

# ICC-ES Evaluation Report

**ESR-1895**

Reissued December 2024

Revised January 2025

Subject to renewal December 2025

This report also contains:

- [CA Supplement](#)



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<p><b>DIVISION: 31 00 00— EARTHWORK</b></p> <p><b>Section: 31 60 00— Special Foundations and Load-Bearing Elements</b></p>	<p><b>REPORT HOLDER:</b> <b>PIN FOUNDATIONS, INC.</b></p> 	<p><b>EVALUATION SUBJECT:</b> <b>DIAMOND PIER® DP-50 &amp; DP-75 FOR BEARING PIN PIERS</b></p>	
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## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

- 2024 and 2021, 2018, 2015, and 2012 [International Residential Code \(IRC\)](#)

**Property evaluated:**

Structural

## 2.0 USES

The Diamond Pier DP-50 and DP-75 inclined steel foundations and their connecting heads are used as foundations for the support of gravity loads for attached or detached exterior decks, including covered decks, exterior porch decks, elevated walkways, stairway construction and non-habitable accessory structures as defined in the IRC. The inclined steel foundations and their connecting heads are permitted for use in any of the weathering classifications defined in 2024 and 2021 IRC Figure R301.2(1), or 2018 IRC Figure R301.2(4) or 2015 and 2012 IRC Figure R301.2(3).

## 3.0 DESCRIPTION

### 3.1 General:

The inclined steel foundations and their connecting heads consist of a factory-fabricated, pre-cast, diamond-shaped concrete head that has a galvanized steel anchor bolt precast into the center of the top of the head; and galvanized steel pipes which are jobsite-installed through holes precast in the head, and driven into the underlying soil. See [Figure 1](#).

### 3.2 Materials:

**3.2.1 Concrete Head:** The DP-50 concrete head measures 10 inches (254 mm) by 10 inches (254 mm) by 11 inches (279 mm) tall, weighs approximately 50 pounds (22.7 kg), and is formed from air-entrained, normal-weight concrete. The DP-75 concrete head measures 11 inches (279 mm) by 11 inches (279 mm) by 12 inches (305 mm) tall, weighs approximately 75 pounds (34.0 kg), and is formed from air-entrained, normal weight concrete. The air-entrained concrete has a minimum compressive strength of 5500 psi (37.9 MPa) at 28 days, and a total air content (percent by volume of concrete) of not less than 5 percent nor more than 7 percent, in accordance with IRC Section R402.2.

**3.2.2 Precast Galvanized Steel Anchor Bolt:** The galvanized steel anchor bolt that is precast into the center of the top of the DP-50 concrete head measures a minimum 1/2 inch (12.7 mm) in diameter and complies with ASTM A307 as Grade A. The galvanized steel anchor bolt that is precast into the center of the top of the

DP-75 concrete head measures a minimum  $\frac{5}{8}$  inch (15.9 mm) in diameter and complies with ASTM A307 as Grade A.

**3.2.3 Inclined Steel Pipe:** The four steel pipes supplied with each pier are made of Schedule 40, galvanized steel pipe complying with ASTM A53. For the DP-50, pipes have a nominal 1-inch diameter [1.315-inch (33.4 mm) outside diameter; 0.133-inch nominal wall thickness]; and have a minimum nominal length of 36 inches (914 mm) or 50 inches (1270 mm). For the DP-75 the pipes have a nominal  $1\frac{1}{4}$ -inch diameter [1.66-inch (42.2 mm) outside diameter with a 0.140 nominal wall thickness]; and have a minimum nominal length of 50 inches.

## 4.0 DESIGN AND INSTALLATION

### 4.1 Design:

When installed in accordance with this report in minimum allowable 1500 psf (71.8 kPa) soils per IRC Table R401.4.1, the DP-50 bearing pipe pier with 36 inch (915 mm) pipes provides a 1.8 square foot (0.17 m<sup>2</sup>) bearing area for supporting gravity loads; the DP-50 bearing pipe pier with 50 inch (1270 mm) pipes provides a 2.4 square foot (0.23 m<sup>2</sup>) bearing area for supporting gravity loads; and the DP-75 bearing pipe pier with 50 inch (1270 mm) pipes provides a 2.8 square foot (0.26 m<sup>2</sup>) bearing area for supporting gravity loads.

