

A decorative border featuring a dense arrangement of various flowers, including large white and pink blossoms, and green foliage, set against a dark background. The border is framed by a thin, ornate gold-colored line.

Tutor:

➤ Dave Atkinson

(Stacey likes to visit)

Scenic Construction and Drawing.
ADPA4020

AI Statement

I confirm that I have not used any AI tools in the research and creation of this assignment. I confirm that I have not presented any AI materials as my own work. I confirm I have copies of my drafts, notes, drawings and other resources I used, which I may be asked to provide in evidence.

A decorative border surrounds the central text. It features large blue roses in the bottom-left and bottom-right corners, with intricate gold and blue scrollwork, leaves, and smaller floral motifs filling the rest of the frame. The background within the border is a light cream color with subtle floral patterns.

Safety and tools.
Introduction to the Workshop.

Importance of PPE:

PPE includes-

- Steel cap boots
- Protective goggles
- Ear defenders
- Mask
- Dungarees



You aren't permitted in the workshop without them, before beginning any work within the area insure you have all PPE with you. Even if you are only entering briefly, you must have protective boots on as there are always nails, screws and other sharp pieces scattered across the floor. The mask is recommended to have when in the workshop for a long time and there is sawdust and such in the air.

Emergency 'breaks':

The button to the left of the workshop door when you are facing to leave. It's a red button on a yellow box, has a massive ass green and white sign next to it and an even massiver sign above that is red and white. Pressing this button will immediately shut off the power to the entire workshop and should be hit in the event of injuries or something causes the area to become unsafe. There are buttons attached to the wall behind the saw benches that will cut the power directed only to the saw. This isn't the button you should run for though. Go big or go home. Why shut down one when you can shut down all? In all seriousness it is safer for all around to cut all power. If an accident occurs in can incur panic and it isn't the best idea to keep power tools in the equation.

Basic safety precautions:

Most of our rules are basic common sense in a hazardous area but I suppose it's too do with insurance and shit.

- Don't bring food and drink inside the workshop (You are practically begging for spillage if you do. There is plenty of things inside the workshop that are not indigestible and having those materials around your food and drink isn't smart)
- Always wear PPE
- Keep aware of surroundings, especially when it comes to people around you. Warn them when you plan to use loud or dangerous tools. Don't automatically assume they are paying attention (They should be but still) It is better to be safe.

In the event of injury:

- Shut off power
- Go to first aid kit, located in the locker room.
- If severe enough contact the porters, number is located on the wall behind the first aid kit, or they can be found in the security office across the car park.

Access Doors

Every workshop must have a dedicated door to allow for transport of scenic constructions. Measure diagonal to find the greatest width and bare this in mind throughout the construction process. Always insure to get the access doors measurements upon entering a new workshop area with the intent of working there.

Our workshop dimensions:



- Hand tools:
- Claw hammer
 - Tenon saw
 - Tape measure
 - Chisels
 - Ruler (eg. T-squares, meter rulers)
 - Set squares
 - Screwdrivers
 - Drills
 - Drill bits
 - Nail punch
 - Pliers
 - Spirit level
 - Mallet
 - Files
 - Coping saw
 - Speed clamps
 - Wrenchs



Drills and drill bits.

Impact drills 18v

- Impact drills have compact designs and usually feature a keyless chuck to allow quick and easy bit changes.
- The primary purpose of an impact drill is general drilling, but not into tough materials like concrete. Impact drills can handle driving, too, but this is not their primary functionality. They use rotational force for drilling, as opposed to a hammer force (see the next section).
- Impact drills are versatile tools, suitable for a wide range of applications.

These drills delivers bursts of high torque, combining rotational force with concussive power for fast, precise results.

Dangers to be aware of:

Kickback

Kickback is the jolt that occurs from time to time. A common hazard when the bit encounters resistance. If you're not prepared for it, it can lead to a loss of control or even wrist injuries.

Flying Debris

High-speed rotations can send debris flying, risking eye injuries or cuts. Always wear safety goggles to protect your eyes.

Noise Exposure

Impact drivers are loud with noise levels often exceeding 100 decibels, long use without ear protection can damage your hearing.

Hand and Arm Strain

Using an impact driver for too long or with a wrong grip can leave your hands and arms feeling sore or lead to injuries like Hand-Arm Vibration Syndrome (HAVS). Not recommended for longer than 10 minutes daily.

