



NEW OLDCASTLE CABLE TRENCH OVERCOMES CHALLENGES OF STEEL REINFORCEMENT, THANKS TO WEAV3D COMPOSITES

Cable trenches play an important role in managing and distributing cables and wires in utility, rail and power applications. Oldcastle, a leading provider of building materials, supplies these durable components in the form of its polymer-based concrete trench systems. By using a patented material, these trenches offer exceptional H-20 loading at 25-percent less weight than traditional concrete. They also feature an excellent strength-to-weight ratio, reduce installation costs and provide a safer, more cost-effective option compared to concrete trenches.

But despite the many benefits of polymer-based cable trenches, the use of a steel wire cage to reinforce the material has some disadvantages. For one, rusting can occur if the rebar is exposed, such as when a trench is cut for installation. Polymer concrete also does not adhesively bond to the steel, instead relying purely on the mechanical interface between the materials.





THE BENEFITS OF WEAV3D COMPOSITE LATTICE TECHNOLOGY

Our composite lattice has allowed Oldcastle to produce an economical, yet high-quality cable trench without the failure modes of polymer concrete systems. The result of our collaboration is a completely non-metallic cable trench system that offers the following advantages:

1. **Adhesive bonding.** Instead of a steel wire cage, these new trenches are reinforced by a WEAV3D composite lattice. This lattice is based on a thermoplastic composite material that forms an adhesive bond with the polymer concrete—yielding the best possible strength and mechanical properties. Because the structural reinforcement and polymer concrete have been optimized to work together, the trenches are more resistant to impact damage and internal reinforcement disbond.
2. **Selective reinforcement.** In all WEAV3D composite materials, we have the ability to vary weave pattern, lattice density and tape-type in composites, enabling complete control over the strength, stiffness and cost of the final part. In this application, we selectively reinforced the trench structure while managing the strength of the polymer concrete at a local level.

This design provides the tensile strength necessary to install the trenches without damage while retaining the compressive strength necessary for use in demanding rail applications, which involve high loads and exposure to harsh environmental conditions. In fact, these new trenches have an exceptional load rating—up to a 16,000-pound wheel load.

3. **Balancing cost and performance.** Our composite lattice has enabled Oldcastle to carve out a new cost-to-performance niche with its upcoming trench system. Although premium materials do exist with higher compressive load ratings, this new trench system is an ideal middle ground between cost and performance.

Thanks to the integration of our lattice reinforcement, these new trenches overcome many of the challenges presented by polymer-based concrete trench systems that incorporate steel reinforcement. For one, they are designed to provide extra strength around the drain holes and ends of the trench, reducing the likelihood of damage during transportation and installation. They also eliminate the corrosion that can occur when trenches are cut and rebar is exposed.

To learn more about Oldcastle cable trench systems and other building materials, please visit www.oldcastleinfrastructure.com.

To learn more about WEAV3D composite technologies, please visit www.weav3d.com.