When installed in accordance with this report in minimum allowable 2000 psf (95.8 kPa) soils per IRC Table R401.4.1, the DP-50 bearing pipe pier with 36-inch (915 mm) pipes provides a 1.8-square-foot (0.17 m<sup>2</sup>) bearing area for supporting gravity loads; the DP-50 bearing pipe pier with 50-inch (1270 mm) pipes provides a 2.2-square-foot (0.20 m<sup>2</sup>) bearing area for supporting gravity loads; and the DP-75 bearing pipe pier with 50-inch (1270 mm) pipes provides a 3.2-square-foot (0.30 m<sup>2</sup>) bearing area for supporting gravity loads.

### 4.2 Installation:

The site soil is prepared by digging a hole with a conical shape, approximately the shape of the base of the concrete head and slightly deeper than the pier itself, leaving loose soils directly below the head. The head is positioned in the hole to its midpoint, and braced as needed to plumb. The steel pipe must then be slid through the holes in the concrete head, and driven into the soil as recommended in the Pin Foundations published installation instructions, leaving  $\frac{3}{4}$  inch (19.1 mm) of the pipe protruding from the upper surface of the pier. Once the dead loads have been applied to the pier, the length of the protruding pipe must be verified and adjusted as necessary to  $\frac{3}{4}$  inch (19.1 mm). The exposed end of the steel pipes must then be capped and sealed as recommended in the Pin Foundations published installation instructions. The minimum spacing of the installed inclined steel foundations and their connecting heads is 3 feet (0.91 m) on center.

## 5.0 CONDITIONS OF USE:

The Diamond Pier DP-50 and DP-75 inclined steel foundations and their connecting heads described in this report comply with, or are suitable alternatives to what is specified in the code indicated in Section 1.0 of this report, subject to the following conditions:

- 5.1 The inclined steel foundations and their connecting heads must be installed in accordance with the Pin Foundations, Inc. published installation instructions, the IRC and this report. In the event of a conflict between this report and the Pin Foundations, Inc. published installation instructions, this report governs.
- 5.2 Wood in contact with the concrete head and precast galvanized steel bolt must be protected against decay and subterranean termites in accordance with 2024 IRC Section R304 and R305, and 2021, 2018, 2015 and 2012 IRC Sections R317 and R318, as applicable. Compatibility of the concrete head and precast galvanized steel bolt with wood treatments not described in 2024 IRC Section R304 and R305 and 2021, 2018, 2015 and 2012 IRC Sections R317 and R318, as applicable must be established based on a current ICC-ES evaluation report on the wood treatment.
- 5.3 In areas where the frost line exceed 12 in. (305 mm) footing depth, decks on inclined steel foundations and their connecting heads attached to a frost protected structure may be approved by the code official, as indicated in the 2024 and 2021 IRC Section R507.3.3, Method 3 (e.g. using manufacturer's documentation on frost depth ratings for various model sizes for specified frost line defined in Table R301.2.(1)).

For earlier IRC editions, decks on inclined steel foundations and their connecting heads attached to a frost protected structure may be approved by the code official, as described in Section R403.1.4.1 Method 1 (e.g. using manufacturer's documentation on frost depth ratings for various model sizes for specified frost line defined in Table R301.2.(1)). For free standing decks, reference IRC Section R403.1.4.1, Exception 3.

- 5.4 Frost protection for detached buildings defined by the IRC is beyond the scope of this report, except free-standing non habitable accessory structures constructed in accordance with IRC Section R403.1.4.1, Exceptions 1 or 2, where frost protection is not required. IRC defines accessory structure as a structure that is accessory to and incidental to that of the dwelling(s) and that is located on the same lot.