Battery and Electrical Issues

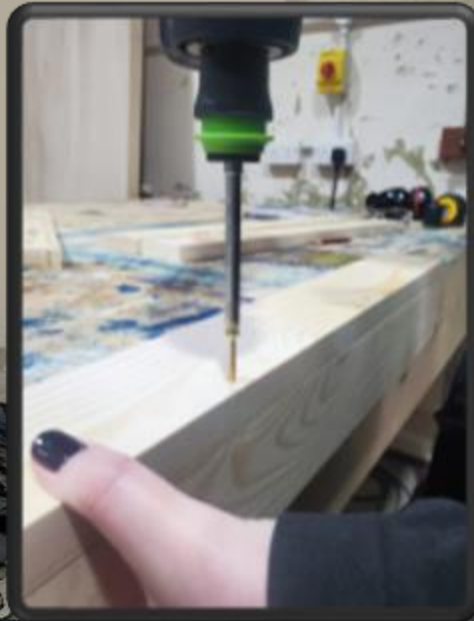
Cordless impact drivers rely on batteries, and damaged ones can overheat or even catch fire. With corded models, frayed wires or damp conditions can cause electric shocks. Inspect your tools regularly and handle them with care. (Work, 2025)

12V Drill

These are best for light work. They're great for drilling into softwood, tightening screws, or cutting lightweight materials. Their motors consume less power, so they generate less torque, but that also means they're easier to control.



18 volt



Saws and blades.

➤ Jigsaw,

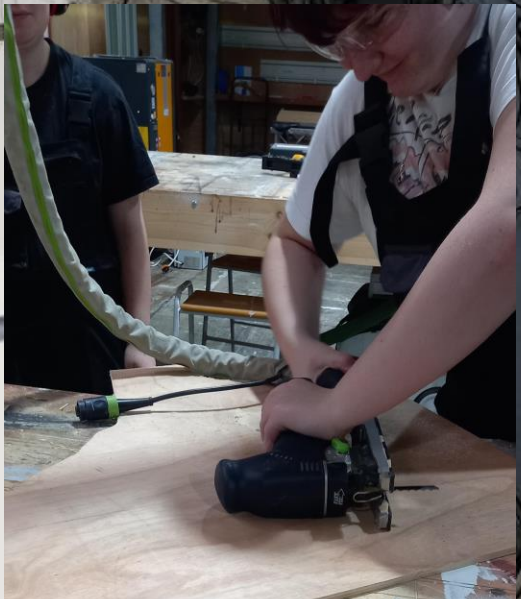
A portable, handheld power saw that has a narrow blade with jagged teeth that moves in a vertical, repeated motion that tears through a material. The blade is guided by a flat base (shoe) pressed against the surface material.

By combining a grip, with guided blade motion, controlled cutting is allowed. The tool also has a trigger, lock and speed control. The ones we have in the workshop have a covering where the blade sits as a safety precaution. Due to the design of the tool, it is desirable for curved lines, plunge cutting, bevel adjustments and intricate shapes. The saw offers more flexibility than a circular saw while still maintaining power and speed.

Begin by selecting the correct blade for your material and slot it into the blade clamp. Ensure the blade is correctly seated and secure.

We need to mark the cutting line clearly on the workpiece. Secure or clamp the workpiece so it cannot shift. In class we use other people as clamps as they are usually closer to us. Power on the jigsaw at a slow setting, align the blade with the starting point, then smoothly guide the saw along the line using consistent pressure. Use slower speeds and greater care when navigating tight curves or thicker materials. The cut may be slightly rough which is an easy fix with a file or sandpaper. (Jenkins and Mullane, 2023)

Material	Blade type / characteristic	Best practice / notes
Softwood, basic carpentry	Low TPI (e.g. 6–10 TPI) HCS wood blades	Fast, rough cuts where speed matters more than edge finish
Hardwood, laminates	Medium TPI (10–14 TPI), BIM or HSS blades for wood or mixed use	Cleaner cuts, less tear-out
Plastic, acrylic, PVC	Fine-tooth blades, higher TPI, fine set	Slow speed to avoid chipping, support the sheet to avoid flex
Thin metal (aluminium, mild steel)	High TPI bi-metal or HSS blades	Use lubricant, go slow
Very thin sheet metal	Ultra fine TPI bi-metal / specialized metal blades	For very thin gauge only — above that, use another tool



Saws and blades.



