

# FOUNDATION SUPPORTWORKS™

## MODEL 288 PUSH PIER SYSTEM

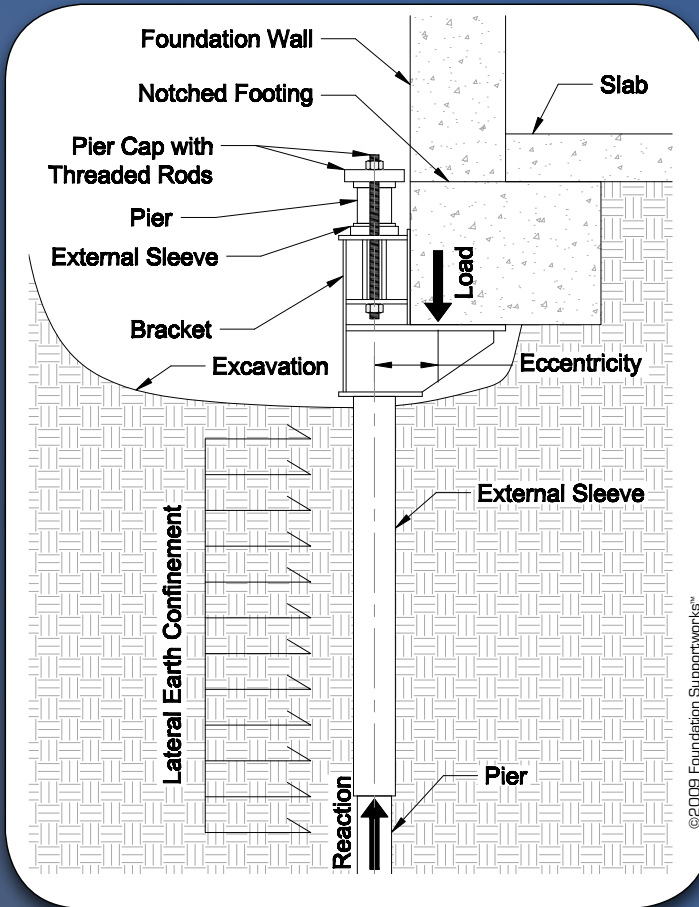


STABILITY. SECURITY. INTEGRITY.

288 Push  
Pier System



# Model 288 Push Pier System DESIGN CONSIDERATIONS



► Push piers are installed directly adjacent to the existing structure utilizing side-load brackets. This introduces eccentricity into the system. The Model 288 Push Pier System incorporates an external sleeve at the top of the pier to aid in resisting the bending forces generated by this loading condition. This helps preserve the axial compressive capacity of the pier shaft. The external sleeve extends through and below the foundation bracket to essentially create a bracket that is 48 inches tall.

The moment or bending force is localized within a relatively short distance below the bracket. Although the bending force is dissipated quickly by the pier bearing against the confining soil, it is significant and cannot be ignored. The depth or length of sleeve and pier over which the bending force dissipates is a function of the soil stiffness near the surface. The depth is greater in soft clay and loose sand, and less in stiff clay and dense sand. In soft or loose soils, a small portion of the bending force may be transferred to the pier below the sleeve, thereby reducing the pier's allowable axial compressive capacity. A modified, lower capacity system is also available with a shorter, 30-inch long sleeve for low headroom applications.

# Model 288 Push Pier System SPECIFICATIONS

► **Bracket:** Weldment manufactured from 0.25", 0.375", and 0.50"-thick steel plate. Yield strength = 36 ksi (min.), tensile strength = 58 ksi (min.).

**External Sleeve:** 3.50" OD x 0.216" wall x 30" or 48" long with sleeve collar welded to one end. Yield strength = 50 ksi (min.), tensile strength = 62 ksi (min.).

**Pier Starter Tube:** 2.875" OD x 0.165" wall x 50" long, triple-coated in-line galvanized. Yield strength = 50 ksi (min.), tensile strength = 55 ksi (min.). 3.375" OD x 0.188" wall x 1" long friction reducing collar welded to one end.

**Pier Tube:** 2.875" OD x 0.165" wall x 36" long, triple-coated in-line galvanized. Yield strength = 50 ksi (min.), tensile strength = 55 ksi (min.). 2.50" OD x 0.180" wall x 6" long internal coupler at one end with 3" extending out of pier tube.

**Pier Cap:** 5.0" wide x 9.0" long x 1" thick plate with confining ring welded to one side. Yield strength = 50 ksi (min.), tensile strength = 65 ksi (min.).

