

ICC-ES Evaluation Report

ESR-4933

Issued May 2024


This report also contains:

Subject to renewal May 2025

- LABC Supplement
- CBC Supplement
- FBC Supplement

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<p>DIVISION: 03 00 00— CONCRETE</p> <p>Section: 03 20 00— Concrete Reinforcing</p> <p>Section: 03 25 00— Composite Reinforcing</p>	<p>REPORT HOLDER: BINEVIR, LLC.</p>	<p>EVALUATION SUBJECT: FIBER-REINFORCED POLYMER WIRE MESH W1.4</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018 and 2015 [International Building Code® \(IBC\)](#)
- 2021, 2018 and 2015 [International Residential Code® \(IRC\)](#)
- 2013 *Abu Dhabi International Building Code (ADIBC)*[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

For evaluation of compliance with codes adopted by [Los Angeles Department of Building and Safety \(LADBS\)](#), see [ESR-4933 LABC and LARC Supplement](#).

Properties evaluated:

- Crack Control
- Physical

2.0 USES

The Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4 is used as an alternative to the shrinkage and temperature reinforcement specified in Section 24.4 of ACI 318-19 (2021 IBC) and ACI 318-14 (2018 and 2015 IBC) for plain concrete footings and for plain concrete slabs (as defined by ACI 360) supported directly on the ground.

The Binevir GFRP Wire Mesh W1.4 is also used as an alternative to horizontal temperature and shrinkage reinforcement in structural plain concrete walls covered in Section 1901.2 of the 2021 and 2018 IBC, Section 1906 of the 2018 IBC, IRC Sections R404.1.3 and R608.1, and ACI 332-20 Sections 9.2.1 and 9.2.7 (2021 IRC), or ACI 332-14 Sections 8.2.1 and 8.2.7 (2018 and 2015 IRC), excluding walls where vertical reinforcement is required.

3.0 DESCRIPTION

The Binevir GFRP Wire Mesh W1.4 is a composite mesh consisting of longitudinal fiber reinforced polymer (FRP) wire elements, arranged in the two primary orthogonal directions (0°/90°) with a 6-inches (150 mm) spacing and fixed at each intersection. The mesh has 'no shape memory' returning to flat position after unrolling, stepping, or driving over it. The mesh can be provided in sheets or rolled to a desired continuous length (based on transportation limitations).

4.0 DESIGN AND INSTALLATION

The Binevir GFRP Wire Mesh W1.4 must be installed in accordance with this report, applicable provisions in ACI 440.5-08, and Binevir, LLC. Installation Manual dated February 18, 2024.

5.0 CONDITIONS OF USE:

The Binevir GFRP Wire Mesh W1.4 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 Installation of FRP bars or meshes used as temperature and shrinkage reinforcement for plain concrete footings, plain concrete slabs, and as horizontal reinforcement in plain concrete walls where vertical reinforcement is not required, must be in accordance with this evaluation report, and the report holder's Installation Manual. In case of conflict, this report governs.
- 5.2 Binevir Glass Fiber Reinforced Polymer (GFRP) mesh designation, as shown in [Table 1](#) of this report, with grid spacing between wire elements of 6-inches (150 mm) by 6-inches (150 mm) can be used as an alternative to conventional temperature and shrinkage reinforcement with standard 10-gauge steel electro-welded with grid spacing between wire elements of 6-inches (150 mm) by 6-inches (150 mm). Alternate meshes with grid spacings over 6-inches (150 mm) for GFRP meshes have not been evaluated and may be considered by a registered design professional to the satisfaction of the code official for each project.
- 5.3 Complete construction documents, including plans showing compliance with the evaluation report, must be submitted to the code official for each project at the time of permit application. The construction documents must be prepared and sealed by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.4 Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4 must be stored and protected during storage in accordance with the guidelines given in ACI 440.5-08.
- 5.5 Special inspection as required by Table 1705.3 of the IBC for steel-reinforced concrete construction, is also applicable to FRP mesh construction under this report.
- 5.6 Use of GFRP mesh does not eliminate the requirement for joints specified in Section 14.3.4 of ACI 318 (IBC and IRC).
- 5.7 Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4 is 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 Fiber-reinforced Polymer \(FRP\) Bars and Meshes for Internal Reinforcement of Non-structural Concrete Members \(AC521\)](#), dated October 2020 (Editorially revised May 2021), including fiber mass content, moisture absorption, shrinkage crack resistance, and quality control documentation.

