CLAY MODEL PREPARATION

Simplified step-by-step guide:

“We affirm that the world's magnificence has been enriched by a new beauty: the beauty of speed. A racing car whose hood is adorned with great pipes, like serpents of explosive breath – a roaring car that seems to run on grapeshot is more beautiful than The Victory of Samothrace.” (1910)

Filippo Tommaso Emilio Marinetti (December 22, 1876 – December 2, 1944) was an Italian ideologue, poet, editor, and main founder of the futurist movement of the early 20th century.

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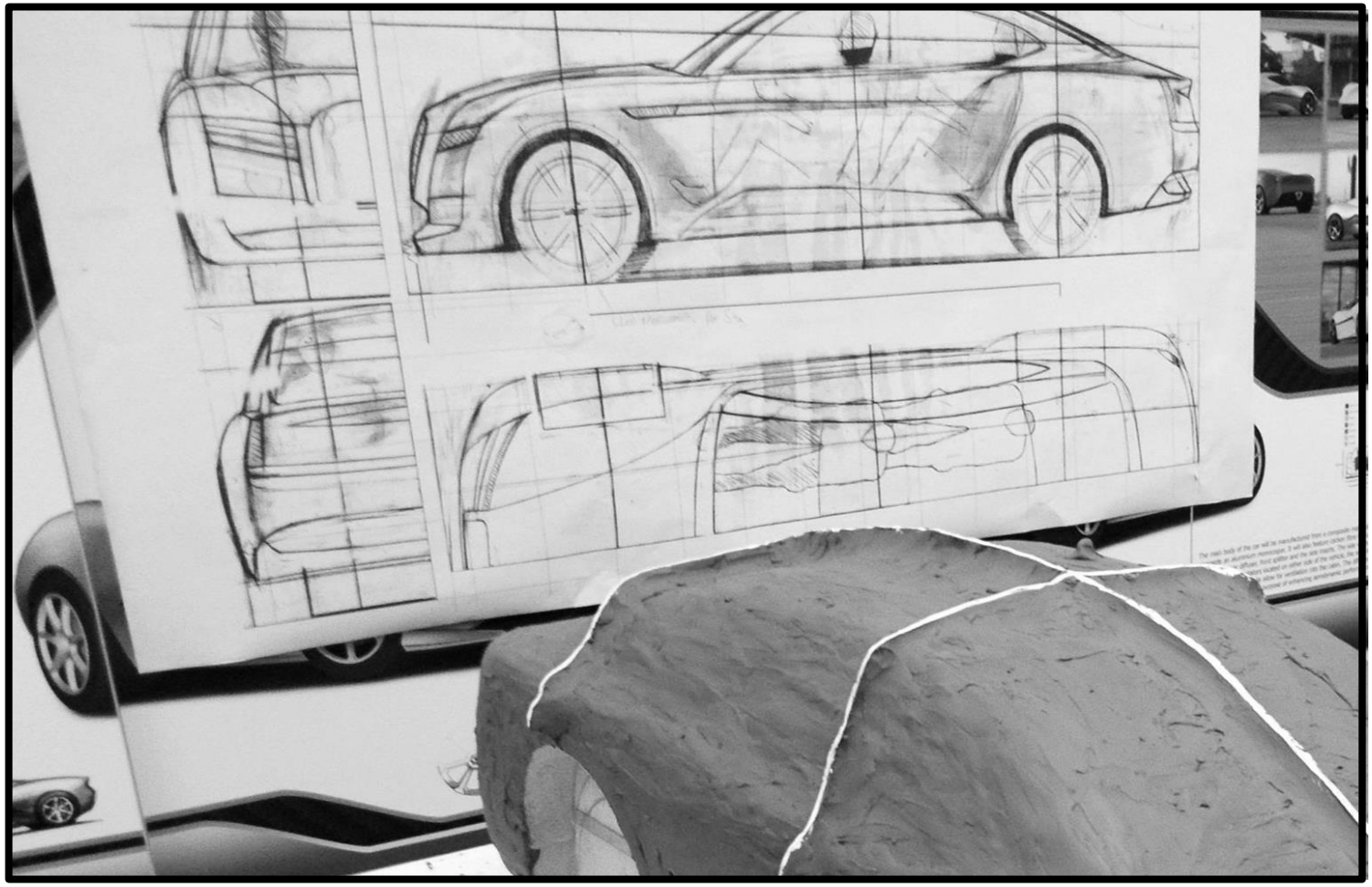
General Arrangement drawing (GA) completed and signed off by your tutor.
The sign-off sheet allows access to workshops and materials.

The drawing should be to the size you intend to build the model i.e. 1:4 scale, 1:5, 1:10 etc.

