

PermaStruct®

Installation & Fabrication Guide



Confidence with every step

PermaStruct®

Recommended Tools & Fabrication Practices

Suggested Hand Tools

Perma Composites® recommends the use of the following tools during light fabrication...

- ✓ Drill
- ✓ Circular Saw - Diamond Tip Blade
- ✓ Jig Saw - Fine Tooth Wood Blade
- ✓ Hand File

Recommended Fabrication Practices

The following fabrication practices are recommended whilst working with PermaStruct® FRP...

- ✓ Always adhere to safety standards.
- ✓ FRP can be dusty during fabrication, it is essential to wear eye protection, dust mask/respirator and a long-sleeve shirt.
- ✓ Due to FRP being abrasive, frequent tool sharpening is often required as tools will wear rapidly.
- ✓ Diamond-coated bits and saw blades are recommended during fabrication.
- ✓ Always use an appropriate machine speed. As a general rule, the greater the thickness the slower the cutting or drilling speed.
- ✓ Avoid excessive pressure when drilling or sawing as using too much force can rapidly dull tools.
- ✓ Ensure that machines are cleaned frequently as dust and glass particles will build up over time and become abrasive.
- ✓ It is good practice to spray any cuts with an Automotive Clear Lacquer.

Machine Operations

Cutting or Sawing

When cutting or sawing PermaStruct® FRP ensure you apply a light and even spread of pressure. If excessive pressure is applied dust particles may clog up and shorten the life of the blade.

The cutting or sawing speed is extremely important during the fabrication of PermaStruct® FRP. Cutting too fast will fray the edge of the material and may, in some cases cause the FRP to turn black.

Whilst cutting, you will need to provide adequate support to prevent the material from shifting. If the PermaStruct® FRP is not supported correctly, chipping may occur.

A masonry blade is recommended for small jobs.

Machine Operations: Continued

Straight Cuts and Ripping

When ripping a large quantity of PermaStruct® FRP, a table saw fitted with a diamond-coated blade will provide the most accurate cut and also ensure a longer blade life.

Drilling

The following practices are recommended when drilling PermaStruct® FRP...

- ✓ A low drilling speed should be used.
- ✓ Carbide-Tipped Drills are best for use when drilling large quantities.
- ✓ The drill bit should be approximately 0.05mm under size.
- ✓ The use of a wood backup plate will reduce breakout on the back side of the hole when drilling large holes.

Mechanical Fastening

Mechanical Fastening

There are several different techniques that can be used to fasten FRP to any materials. Any of the following methods may be used...

Riveted Connections

The hole for a Rivet must be drilled slightly larger than the Rivet itself.

Many different styles, types and head style Rivets are available and options include nylon, aluminium, stainless steel, steel, or cooper.

Screwed Connections

The use of Self-Tapping Screws and Adhesive work well. The screws will hold the material together while the adhesive has time to cure, provide a high-strength connection.

Screws may be used alone but will not provide a high-strength connection.

