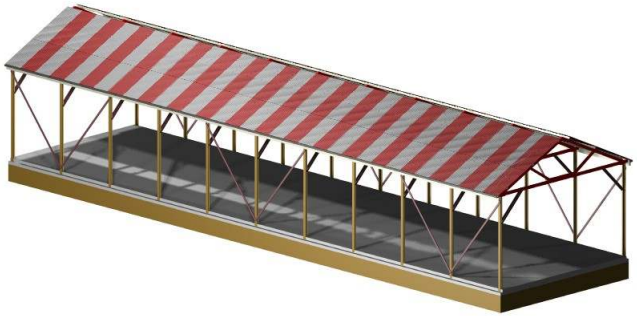
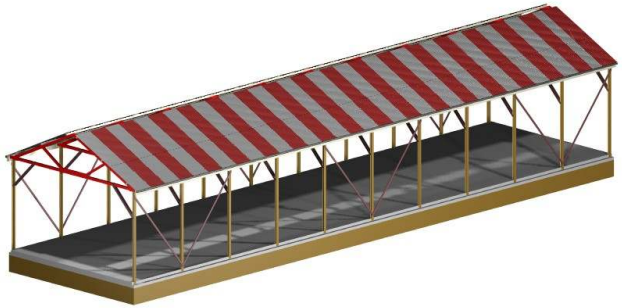
KRM GS001 HO Acrylic
100 Foot NSW Grain Shed

Instructions for Construction

By

Keiran Ryan





Introduction

Thank you for purchasing the KRM GS001 HO 100ft Grain Shed Kit. Grain Sheds in the NSW railway and grain systems come in various forms. One of the original styles, was a shed that had a concrete floor with vertical roof supports made from disused rail and hardwood timber trusses. They had a sectional spacing of 10 feet between supports. These sheds were built at the turn of the century. There are still a few sheds existing today, but only a few as most of them have either fallen down or been demolished. This kit is based on this type of Grain Storage Shed

The sheds were originally designed to store bagged grain sacks and keep them from the weather and vermin. The shed roof was clad with corrugated iron. Early on, the sheds had to be modified by having sheets of corrugated iron on edge at the bottom inside of the rail supports to prevent vermin from gaining access to the grain stacks and infesting the grain. (all to no avail). The sheds had no ridge capping, but had a curved section of corrugated iron over the centre of the roof, minimising joints and the possibility of rain water ingress.

These sheds have gone through many modifications over the years which include, no side cladding, minimal cladding as previously mentioned, and later to full cladding to allow the storage of AFL Superphosphate. This full cladding differed from the norm, in that timber battens were attached to the inside of the rail supports and the cladding was then attached to the inside of the battens.

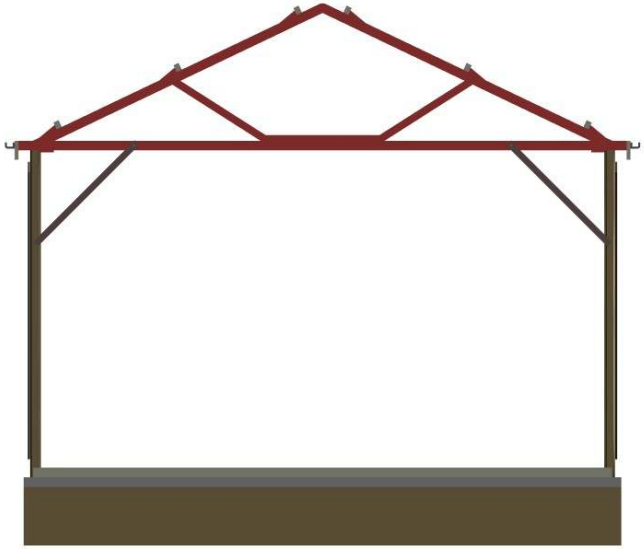
The Model

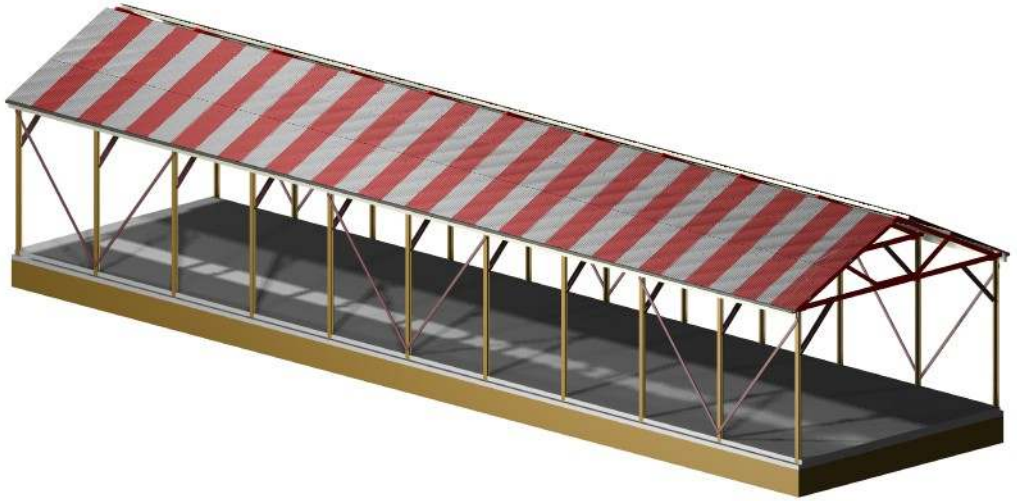
While it would be nice to be able to model the railway and associated buildings exactly as the prototype, it is not always practical to do so. This kit is no different. The compromise that we need to deal with, involves the shed length. Most of the sheds found around NSW are up to 320 ft long (In scale ----1120 mm). This is way too long to model, due to space and cost limitations.

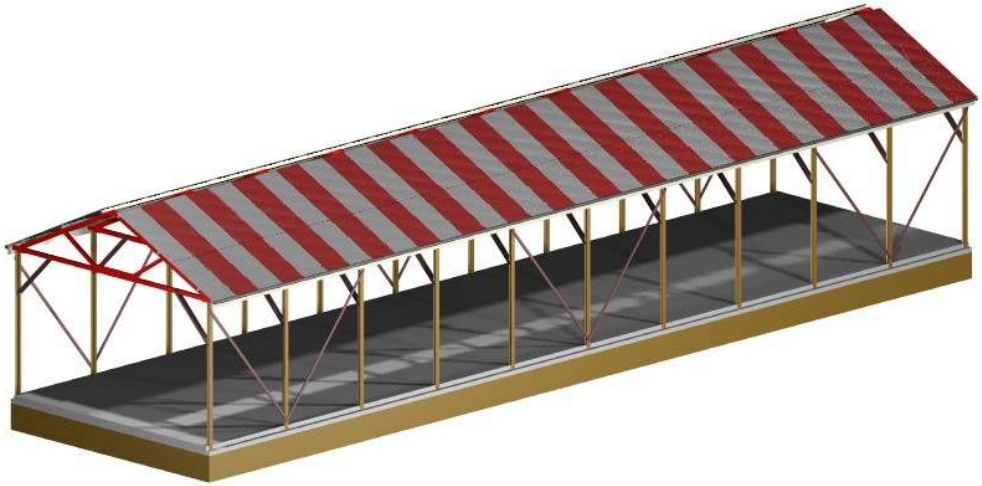
This kit builds up into a shorter model that is 100 ft long (350 mm). There is potential to make a 300 ft long shed by joining 3 sheds together with a little modification.

There are a few prototype grain shed photos attached in this instruction CD to assist you in the construction of the grain shed.

Outcome







The diagrams shown here, represent the actual model, but could differ slightly in detail.

KRM GS001 HO Acrylic 100ft NSW Grain Shed Kit

- The major components in this kit are laser cut form 1mm, & 2mm acrylic.
- 12 trusses - 1mm clear acrylic - 11 required – 1 spare.
- Base and concrete floor – 1mm clear acrylic.
- The Truss building jig – 2mm white acrylic.
- Truss bracing – 0.3mm etched brass – 44 only.
- Rail bracing – 0.3mm etched brass – 12 only.
- 0.4mm brass wire – 2 x 300mm length only.
- 1.0mm brass wire – 1 x 300mm length only – Down pipes.
- Code 70 rail – 3 x 330mm lengths. 1 x 240mm length. Cut 22 lengths as per the go/no-go jig in the base.
- Evergreen styrene (HO scale) 6 only 4”x 6” (Truss battens) , 2 only 2” x 10” Fascia).
- 2 x 0.6mm laser cut saw tooth timber ends.
- 2 x 0.6mm laser cut timber bargeboards.
- Evergreen styrene 1.5mm “C” Channel. (Guttering)
- What the modeller needs to supply.
  - Timber base (available from Keiran Ryan Models - $22.50 – ($20.50 with the kit).
  - Campbell's Corrugated Aluminium.- 2 - packets of (scale) 12ft.
  - Super Glue.
  - Dichloromethane.(Pleas Read Health Warning)

Health Warning

The following is a warning for using **Dichloromethane:**

Principal hazards

*** Dichloromethane is harmful if you swallow or inhale it.
*** It may act as a narcotic, so inhaling it will make you feel unwell.
*** Like many small hydrocarbons that contain halogen atoms, dichloromethane is a suspected carcinogen. It is unlikely to be strongly carcinogenic, but it is important to reduce your exposure to the lowest level possible.

Safe handling

Wear safety glasses. Work in a well-ventilated area. Avoid repeated or long-lasting exposure.

Emergency

Eye contact: Immediately flush the eye with water. If irritation persists, call for medical help.
Skin contact: Wash off with soap and water.
If swallowed: Call for medical help.

Disposal

Store for later disposal as chlorinated waste solvent.

Protective equipment

Safety glasses.

Construction Hints & Tips

- Please read the instructions 3 TIMES before commencing the construction of this kit. (Yeah I hate reading instructions as well – but somebody has too read them – why else would I write them?)
- Please work safely, as injuries can occur when using sharp instruments and tools.
- Thin section acrylic can be very brittle and easily damaged, so take care when working with this material, especially the trusses.
- The trusses are laser cut from 1mm acrylic and this material varies in thickness (as it is cast). So when placing the trusses in the truss assembly jig, some trusses may appear to be tight. Adjust the thickness of the trusses by rubbing CAREFULLY on some wet and dry paper and test fit the trusses so that they fit the jig without binding
- The truss jig can also have the grooves cleaned up with a small piece of wet and dry to make the trusses fit with ease. Attempt this before sanding the trusses.
- The rail required for the vertical supports in this kit should be code 70, as the base holes are cut to suit this size rail. Rail is supplied with the kit
- There is a slot between the truss cut-outs at one end of the base, that can be used as a GO – NOGO jig. Cut and file the rail pieces to fit this jig. This allows consistency in the length of the truss supports. The rail must JUST fit in the slot, if it is tight it is a NO-GO and if it is sloppy it is also a NO-GO
- When using super glue, use a tooth pick to apply glue to components, as excess glue (unintentional) can ruin a model.

Tools required

- Stainless Steel Scissors
- Tweezers or other small non marring clamping device.
- (Metric) Number Drills & Pin Vice
- Small Files
- Rail and wire cutters
- Soldering Iron
- Hold & Fold Tool
- Solder & Flux or Solder Paint
- Snap-off Cutting Blade
- Fine Wet & Dry Paper
- Burnishing Brush (Be very Careful)
- Selleys Quick Grip.
- Superglue.
- Cutting Board.

Let's

Get

Ready

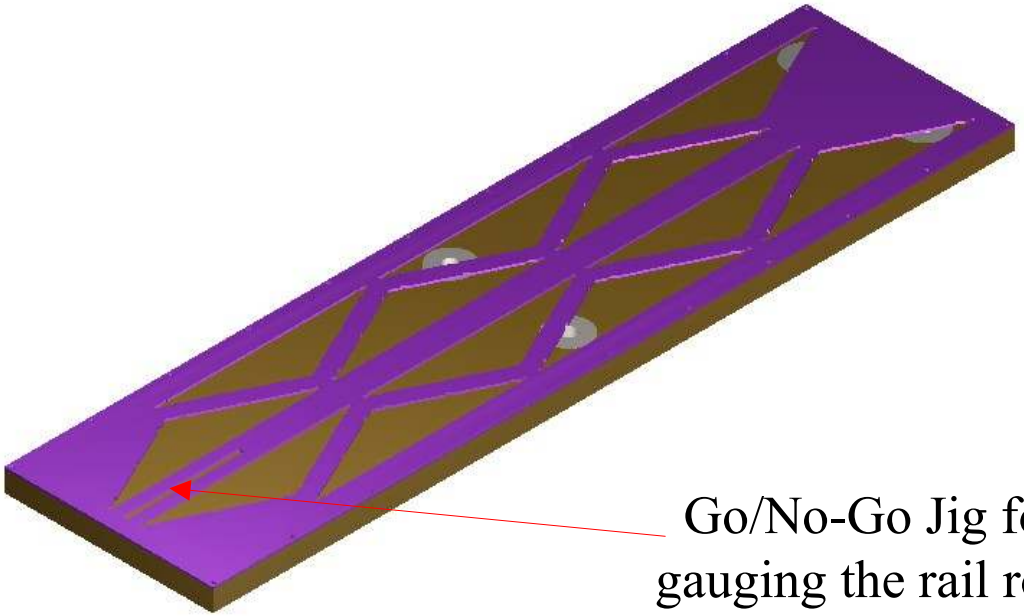
To

Model

Before we do anything - Cut the Rail to Length.

The kit is supplied with 4 lengths of Code 70 rail (roof supports) 3 x 330mm (6 lengths) and 1 x 240mm (4 lengths). From these pieces, you will be able to cut 22 lengths of rail measuring 51.87mm long.