- 5.5 The bearing capacity of the site soil must be determined in accordance with IRC Table R401.4.1. If presumptive soil capacity cannot be assumed in accordance with the IRC Table R401.4.1, the code official may request a soils report.
- 5.6 The capacity of the inclined steel foundations and their connecting heads to resist lateral and/or uplift loads was not evaluated for this report.
- 5.7 Use of the inclined steel foundations and their connecting heads in soil exposure conditions indicative of potential deterioration on the foundation assembly, is beyond the scope of this report.
- 5.8 Use of the inclined steel foundations and their connecting heads is limited to structures regulated by the IRC.
- 5.9 Diamond Pier DP-50 and DP-75 inclined steel foundations and their connecting heads are manufactured under a quality-control program with inspections by ICC-ES.

## 6.0 EVIDENCE SUBMITTED

Data in accordance with the [ICC-ES Acceptance Criteria for Inclined Steel Foundations and Their Connecting Heads \(AC336\)](#), dated June 2016 (editorially revised December 2024).

## 7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-1895) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2 In addition, each pallet of Diamond Pier DP-50 and DP-75 precast concrete heads is labeled with the Pin Foundations, Inc., name and address; the product name (Diamond Pier DP-50, or Diamond Pier DP-75); the evaluation report number (ESR-1895); the manufacturing date and lot number; and the phrase, "For Use with One- and Two-Family Dwelling Construction Only."

Each bundle of bearing pins is labeled with the Pin Foundations, Inc., name and address; the product name (Diamond Pier DP-50, or Diamond Pier DP-75); the evaluation report number (ESR-1895); and the phrase, "For Use with One- and Two-Family Dwelling Construction Only."

- 7.3 The report holder's contact information is the following:

**PIN FOUNDATIONS, INC.**  
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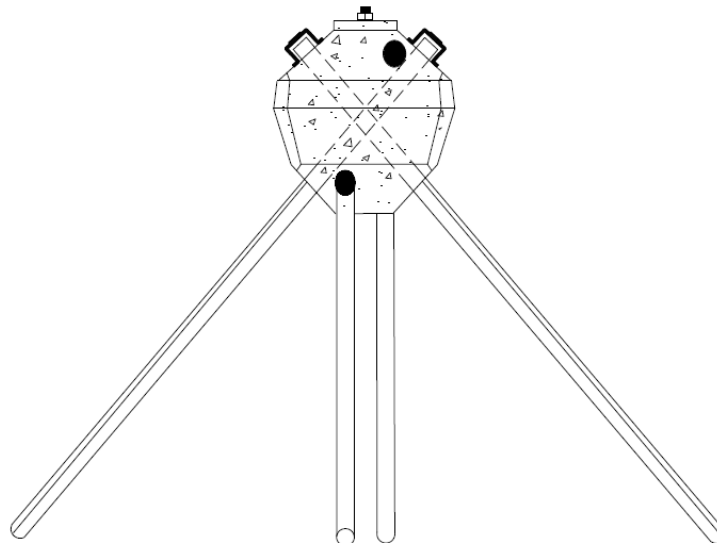


FIGURE 1—DIAMOND PIER DP-50 and DP-75

**DIVISION: 31 00 00—EARTHWORK**

Section: 31 60 00—Special Foundations and Load-Bearing Elements

**REPORT HOLDER:**

PIN FOUNDATIONS, INC.

**EVALUATION SUBJECT:**

DIAMOND PIER DP-50 &amp; DP-75 FOR BEARING PIN PIERS

**1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that DIAMOND PIER DP-50 & DP-75 bearing pin piers, described in ICC-ES evaluation report ESR-1895, has also been evaluated for compliance with the code noted below.

**Applicable code edition:**

2022 California Residential Code (CRC)

**2.0 CONCLUSIONS****CRC:**

The DIAMOND PIER DP-50 & DP-75 bearing pin piers, described in Sections 2.0 through 7.0 of the evaluation report ESR-1895, complies with CRC Chapter 4, provided the design and installation are in accordance with the *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued December 2024 and revised January 2025.