Bolt and Nut Connections

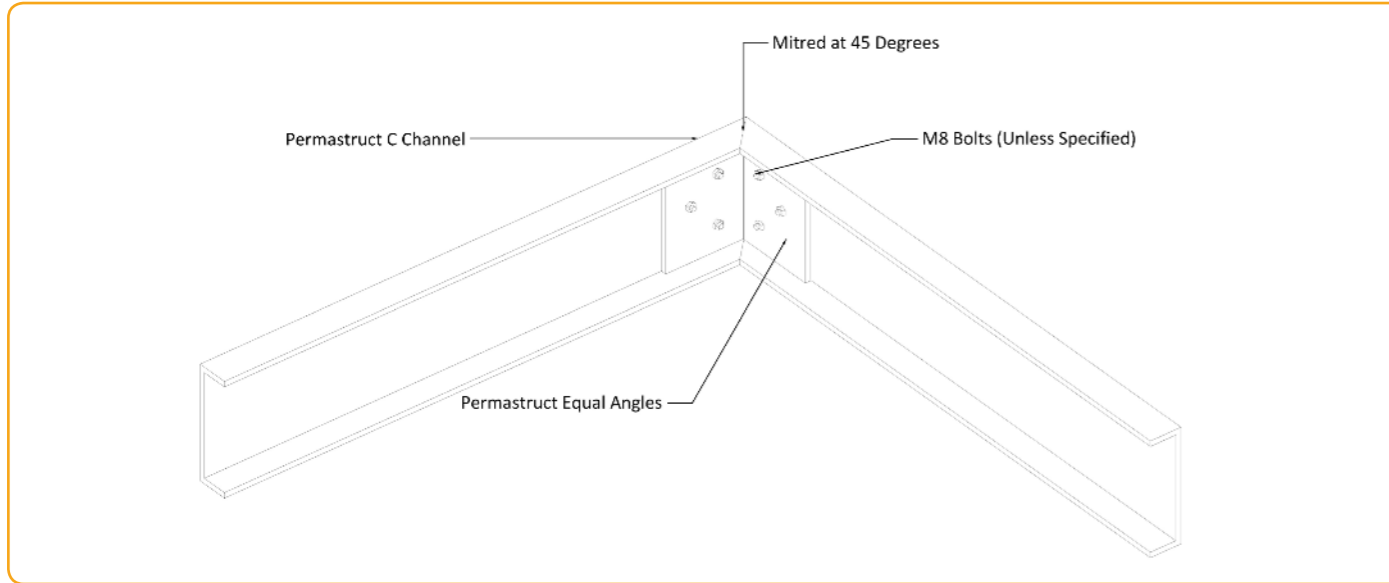
Bolt and Nut connections are the most common practice for connection profiles. It is best to use a flat washer on both sides of the bolted connection wherever possible, as this will help distribute the load. The strength of this connection will increase when an adhesive is applied to the properly prepared mating surfaces.

For corrosive applications, it is best to use threaded FRP rod and molded FRP nuts.