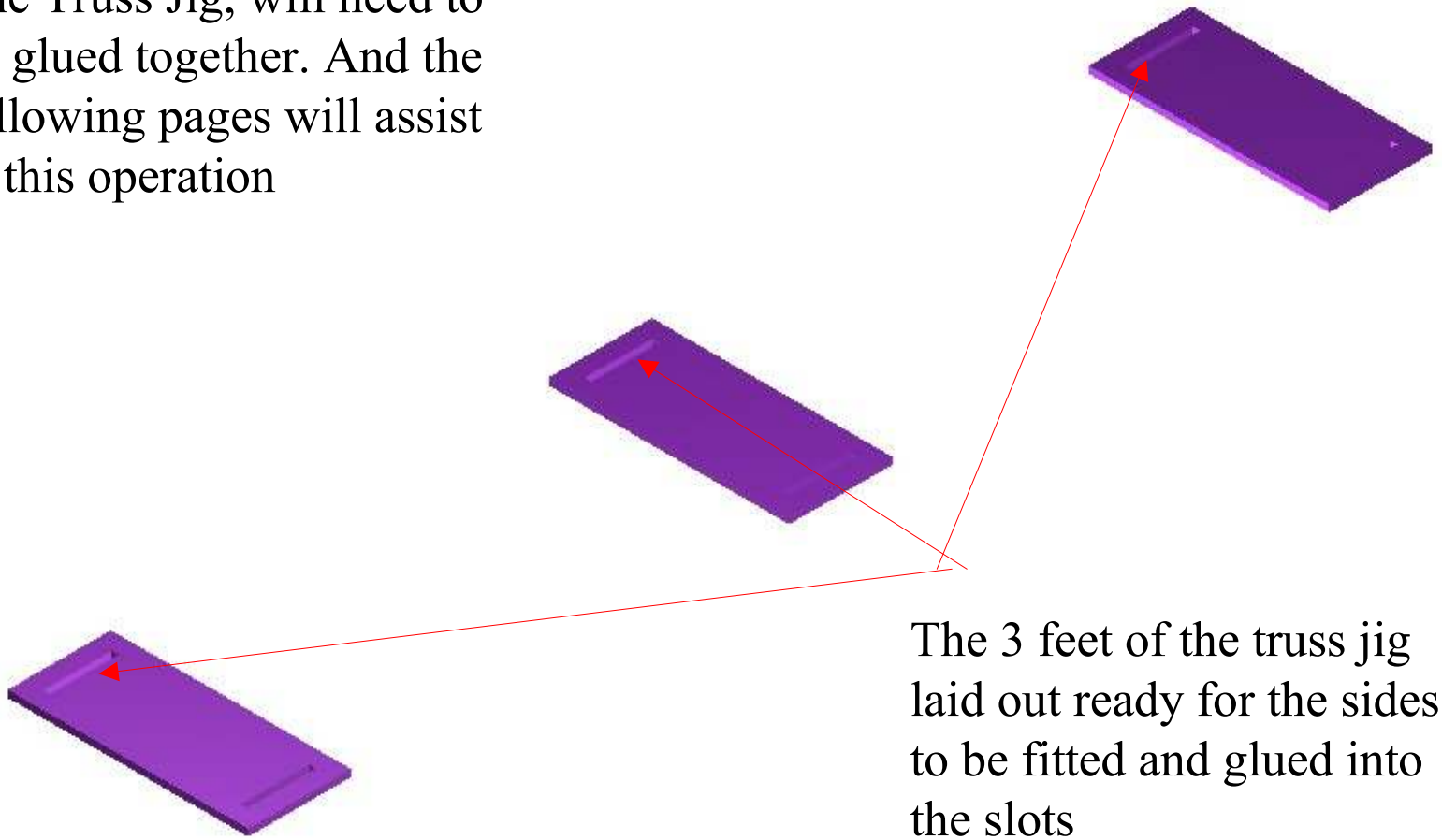
Don't worry about accuracy at this point, as the rail needs to be cut oversize and filed to fit using the Go/No-Go jig in the base. (shown here to the right) When all the rail is cut and filed, place it in a secure location for fitting to the base at a later time.



Go/No-Go Jig for gauging the rail roof supports

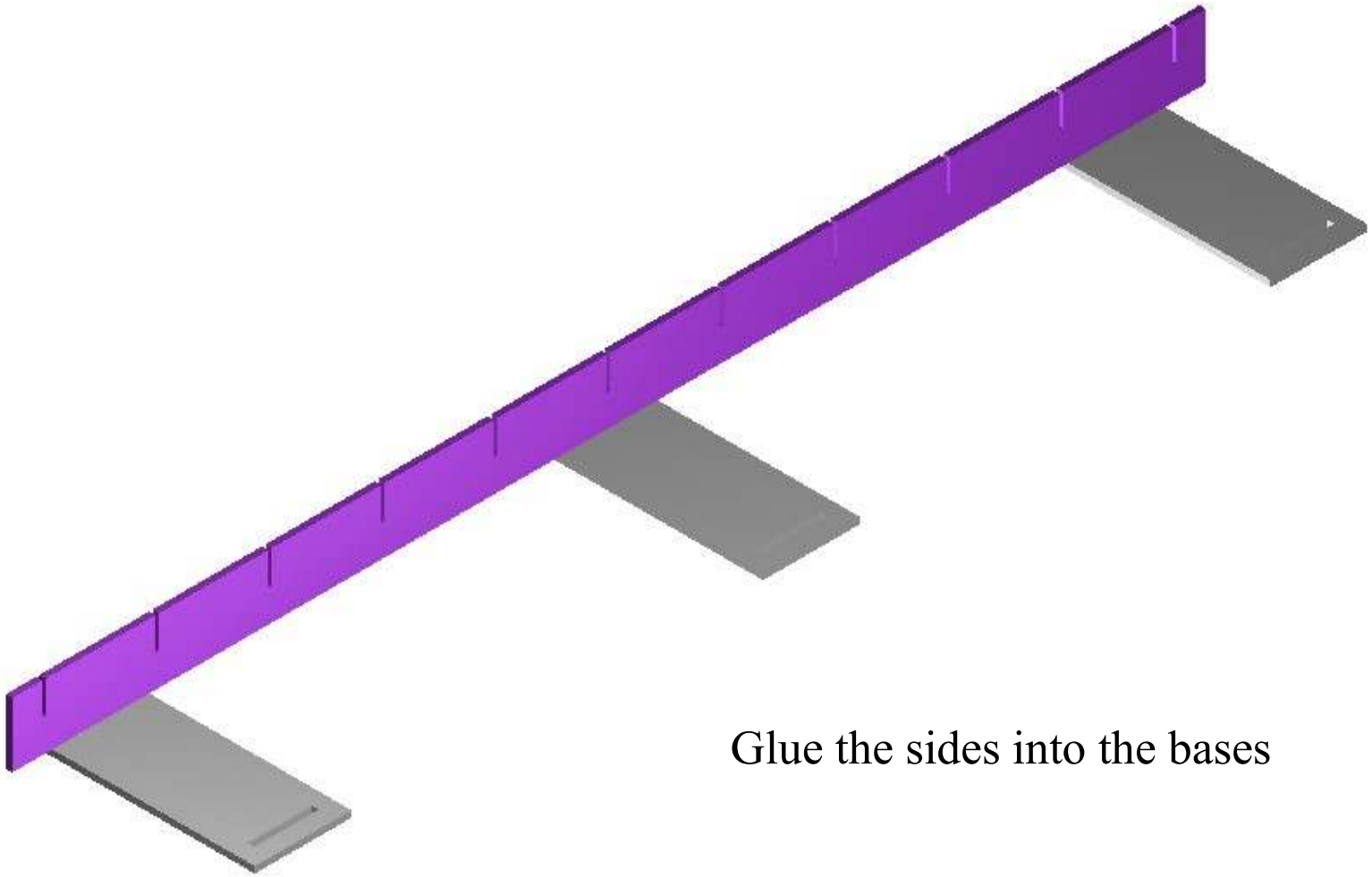
The Truss Jig – Step 1

The Truss Jig, will need to be glued together. And the following pages will assist in this operation



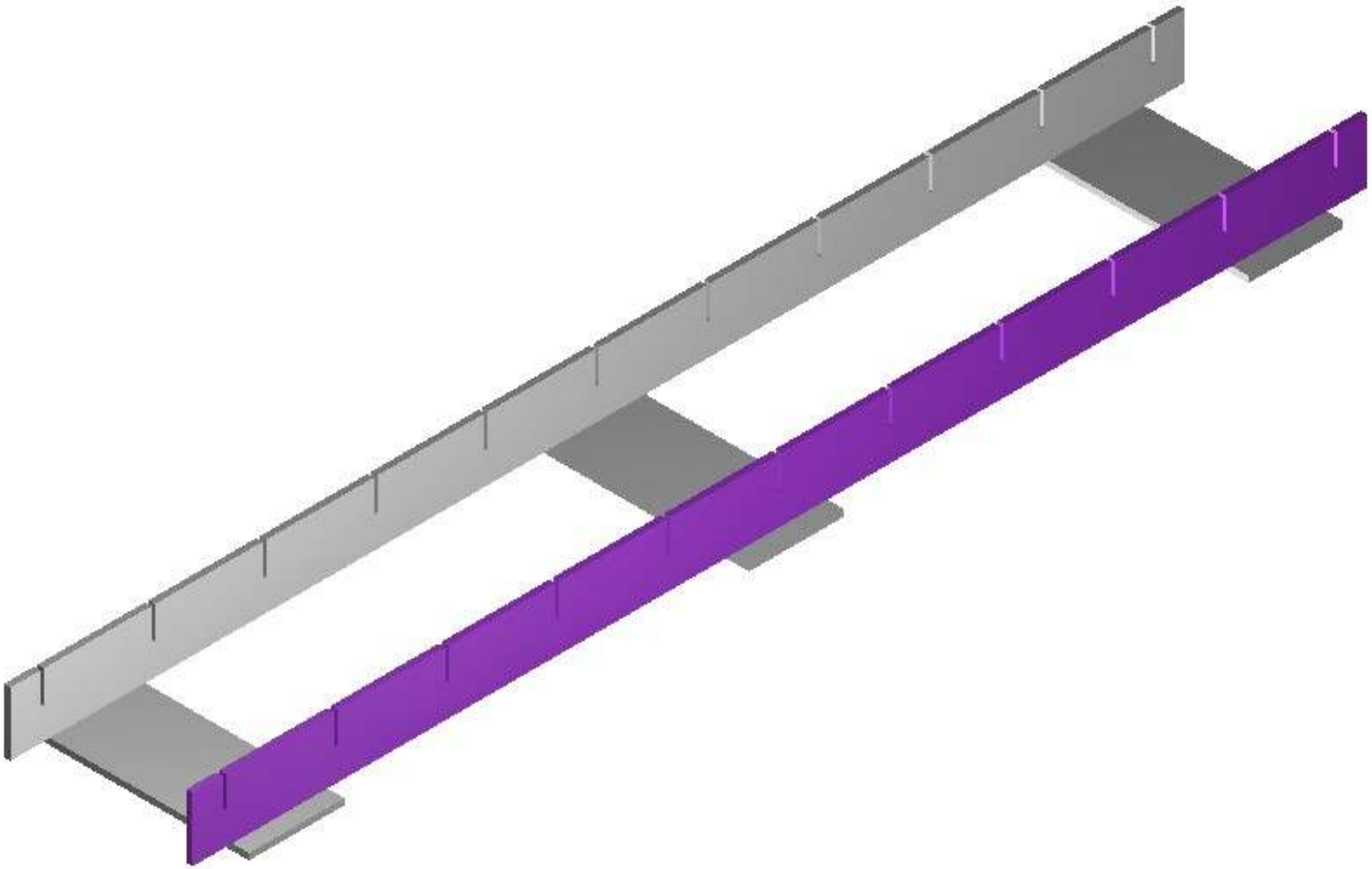
The 3 feet of the truss jig laid out ready for the sides to be fitted and glued into the slots

