



Composite Rebar for Concrete Structures

NEWSLETTER

ELECTRICAL SUBSTATIONS

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1 Reinforcement in electrical applications

Reinforced structures exposed to large magnetic and electrical fields need to be designed with the purpose of structural integrity as well as equipment functionality. Structures such as electrical substations, underground enclosures and power distribution equipment, must frequently be over-reinforced to compensate the loss of properties of the steel rebars due to the electrical fields they are constantly exposed to.

In many cases, the electrical equipment must be mounted on pedestals to separate them as much as possible from the electrified steel reinforcement. It is standard practice to use a thicker concrete cover (up to 3" / 75mm) to further protect the equipment.

In addition to these protection systems, the steel reinforcement must be connected together and a grounding electrode must often be used. Furthermore, a ground-ring must be used as secondary electrode.

All the above increase the construction cost, limit the design and jeopardize quality control of the finish product since it relies on labor qualification.

2 Why

Composite Rebar

The use of glass-fibers composite reinforcing bars has significant advantage. It can reduce the amount of concrete needed by minimizing the concrete cover. In some cases, a cover as thin as 1¼" (30mm) can be used.

The use of **V-ROD** fiberglass rebars removes the need to ground the reinforcement and improve the quality control on site.

Element dimensions can often be reduced thus lowering concrete cost, shipment cost and labor cost.

3 Advantages

Good properties:

Pultrall HM grade of GFRP rebars offer tensile strength up to 199 ksi (1372MPa) and a tensile modulus up to 9,600 ksi (66 GPa). With some of the highest properties available in the world, **V-ROD** is the best GFRP option for your projects. **V-ROD** is available in straight bars, bent bars, circular ties and continuous spirals offering you complete flexibility during the design stage and speeding the installation process.

Lightweight:

V-ROD is approximately one-quarter the weight of an equivalent size steel bar, thus reducing freight and placement costs.

Approved material:

V-ROD is included in the CAN CSA S806-12, CAN CSA S06-06, AASHTO LRFD and ACI 440.1R-06.

4 Field Applications



5 Design and Training

Your steel reinforcement design is already done? Submit it to us and our team of civil engineers will convert it to **V-ROD** at absolutely no charge and provide an economical evaluation of your project. Also, available, custom tailored training in engineering design of tunnelling structures reinforced with composites materials to fit your needs.

Contact: service@pultrall.com

A WORD ABOUT PULTRALL:

Established in 1987, Pultrall Inc. is the pioneer of non-metallic concrete reinforcement solutions in North America. Pultrall's achievements include some of the most prestigious projects in North America and around the world. The company serves clients through a network of Authorized Distributors throughout North America, Latin America, Europe, Australia and the Middle East.

AT PULTRALL, WE BELIEVE IN CHALLENGING THE STATUS QUO.

*We are convinced that safe and durable concrete structures are achieved by eliminating the corrosion problem at its roots. Our solution, a stronger, well tested, widely used and corrosion proof reinforcement that advantageously replaces the easily corroded steel rebar. Our solution, **V-ROD!***

PULTRALL

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