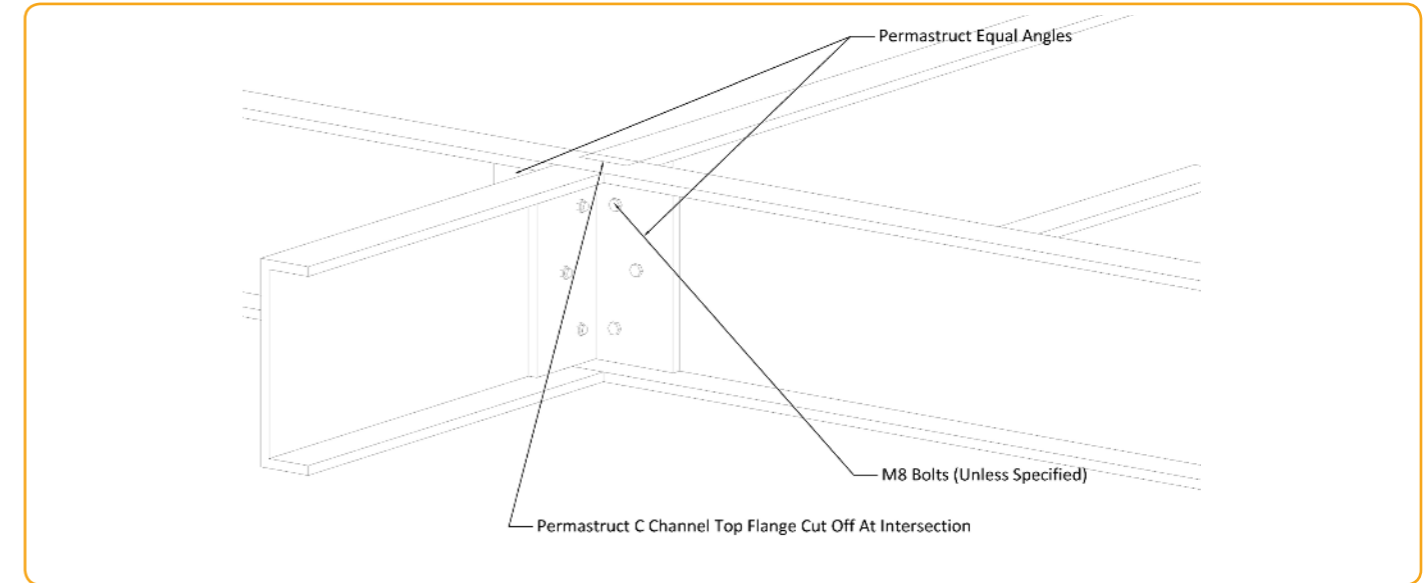
FRP Connection Details

All bolts are to be arranged asymmetrically with a minimum edge distance of 25mm unless stated.