The Truss Jig – Step 2



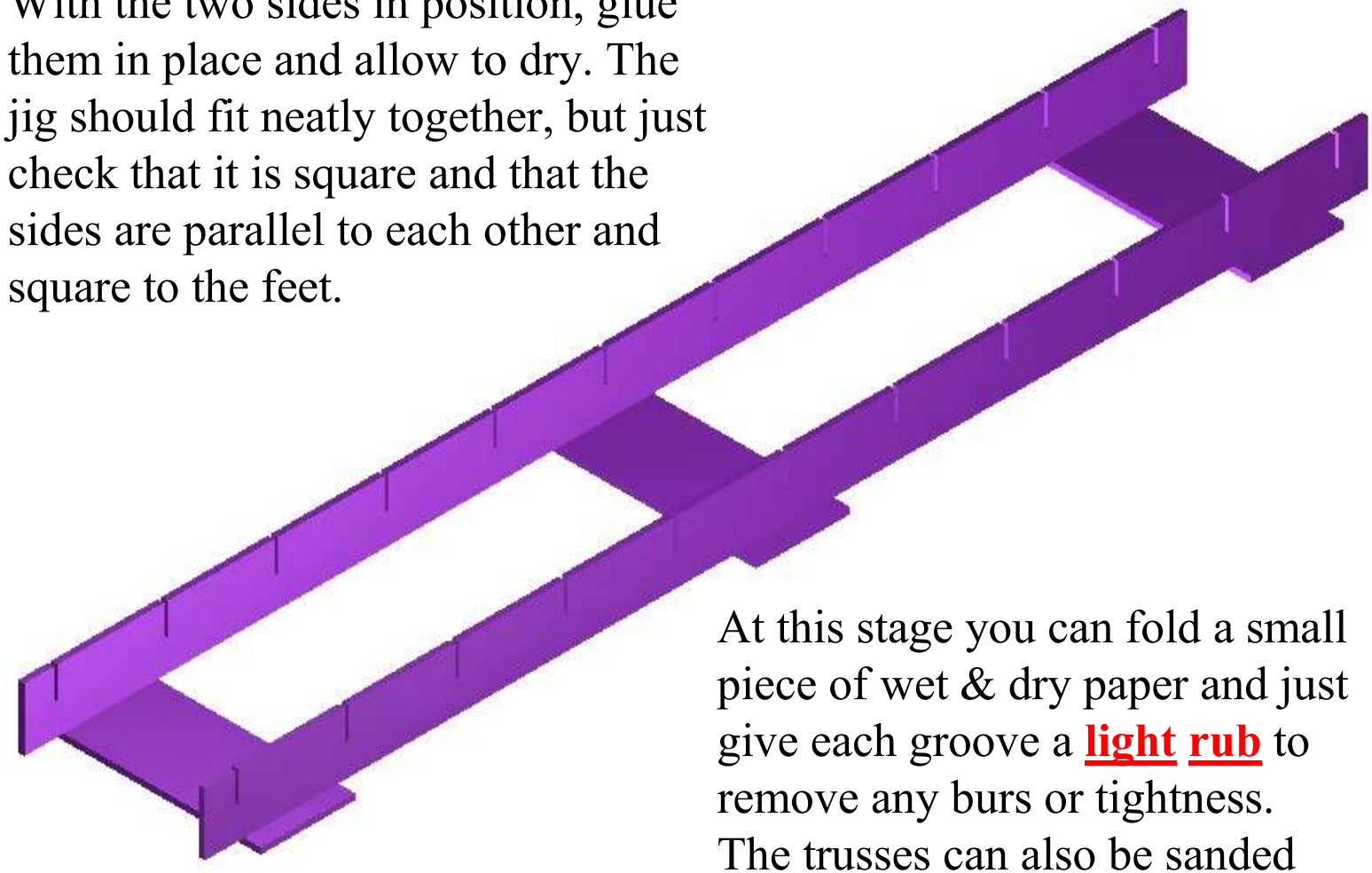
Glue the sides into the bases

The Truss Jig – Step 3



The Truss Jig – Step 4

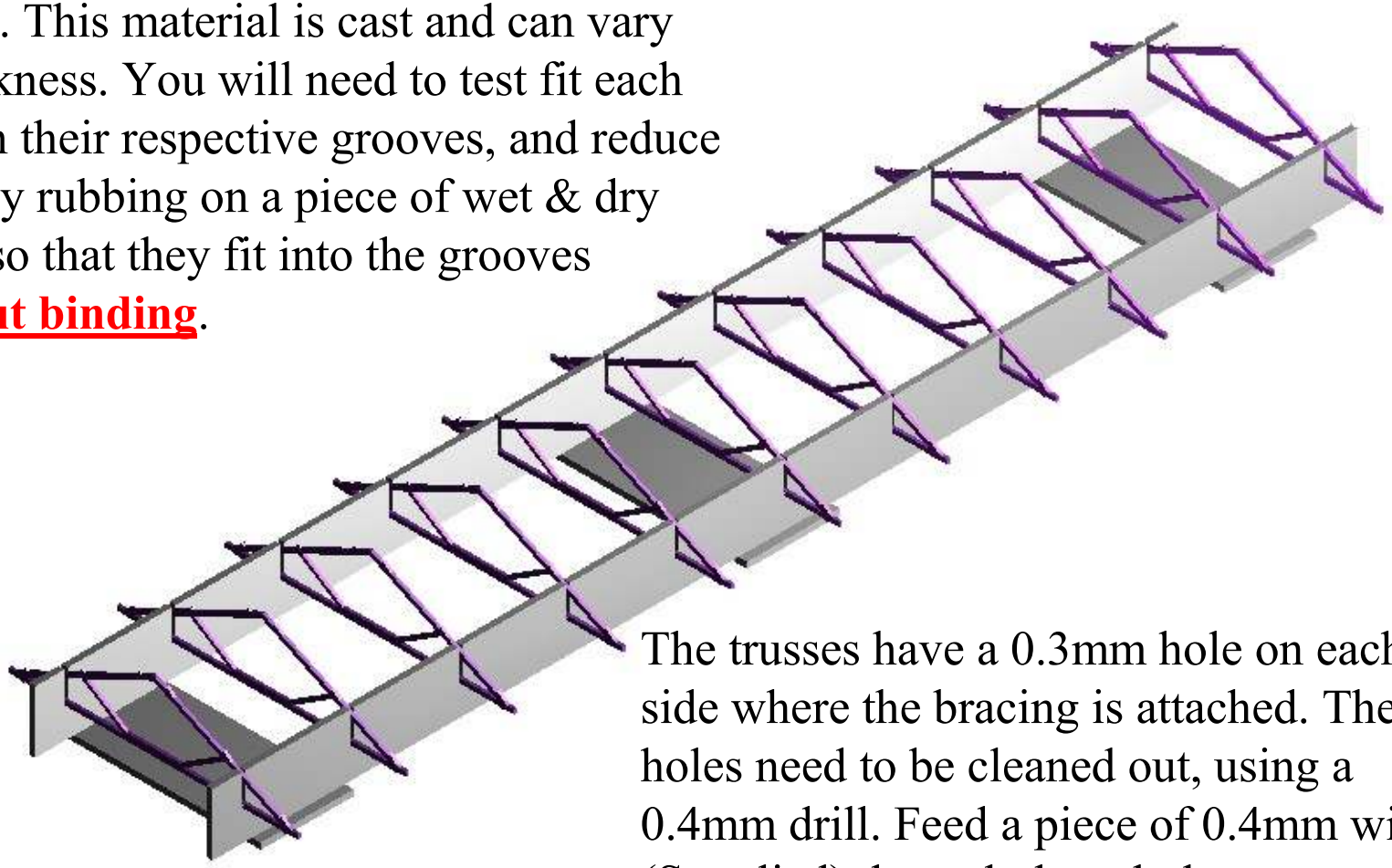
With the two sides in position, glue them in place and allow to dry. The jig should fit neatly together, but just check that it is square and that the sides are parallel to each other and square to the feet.



At this stage you can fold a small piece of wet & dry paper and just give each groove a **light rub** to remove any burs or tightness. The trusses can also be sanded down to achieve a better fit, more on that next.

The Truss Jig – Step 5

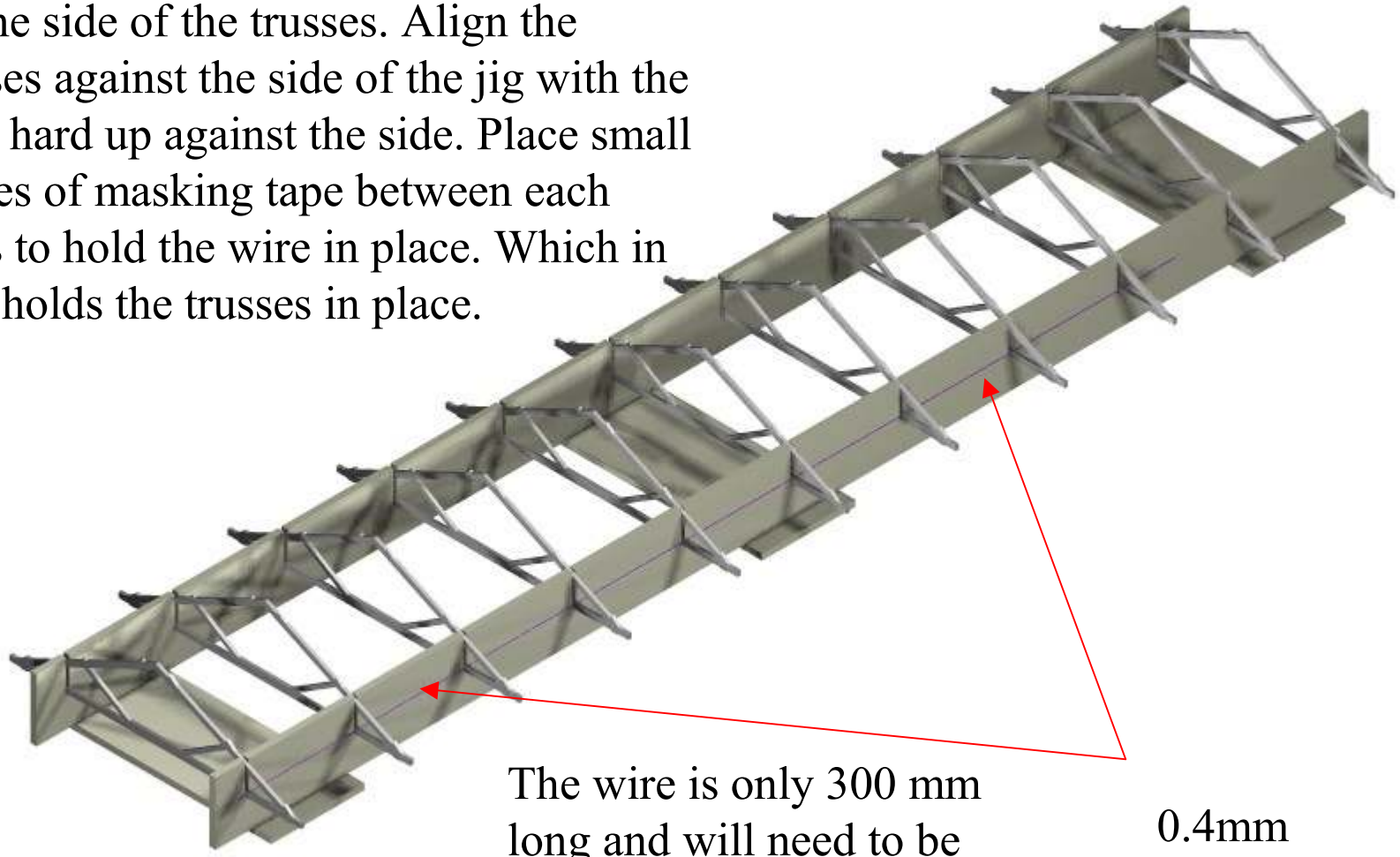
The trusses are laser cut in 1mm clear acrylic. This material is cast and can vary in thickness. You will need to test fit each truss in their respective grooves, and reduce them by rubbing on a piece of wet & dry paper so that they fit into the grooves **without binding**.



The trusses have a 0.3mm hole on each side where the bracing is attached. These holes need to be cleaned out, using a 0.4mm drill. Feed a piece of 0.4mm wire (Supplied) through these holes, to ensure an easy fit, ready for the next step. **The wire should not be tight in the holes.**

The Truss Jig – Step 6

Feed 0.4mm brass wire through the holes in one side of the trusses. Align the trusses against the side of the jig with the wire hard up against the side. Place small pieces of masking tape between each truss to hold the wire in place. Which in turn holds the trusses in place.



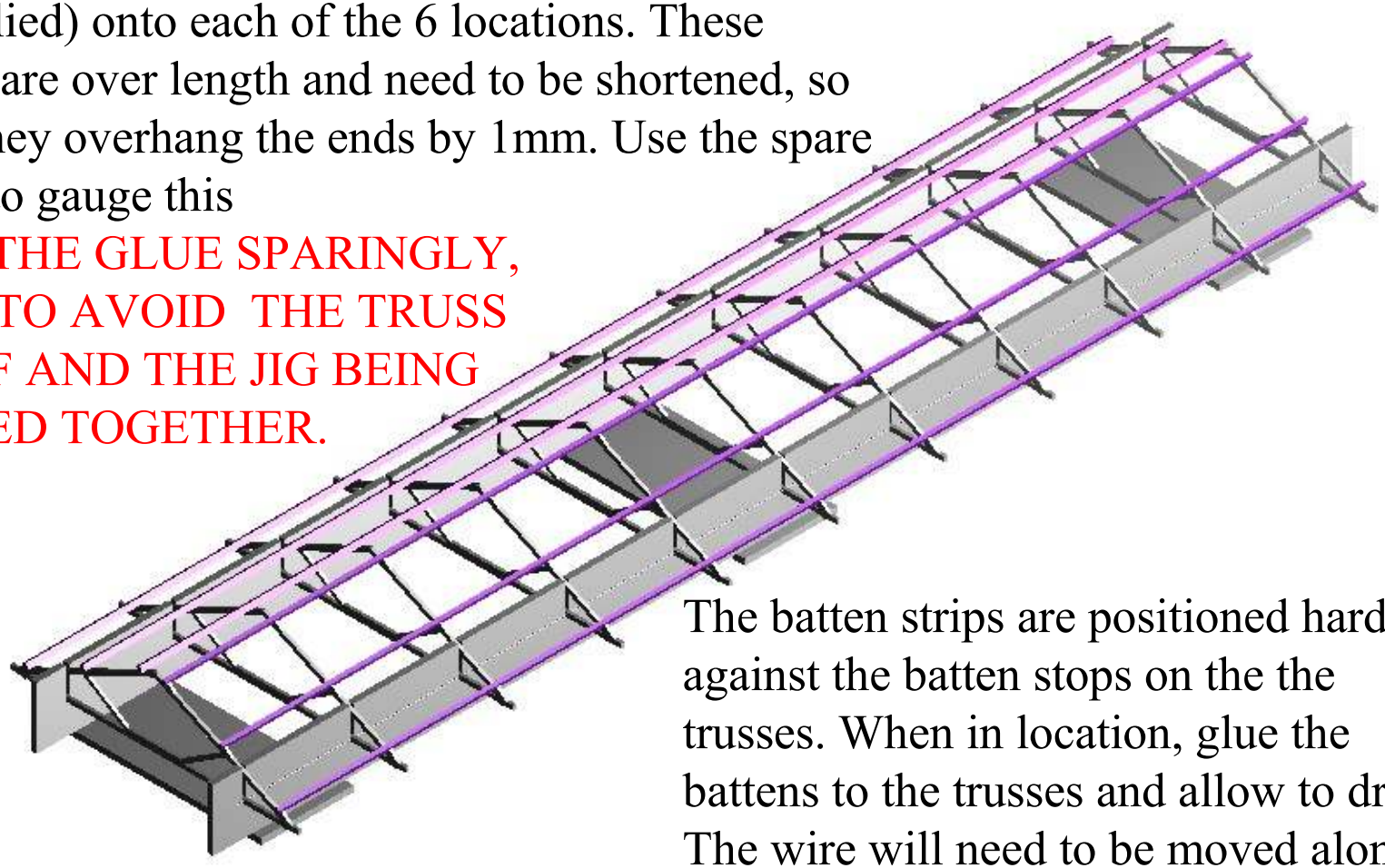
The wire is only 300 mm long and will need to be moved along when fitting the roof battens.

0.4mm brass wire

The Truss Jig – Step 7

Locate 4” x 6” battens (styrene strips on edge) (supplied) onto each of the 6 locations. These strips are over length and need to be shortened, so that they overhang the ends by 1mm. Use the spare truss to gauge this

USE THE GLUE SPARINGLY, TRY TO AVOID THE TRUSS ROOF AND THE JIG BEING GLUED TOGETHER.

