

Guidelines for RUS Approval to Use Fiber Reinforced Polymer (FRP) Poles

The Rural Development Utilities Programs will consider a borrower's written request to use fiber reinforced polymer (FRP) distribution poles for site specific projects on a case-by-case trial basis to gain experience. In this guideline, "agency" refers to Rural Development Utilities Programs Electric Program.

Before granting approval, the agency needs sufficient information to assure that the application of FRP poles will result in safe and reliable construction and meet agency requirements.

Borrowers requesting agency approval to use FRP distribution poles are asked to furnish the agency with the information requested.

Information to include in requests to use FRP poles:

1. Because approval is only being considered for site specific projects, define the project and where the FRP pole will be installed.
2. State the maximum number of FRP poles to be used.
3. Furnish reasons for using FRP poles. If favorable cost (first cost or total lifecycle cost) is the main reason, then include an engineering economic analysis of the cost of using FRP poles compared with standard RUS construction with wood poles. This analysis should include the additional cost (if any) for equipment and material needed to compare both structure types as equivalent in mechanical strength, raptor protection, and quality of service such as blinking lights due to lightning flashovers.
4. Provide a description of the proposed FRP poles and the method(s) of UV protection to be utilized when manufactured, when placed in service and for future maintenance.
5. RUS regulations require that all assembly units must be built according to RUS construction standards. If nonstandard assembly top construction is being proposed, then furnish sufficient dimensioned drawings and other technical information for RUS' evaluation of the design.
6. Except for various miscellaneous material items, RUS regulations require that borrowers use materials that RUS has accepted or technically accepted. A compilation of accepted materials may be found in Informational Publication 202-1, "List of Materials Acceptable for Use on Systems of RUS Electrification Borrowers." Contact the Chair, Technical Standards Committee "A" (Electric) for information on technically accepted items. If the proposed design uses materials that do not fall into the any of the acceptance categories above, then furnish RUS sufficient information, data and test results of all such materials for evaluation and approval determinations.
7. Indicate that the FRP poles to be used have been selected based on engineering calculations considering the expected duty and conditions to which they will be exposed.

The following design information should also be considered but does not have to be submitted to RUS:

Grounding of FRP structures may be completed in a similar fashion to wood poles. Bonding conductors can be attached to the surface of the pole using clips and self-drilling screws. Clips should be made from galvanized or stainless steel to avoid issues with galvanic corrosion. Grounding wires may also be run inside the structure where applicable.

Hardware for wood poles will often have cleats or studs that are designed to dig into the surface of the pole. This hardware is not suitable for use on FRP poles, and should be substituted for equivalent units without cleats or studs. Utilities should refer to the manufacturers' guidelines for hardware application and make appropriate hardware substitutions and note these items are per item number 6 above when applicable.

FRP poles can be either single piece or modular in design. When modular poles are purchased, assembly of the pole should be completed to the manufactures recommended procedures.

For NESC Grade C construction, there should not be a direct substitution of wood poles with FRP poles of the same designation. Engineers should calculate the design load and select the standard class FRP pole based on these calculations. Extreme ice conditions and appropriate high winds should be considered in the design loads. (See also "Wood Equivalent Steel and Concrete Poles" in this issue.) For FRP poles on distribution lines, RUS advocates the use of NESC Grade B overload factors for angle and deadend structures.

The information requested above is needed to insure a safe, reliable, and economical distribution line when using FRP poles. Considerations such as these plus many other design considerations are incorporated into all RUS standard designs for overhead distribution lines. RUS is developing a guide specification for FRP distribution poles which, when finalized, borrowers could use to purchase and use FRP distribution poles without further RUS approval.

If you would like further information or have any questions, please call Donald Junta, Chief, Distribution Branch, at (202) 720-0486.