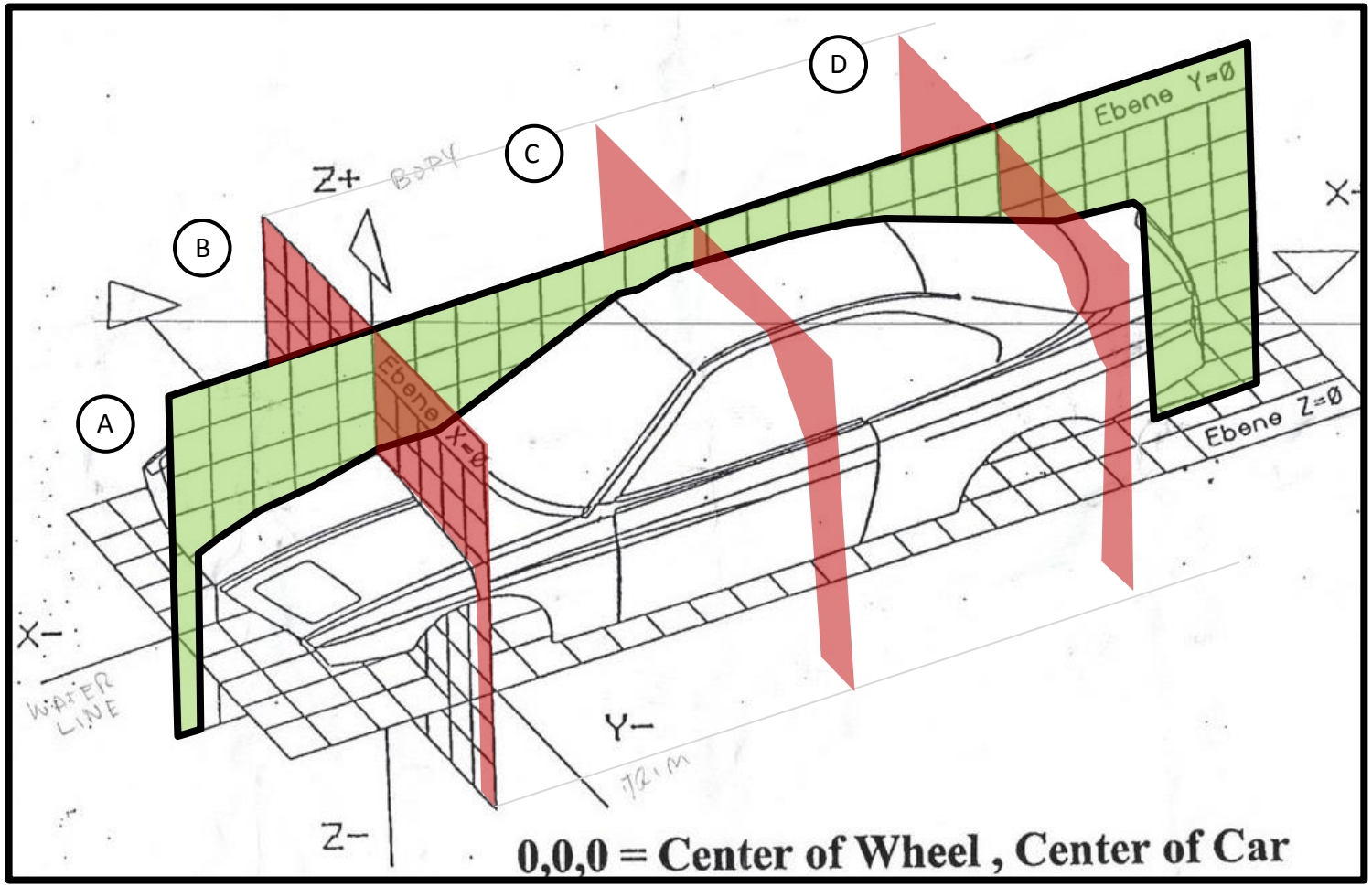
Overall size should be <u>smaller than</u> the size of the table tops in the clay workshop- 1500x700mm.



Print out several copies of the GA drawing.

Use one of the copies to trace and cut 4 plastic templates-
(A) Longitudinal,
(B) Transverse through front wheel,
(C) Transverse through driver head,
(D) Transverse through rear wheel.

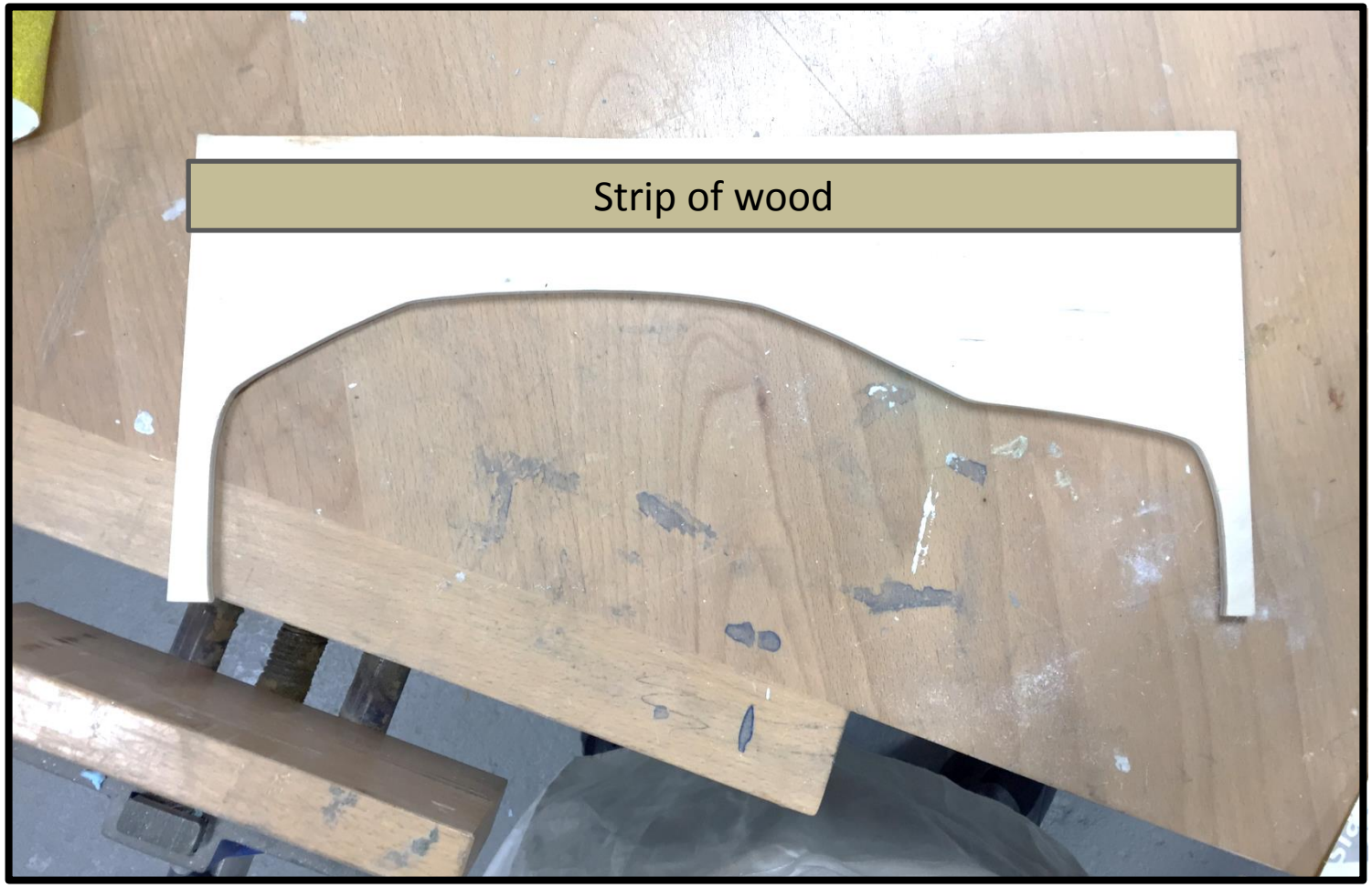
N.B. the templates do not slot together, make them separately.


A
B
C
D
Z+
Ebene Y=Ø
Ebene X=Ø
Ebene Z=Ø
X-
X-
Y-
Z-
WATER LINE
0,0,0 = Center of Wheel , Center of Car

Example of longitudinal plastic template.