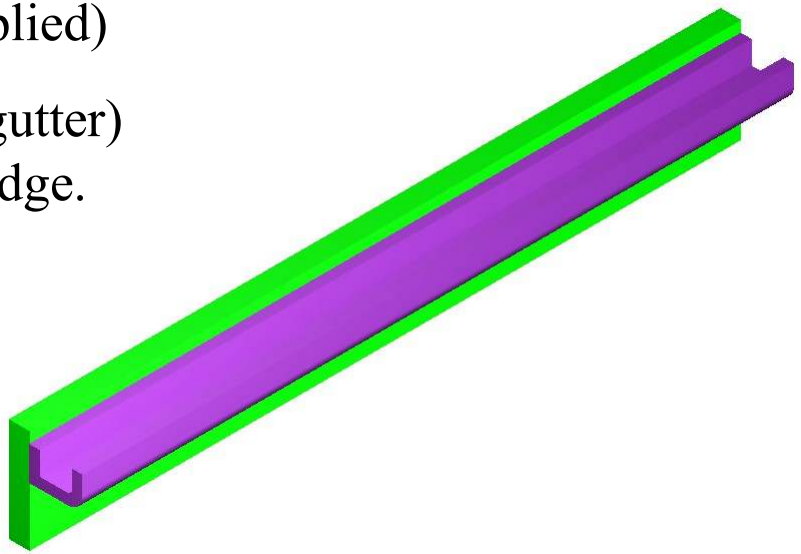


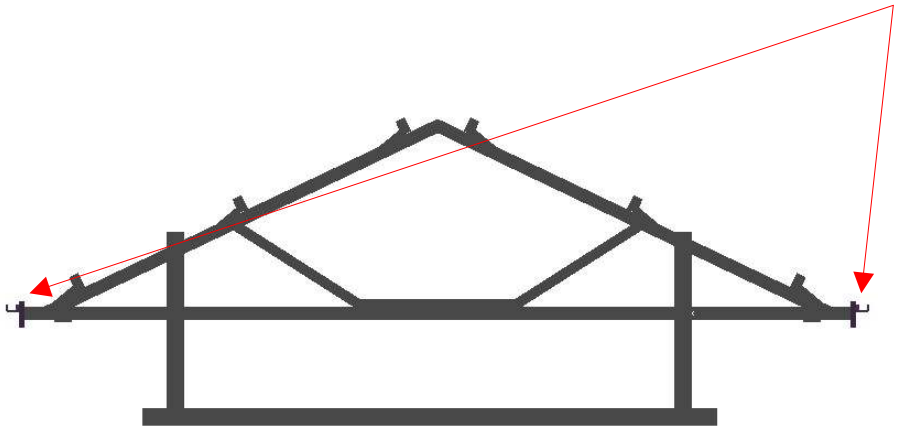
The batten strips are positioned hard against the batten stops on the the trusses. When in location, glue the battens to the trusses and allow to dry. The wire will need to be moved along the side after the battens at one end are glued into position. The battens at the other end can then be glued.

The Truss Jig – Step 8

Green – 2” x 10” (fascia) (Supplied)

Purple – 1.5mm “C” channel (gutter) (Supplied), chamfer the outer edge.

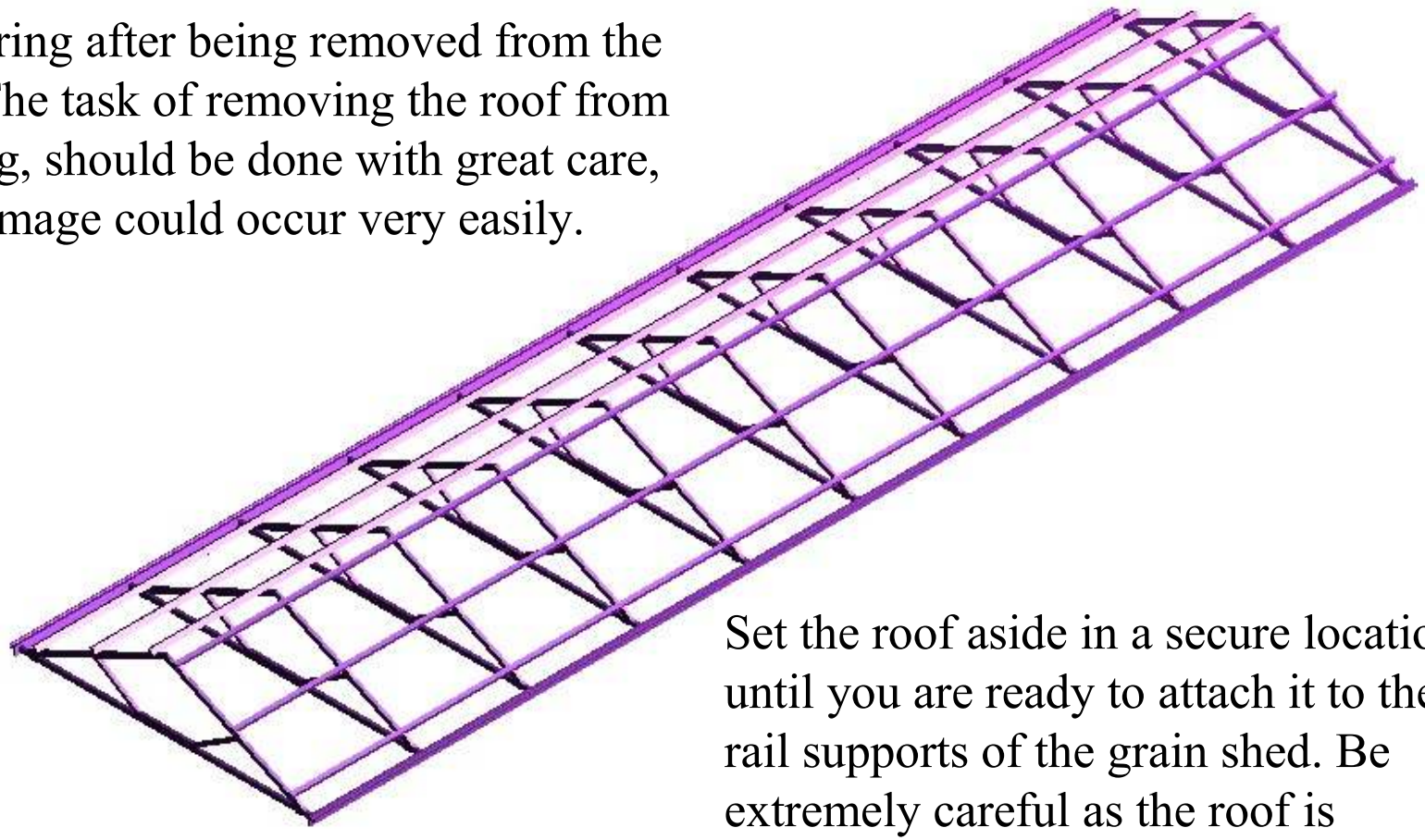




The guttering is glued to the fascia 1.5mm from the top, before the fascia is fitted. When dry, attach the combined fascia/gutter to the truss ends with the top of the fascia, 1.5mm above the top of the truss end. Do the same with the fascia on the other side.

The Truss Jig – Step 9

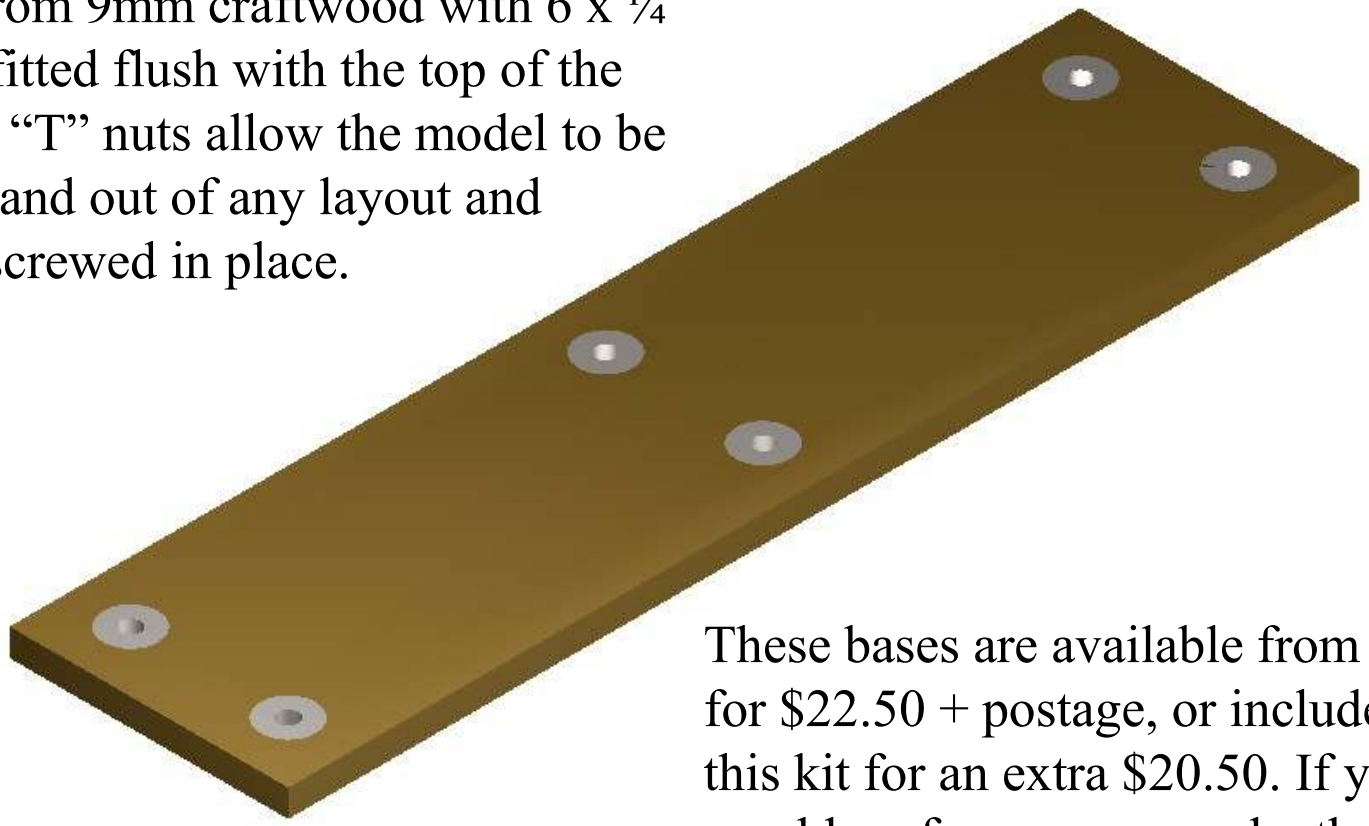
The finished truss roof with fascia and guttering after being removed from the jig. The task of removing the roof from the jig, should be done with great care, as damage could occur very easily.



Set the roof aside in a secure location until you are ready to attach it to the rail supports of the grain shed. Be extremely careful as the roof is fragile and damage can occur very easily.

The Grain Shed Base – Step 1

Like any building a good foundation is always a great start. The grain shed base is made from 9mm craftwood with 6 x ¼" "T" nuts fitted flush with the top of the base. The "T" nuts allow the model to be placed in and out of any layout and securely screwed in place.



These bases are available from KRM for $22.50 + postage, or included in this kit for an extra $20.50. If you would prefer, you can make the base yourself by using the acrylic base piece as a template.

The Grain Shed Base – Step 2

The acrylic base is simply glued to the timber base with contact cement (Quick Grip).

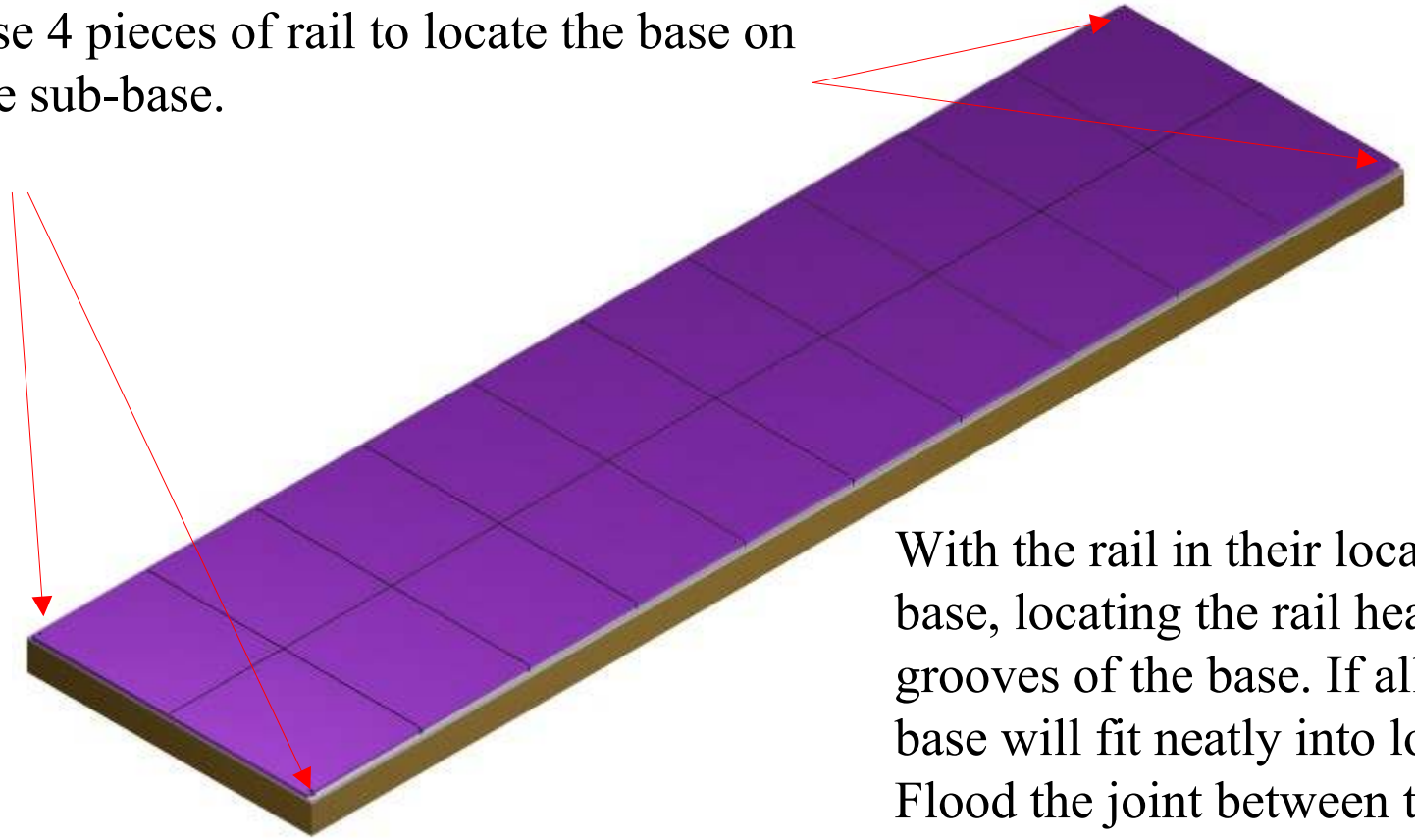
Press the glued parts together and leave overnight (With a heavy weight on them) for the parts to gain full contact.

