier installation. The construction, capacity and performance of the pile or pier are the sole responsibility of the contractor. This specification is most common for securing bids on temporary projects, and is not recommended for permanent applications. See also Performance Specification and Prescriptive Specification.
Overburden	Natural or placed material that overlies the load bearing stratum.

Performance Specification	An arrangement in which the contractor is given the responsibility for certain design and/or construction procedures, but must demonstrate to the owner through testing and/or mutually agreed upon acceptance criteria that the production piles/piers meet or exceed the specified performance parameters. The contractor and owner share responsibility for the work. See also Open Specification and Prescriptive Specification.
Pier Head Assembly	An ATLAS RESISTANCE® Pier bracket or other termination device that allows attachment to an existing footing or floor slab.
Pile Cap	A means of connection through which structural loads are transferred to a pile or pier. The type of connection varies depending on the requirements of the project and the type of pile/pier material used. NOTE: Care must be used in the design of pile caps to ensure adequate structural load transfer. Design constraints such as expansive soils, compressible soils and seismic loads must be accounted for in pile cap design.
Pipe Shaft	A central shaft element made from hollow, steel, round pipe, ranging in diameter from 2" to 10". Also known as Hollow Shaft, Round Shaft (Type RS), Type T/C and Type PIF for CHANCE® Helical Piles.
PISA® System	The acronym for Power Installed Screw Anchor. The PISA® System was originally developed for the power utility industry in the late 1950's.
Plain Extension	A central steel shaft segment without helical plates. It is installed following the installation of the lead section or helical extension (if used). The units are connected with separable sleeve couplings or integral forged couplings and bolts. Plain extensions are used to extend the helical plates beyond the specified minimum depth into competent load bearing stratum.
Pore Pressure	Unit stress carried by the water in the soil pores in a cross section.
Post Tensioning	The stressing of a structure after all structural elements are in place (e.g., loading a tieback anchor to post tension a retaining wall).
Preloading	A load applied to a pile prior to connection to a structure to minimize structural movement in service. Also known as Prestressing.
Prescriptive Specification	An arrangement in which the owner has the sole responsibility for the scope and design of the pile or pier installation and specifies the procedures that must be followed. Prescriptive specifications mandate the owner to be responsible for the proper performance of the production piles/piers. The contractor is responsible for fulfilling the obligations/details as specified in the construction documents.

Pretensioning	The prestressing of an anchor or foundation prior to the service load being applied.
Proof Test	The incremental loading of a pile or pier, where the load is held for a period of time and the total movement is recorded at each load increment. The maximum applied load is generally 1.0 to 1.25 times the design load.
Rebound	Waste created by sprayed concrete falling to the floor or ground below the intended target location. Rebound is usually half for shotcrete compared to gunite.
Reinforced Earth	A soil mass whose overall shear strength has been increased via some reinforcing technique (e.g., SOIL SCREW® Anchor, soil nail, geofabric, etc.).
Round Shaft	Hollow steel, round pipe, central shaft elements ranging in diameter from 2" to 10". Also known as Hollow Shaft, Round Shaft (Type RS), Type T/C and Type PIF for CHANCE® Helical Piles.
Safety Factor (SF)	The ratio of the ultimate capacity to the working or design load used for the design of any structural element. Also referred to as a factor of safety.
Seismic Load	A load induced on a structure caused by ground motions resulting from a seismic event (earthquake). Usually included as part of the live load.
Shaft	A steel or composite steel/grout shaft or rod used to transfer load from the surface to the bearing plates.
Shotcrete	A wet concrete mixture that is pumped to a nozzle where air is added to carry the concrete mix to the application. Often used to quickly provide a facing on soil nail or SOIL SCREW® Anchor reinforced retaining walls.
Soil Nail	A steel rod driven or drilled and grouted into the ground to reinforce, stabilize, or strengthen soil such as the soil mass behind a retaining wall.
SOIL SCREW® Anchor	A CHANCE® Helical Anchor with helices welded along the entire length of the shaft. A SOIL SCREW® Anchor is used to engage the soil and serves the same function as a soil nail, i.e., soil reinforcement.
Soldier Pile	An H or WF section normally driven (or placed in a drilled hole and backfilled with weak grout or concrete) vertically at intervals of several feet to resist the load on the lagging of a retaining wall. It is the main structural element of a retaining wall. Also known as an h-pile.
Square Shaft (SS)	A solid steel, round-cornered-Square central Shaft element ranging in size from 1-1/4" to 2-1/4". Also known as Type SS for CHANCE® Helical Anchors.
Starter Pier Section	With reference to an ATLAS RESISTANCE® Pier, the first pipe section to be placed in the ground. It is usually equipped with a friction reduction collar.
Starter Section	With reference to a CHANCE® Helical Pile, a lead section, but usually used in reference to a SOIL SCREW® Anchor.
Test Load	The maximum load applied to a pile or pier during testing.

Thread Bar Adapter	A section of central steel shaft that can be used to connect a tiedown or ground anchor to a new or existing concrete foundation/pile cap via a high tensile strength pre-stressing thread bar.
Tieback	A tension anchor used to resist the loads on a retaining wall due to the earth pressure and other loads at or near the top of a wall.
Tiedown	A device used to transfer tensile loads to soil. Tiedowns are used for seismic retrofit. They consist of a central steel shaft, helix bearing plates, coatings, corrosion protection, a means of connection, etc. Also known as a ground anchor.
Top Pier Platform	The top section of an ATLAS RESISTANCE® Pier equipped with vertical stabilizers that facilitate attachment to the pier bracket.
Torque Rating	The maximum torque energy that can be applied to a helical anchor/pile during installation in soil. Also known as allowable torque or safe torque.
Ultimate Capacity (Qu)	The limit state based on the structural and/or geotechnical capacity of a pile or pier, defined as the point at which no additional capacity can be justified.
Ultimate Load (Pu)	The load determined by applying a safety factor to the working load. The ultimate load applied to a structural element must be less than the ultimate capacity of that same element or a failure limit state may occur.
Underpinning Bracket	A bracket used to connect an existing strip or spread foundation or footing to a CHANCE® Helical Pile or ATLAS RESISTANCE® Pier.
Uplift Load	Generally, an axial tensile load on an anchor.
Verification Test	Similar to the Proof Test except a cyclic loading method is used to analyze total, elastic and net movement of the pile. Used for pre-contract or pre-production pile load tests.
Vertical Stabilizer	A steel plate element, welded to the side of the top pier platform, which prevents lateral movement within the pier bracket. Vertical stabilizers will allow the pier bracket to move vertically up from the top pier platform but prevent the bracket from moving below a previously set elevation.
Waler	A horizontal structural member placed along soldier piles to accept the load from the piles and transmit it to struts, shoring or tieback anchors.
Working Load	Another term for Design Load.