➤ Rail saw

(Also called a plunge saw)

It is relatively similar to a circular saw but works in a different way. A circular saw begins by slicing through the edges whereas, as per the name, this saw plunges into the material you are trying to cut. It is also easier to transport than a table saw. The rail or track provides a smooth guide for the blade to cut alongside of. The rail does have grips beneath it, but the rail isn't a stranger to shifting. A second person is sometimes needed to hold it steady. Bearing it in mind to not slice through their fingers. (I don't think they would appreciate it, to be honest)

The rail is placed on the material you wish to keep/use for the project. Due to the nature of the saw, it allows for more control as you can start the 'cutting process' from further in on the wooded piece. In the workshop we have rails of different lengths that can fit different sizes of wood.

The plunge saw is designed for accuracy and is best used in materials such as sheets of MDF, plywood, chipboards or decorative panels. The rail also helps reduce splinters on fine cuts of wood.

Some rails are interchangeable between brands, but it is not always the case, and you are better off checking first. This isn't a current issue for us as we use the brands in the workshop. Both the rails and saws are from Festool.

(Bot, 2025) & (From Dave's class)



Saws and blades.

Table saw.

(Also called a circular saw)

The table saw can be used to cut down the width of wood. There are areas marked red 'unsafe' hands are to be kept away from this. We do have two handles (IDK what to call them....) that are made from wood and plastic which we use to guide the wood through the saw. There is a built-in safety feature on this table saw. It's a sensor that shuts off the blade if the 'cover' detects anything softer. It will assume it is flesh and will not proceed. We would rather not test this in the workshop, so we use the handles.

(Class notes)

Components of the saw:

- Table:
Supporting body of the table saw.
- Motor:
It is the core component of the table saw's power, providing relatively stable power that allows the blade's no-load speed to be 3000-5000 RPM.
- Rip Fence:
Straight guiding fixtures parallel to the saw blade.
- Blade:
A table saw with a suitable outer diameter, bore diameter, thickness, and tooth shape can achieve outstanding results.

(FindBuyTool Admin, 2025)



Saws and blades.



Miter saw

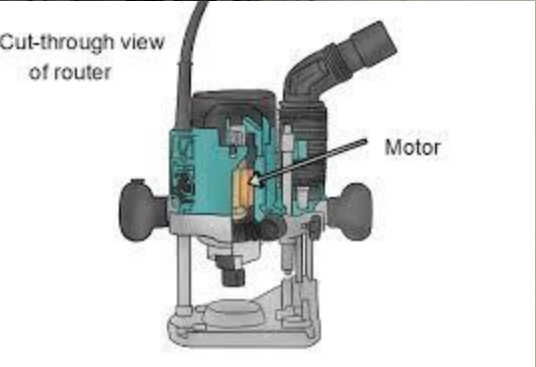
To turn it on, switch at the wall and to unlock it pull the pin. There is a button for the red dotted cutting line behind the show. The trigger on the bottom of the handle lowers it and pulls the cover up. The button at the top of the handle is what activates the saw. They must be held together to make your cut. There is a safety line clearly visible, this is the min length you can place on the bench to be cut. There is two dotted red laser lights that marks the width of the blade. There is also a clamp used to hold the wood in place. The angle can be changed with the nob at below the saw.



Routers.

A router is principally used in woodworking and uses a milling cutter housed in either a handheld unit or tabletop. It is used for chamfering, cutting grooves, slots, recesses, radii and other profiles. The milling cutter can be height adjusted for shallower or deeper cuts. We used them quite often for our Ghost Busters flats.

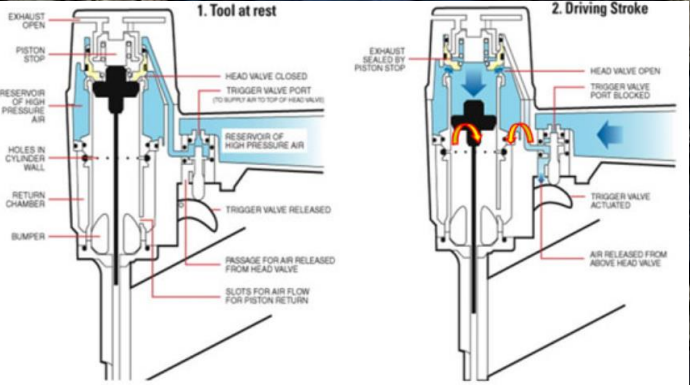
(Institute of Making, 2025)



Nail guns.