WARNING - Avoid Quick Grip entering the support rail holes

The Grain Shed Base – Step 3

The base is glued to the sub base, but will need locating before this is attempted.

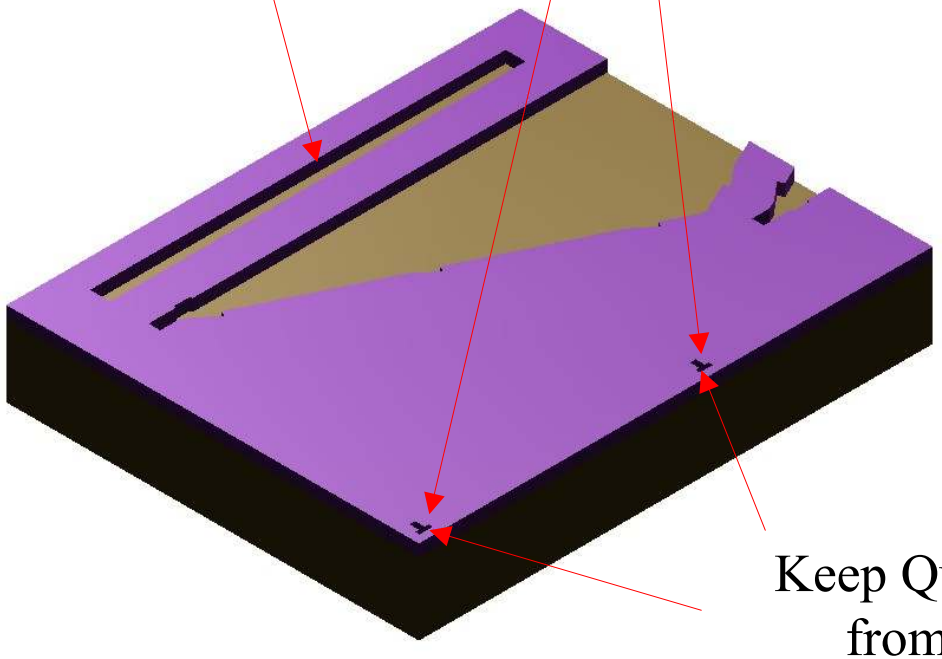
Use 4 pieces of rail to locate the base on the sub-base.

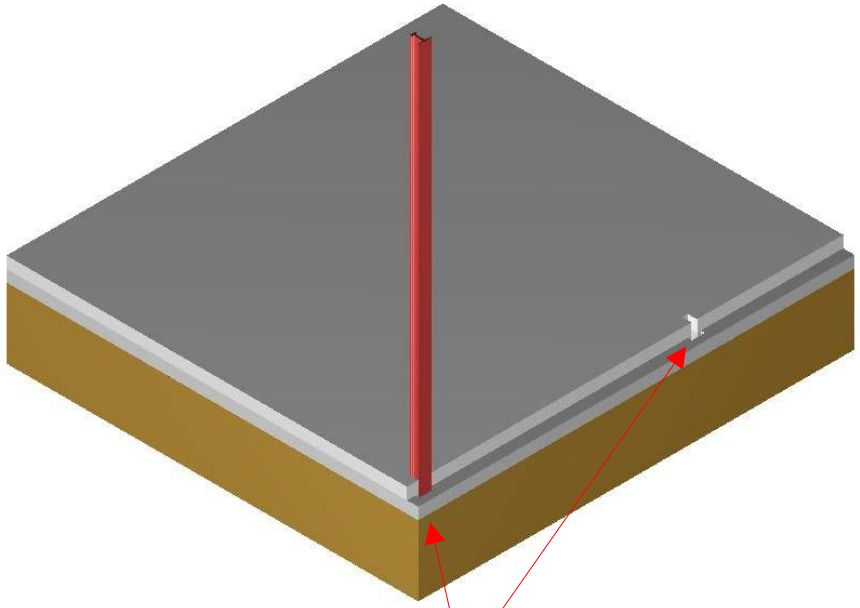


With the rail in their locations, fit the base, locating the rail heads into the grooves of the base. If all is well, the base will fit neatly into location. Flood the joint between the 2 acrylic pieces with glue, and clamp together, whilst drying.

The Grain Shed Base – Step 4

Sectional view of sub base, showing Go/No-G0 gauge and rail support locations



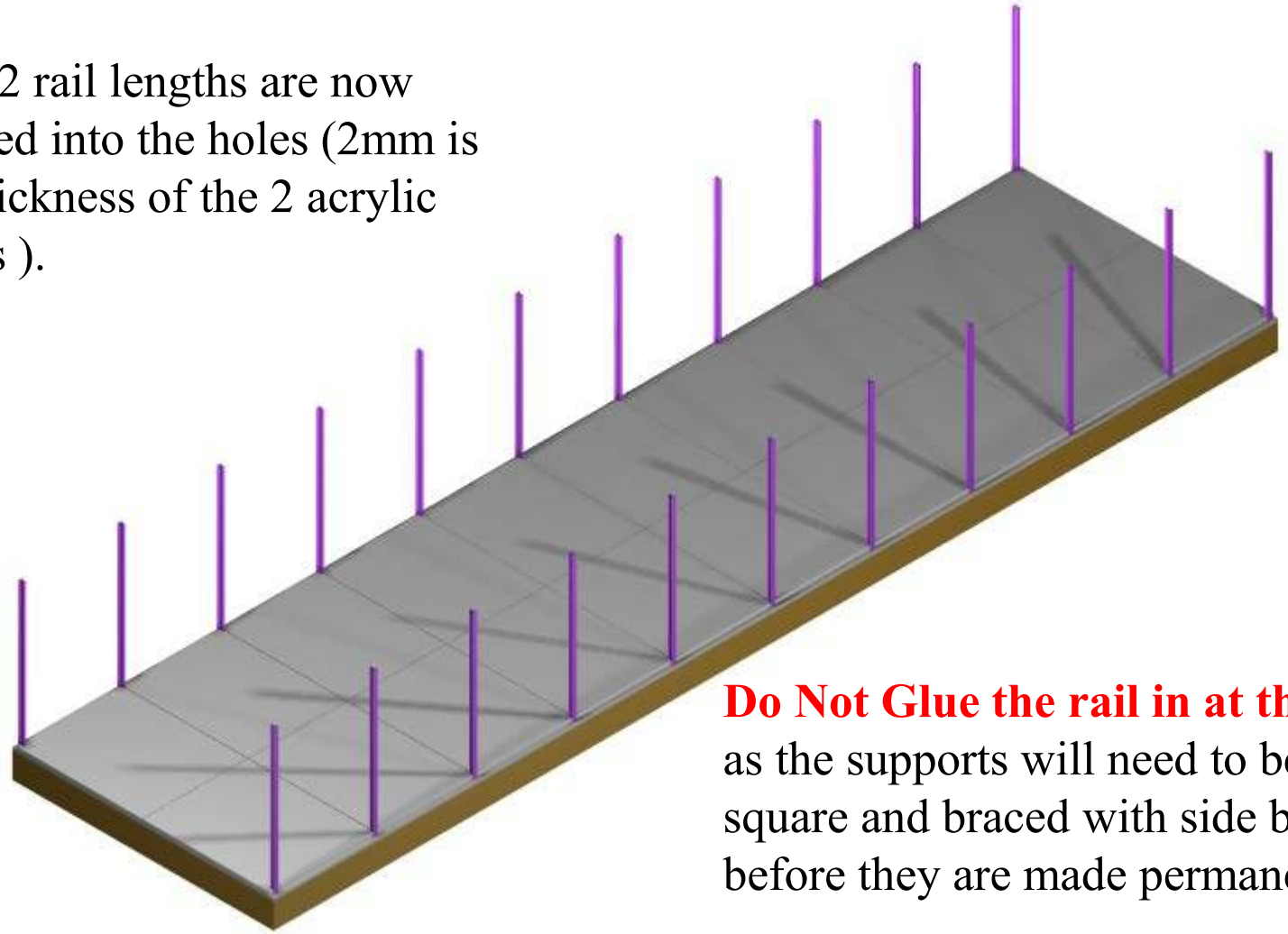


Sectional view of upper base showing edge and rail support locations

Keep Quick Grip away from these holes

The Grain Shed Base – Step 5

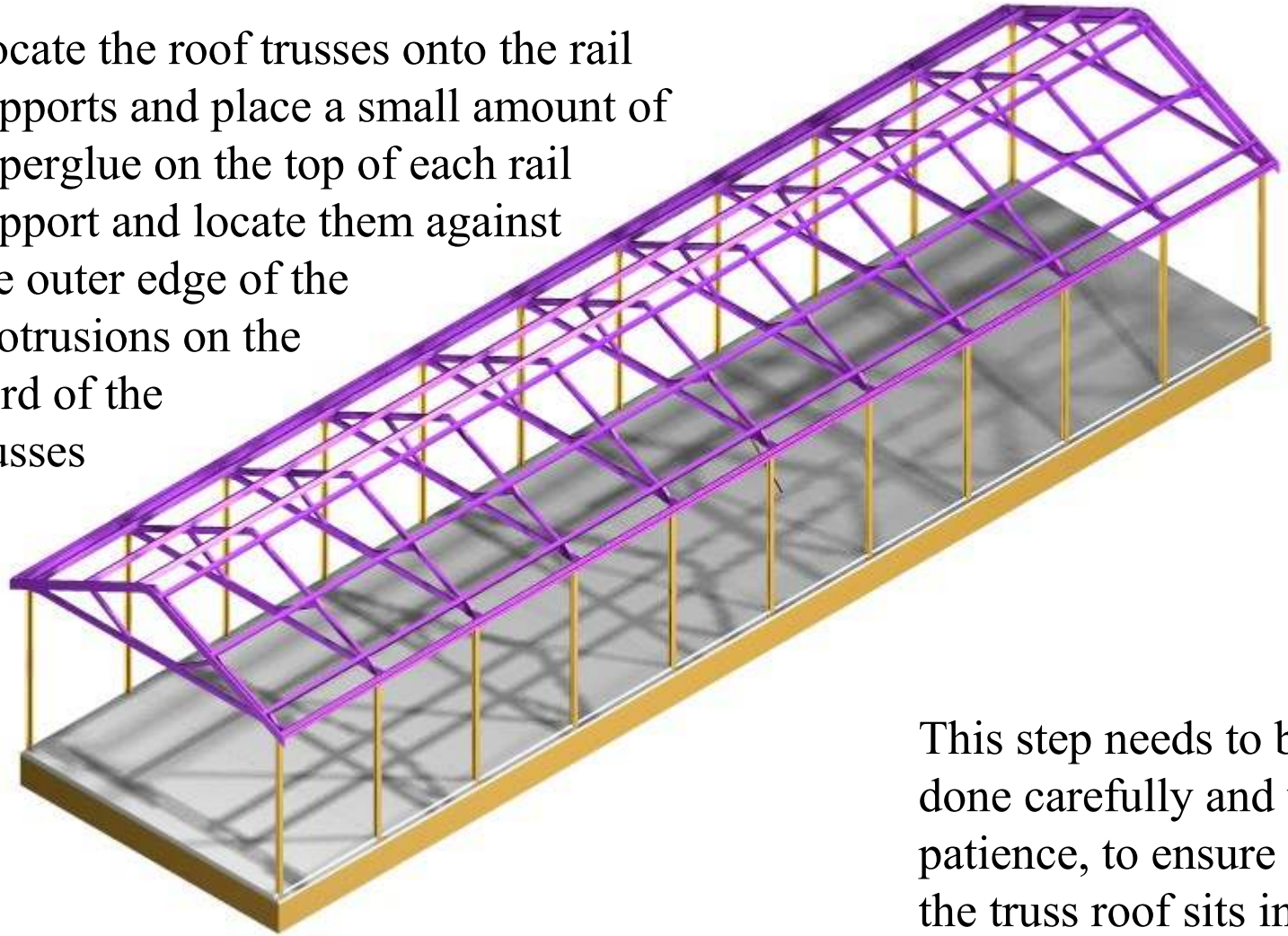
The 22 rail lengths are now inserted into the holes (2mm is the thickness of the 2 acrylic pieces).



Do Not Glue the rail in at this time, as the supports will need to be adjusted square and braced with side bracing before they are made permanent.