Do a good job of these as they will save a lot of work helping to put the correct thickness of clay on your buck.

It may help to re-enforce the longer templates with a strip of wood.

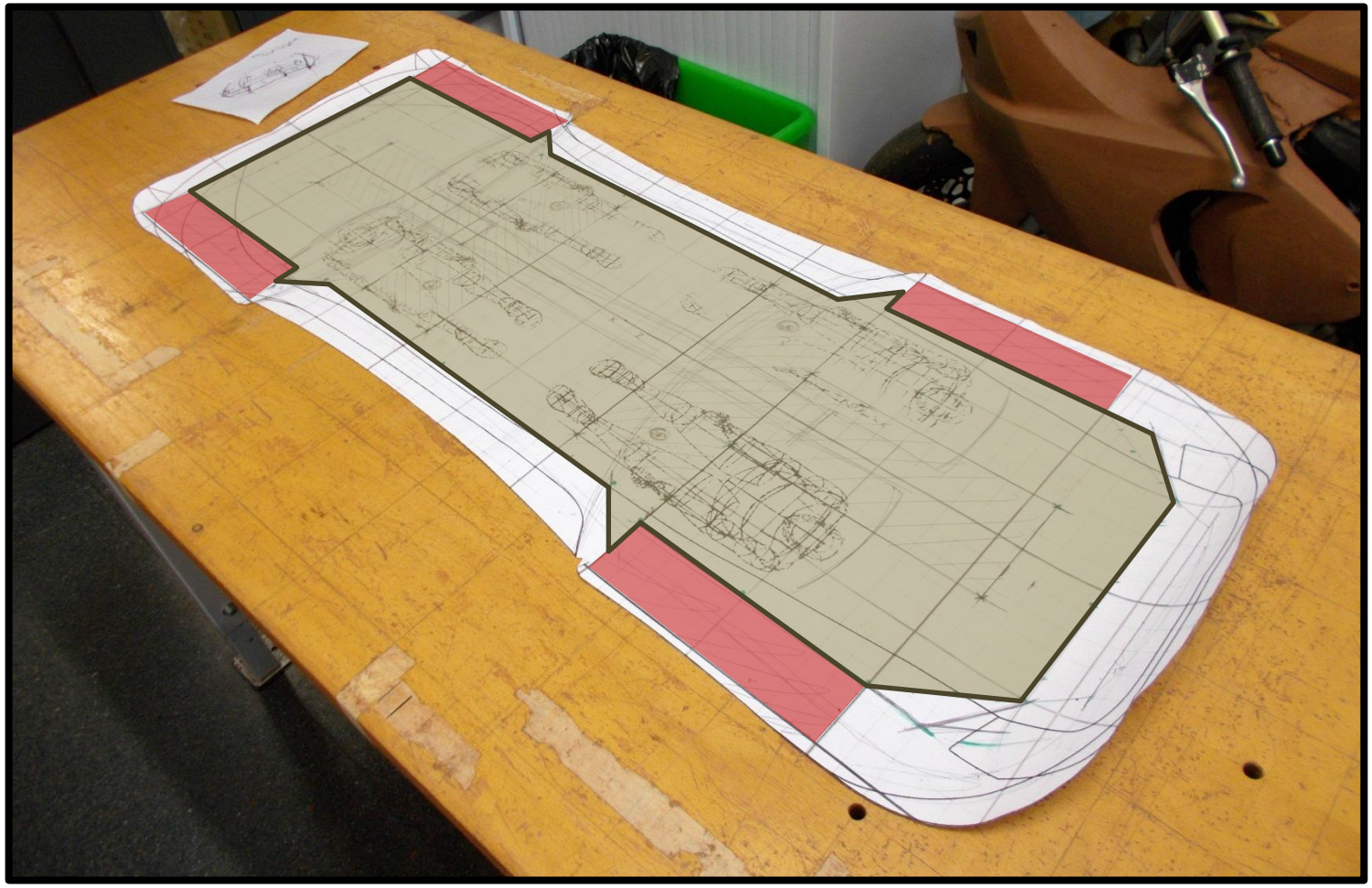

Strip of wood

Use another of the GA drawing copies to cut and trace the ‘footprint’ of your project.

Plan to cut the base board of your project 30-50mm inboard of the clay surface.

Position the wheels (if there are any).

Use only straight (easy to cut on the band saw) lines.



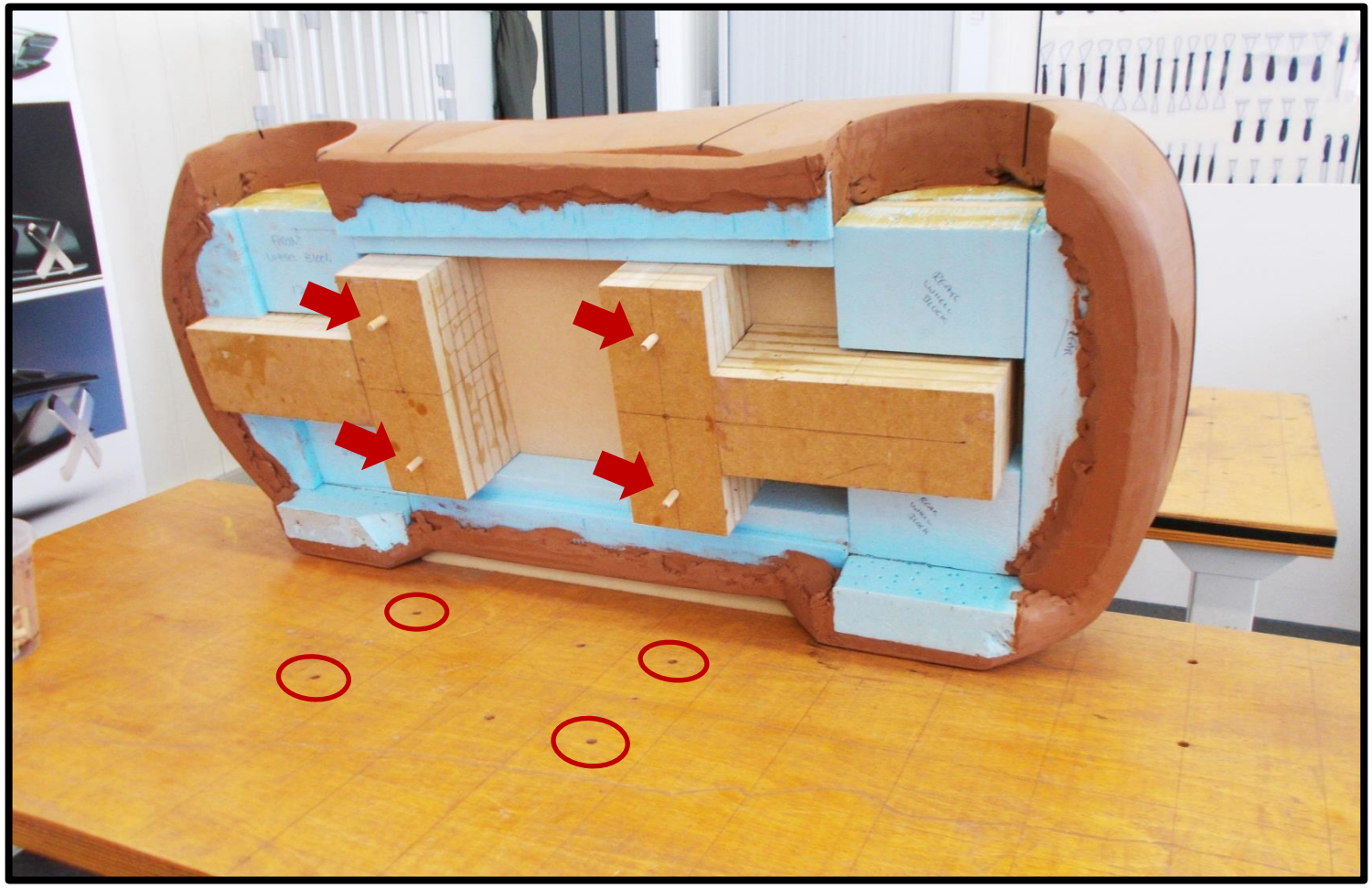
The GA is also used as a guide to position the base board.