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4933) 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 Binevir GFRP Wire (GFRP) Wire Mesh is identified by packaging with the company name (Binevir, LLC) and contact information, product name, mesh size and lot number.
- 7.3 The report holder's contact information is the following:

BINEVIR, LLC
1206 STIRLING ROAD, UNIT 6A/6B
DANIA BEACH, FLORIDA 33004
(305) 833-7066
www.binevir.com
info@binevir.com

TABLE 1—BINEVIR GFRP WIRE MESH DIMENSIONS AND PROPERTIES

MESH DESIGNATION NUMBER	NOMINAL DIAMETER (in)	NOMINAL CROSS SECTIONAL AREA (in²)	GUARANTEED ULTIMATE TENSILE FORCE (kip)	MEAN TENSILE MODULUS OF ELASTICITY (ksi)	MEAN ULTIMATE TENSILE STRAIN (%)
US 1.4	0.134	0.014	2.0	9300	1.9

For **SI**: 1 inch = 25.4 mm, 1 kip = 4.45kN, 1 psi = 6.89 kPa, 1 ksi = 6.89 MPa

DIVISION: 03 00 00—CONCRETE
Section: 03 20 00—Concrete Reinforcing
Section: 03 25 00—Composite Reinforcing

REPORT HOLDER:

BINEVIR, LLC.

EVALUATION SUBJECT:

FIBER-REINFORCED POLYMER WIRE MESH W1.4

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4, described in ICC-ES evaluation report [ESR-4933](#), has also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4, described in Sections 2.0 through 7.0 of the evaluation report [ESR-4933](#), comply with the LABC Chapter 19 and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4 described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-4933](#)
- The design, installation, conditions of use and identification of the Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4 are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-4933](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, issued May 2024.

DIVISION: 03 00 00—CONCRETE
Section: 03 20 00—Concrete Reinforcing
Section: 03 25 00—Composite Reinforcing

REPORT HOLDER:

BINEVIR, LLC.

EVALUATION SUBJECT:

FIBER-REINFORCED POLYMER WIRE MESH W1.4

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4, described in ICC-ES evaluation report ESR-4933, has also been evaluated for compliance with the codes noted below.

Applicable code edition(s):

- 2022 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) aka: California Department of Health Care Access and Information (HCAI) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4, described in Sections 2.0 through 7.0 of the evaluation report ESR-4933, complies with CBC Chapter 19, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 19, as applicable.

2.1.1 OSHPD: The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

2.1.2 DSA: The applicable DSA Sections of the CBC are beyond the scope of this supplement.

2.2 CRC:

The Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4, described in Sections 2.0 through 7.0 of the evaluation report ESR-4933, complies with CRC Section R301.1.3, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report and the additional requirements of CRC Chapter 3.

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DIVISION: 03 00 00—CONCRETE
Section: 03 20 00—Concrete Reinforcing
Section: 03 25 00—Composite Reinforcing

REPORT HOLDER:**BINEVIR, LLC.****EVALUATION SUBJECT:****FIBER-REINFORCED POLYMER WIRE MESH W1.4****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4, recognized in ICC-ES evaluation report ESR-4933, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 *Florida Building Code—Building*
- 2023 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4933, complies with the 2023 *Florida Building Code—Building* or the *Florida Building Code—Residential*, provided the design requirements are determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-4933 for the 2021 *International Building Code*® meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the Binevir Glass Fiber-Reinforced Polymer (GFRP) Wire Mesh W1.4 for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, issued May 2024.