The Grain Shed – Step 1

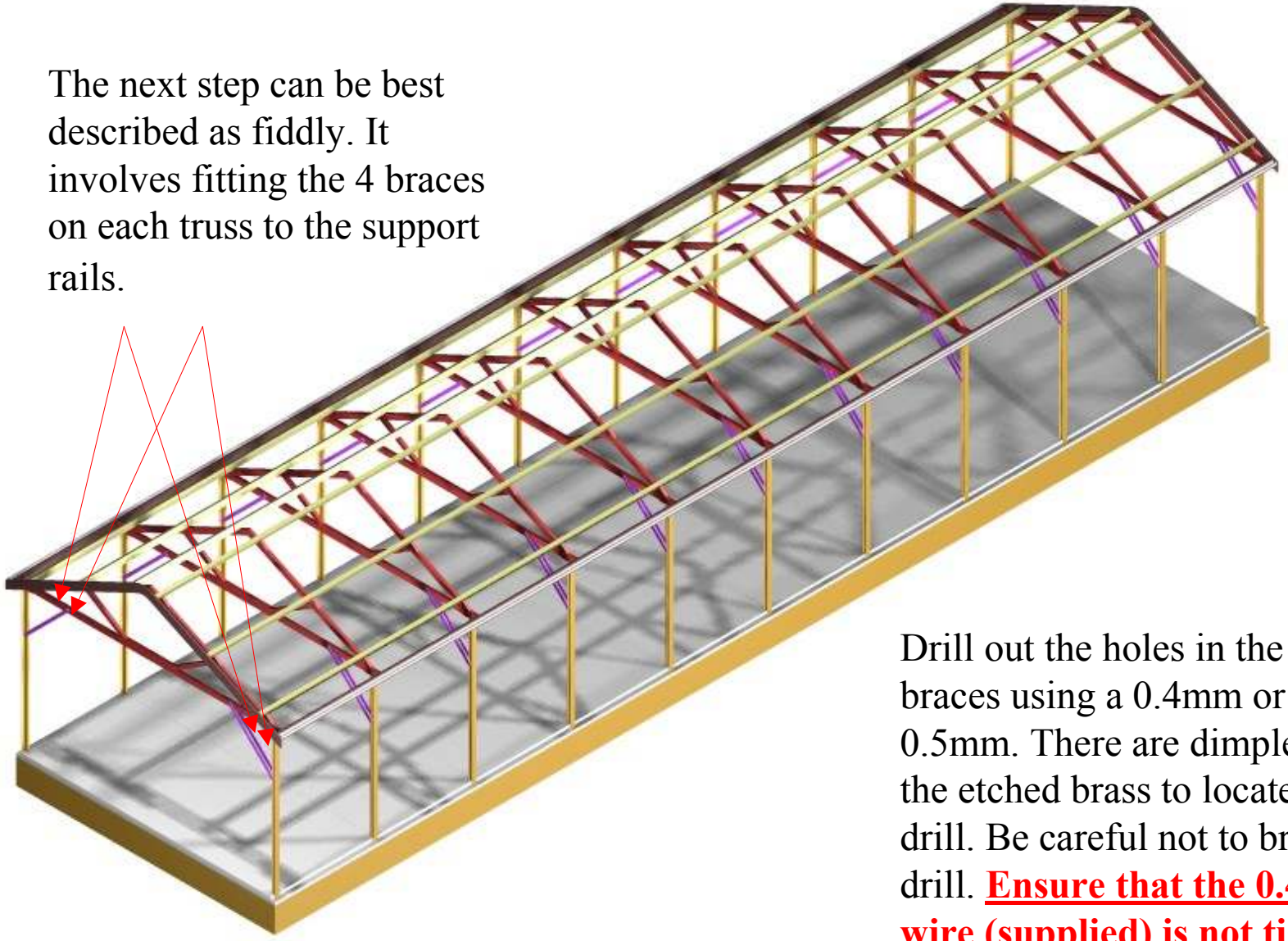
Locate the roof trusses onto the rail supports and place a small amount of superglue on the top of each rail support and locate them against the outer edge of the protrusions on the cord of the trusses



This step needs to be done carefully and with patience, to ensure that the truss roof sits in the correct location on the rail supports.

The Grain Shed – Step 2

The next step can be best described as fiddly. It involves fitting the 4 braces on each truss to the support rails.

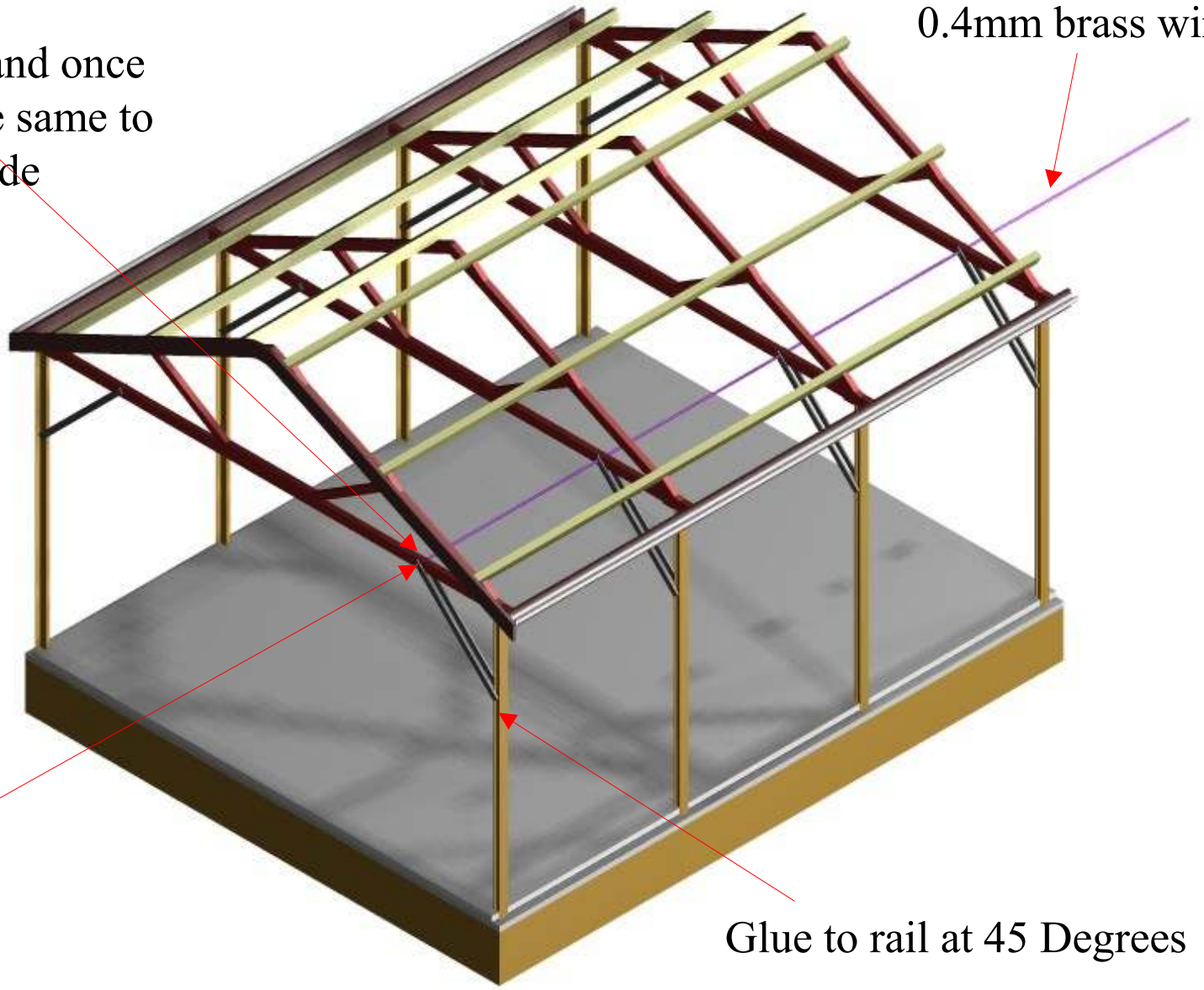


Drill out the holes in the etch braces using a 0.4mm or 0.5mm. There are dimples in the etched brass to locate the drill. Be careful not to brake the drill. **Ensure that the 0.4mm wire (supplied) is not tight in these holes**

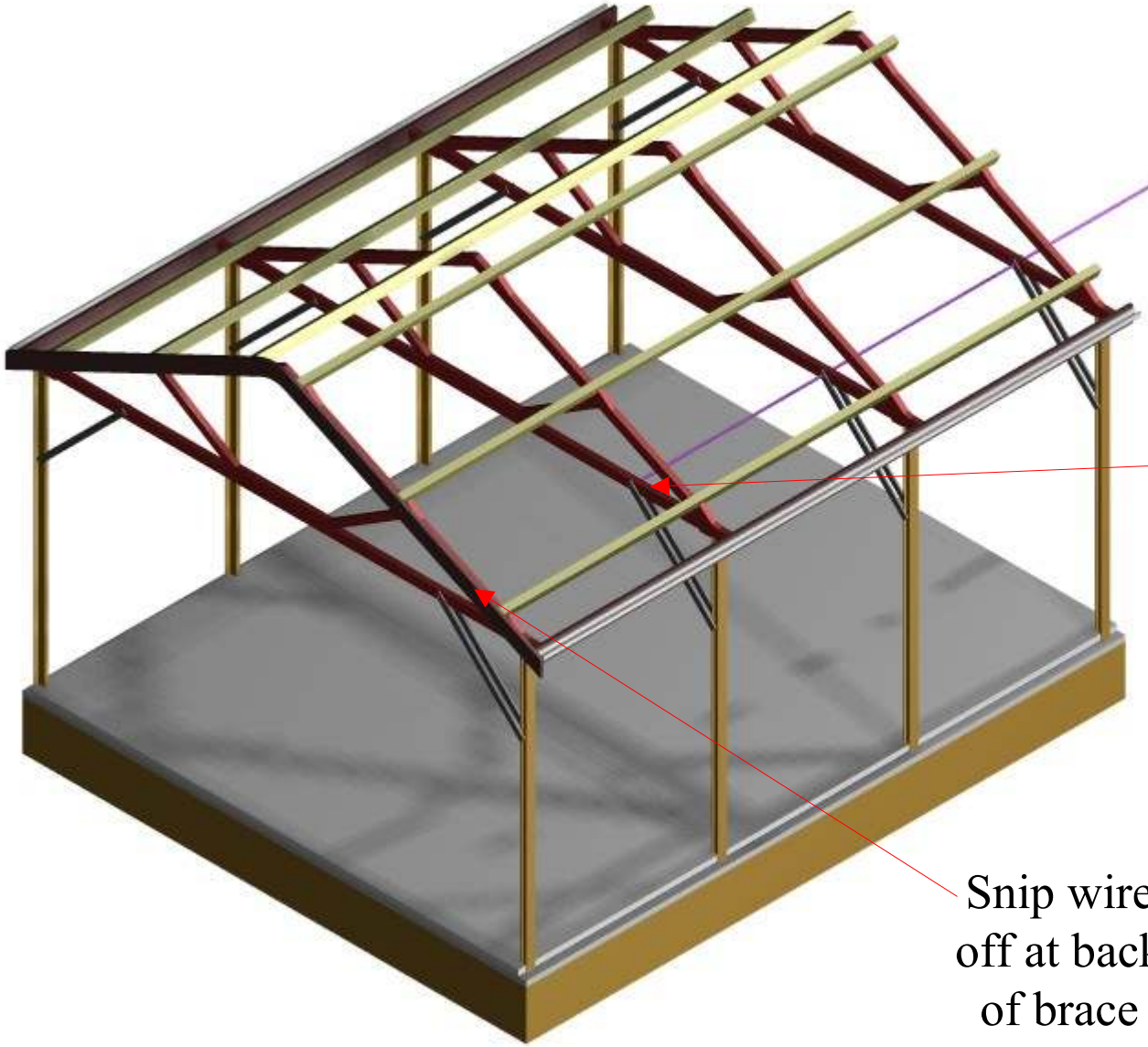
The Grain Shed – Step 3

- Locate a length of 0.4mm wire through the braces and the trusses on one side of the shed.
- Starting from one end, leave a small protrusion of wire on the outside of the outer brace.
- Locate and glue the 2 braces at 45 degrees to the rail.
- Hold and glue the wire, braces and truss together, allow to dry.
- Snip the wire on the inside of the inner brace.
- Move the wire along to the next truss and repeat the process.
- There should be ample 0.4mm wire supplied to secure all the braces to the trusses.
- Do be careful with superglue as it will run everywhere, so the simple solution is to use a toot pick to apply the glue.
- View the drawings on the next slide for a graphic explanation, “you know picture, 1000 words etc”.

