ICC-ES Evaluation Report

ESR-5201

Issued July 2024

Subject to renewal July 2025

DIVISION: 31 00 00—EARTHWORK Section: 31 60 00—Special Foundations and Load-Bearing Elements	REPORT HOLDER: FSI	EVALUATION SUBJECT: POLECRETE STABILIZER	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, and 2015 *International Building Code*® (IBC)

Property evaluated:

- Structural
- Durability

2.0 USES

The Polecrete Stabilizer material is used as stabilizing backfill material around embedded posts, as an alternate to the concrete described in IBC Section 1807.3.3. The Polecrete Stabilizer is also be used as a footing, to transfer downward axial load from the embedded post to the soil.

3.0 DESCRIPTION

3.1 Polecrete Stabilizer:

The Polecrete Stabilizer is a field-mixed, two-part closed-cell urethane foam. The two components are designated Polecrete Stabilizer ISO (or component A) and Polecrete Stabilizer Polyol (or component B). These components are packaged together in two large containers. The two components are mixed together in the field to produce the foam plastic material. After mixing, the resulting liquid is poured into the hole and allowed to expand, resulting in a solid foam. After expansion, the installed foam has a nominal density of 4.2 pcf (67.3 kg/m^3).

3.2 Wood Post:

Wood post material and size must comply with the IBC and the wood must be treated in accordance IBC Section 1807.3.1.

3.3 Applicable Soil Types:

The Polecrete Stabilizer may be used in any of the soil materials addressed in rows 3, 4 or 5 of IBC Table 1806.2.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: The posts must be embedded a minimum of 6 inches (152 mm) below the frost depth. The elevation of the top of the backfill material must allow for 3 to 6 inches (76 to 152 mm) of soil to be placed over the backfill material, to prevent exposure to fire.

The diameter of the Polecrete Stabilizer must not be less than the diameter required by IBC Section 1807.3.3. The backfill material must have a minimum height of 12 inches (305 mm).

The capacity of the wood post is outside the scope of this evaluation and must be determined in accordance with the IBC.

4.1.2 Engineering Footing Design: The Polecrete Stabilizer has an allowable bearing pressure of 3,000 psf (144 kPa). The required height of the foam plastic must be determined using an allowable (ASD) shear bond strength between the wood and the foam plastic of 4.6 psi (32 kPa). Footing designs for select conditions are shown in Table 1. The expected settlement due to compression of the anchor can be determined as follows:

$$\Delta = \frac{PH}{AE}$$

where:

P = Applied load, lbf (N)

H = Height of the anchor, inches (mm)

A = Cross sectional area of the anchor, in^2 (mm^2)

E = Modulus of elasticity in compression,

= 2,224 psi (15 MPa)

4.2 Installation:

4.2.1 General: The Polecrete Stabilizer must be installed in accordance with this report and the manufacturer's published installation instructions. A copy of these instructions must be available on the jobsite at all times during installation.

4.2.2 Conditioning**:** The Polecrete Stabilizer components must be conditioned to a temperature between 65°F and 95°F (18°C -35°). The Polecrete Stabilizer components are to be stored in locations above 65°F (18°C) before mixing.

4.2.3 Hole **Preparation and Post Installation:** The hole for the embedded posts must be prepared in accordance with the local building codes and standards. See Table 1 for footing design dimensions. The presence of water in the hole must be addressed in accordance with the local building codes. The post must be installed in the hole and held in place vertically and keep plumb during placement of the backfill material, in accordance with the manufacturer's installation instructions.

4.2.4 Backfill **Application:** The two components of Polecrete Stabilizer must be mixed in accordance with the manufacturer's published installation instructions. The resulting liquid mixture is poured into the hole, wetting all sides of the wood post. Adjustments needed to plumb the post are only allowed within the first 10 seconds after the liquid backfill has been introduced in the hole. If more than one kit of backfill is required, it is recommended that the initial kit be allowed to cure for a minimum of 15 minutes before adding a subsequent kit. After the final application can cure for at least 15 minutes, excess foam above the desired height may be mechanically removed (cut away).

5.0 CONDITIONS OF USE:

The Polecrete Stabilizer described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The Polecrete Stabilizer must be installed in accordance with this report and the manufacturer's published installation instructions. In the case of a conflict between the published installation instructions and this report, the more restrictive requirements govern.

5.2 The Polecrete Stabilizer is manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Reports of testing of the physical properties and durability of the foam plastic, including compressive strength and resistance to thermal and humid aging.

6.2 Report of shear bond testing and compressive creep testing.

6.3 Quality documentation in accordance with the ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated May 2022.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5201) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the Polecrete Stabilizer components are identified with the product name, the component identification (Polecrete Stabilizer ISO or component A and Polecrete Stabilizer Polyol or component B) and a batch number.

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

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TABLE 1—REQUIRED POLECRETE STABILIZER DIMENSIONS

APPLIED LOAD, lbf	MINIMUM REQUIRED FOOTING DIAMETER[1] (inches)			MINIMUM REQUIRED FOOTING HEIGHT[2] (inches)			
	Soil Bearing Pressure (psf)			Nominal Post Size (inches)			
	1500	2000	3000	4x4	4x6	6x6	8x8
1000	12	10	8	16	13	12	12
1500	14	12	10	24	19	15	12
2000	16	14	12	32	25	20	16
2500	18	16	13	40	31	25	19
3000	20	17	14	47	37	30	23
4000	23	20	16	63	49	40	31
5000	25	22	18	79	61	50	38
6000	28	24	20	94	74	60	46
7000	30	26	21	110	86	70	53
8000	32	28	23	126	98	80	61

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psf = 47.9 Pa.

[1]The footing diameter must be as needed to comply with IBC Section 1807.3.3 or as tabulated, whichever is larger.
[2]The footing must extend a minimum of 6 inches below the frost depth or to a depth equal to the sum of the tabulated footing height and the required soil cover distance described in Section 4.1.1, whichever is greater.