

TYPICAL SPECIFICATION

Magnum Hydraulic Piering System

PART 1 – GENERAL

1.01 SCOPE OF WORK

This work consists of furnishing all labor, tools, equipment; and materials associated with the preparation and installation of Magnum Piers according to the specifications contained herein. The work includes but is not limited to the following:

1. All earth excavation;
2. Preparation of footer/foundation;
3. Installation of the pier bracket including concrete anchors;
4. Mounting of hydraulic loading assembly and installation of steel pier sections to designed specifications;
5. Lifting the structure hydraulically and installing to permanent elevation;
6. Replacement of earth materials and general site clean-up.

1.02 REFERENCES

- A. Technical Guide, Magnum Piering, Inc.
- B. The Building Officials and Code Administrators, International, Inc. (BOCA) Basic National Building Code

1.03 DELIVERY STORAGE AND HANDLING

All Magnum Piering materials shall be handled and transported carefully to prevent any deformation or damage. Care should be taken to prevent the accumulation of dirt, mud or other foreign matter on the steel materials. Such accumulation shall be completely removed prior to installation.

PART 2 – MATERIAL

2.01 PIER BRACKET

A 3/8-inch flame cut steel plate, or a 1/2 -inch flame cut steel angle, welded assembly conforming to ASTM A-36, A-536 and A-519.

2.02 STEEL CONCRETE ANCHORS

5 1/2 inch long by 1/2 inch O.D. ultimate shear strength of 10,000 pounds in 5000 psi concrete. Anchors will conform to ASTM E-488 AND B-633 TYPE 3.

2.03 PRESSURE BEARING GROUT (OPTIONAL)

A quick set thin mortar with 4,500 psi, 3 day-strength minimum. 713 Master Builder's non-shrink grout or equivalent may be used.

2.04 HYDRAULIC DRIVE/LIFT ASSEMBLY

A 3-1/4 inch hydraulic double acting cylinder capable of driving a 3-inch O.D., 36 inch long steel tube through various soil conditions. The cylinder should have a minimum working pressure rating of 3,200 psi and must be capable of developing 65,000 pounds lift.

2.05 PIER SECTION

A 36-inch, 3 inch O.D. mechanical steel tube with a .120/.250 nominal wall thickness, and with a minimum tensile strength of 50,000 psi. The initial 36-inch section shall have a 3 1/8 O.D. collar on its end to assist in reducing wall friction during driving the pier to capacity. Steel in this section shall all conform to ASTM A-513.

2.06 PIER SLEEVE COUPLING

A 6-inch long steel coupling with 2.750/2.500 inch O.D. and 0.125/.250 inch wall thickness welded inside bottom on each connected pipe section with 3 inches exposed. All conforming to ASTM A-513.

2.07 HIGH STRENGTH LOCK BOLTS

Three 1 1/4 inch x 3/4 inch grade 8 bolts capable of providing minimum yield and tensile strength of 130 ksi conforming to ASTM A-325.

2.08 WELDMENTS

All welded connections shall conform to the requirements of the American Welding Society “Structural Welding Code AWS D1.1,” and all applicable revisions.

PART 3 – EXECUTION

The following is intended to provide the controlling specifications for the installation of each Magnum Pier.

3.01 EXPOSURE OF FOOTER/FOUNDATION

An area shall be excavated immediately adjacent to the building foundation in order to expose the footer element to a width of at least 3 feet and to a depth of at least 1 foot beneath the base of the footer. A chipping hammer shall then be used to prepare the footer for mounting the pier bracket. The vertical and bottom face of the footer shall be smooth free of all dirt, debris, and loose concrete, so as to provide firm bearing surfaces for the pier bracket.

3.02 INSTALLATION OF PIER BRACKET

The pier bracket shall first be mounted to the footer. The bracket shall be seated against the footer and fastened by steel concrete anchors. If the pier bracket does not have continuous bearing support on either its vertical or horizontal face then pressure bearing grout shall be used to provide proper bearing previous to the lifting and holding operation. The hydraulic drive/lift assembly is then attached to the pier bracket. Care should be exercised to insure that the hydraulic drive/lift assembly frame is vertical in alignment previous to driving any pier sections. A carpenter’s level may be used to verify the vertical alignment.

3.03 DRIVING OF PIER SECTIONS

All pier sections shall be continuously hydraulically driven by use of the hydraulic drive/lift assembly. The initial pier section shall have a friction collar on its bottom end. Additional 36-inch sections of the pier shall be added as the driving operation continues. Driving of the pier will continue until bedrock or an equal bearing strata is reached as defined by a total pier capacity of 65,000 pounds, or until lift of the structure is achieved.

3.04 LIFTING AND HOLDING

The lifting and holding operation is designed to raise (lift) the structure to restore it to its proper elevation. Normally this lift/hold operation is accomplished with several piers simultaneously. This lift/hold operation shall be accomplished by using the hydraulic drive/lift assembly. The hydraulic drive/lift assemblies shall be activated simultaneously to effect the raising of the structure. Lifting shall continue until the structure is restored to its approximate original elevation, or designed specifications. Once restored, two to three $\frac{3}{4}$ grade 8 bolts are driven through the pier bracket into the pier. To permit full transfer of the structure load from the hydraulic drive/lift assembly to the pier bracket, the hydraulic pressure is relieved and the hydraulic drive/lift assembly is removed.

3.05 CLEAN-UP RESTORATION

Once the pier installation equipment has been removed from the foundation, the area shall be backfilled using the previously removed soil. In backfilling place no more than 12" of loose material in a lift and compact that soil prior to placement of the next lift. Sufficient lifts shall be used to restore the ground to its original elevation.