First job is to make ‘T’ shaped blocks to support the base board at the desired height.

The blocks have dowels which correspond to holes in the surface of the table top to fix the buck in position.

There is a template available to help drill the 9mm dowel holes accurately.

Note how the blue foam is glued around the ‘T’ blocks under your baseboard.

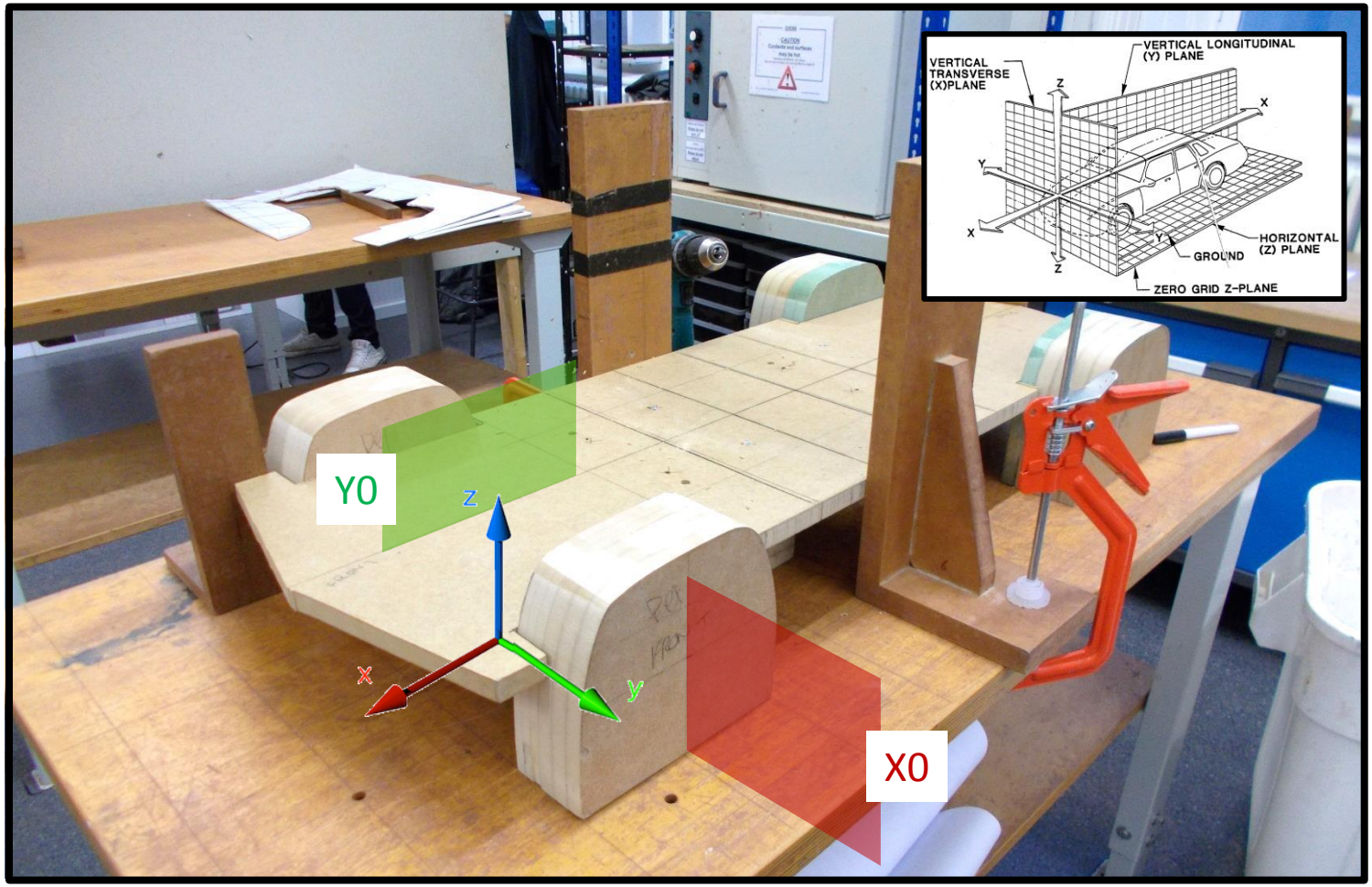


In addition, the GA is used as a guide to cut the wheel arch formers .

Base board is positioned at a height corresponding to the wheel centres or widest part of your model.

The assembly is positioned longitudinally on the centre line marked on the table Y0.