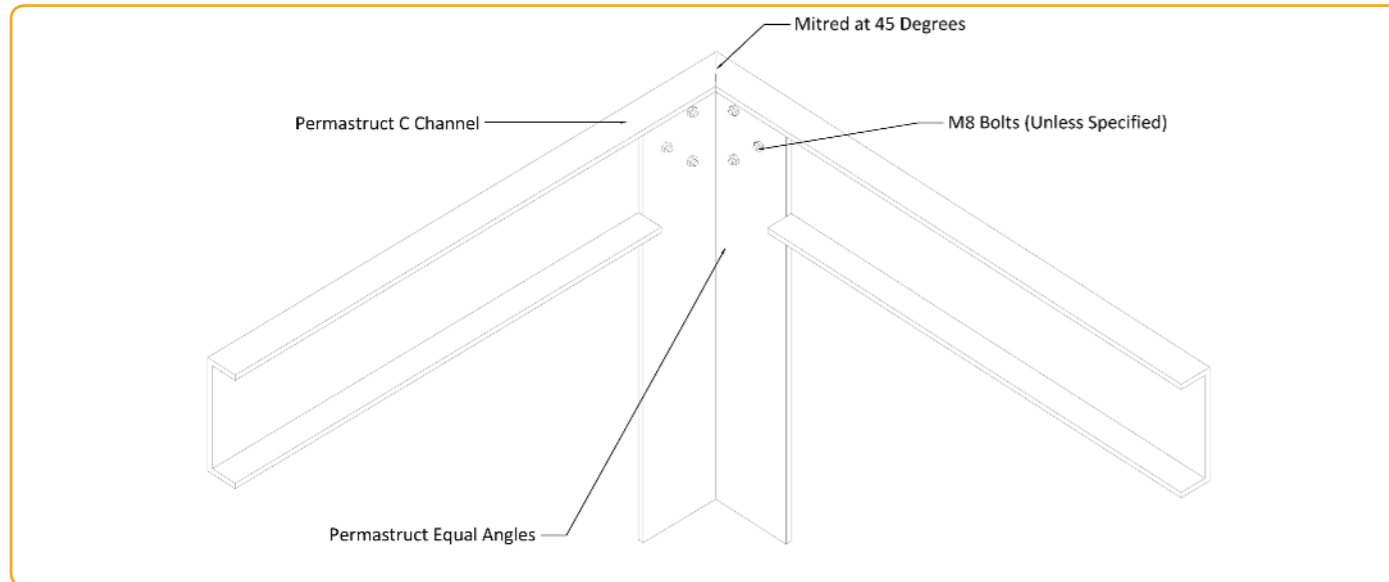
FRP Profile Connection - Corner



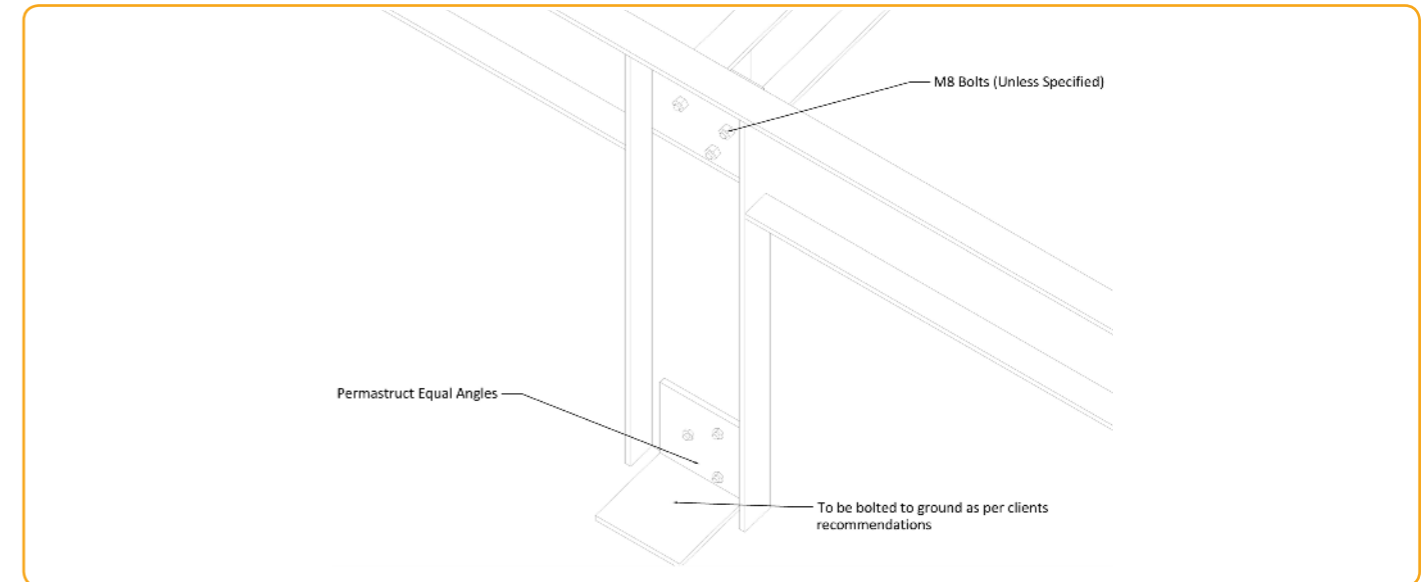
FRP Profile Connection - 4 Way Beam Column



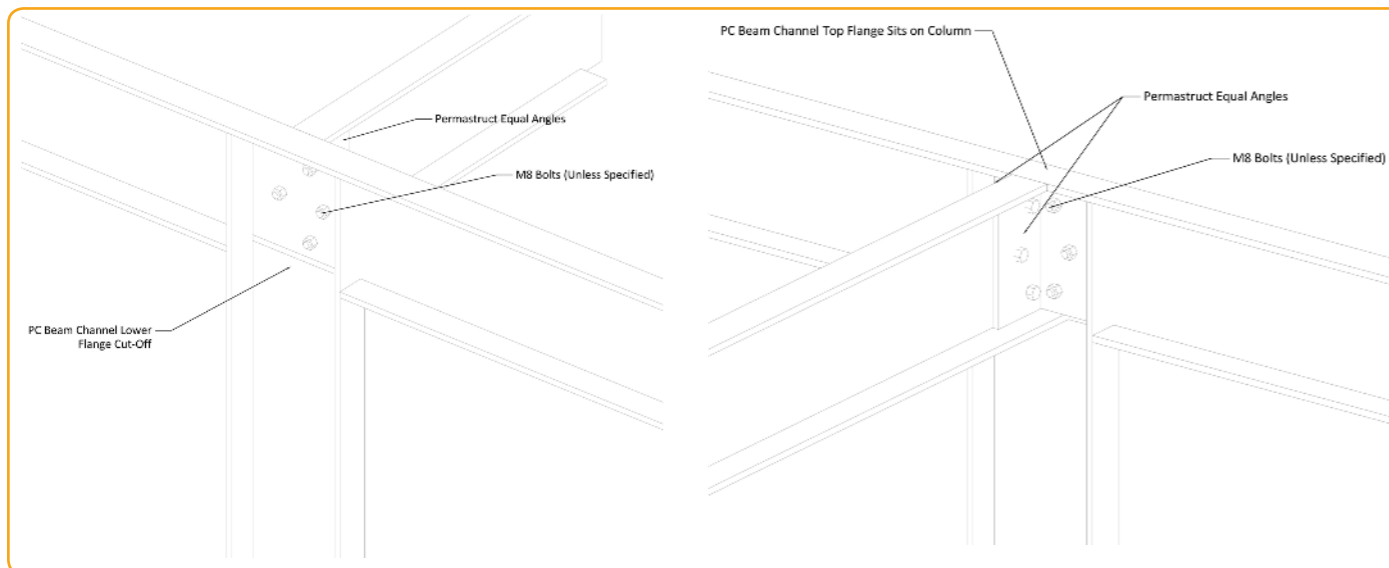
FRP Profile Connection - Corner Cut Length