**All-Thread Rod:** 0.75" diameter x 16" long, zinc plated, Grade B7, tensile strength = 125 ksi [min.].

## System Capacity

Soil Type	Consistency/ Relative Density	Soil Strength Parameters			Allowable System	Allowable System
		SPT, N-value (blows/ft)	Cohesion (psf)	Friction Angle (degrees)	Capacity* (kips)** 48" Ext. Sleeve	Capacity* (kips)** 30" Ext. Sleeve
Clay	Very Soft	< 2	< 250	-	23.5	19.2
Clay	Soft	2 - 3	250 - 500	-	27.0	21.5
Clay	Medium Stiff	4 - 7	501 - 1,000	-	32.0	23.9
Clay	Stiff	8 - 15	1,001 - 2,000	-	34.5	26.9
Clay	Very Stiff	16 - 32	2,001 - 4,000	-	34.5	30.8
Sand	Very Loose	< 3	-	26 - 30	33.0	24.2
Sand	Loose	4 - 9	-	28 - 34	33.0	24.2
Sand	Medium	10 - 29	-	30 - 36	34.0	26.3
Sand	Dense	30 - 49	-	34 - 40	34.5	27.2

\* Capacity based upon a concrete compressive strength of 2,500 psi for the foundation.

\* Capacity considers a loss in steel thickness due to corrosion over a period of 50 years. The design period and corrosion loss rates are in accordance with ICC-ES AC308.

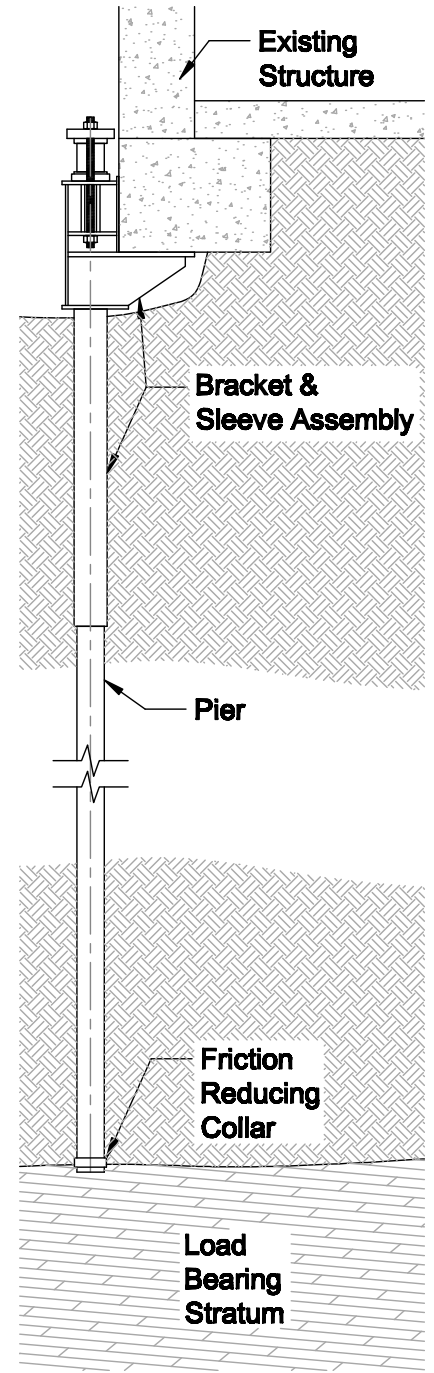
\*\* 1 kip = 1,000 pounds (lb.)

## FRICITION REDUCING COLLAR

▶ The first pier section advanced into the ground includes a larger-diameter “friction reducing collar” welded to the lead end. This collar, being larger in diameter than the pier tube, effectively creates annular space around the pier as it is advanced through most clayey soils. In soft clay or clean sand and gravel, an annular space may only temporarily be created. However, the larger diameter collar causes soil disturbance or remolding to occur, which also significantly reduces frictional resistance on the outside surface of the pier during driving. The result is a driven pier that generates most of its capacity in end-bearing. Over time, the soils surrounding the pier relax back into the annular space and against the pier shaft. This provides an additional frictional component to the pier’s capacity. Even though this frictional capacity may be significant, it is conservatively ignored in the determination of the pier’s factor of safety against pier settlement.



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## Model 288 Push Pier System

# ADVANTAGES

- End bearing pier that does not rely on skin friction for capacity
- Portable equipment allows for installation in areas of limited access
- Piers are individually load-tested during installation
- System design allows for lifting of settled structures
- Factors of safety typically range from 1.5 to 3
- Galvanized pier sections for added corrosion protection

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