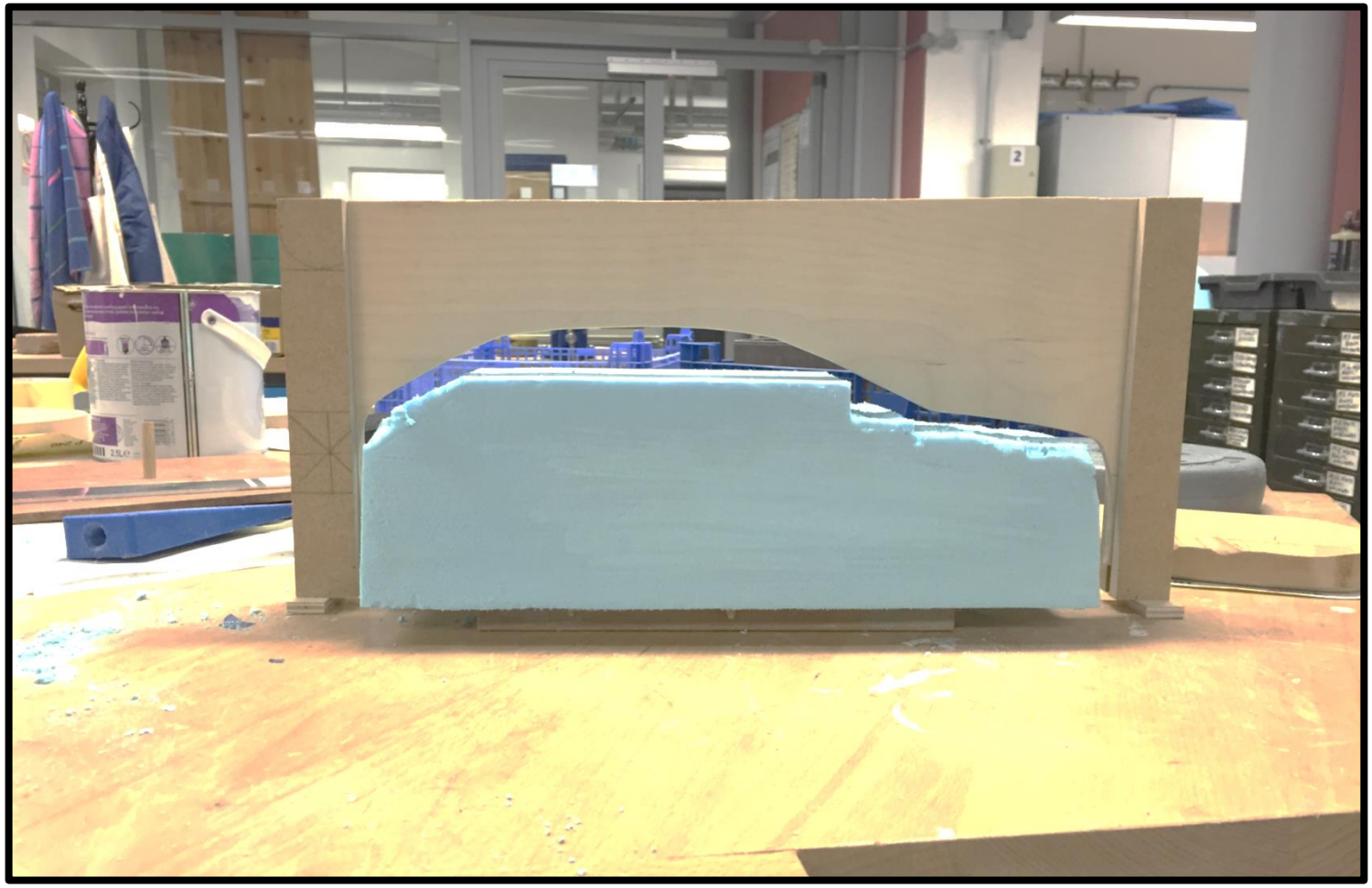
The front wheel axis is positioned on a grid line chosen to be X0.


VERTICAL LONGITUDINAL (Y) PLANE
VERTICAL TRANSVERSE (X)PLANE
HORIZONTAL (Z) PLANE
GROUND
ZERO GRID Z-PLANE
Y0
X0
z
x
y

Use the 4 templates to help mark out and cut blue foam.

On a 1:4 model, plan to cut the foam about 15- 20mm in from the proposed clay surface.

Care taken here will mean <u>much less work</u> loading clay.

