



Approval #

BP-012200001-BVP  
(Replaces DIS-122157650  
& 201612-O )

Industry Services Division  
4822 Madison Yards Way  
P.O. Box 7302  
Madison, WI 53701-7302

## Wisconsin Building Product Evaluation

Material

Diamond Pier® DP-50 & DP-75  
Bearing Pin Concrete Pier Foundation

Manufacturer

Pin Foundations, Inc.  
321 Park Ave.  
River Forest, IL 60305

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### SCOPE OF EVALUATION

The Diamond Pier® DP-50 & DP-75 precast concrete pier foundation assembly as manufactured by Pin Foundations, Inc. has been evaluated against the structural provisions of the current **Wisconsin Uniform Dwelling Code (UDC)**. The Diamond Pier® DP-50 & DP-75 precast concrete pier foundation assembly has been evaluated for use as a foundation for the support of gravity loads, as well as specified lateral & uplift loads for exterior decks, covered enclosed porches, sunrooms as defined in the 2018 IRC R301.2.1.1.1 Categories I through IV [as noted below, but also see UDC Sunroom definition in SPS 320.06(17)], elevated walkways and stairways as regulated by the current **Wisconsin Uniform Dwelling Code (UDC)** and some site accessory detached structures not directly covered by the UDC rules. This approval is not for support of habitable enclosed dwelling areas. This approval is for installation of these anchors per the manufacturer's installation manual to support/resist loads as tested and published with the adjustments as noted below.

Category I: A thermally isolated sunroom with walls that are open or enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is nonhabitable and unconditioned.

Category II: A thermally isolated sunroom with enclosed walls. The openings are enclosed with translucent or transparent plastic or glass. The space is nonhabitable and unconditioned.

Category III: A thermally isolated sunroom with enclosed walls. The openings are enclosed with translucent or transparent plastic or glass. The sunroom fenestration complies with additional requirements for air infiltration resistance and water penetration resistance. The space is nonhabitable and unconditioned.

Category IV: A thermally isolated sunroom with enclosed walls. The sunroom is designed to be heated or cooled by a separate temperature control system and is thermally isolated from the primary structure. The sunroom fenestration complies with additional requirements for water penetration resistance, air infiltration resistance and thermal performance. The space is nonhabitable and conditioned.

## **DESCRIPTION AND USE**

The Diamond Pier® DP-50 & DP-75 precast concrete pier foundation assembly manufactured by Pin Foundations, Inc. consists of a factory-fabricated, diamond-shaped concrete pier which has a galvanized steel anchor bolt precast into the center of the top of the pier and precast holes for installation of steel bearing pins. Steel bearing pins are jobsite-inserted through precast holes and driven into the soil. Pins are 1-inch or 1¼" diameter steel of 36", 42", 50" or 63" length.

## **TESTS AND RESULTS**

Data & report (dated November 2006) was submitted to ICC-ES in accordance with the ICC-ES Acceptance Criteria for Precast Concrete Pier Foundation Assemblies (AC336) now dated August 1013 (Editorially revised September 2015). A 2010 Frost Performance Report for the DP50 Diamond Pier® in Minnesota was submitted. A 2013 Cross Pin Group Foundation Load Test Report for Diamond Pier® was submitted under EEI Report No. 07-020-08 at the same site as the previous November 2006 report. A National Performance Submittals, 2005 report for Diamond Pier® was submitted to show testimonials from across the country that Diamond Pier® should not be limited for frost/horizontal load forces to only detached decks & structures.

This product has been granted ICC-ES evaluation report ESR-1895 reissued December 2021; included Scope, Uses, Descriptions, Design & Installation, Conditions of Use, Evidence Submitted, and Identification. The 2018 International Residential Code (IRC) provisions referenced in the evaluation report are similar in scope & application to requirements under the Wisconsin Uniform Dwelling Code (UDC) provisions, but some terminology differences are noted. Evaluation Report from ICC for ESR-1895 is available for additional information through the following link for it found at: <https://icc-es.org/report-listing/esr-1895/>. The manufacturer's installation instructions & information may be found on their website: [www.pinfoundations.com](http://www.pinfoundations.com).

Model DP-50 uses minimum 36" to maximum 50" steel pins. Model DP-75 uses minimum 50" pins, but may also use 63" steel pins. Model DP-50 & DP-75 foundations show bearing capacity in accordance with the 2006 & 2013 testing results noted above and are summarized in the Table below. Lateral and uplift values are subject to the limitations noted below, but are also shown in the Table below.

TABLE: Cross Pin Group Allowable Load Carrying Capacity Recommendations in 1500 PSF properly drained soil

<b>Embedded Pin Group</b>	<b>Equivalent Bearing Area</b> (square feet)	<b>Compression</b> (pounds)	<b>Uplift</b> (pounds)	<b>Lateral</b> (pounds)
(4) 1" x 36" Pins	1.83	2,745	670	575
(4) 1" x 42" Pins	1.87	2,805	920	820
<b>(4) 1" x 50" Pins</b>	<b>1.91</b>	<b>2,870</b>	<b>1,175</b>	<b>1,070</b>
<b>(4) 1-1/4" x 50" and longer Pins</b>	<b>2.93</b>	<b>4,400</b>	<b>1,380</b>	<b>1,310</b>
<b>Larger Diameter Pins</b>	<b>Values only determined through site-specific engineered calculations at 50" &amp; longer</b>			

1500 PSF properly drained soils generally include clay, sandy clay, silt, and sandy silt. Properly drained soils of sand, silty sand, clayey sand, and silty gravel with a minimum 2000 PSF soil bearing capacity may have the bearing values above increased by 33% (as detailed in the full Installation Manual).

Diamond Pier conditions for use of this product in Wisconsin include the following:

- All Diamond Pier models in Wisconsin must have a minimum pin length of 50 inches.
- Diamond Pier models installed in Wisconsin must be installed in accordance with the current Pin Foundations, Inc. published installation manual, the Diamond Pier® Residential Load Chart, and this report.
- Where soil conditions are not appropriate for supporting the Diamond Pier® foundation, use of the system is not allowed. Some examples include soils that are weaker than 1500 PSF, soils that are highly expansive, and shifting or sliding soils.

Diamond Pier® DP-50 & DP-75 precast concrete piers must be identified when shipped, including:

- The product name and model number
- The manufacture date and lot number and
- The phrase: "For use with one and two-family dwelling construction only."

### **LIMITATIONS OF APPROVAL**

In order to be in compliance with the frost protection requirements of SPS 321.16 of the current Wisconsin Uniform Dwelling Code (UDC), the Diamond Pier® DP-50 & DP-75 precast concrete pier foundation assembly shall utilize steel bearing pins that are at least 50" long when frost protection is required (shown bold in the TABLE above). Minimum 50" long steel bearing pins are also required when foundations must resist uplift or horizontal loading. The Wisconsin Building Product Evaluation Number must be provided when plans that include this product are submitted for review to the local building inspector.

**DISCLAIMER**

This approval will be valid through 12/31/2027 unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Building Product Evaluation Number must be provided when plans that include this product are submitted for UDC review. The Department is not endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Reviewed by: Jack A. Miller

Approval Date: 01/18/2022 By: Jack A. Miller

Commercial building plan examiner and product reviewer

Peer Review: R.K.