Pneumatic means “operated by air under pressure”. So usually, a pneumatic nail gun would be connected to a separate air compressor which generates a constant supply of compressed air to apply the driving force behind each fastener.

(Corp, 2022)



Harvard Referencing:

Jenkins, S. and Mullane, J. (2023). *What is a jigsaw tool and why its a must-have for DIYers*. [online] Homebuilding. Available at: <https://www.homebuilding.co.uk/advice/what-is-a-jigsaw> [Accessed 7 Dec. 2025].

Bot, B. (2025). *How to Choose the Right Plunge Saw & Guide Rail | Cutsmart*. [online] Cutsmart. Available at: <https://cutsmart.co.uk/blog/how-to-choose-the-right-plunge-saw-guide-rail-system> [Accessed 7 Dec. 2025].

FindBuyTool Admin (2025). *Beginners Guide: How to Use A Table Saw?* [online] FindBuyTool. Available at: https://www.findbuytool.com/en-uk/blogs/university/what-is-a-table-saw-and-how-to-use-it?srltid=AfmBOorcO2NuwplrmxGN0d6Y7zMRRP-GfiSp9dZvDB_QGc0MuHJ5hzOk.

Work, G.D. (2025). *Impact Driver Safety*. [online] Gooddayswork.ag. Available at: <https://blog.gooddayswork.ag/blog/impact-driver-safety>.

Institute of Making (2025). *Routers - Tools - Workshop - Institute of Making*. [online] Institute of Making. Available at: <https://www.instituteofmaking.org.uk/workshop/tools/routers> [Accessed 15 Dec. 2025].

Corp, E.P. (2022). *How a pneumatic nail gun works - Everwin Pneumatic*. [online] www.everwinpneumatic.com. Available at: <https://www.everwinpneumatic.com/new/pneumatic-nail-gun-works>.

A decorative border featuring various flowers and foliage in shades of teal, blue, and green, framing the central text. The flowers include large peonies and smaller blossoms, with intricate leaf patterns and swirling vines.

Research Questions

The image features a dark blue background with a subtle, mottled texture. A wide, ornate border in a golden-yellow color frames the entire scene. This border is composed of intricate, symmetrical scrollwork, floral motifs, and leaf-like patterns that curve and swirl at the corners and along the edges. In the center of the image, there is a rectangular area defined by a thin, double-lined gold border. Inside this central rectangle, there is a block of text written in a cursive script.

*From the drawing provided produce a cutting list for the flat.
Estimate the overall amount of wood used and estimate what the
difference would be if the flat were to be constructed using the
Hollywood method. How do you think these two flats would be used —
what are the advantages/disadvantages of each.*

A flat is a piece of scenery used to represent a wall or to conceal a backstage area. A series of flats can be joined together to make a run, where each flat is supported by a brace with a heavy weight attached.

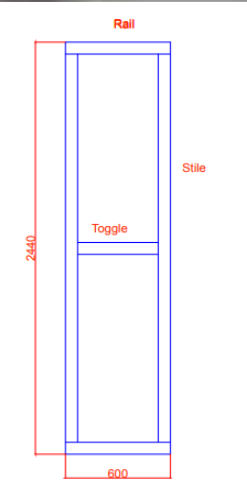
The flat construction methods differs. Hollywood flats are designed for strength and stability, making them ideal for productions where the set must support interaction with actors. Broadway flats, on the other hand, are intended to be visually appealing rather than physically sturdy, making them a better fit for background scenery in theatrical set construction.

‘Hollywood flats which are also known as hard flats or rigid flats, are commonly used in film set construction due to their solid, durable build. They are framed with thick lumber, typically 1×3 or 1×4, and covered with a hard surface such as plywood or lauan’ –(admin, 2024) These are typically more expensive.

‘Broadway flats, also known as soft flats, are the preferred choice for theatrical productions. These flats are framed with thinner wood, usually 1×2, and covered with muslin or canvas, which is then painted to create the desired backdrop.’ *admin, 2024*) They are easier to store and transport as they are lighter and flatter.