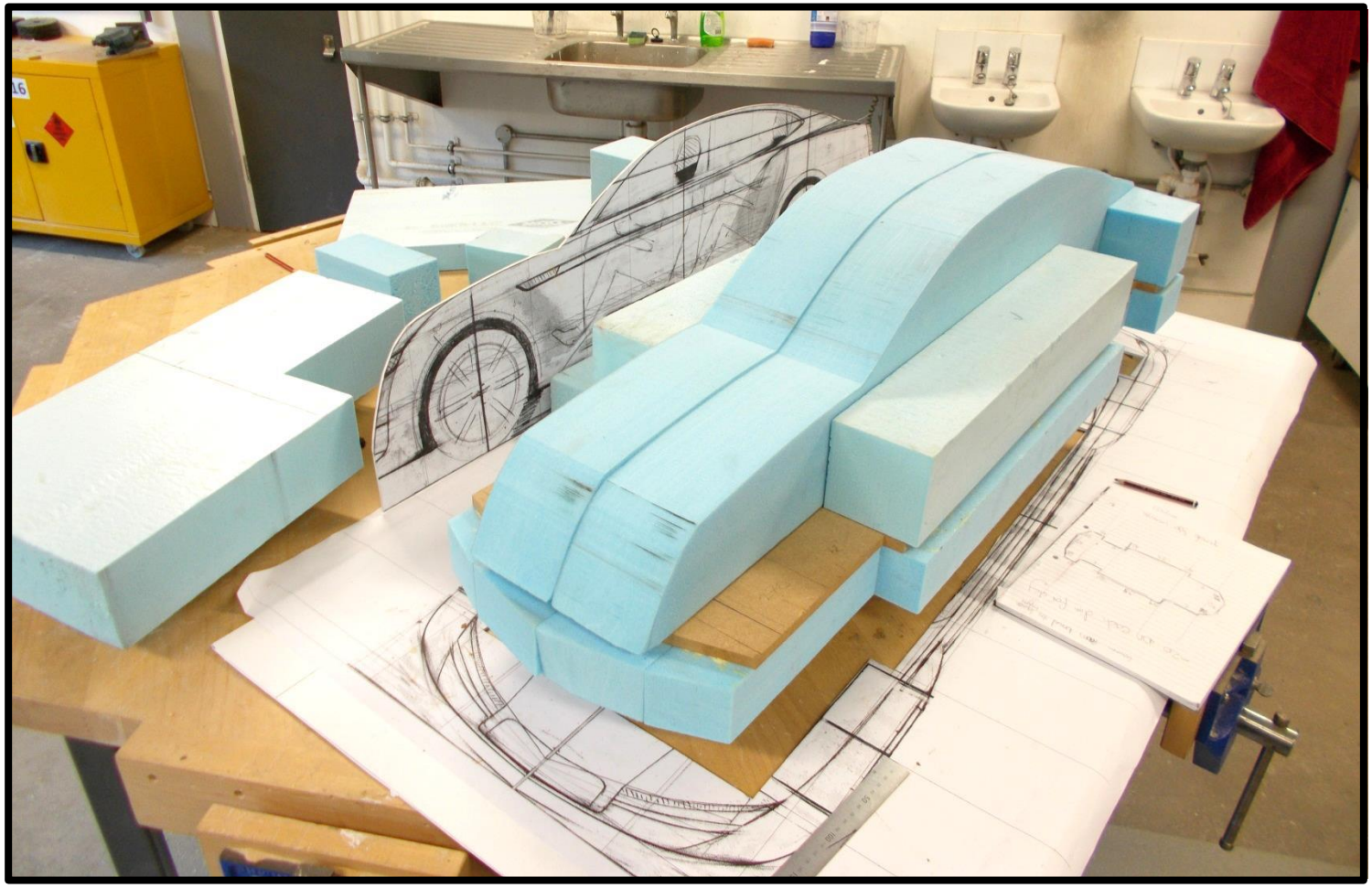


Centre of buck for 1:5 or 1:4 scale usually cut from two 100mm slabs of blue foam.

The rest is filled in using smaller pieces using your 4 templates as a guide.

Note there is foam underneath the baseboard which is usually glued on first (upside-down, see page 13).

Expanding polyurethane glue should be used to fix the blue foam to the baseboard- 'Gorilla' brand, etc.
<u>Do not get this glue on your skin.</u>



Continue using the 4 templates as a guide to help shape blue foam 20mm below the proposed clay surface.

Common woodwork tools such as ‘Surform’ rasps and sanding blocks are good for this (see page 35).

The surface of the foam is punched all over with a sharp pencil or similar to make small holes. Shellac can be applied sparingly (as shown) to help clay adhesion .

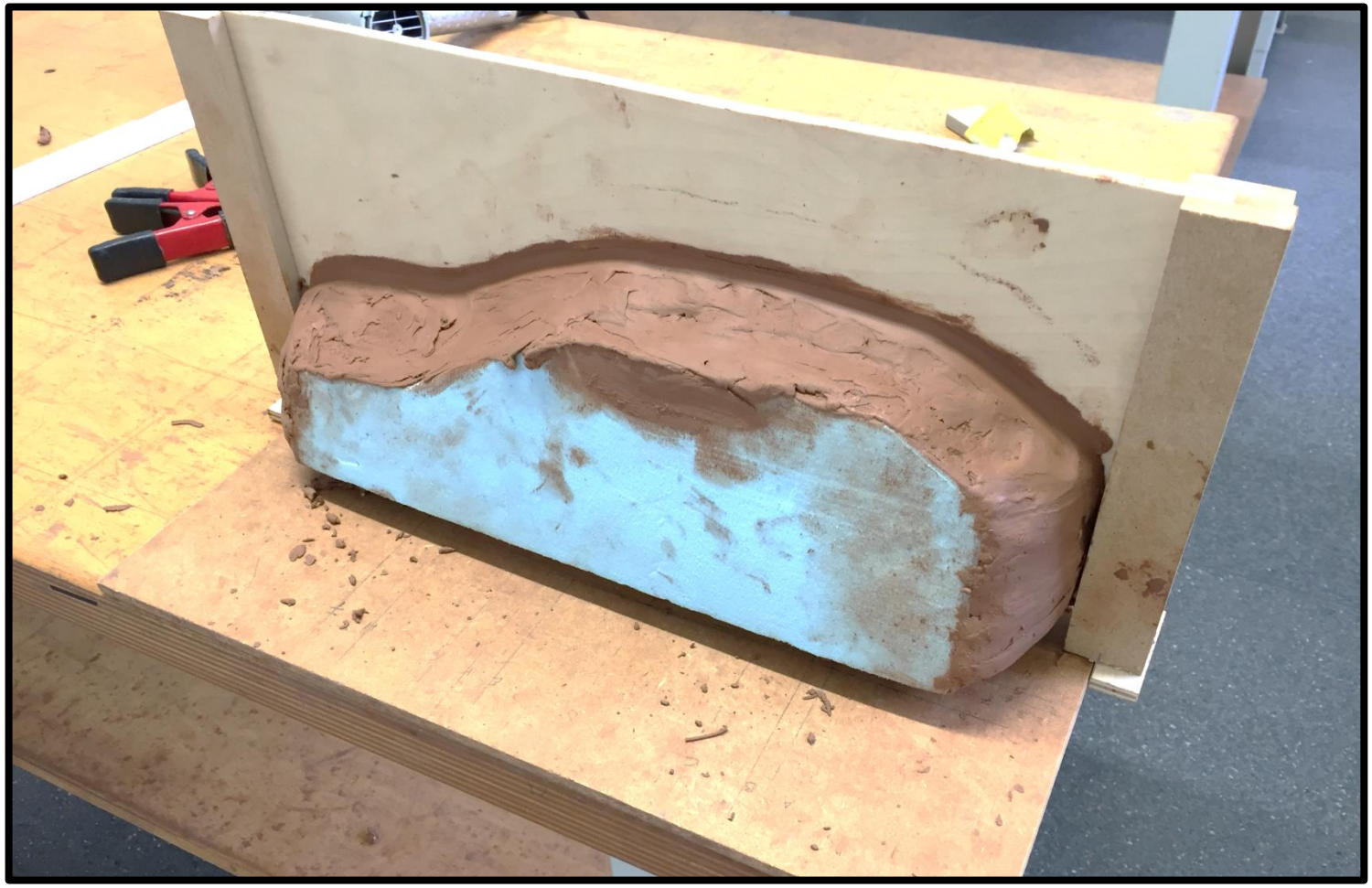
The templates are also used as guides to begin applying clay.

A thin ‘skin’ of clay is applied all over the foam taking care to push the warm clay into the surface for good adhesion.

Here the Longitudinal template is being used to build a central ridge of clay which will help control the thickness accurately.

The clay is at 60 C in the ovens so some care should be taken.

Buy your own blue Nitrile gloves if you have sensitive skin.



