

Fibertrench Technical data

The **Fibertrench** product is a unique alternative to pre-cast concrete trenches, and has many advantages over conventional access ducting systems.

The **Fibertrench** product is manufactured using high strength GRP (Glass reinforced polyester) and incorporates woven reinforcements to provide extra strength in groundwork installations.

Trenches are joined by means of a simple universal fiberglass flange, and can be easily drilled bonded, and mechanically fixed if required.

Other advantages include:

Lightweight

A 7.5mm (nominal) thick trench weighs approximately 17/22 Kgs per metre depending on size, suitable for handling by two operatives. Unlike conventional pre-cast concrete units no heavy lifting equipment is required for installation. The units can be easily adjusted by hand for leveling and alignment.

Health & Safety Implications

No heavy lifting gear or cranes are required for the installation of **Fibertrench**. The number of site staff required is considerably reduced giving very quick and easy installation.

Strength

The combination of Isophthalic resin, chopped strand fiberglass and woven reinforcement make **Fibertrench** one of the strongest composite service protection systems available in the marketplace. Similar combinations of materials are used as boat hulls, aircraft fuselage, rolling stock structures etc all of which are subject to significantly more stress and strain than **Fibertrench**.

Fibertrench will not shatter crack or splinter and will withstand severe manual attack.

Maintenance/Lifetime

Fibergrate GRP products are maintenance free. They cannot rust or corrode and never need painting. Providing they are not subjected to impact damage, very high levels of abrasive wear or chemical attack they can be expected to last for over 40 years.

Installation

The **Fibertrench** is very light and easy to install. Installation time can be expected to be in the region of 1/3rd the time for pre-cast concrete installations. The units can be easily cut on site and adapted in-situ to suit any specific site conditions or changes. The trench run is excavated as the normal method for cable management trenches. The **Fibertrench** is installed on a semi-dry mix concrete base about half the thickness of that required for pre-cast concrete trenches and set to approximate level for base. The section of **Fibertrench** is lowered into place manually and tamped to level required, continue to insert additional sections. Sections can be cut to size using a Diamond tipped circular saw. If apertures are required, these can be cut in situ using a Diamond tipped jig saw. Place covers into **Fibertrench** and insert 10mm of packing to one side of covers, this maintains sufficient clearance to enable covers to be removed once back fill has set. Haunch with volume of concrete to level required ensuring concrete is tight to underside of rebate. For pedestrian use (5kN/m²) haunching should be semi-dry mix (stiff) 100mm thick to underside of trench lip, which supports the trench cover grating. Type 1 aggregate can be used from trench lip to the top of the trench cover grating. For medium and heavy duty use from 5 to 25 Tonnes (slow moving wheel loads) concrete haunching to underside of trench lip should be of a thickness normally required for these applications taking no account of any inherent strength in the **Fibertrench**.

FIBERGRATE COMPOSITE STRUCTURES LIMITED

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Generally, Junctions, Tee's, crossovers and chicanes are pre-fabricated in our factory and shipped to site ready for installation.

Drainage

The joints between each section of **Fibertrench** are not sealed. The view taken by National Grid is that ground water in the trenches should be allowed to drain naturally.

Trench Covers/Loading

The **Fibertrench** has been designed for use with Fibergrate GRP trench covers. It is suitable for use with open mesh & covered pedestrian grating as well as Fibergrate HLC (High Load Capacity) grating. These products have been independently load tested and depending on span we can offer products suitable for slow moving wheel loads up to 25 tonnes.

As the **Fibertrench** is designed for embedment, unlike the trench covers, free standing load tests are not particularly relevant, However free standing load tests on the nominal 600mm wide x 350mm deep **Fibertrench** and on the nominal 600 x 600mm **Fibertrench** were conducted by Lloyds British Testing. Loading was applied through a 250mm dia footprint onto the **Fibertrench** through the trench cover grating:

Load Kgs	600 x 350 mm Trench	600 x 600 mm Trench
	Deflection mm	Deflection mm
1000	2.33	2.55
2000	3.97	5.64
3000	5.77	8.11
4000	7.65	11.49
5000	9.60	18.63
6000	11.40	Non-catastrophic failure
7000	13.25	
8000	15.67	
9000	19.62	
9200	Non-catastrophic failure	

The products were also tested for sidewall deflection with no trench cover grating in place.

Load Kgs UDL	600 x 350 mm Trench	600 x 600 mm Trench
	Deflection mm	Deflection mm
25	60	70
50	147	148

In all cases the **Fibertrench** recovered after removal of the load.

It must be emphasized that these test results were established on the **Fibertrench** in a free-standing state. The product is not designed for use in this state and must be haunched with concrete. Therefore these test results are not representative of what will be achieved after installation and are given in order to demonstrate the inherent strength of the **Fibertrench**.

Endorsements

The new **Fibertrench** product from Fibergrate augments the GRP trench cover grating we have been using for several years and gives all the similar advantages over concrete. Light weight, ease of handling and quick and easy installation. – Steve Barnett – National Grid

We installed the **Fibertrench** system on a project for National Grid at a sub-station in Sheffield and were extremely impressed with the speed and simplicity of installation. The lightweight units were also easily cut and adapted in-situ to suit the specific site conditions. Simon Dennis, MD - Palmer Construction.

Approvals

National Grid installed the **Fibertrench** system at a sub-station in Sheffield. They will use the Fibertrench for any new or replacement trenches in existing sub-stations. Contact: Steve Barnett – National Grid.

National Grid considers that the **Fibertrench** fits into their existing specification for trenches and that they do not need to re-write their specification. They will recommend the **Fibertrench** system to all their alliance partners for new sub-stations. Contact: Nick Tobin, Core Construction – National Grid, Paul Stead, Safety by Design Manager – PB Power National Grid Alliance (North).

Technical

Tensile Strength:	123 MPA
Flexural Strength:	193 MPA
Thermal Conductivity:	0.2 W/M ² k
Thermal Coefficient of Expansion:	30 X 10 (-6) DEG C
Tensile Modulus:	7.1 G.PA
Colour Range:	BS 4800 OR RAL

Size: The standard length is 2.4 meters, but bespoke runs can be accommodated to suit.

Thickness: Nominal wall thickness is 7.5mm but can be produced thicker if required.

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