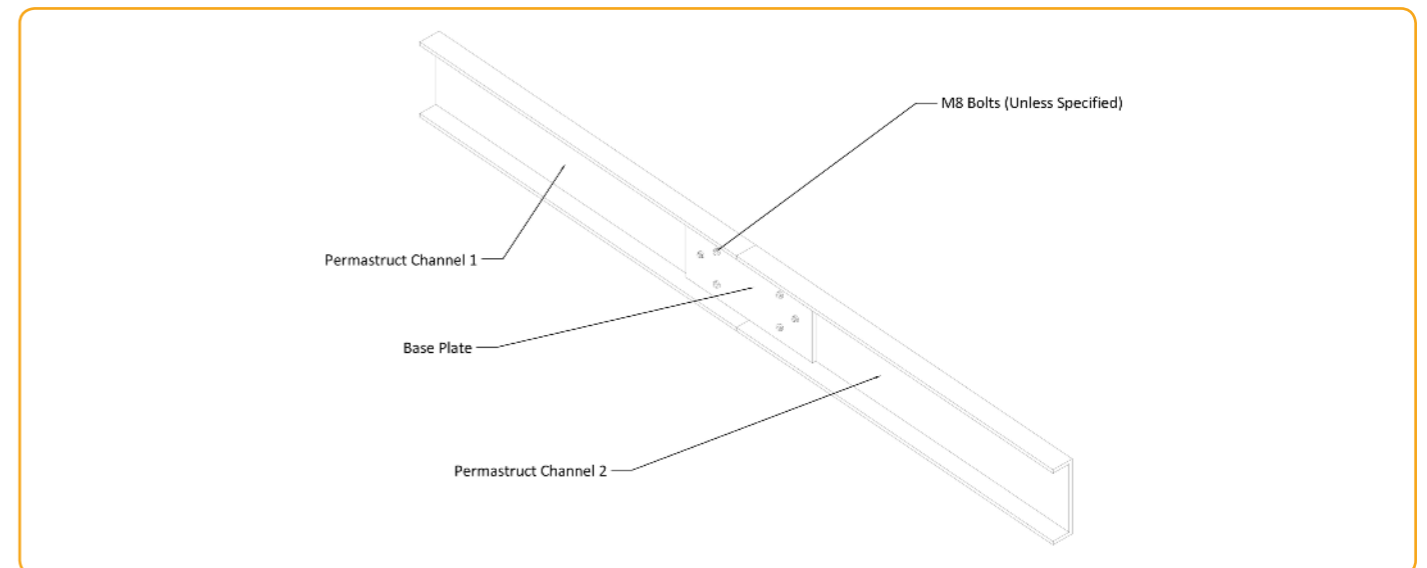
FRP Profile Connection - Channel to Ground



FRP Profile Connection - 3 Way Beam Column



FRP Profile Connection - Channel Plate





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confidence with every step



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