Here you can see the thin skin of clay all over the blue foam.
Some correction fluid has been applied to the ridges built using the templates.
Additional pyramids of clay are applied between the ridges to help control clay thickness.
Add clay a little at a time being careful to spread it on firmly with your fingers until the correction fluid spots are flush with the surface .
Then the clay is thick enough to start modelling.

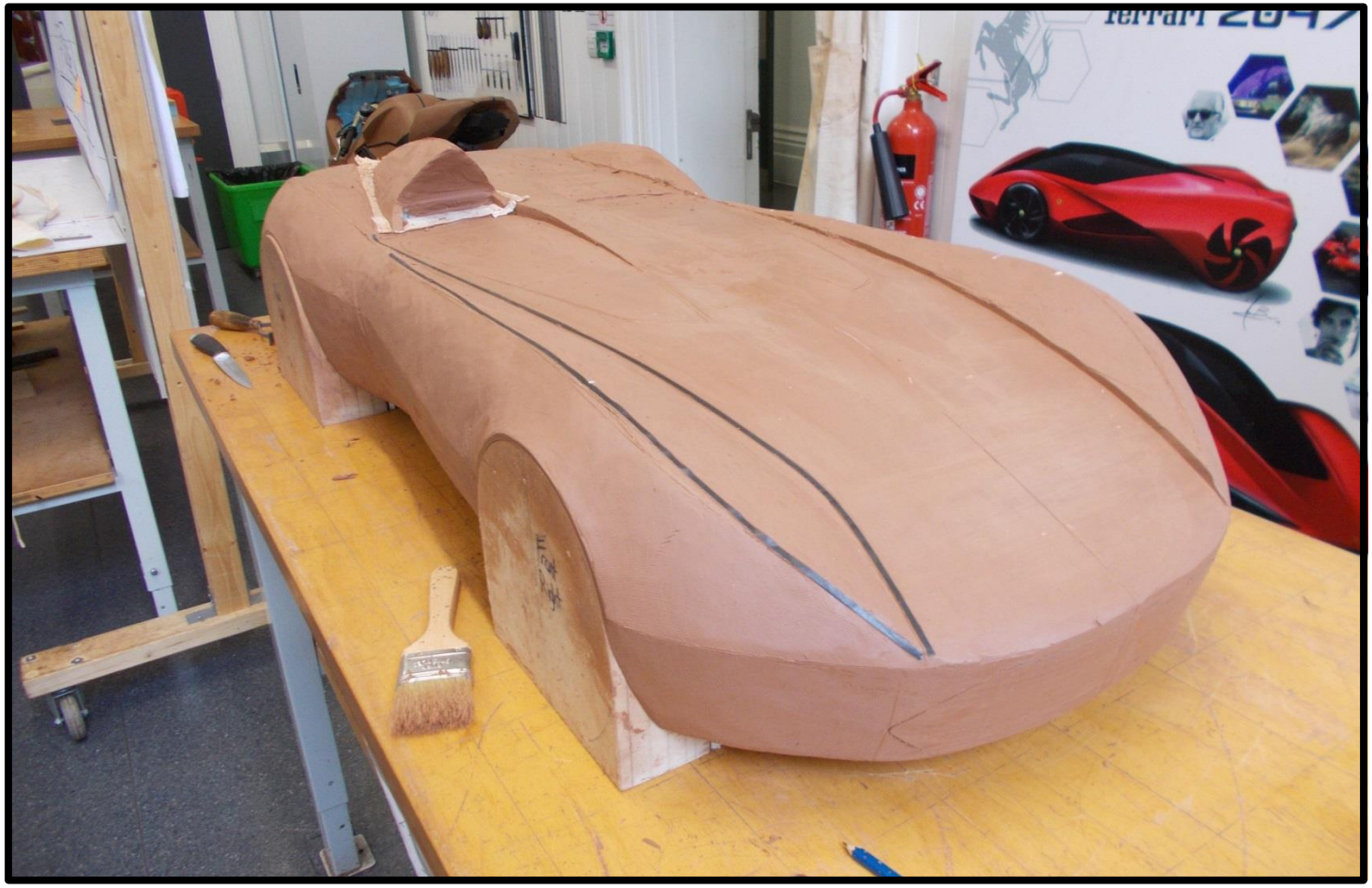
Note transverse templates in background and the footprint template mounted to plastic under the model.

Front
Right

Use various clay tools until desired shape is achieved:

A famed Asian carver of elephants, who, when asked how such beautiful elephants were made, replied –
"Oh! it's really quite simple, I get a piece of wood and remove everything that is not elephant."

You have one advantage over the elephant carver by using clay- if you remove too much, you can put more back on. The key is having a good idea of what you want-(GA & templates again)- your shape will emerge.
Depending on the quality of surface finish required on the clay, as novices, prepare for this part to take a <u>minimum</u> of 10 weeks, 5 days a week, 9am-5pm.



Preparation for moulding Glass Reinforced Plastic or ‘GRP’.

Here the clay is shown prepared with boundary flanges for the top of the mould.

Note the blue PVA release agent which has wax applied to further prevent the GRP sticking to the clay.

N.B. ‘Fibreglass’ is only the chopped strand mat that is used as a part of the process.
The material is a composite of the glass mat and the resin that glues it all together- ‘GRP’.

Further preparation for moulding Glass Reinforced Plastic or 'GRP'.

Here the clay is partially covered by the first layers of GRP forming the top part of the mould.
The chopped strand mat is the white material, the resin is blue.

Making a painted GRP of your project can add about 4-6 weeks to the process.
Plan ahead, we only have materials for a limited number of GRP models each year.

Traditionally, the desired shape can then be finished in one of four ways :