The Grain Shed – Step 4



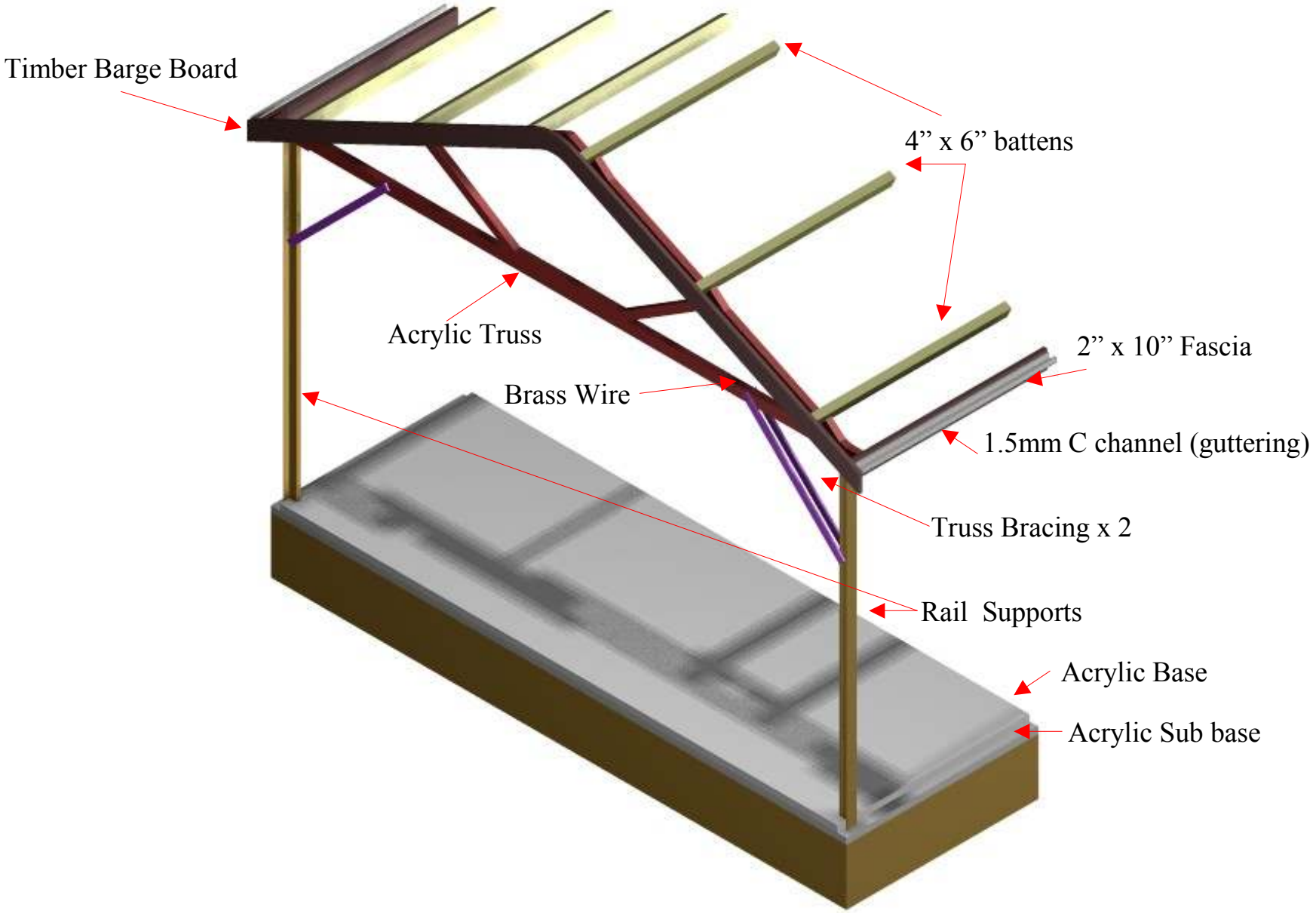
The Grain Shed – Step 5



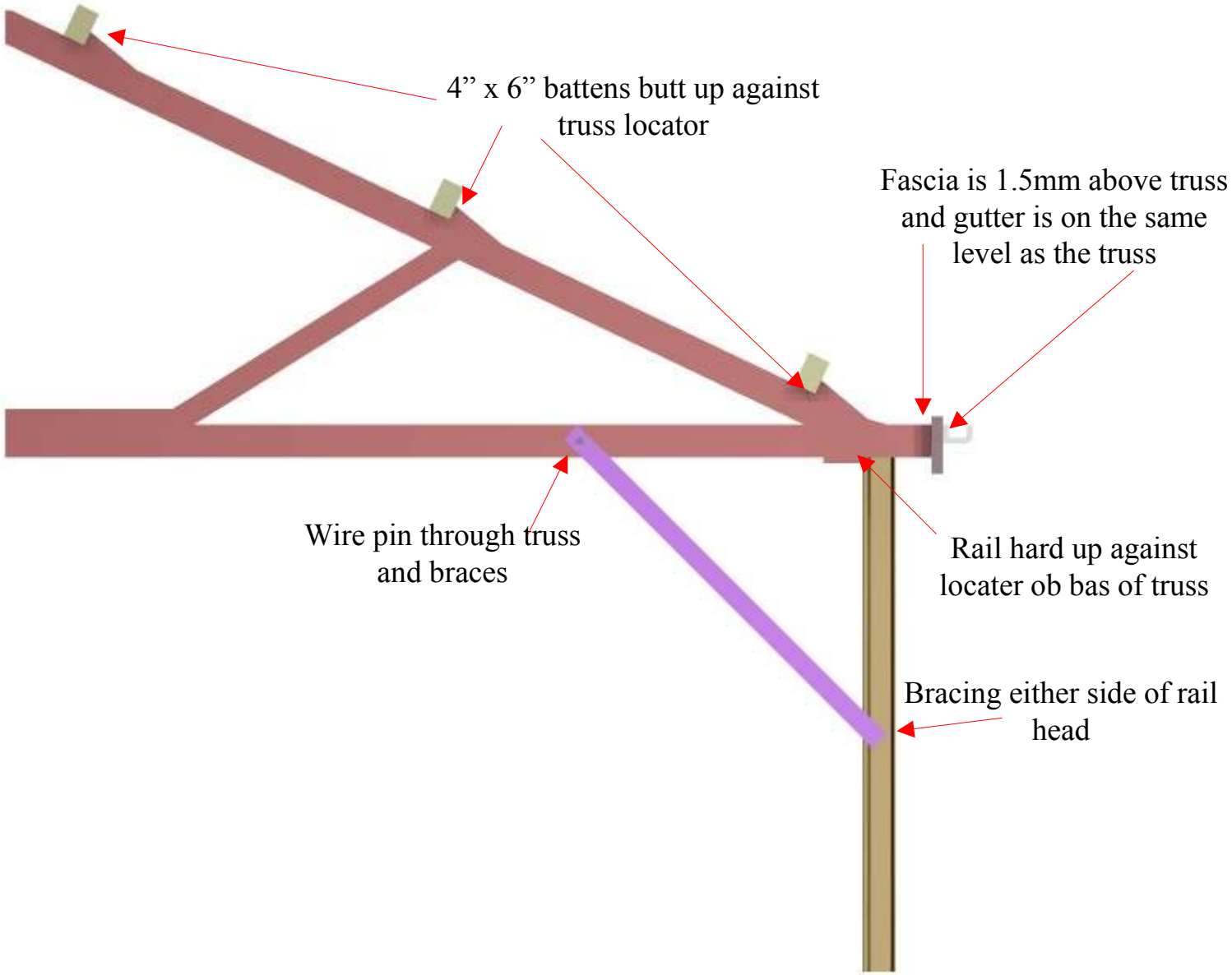
Move wire along and repeat the procedure for the next truss & brace combination

Snip wire off at back of brace

The Grain Shed – Step 5a



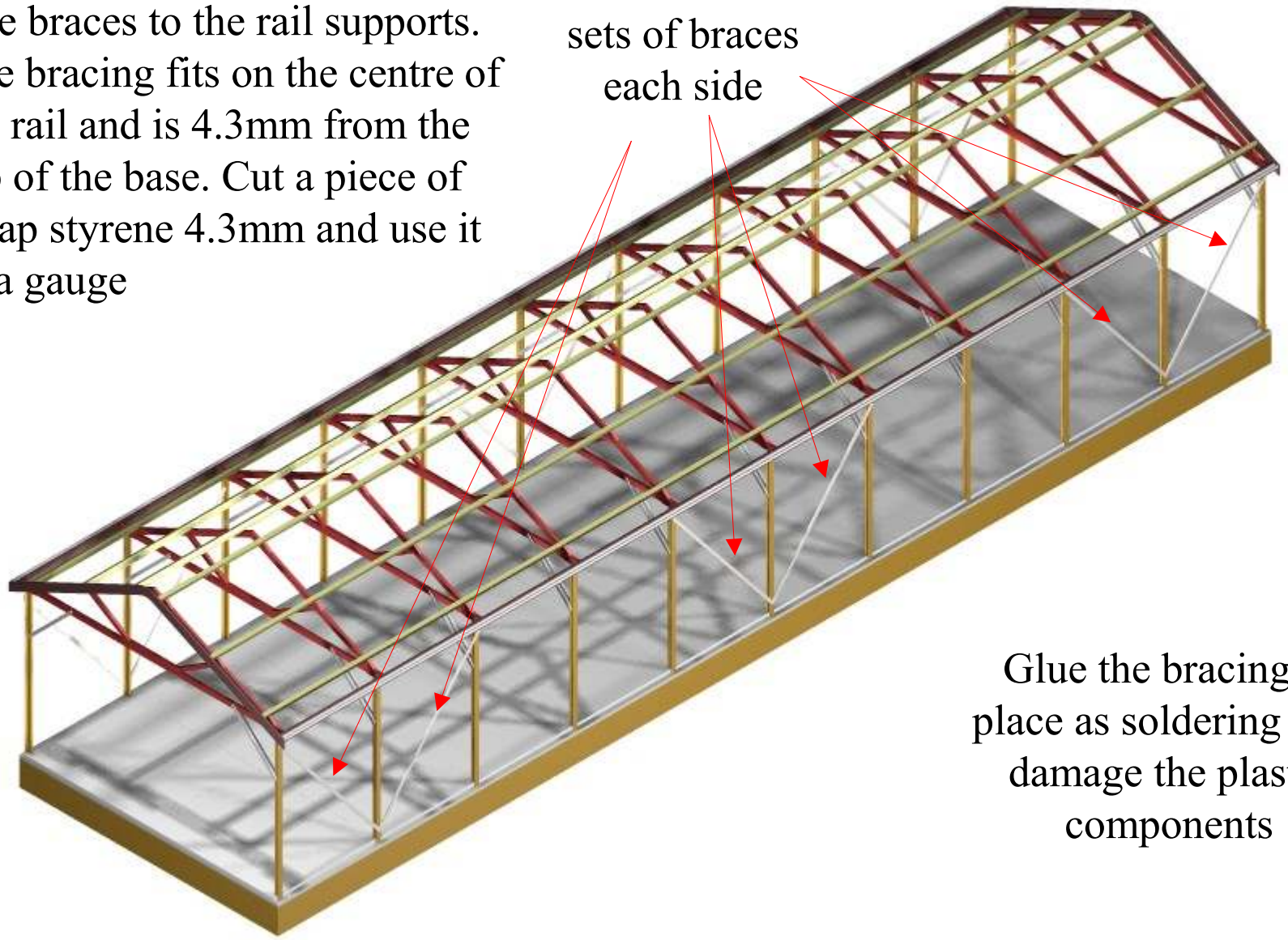
The Grain Shed – Step 5b



The Grain Shed – Step 6

This step involves fitting the side braces to the rail supports. The bracing fits on the centre of the rail and is 4.3mm from the top of the base. Cut a piece of scrap styrene 4.3mm and use it as a gauge