Cutting list:

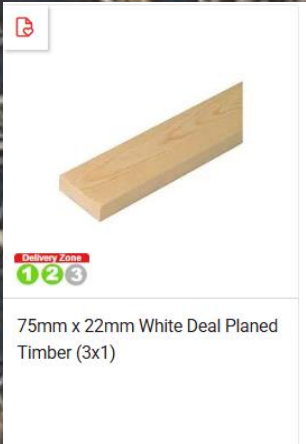
(I decided to look at a Broadway flat given that we already did a Hollywood flat)



Planed All Round (PAR) Timber:
£2 - £8 per timber 3x1
Would need around 6260mm of wood. Consider the blade thickness as well as mistakes.
Round up to 6500mm = 6.5m

Start with the longest length.
Styles: 2440 - 70 - 70 = 2300 (x2)
Rails: 600 (x2)
Toggle: 600-140= 460 (x1)

Part	Calculations	Final measurement	Quantity
Styles	2440-140	2300	x2
Rails	600-0	600	x2
Toggle	600-140	460	x1



€6.95 inc VAT / Price Per LENGTH

Delivery Zone 1 2 3

Length

4.2M (14ft)

4.5M (15ft)

5.1M (17ft)

5.4M (18ft)

4.8M (16ft)

Hardwood Faced Plywood 3mm (8ft x 4ft)

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Research theatre trucks. What they are, how they can be moved and what safety measures need to be put in place when doing so. Find examples of sets that use trucks and research about and fill out a risk assessment for using a truck.

Trucks

Theatre trucks are designed for quick transport on and off stage. The term refers to pretty much everything on wheels (mounted on castors) for the scenery.

Breaks are added to cease unexpected movement. A safety precaution.

You need to know how much weight the truck is supposed to bare. Selected castors need to be strong enough for that.
(Troubridge and Blaikie, 2002)⁹.

Noise factor is also extremely important. Nylon wheels are cheap but loud and rubber wheels are the opposite. What type of castors are needed. Swivel? Fixed? Mixed? Fixed will restrict direction of movement while swivel can cause instability. Best course of action is to have swivel on one end and fixed on the other. Purchasing may increase with brakes accompanied, however, with permission it is possible to secure it to the ground by using a drop bolt.

The elevator break is another possibility. They fit on the back of a truck and physically lift the wheels off the ground. This is the most expensive solution, but it is the best one.
(Troubridge and Blaikie, 2002)

Timber and plywood trucks are commonly used for simplicity. Lightweight and cost effective. Large moving trucks will consist of individual trucked units, each being bolted or drop cleated to its neighbors. These are prone to squeak and groan, lubrication is needed i.e. Candle wax.

(Autor: John Blurton, 2001)



Risk assessment:

Foot traps.

A tripping hazard and it is very easy to find oneself with a foot beneath the wheel. Either have the structure at a higher elevation or add a fit a skirt to its edges.

