



Land Development Services

Technical Bulletin

Subject: Fiber Reinforced Polymer for Rooftop Antenna Screening **Date:** March 16, 2018 **No.:** 18-06

Summary: Guidelines for use of Fiber Reinforced Polymer (FRP) for rooftop antenna screening.

Effective Date: March 2, 2018

Reference: 2012 Virginia Construction Codes (VCC) Section 112.3, 1509.6, 1604, 1705, 2612

Background: As the wireless telecommunication industry continues to grow, additional antenna equipment is needed to meet consumer demand. In lieu of constructing monopoles and towers, the wireless industry has identified building rooftops as a prime location to install antenna equipment. Rooftop equipment installations are often required to be screened for zoning requirements or aesthetics. Screening constructed of materials permitted by code including steel and wood can interfere or block antenna radio frequency (RF) signals. Plastics do not interfere or block RF signals. For this reason, the wireless industry has turned to FRP for construction of screening.

Policy: To meet the wireless industry's needs for RF-friendly screening, this bulletin provides guidelines under which FRP will be accepted in accordance with the provisions of the VCC for alternative materials and methods.

1. A building permit is required for FPR screening. The construction documents must include the information listed below and shall be sealed by a Virginia-licensed registered design professional.
2. A valid research report from a nationally recognized testing laboratory, such as an International Code Council Evaluation Service (ICC-ES) report or City of Los Angeles Research Report (LA-RR), is required. The design of the FRP screen must meet the requirements listed in the research report for the product specified. Where conflicts between this bulletin and requirements of the research report occur, the more restrictive requirements shall apply. (VCC Section 112.3)
3. FRP manufacturer's or distributor's identification, model number or serial number shall be noted on the plans. The edge or face of each piece, package or container of FRP shall bear the manufacturer's label.
4. Structural calculations shall be provided. The design must be based on the material properties and safety factors given in the research report. The design must provide a complete load path for all code prescribed loads (including wind and drifting snow) on the screen structure. FRP panels may not be used to resist lateral loads. The design must consider reduced capacities of FRP for any anticipated elevated temperatures.

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5. Provide complete structural framing plans, cross sections and details. Including member connections and anchorage to supporting roof construction.
6. Moment connections are not permitted. Plastic epoxy or adhesive-type connections may be used to connect FPR panels to pultruded shapes. All other connections shall be FRP or steel bolts, threaded rods, or screws.
7. FRP screens shall not exceed 18 feet in height above the roof deck, as measured to the highest point on the screen. FRP screening shall not include a roof structure.
8. The fire separation distance shall not be less than 20 feet to FRP screens. (VCC Sections 1509.6.2, 1509.6.3)
9. FRP screening shall have a flame spread index of 25 or less. FRP screening shall be tested in accordance with American Society of Testing Materials (ASTM) E84 (or UL 723) and comply with the acceptance criteria of National Fire Protection Association (NFPA) 285. Alternatively, FRP screening may be tested in accordance with ASTM E2768. Foam plastic used as a core material in an FRP panel shall comply with the requirements of Chapter 26. (VCC Section 1509.6, 2303.2)
10. Special inspections are required for FRP screen installations. The special inspector must verify that the FRP material specified is being installed and that the structure is built in accordance with the approved design documents. The special inspector must verify cut edges and drilled holes are properly sealed as specified by the manufacturer. (VCC Section 1705.1.1)
11. The rooftop screening must not block any means of egress or emergency escape and rescue for the occupants of the building. The rooftop screening must not obstruct access to the roof by the fire department. Areas of required aerial access must have 6 feet of unobstructed access to the roof. The rooftop screening must not obstruct roof drainage.
12. Rooftop screening shall meet the requirements of the Fairfax County Zoning Ordinance including site-specific proffers or conditions.
13. Required RF warning labels must also be placed on the antenna screening.

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