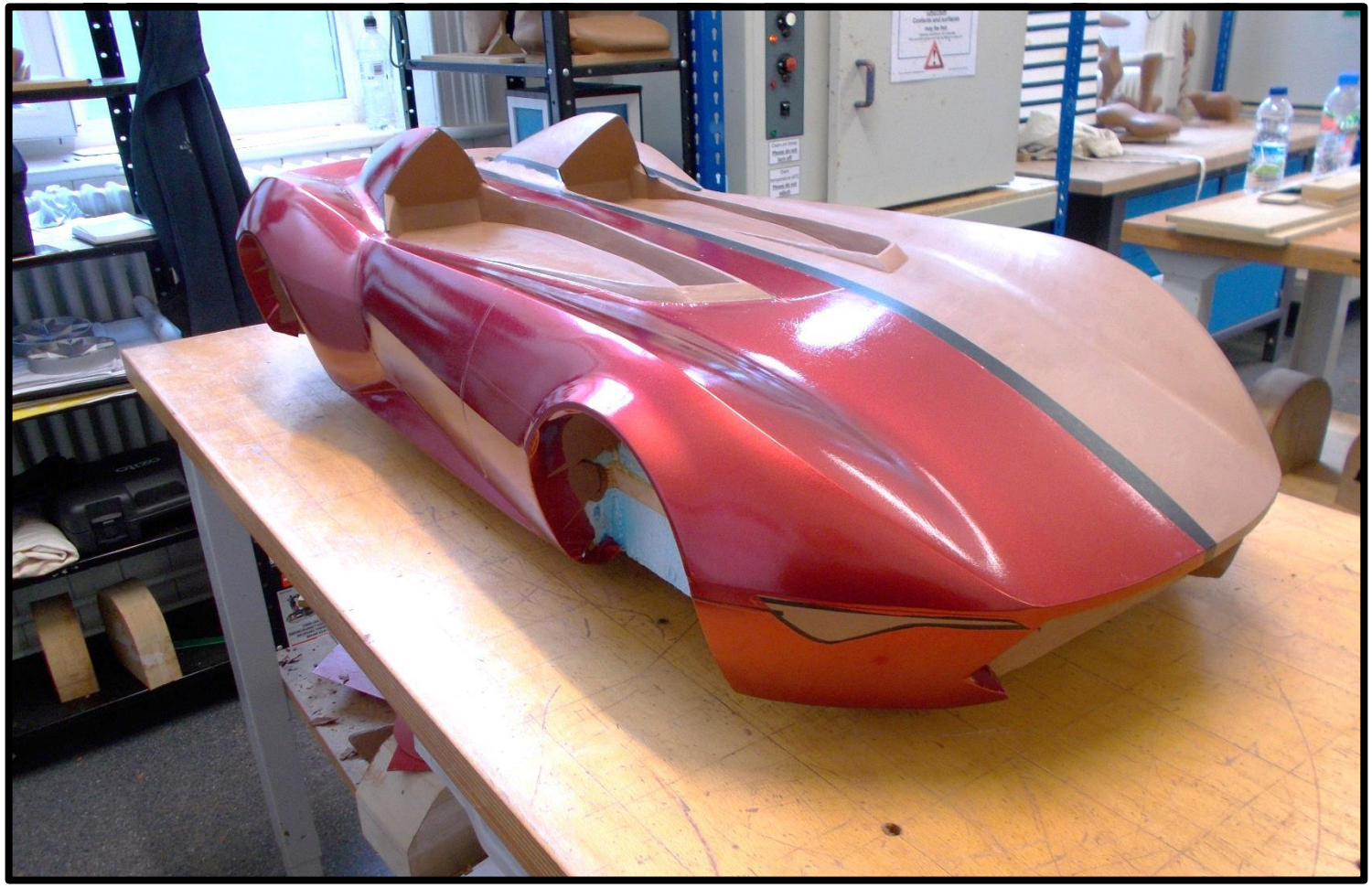
1. Dressed clay- (shown far side) the clay is bare and 'dressed' with thin tape to show door shut lines etc.

2. Dynoc- the thin plastic film is applied to the surface.

3. Painted clay- the surface is sealed and primer sprayed directly onto the model to be surfaced by dry/wet sanding.

4. Painted Glass reinforced Plastic or 'GRP' made from a mould taken from the clay- also dry/wet sanding required.

<u>NONE</u> of these options is the easy way out- they all have advantages and disadvantages in time taken /difficulty. Research availability of materials and help, <u>plan ahead</u> and be prepared to adapt to avoid disappointment.

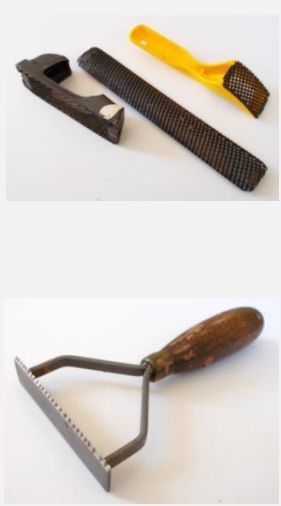


Timeline, tools, process

Various saws, 'Surform' rasps & sanding blocks

Nitrile gloves, brush, shellac

Various 'Surform' rasps, coarse & fine toothed rake



Various marking & measuring tools, rakes, steels/slicks

Various finishing tools and tape 'Dynoc' plastic film

Dressed clay model approx. development time 10-12 weeks, add 2-4 weeks for painted clay, 4-6 weeks for painted GRP

Clay workshop/ Health & Safety (HS) requests from your Technician/Demonstrator:

The Clay Workshop is not a studio or common room. The title relates to safe practice and legal issues of how we are insured within the space. The workshop may be crowded, please collaborate with me by keeping to these health & safety basics:

1. Respect workshop protocol. Common sense- do not rush, throw anything, climb on furniture, disturb those working or touch models that are not your own. If in doubt about any issues, health & safety or otherwise, ask me.

2. Dress appropriately. Wear an apron and safety shoes. No shorts, secure long hair and loose clothing. Remove watches/ hand jewellery . Clay can be messy- wearing old clothes is sensible.

3. Fire escape, first aid, eye rinse & hand wash station. Take a moment to locate where these are and what to do in an emergency.

4. Core hours are 9.00-13.00/14.00-17.00. Be aware I may not always be available at short notice. Organisation of time is your responsibility- pace yourself over the model build period. (See page 35 timeline guide)

5. After hours work. This should not be used as an opportunity to regularly turn up late (See #4). Only with OK from me and signing the 'intention to work after hours' risk assessment form.

6. Absolutely NO FOOD/smoking/vaping in the workshop. One difference to basement workshop- covered drinks allowed due to lengthy clay modelling process leading to possible dehydration.

7. No 'phone/tablet/*whatever gadget* charging lines on the floor as an extra trip hazard. Please walk outside to answer calls.

8. Music- the radio is there for me when the workshop is quiet. For your own music, please use headphones.

9. Last but not least- everybody keep floor and tools clean. Please arrange amongst yourselves to clean the workshop every day. If an inspection finds a 'lack of good housekeeping' health and safety/insurance can close the workshop no matter what stage your project is at.

N.B. Clay modelling is a fantastic opportunity to express yourself, but can be an enormous amount of work.
***Check* with me and your tutor that it is the ideal material to build your project- its use is not compulsory!**
There *may be* a more suitable way to build your model.

Thanks. IM, Clay workshop Tech./Dem. Swansea, September 2017.