Finger traps

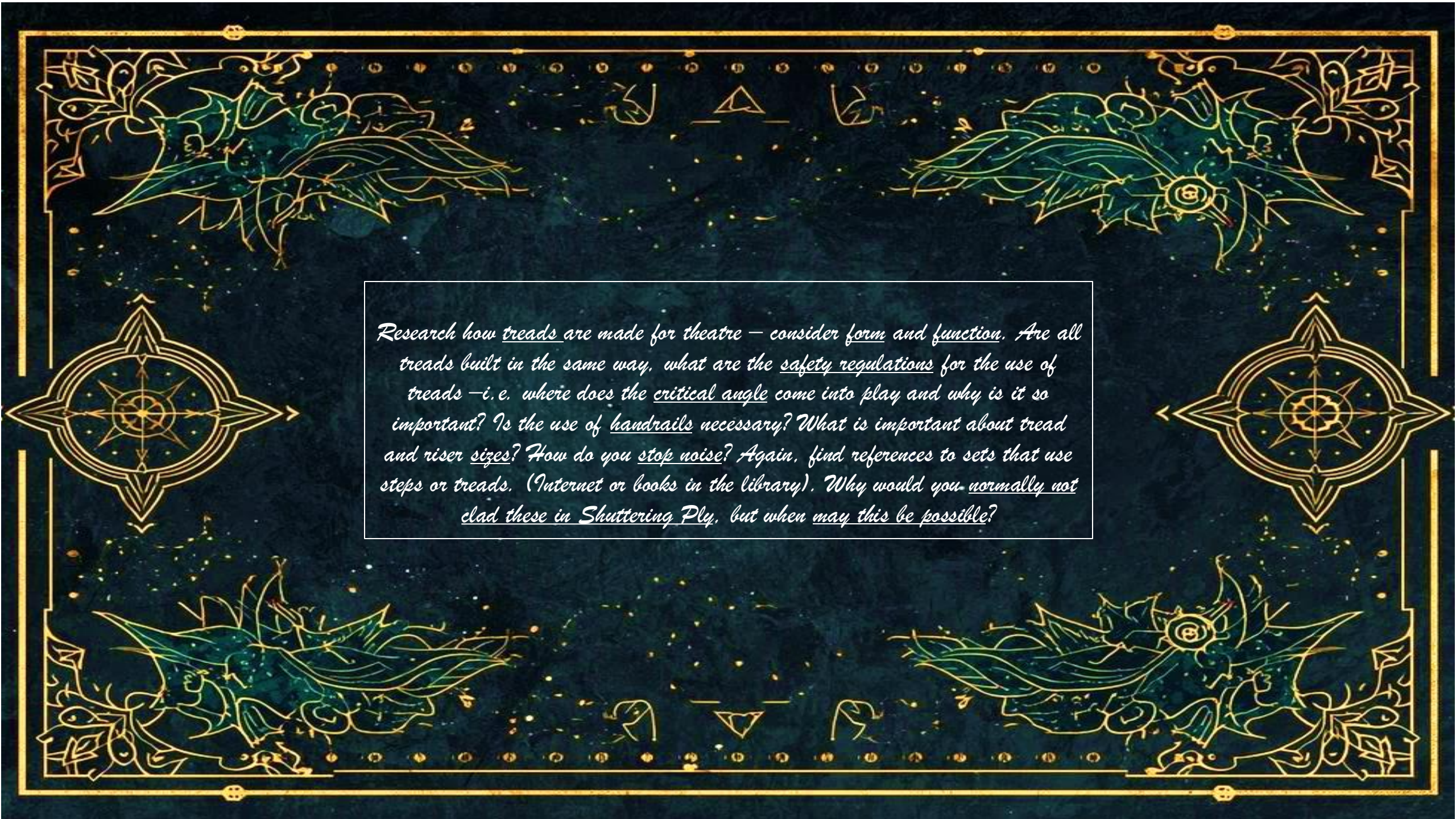
Ensure trap doors, connecting hinges and such are positioned in a way that no one is in danger of catching their hands.

Pulley lines.

These are a very likely cause for falls and trip so they should be marked with something bright, eye catching or luminous. Or a small ramp to cover over it.

Headroom

If the truck is carrying actors or crew, they are on a higher elevation which can mess with personal spatial awareness. Carrying them through doors and low ceiling hallways can also pose the same risk. (Autor: John Blurton, 2001)



Research how treads are made for theatre — consider form and function. Are all treads built in the same way, what are the safety regulations for the use of treads — i.e. where does the critical angle come into play and why is it so important? Is the use of handrails necessary? What is important about tread and riser sizes? How do you stop noise? Again, find references to sets that use steps or treads. (Internet or books in the library). Why would you normally not clad these in Shuttering Ply, but when may this be possible?

Treads



There are three main parts to any set of treads:

- Tread
- Riser
- Carriage

The carriage provides structural support to carry the weight of the stair climber(s) to the structures the treads are connecting. It is also what the tread and riser are built into, it holds them in position. (Note. There may not always be a riser). The carriage may be open or closed. The opened carriage may give the appearance of a ramp when viewing it from the sides.



The stair may be *Dependent* or *Independent*.

An Independent stair is self-supporting, whether it is standing alone, apart from other scenery or pushed in place against an upper level, a person could climb from the bottom step to the top step without the unit tipping or falling over from lack of support.

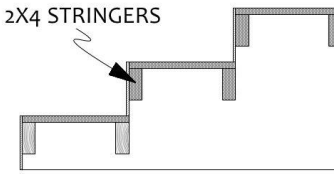
A Dependent stair cannot support itself and does require the help of existing upper level. It can, however, be converted by adding supports beneath the stairs. (designandtechtheatre, 2012) ⁴.