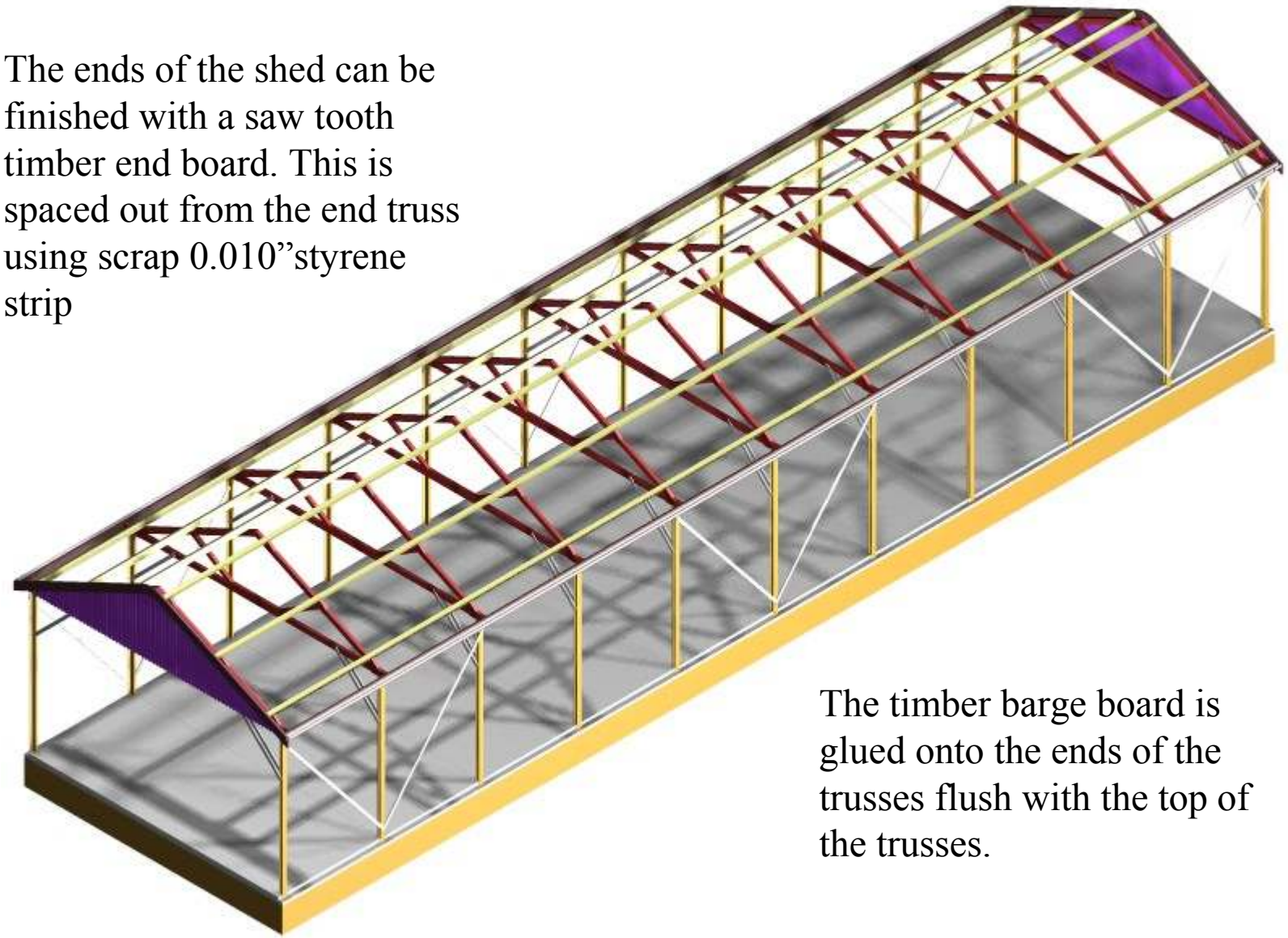
There are 3 sets of braces each side



Glue the bracing in place as soldering may damage the plastic components

The Grain Shed – Step 7

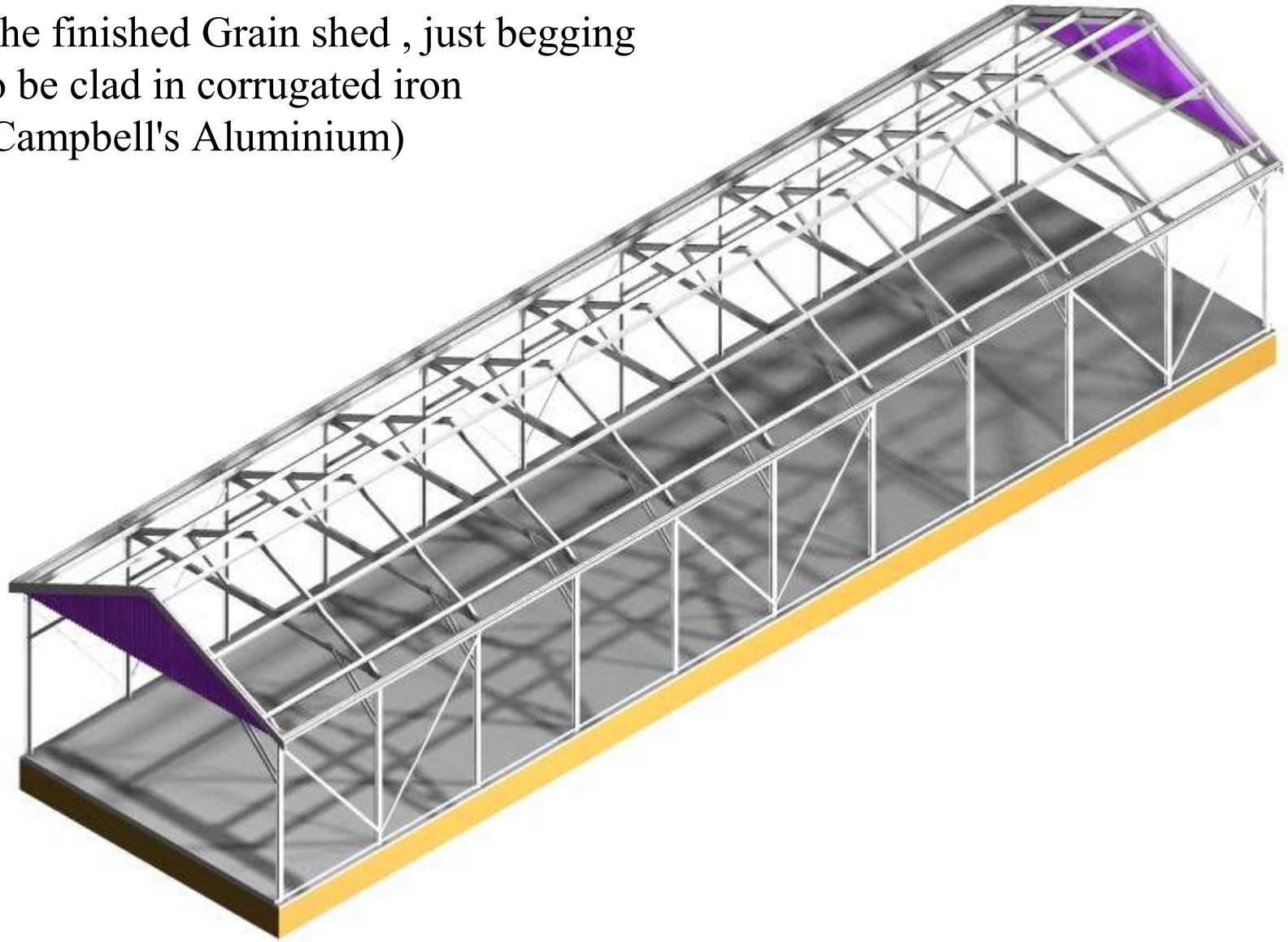
The ends of the shed can be finished with a saw tooth timber end board. This is spaced out from the end truss using scrap 0.010”styrene strip



The timber barge board is glued onto the ends of the trusses flush with the top of the trusses.

The Grain Shed – Step 8

The finished Grain shed , just begging
to be clad in corrugated iron
(Campbell's Aluminium)

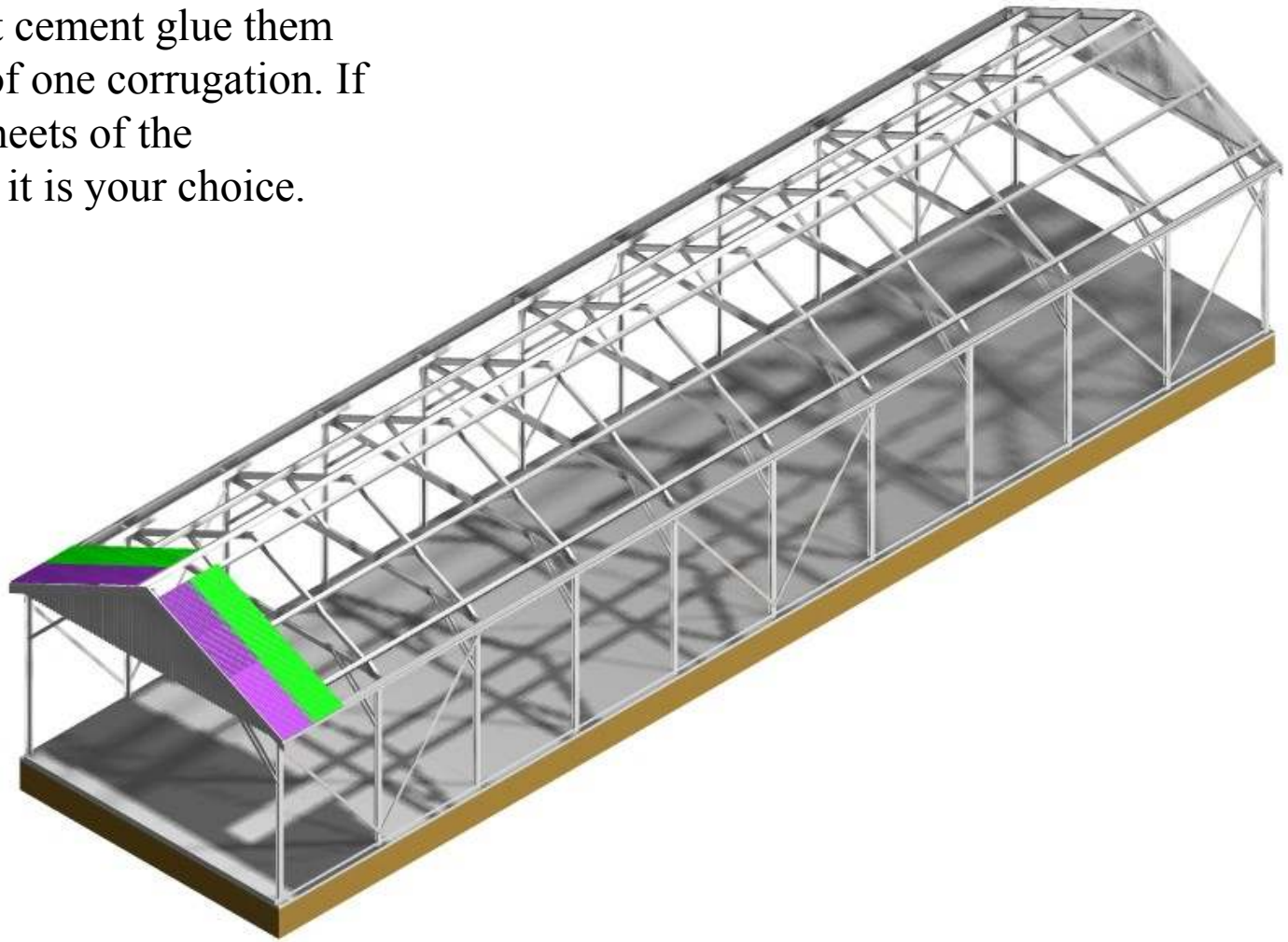


The Grain Shed – Step 9

The grain shed is clad in Campbell's Corrugated Aluminium.

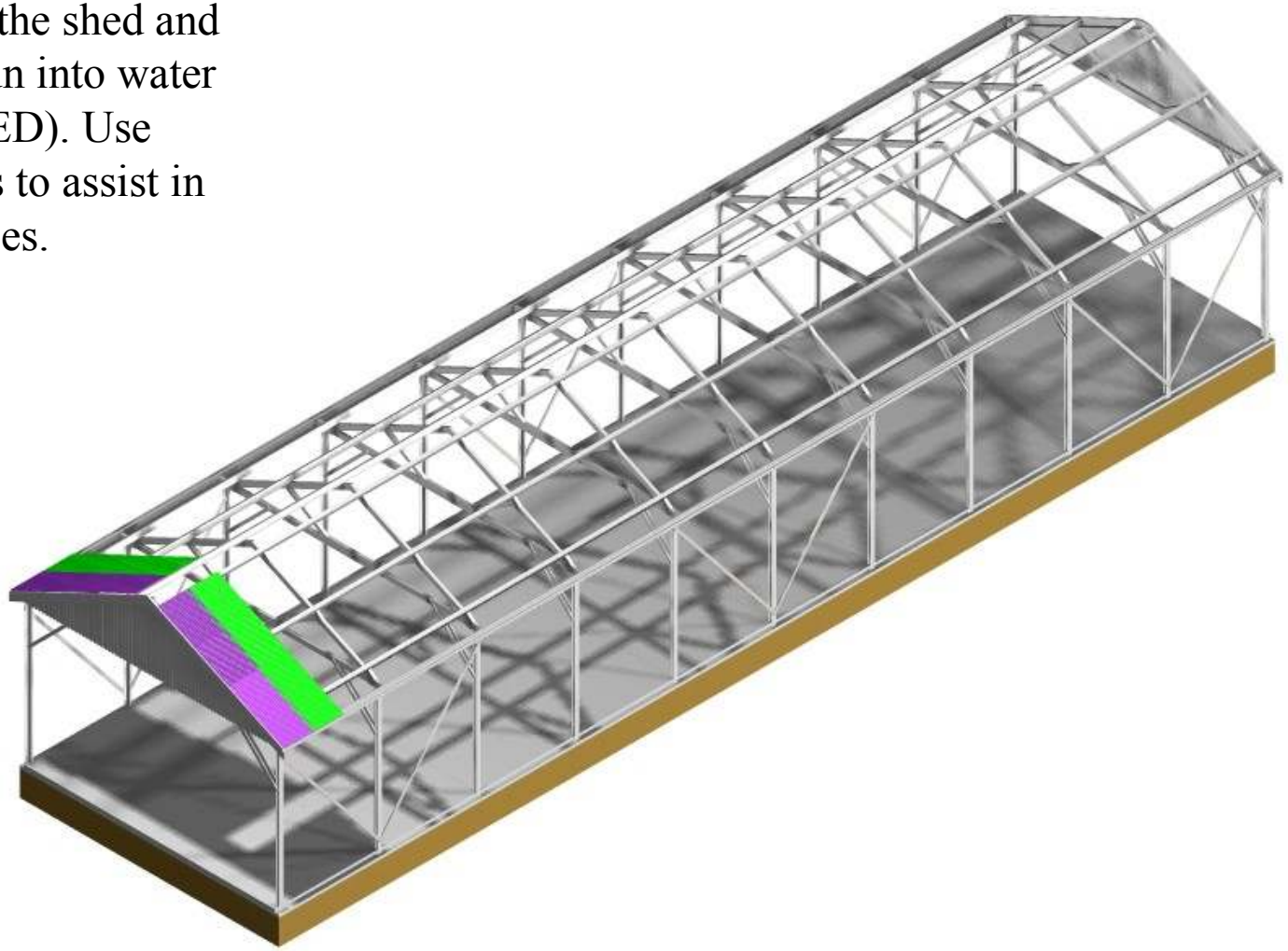
I prefer to cut each sheet into individual strips and using contact cement glue them down with an overlap of one corrugation. If you prefer to use full sheets of the aluminium, this is fine, it is your choice.

Start with the outer sheets, over lapping the next sheets (both sides) finishing with the top curved sheets, which are formed over a 12mm dowel. The roof peak is curved corrugated aluminium, not a ridge (as with most sheds).



The Grain Shed – Step 10

The down pipes are formed from 1mm brass wire (supplied) and are located at one end of the shed and allow roof water to run into water tanks (NOT SUPPLIED). Use photos of grain sheds to assist in forming the down pipes.



The Grain Shed – Painting

➢Timber Base	Flat Black
➢Base & Sub-base	Concrete
➢Rail Supports	Rust
➢Trusses	Brown
➢Truss Bracing	Rust
➢Battens	Brown
➢Fascia	Colour of Choice
➢Guttering	Colour of Choice
➢End Saw Tooth Timber	Brown
➢Barge Boards	Sane as Fascia
➢Side Bracing	Rust
➢Corrugated Iron	SP Lettering Gray
➢Down pipes	Same at Guttering

It would be wise to paint the components as you go to avoid the problem of access later on. You can do touchups at the end when all the components are glued together.

Because of the age of this type of shed, the shed would normally be severely weathered. , unless it was brand new.

The bas eof the shed has etched lines indicating 10ft slabs of concrete, and grass would normally grow between the slabs (expansion joints).

There would also be spills of grain sacks leaving deposits of grain all over the place, some germinating some not.

In later years white remnants of Superphosphate would also be on the concrete base.

The Grain Shed – Painting Tips & Weathering

It would be wise to paint the components as you go to avoid the problem of access later on. You can do touch-ups at the end when all the components are glued together.

Because of the age of this type of shed, they would normally be severely weathered, unless it was brand new.

The base of the shed has etched lines indicating 10ft slabs of concrete, and grass would normally grow between the slabs (expansion joints).

There would also be spills of grain sacks leaving deposits of grain all over the place, some germinating some not.

In later years white remnants of Superphosphate would also be on the concrete base.

The corrugated iron roof would also be extremely weathered (Rusted) or brand new (replaced)

Dry brushing and the use of water colours and powders for weathered, would suit this kit really well.

In Conclusion

I hope that you have enjoyed working with this kit and are happy with the result. If for whatever reason you have found a problem with this kit, or there is something that doesn't make sense, or just doesn't work, you can contact me on any of the methods listed below. Or if you have a suggestion that may improve the kit or the methods suggested to build the kit, please let me know.

It is very important that modellers have their say in regard to Keiran Ryan Model kits, and feedback is not just encouraged but is very much preferred.

Positive or negative, feedback has it's place in improving this kit, and for improving other kits in the future.

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