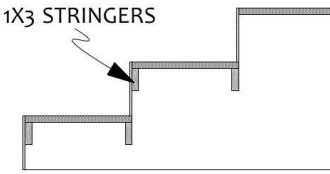
The 'critical angle' refers to the angles that are the safest for people to walk the treads. It is typically between 30 and 37 degrees.

SECTION VIEW OF OPEN-CARRIAGE INDEPENDENT STEP UNITS

2X4 STRINGERS



1X3 STRINGERS



Before constructing the actual tread, measure the space it needs to fit into. Normal tread height is 175mm. Divide the overall height by 175. You may need to round. They are commonly made from 75mm x 25mm Par soft wood and 18mm plywood. The softwood acts as stiffeners and braces. Depending on the width of the treads it may be necessary to create a mid-span supporting stringer to reduce flex in the structure. It is necessary to subtract the thickness of wood from the first tread from the overall dimension. Do the same for the final tread. (Troubridge and Blaikie, 2002) ⁹.

To reduce acoustics:

Nobody wants to hear the loud echo of feet on wood when trying to watch a show. To solve this carpet can be used to mute it. If carpet isn't available for any reason, then cut thin plywood (usually 4mm) and run it around the outside edges of each tread. Fix it in place with glue and nails. A space should be left in the centre of each tread. This will be filled with underfelt, glued and stapled down. Cover everything in canvas and glue and staple once again. After it is painted, the canvas adheres to the underfelt, creating a silencing surface. (Troubridge and Blaikie, 2002) ⁹.

5.

What are revolves and how can they be operated? Is it possible to operate revolve on a raked stage? As usual find images to supplement your research, start to widen your research area and try forums — speak to people in the industry.

Revolves

"A round floor or turntable within the stage floor that spins around a central pivot point, driven by a motor."-(Theatre Royal Stratford East Schools Technical Theatre Resource Pack, n.d.) ²

Standard way of constructing one

The stage floor that spins around a central pivot point, driven by a motor and controlled by an automation operator. A motor is connected to the turntable by a friction drive. The revolve is modular by design, made up by a number of steel wedges with timber on top and wheels on the bottom, which fit together. A painted scenery floor is then added on top to disguise the revolve.

Benefits of using a revolve:

A revolve can move a large amount of scenery and/or props in a short time. It allows for complex set changes to happen quickly and without interruption to the flow of the show. Or a scenery change can be artistically designed to become an integral part of the show.



1) Castors



2) Semitrailer



3) Friction drive



4) Horizontal drive wheel



5) Pneumatic tyre



6) Encoder wheel



Naked stage:

It is a stage that is bare of props and such. Bare walls and minimal lighting. It usually has very plain 'costumes' and furniture. Its purpose is to focus on the actors as much as possible.

Given the nature and premise of a 'naked stage' it wouldn't be the best set to have a revolve on as its purpose is vastly rooted in scene change and to add drama to scenes.

MTC's method of construction:

Each revolve is constructed on a metal frame. (1) **Castors** are set into this frame, and the frame is topped with plywood. Each of the 12 metal frame segments of the 14-metre turntable require up to six people to place each into position for assembly. The finished height of the revolve is up to 220mm. This means that the area around the revolve must also be built up, to ensure the actors have a level surface on which to perform (a surround). One (2) **semitrailer** is required to transport the 14-metre revolve with another semi required for the surround.

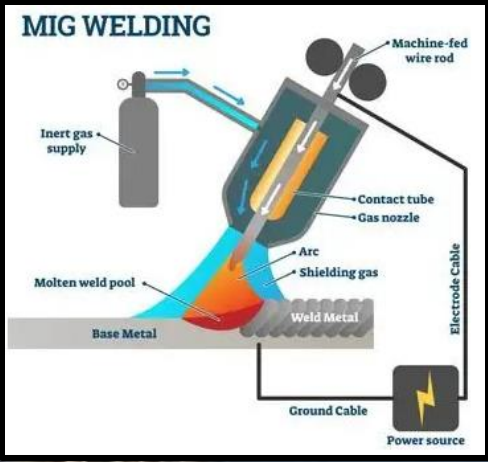
MTC uses a (3) **friction drive** to connect a motor to the turntable. The motor is mounted in a frame and connected to the (4) **horizontal drive wheel** via a chain. The (5) **pneumatic tyre** is pushed up against the edge of the turntable. Alongside the drive is a small (6) **encoder wheel** that reads the position of the turntable. Pre-programed positions are loaded into the computer-based control system and include information about speed, acceleration and deceleration times. Each set of information forms a cue, and a great deal of time goes into programming revolve cues, to ensure the safety of cast and crew.

(www.mtc.com.au, n.d.) ³

The image features a dark blue background with a subtle, mottled texture. A wide, ornate border in a golden-yellow color frames the central area. This border is composed of intricate, symmetrical scrollwork, floral motifs, and leaf-like patterns that extend from the corners and edges towards the center. The design is reminiscent of classical or Art Deco style decorative elements. In the center of the image, there is a white rectangular box containing text.

Research into welding and metal working, what are the different types of welders, why are they different? We know wood comes in a variety of sections (3x1, 3x2 etc) but in what forms can you buy lengths of metal?

Most popular types of welding.



MIG Welding

(Metal Inert Gas) Along the wire electrode, it uses a shield gas. This is what heats up the two metals you wish to join together. Constant voltage and a direct current power source is required for this technique.

It uses four primary methods:

☐ Globular Transfer

Rougher weld. Tendency for splattering. Used for thick, metal plates in horizontal positions.

☐ Short-circuiting

Repeated tapping method with the welding wire on the metal sheet. Little splattering. Can be used in any position

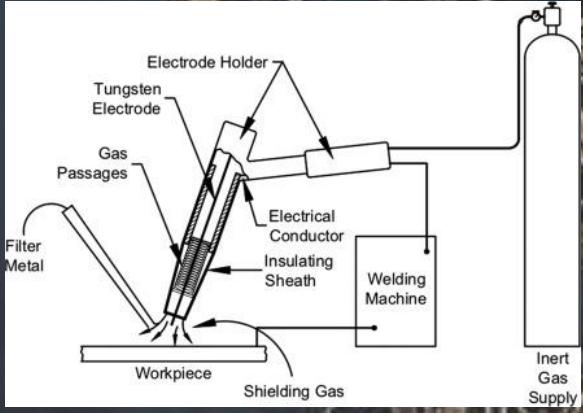
☐ Spray transfer

Steady-contact arc weld. Tiny droplets of molten metal. Very little splattering. Best on thick, flat, horizontal pieces

☐ Pulsed-spray

- Uses a high-low current pulse. Allows micro-cooling periods. Can be used on any thickness in almost any positioning. The 'cooling' temperature is still several thousand degrees Fahrenheit. **1,000°F** is approximately **537.8°C**. (Lanni, 2014) **5**.

Also called **TIG** welding. Shielding gas is supplied through an annular nozzle around the tungsten electrode. Better used for shop not field as air movement must be below 5mph to maintain the inert gas blanket. TIG welding utilizes a nonconsumable tungsten electrode and separate filler metal in the form of a wire (not used for thin sections). It is mainly a manual, but automatic processes have been developed for high-quality pipe and tube welding .It is preferred for vessel-closure welds or welds on small-diameter sections



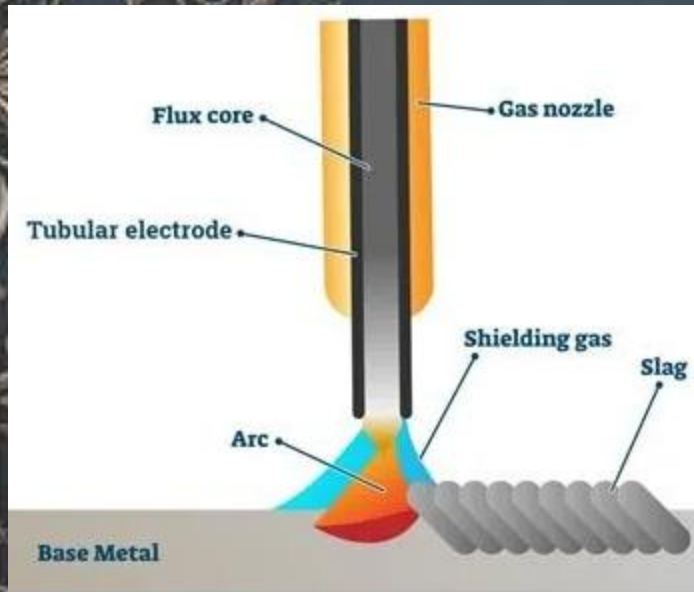
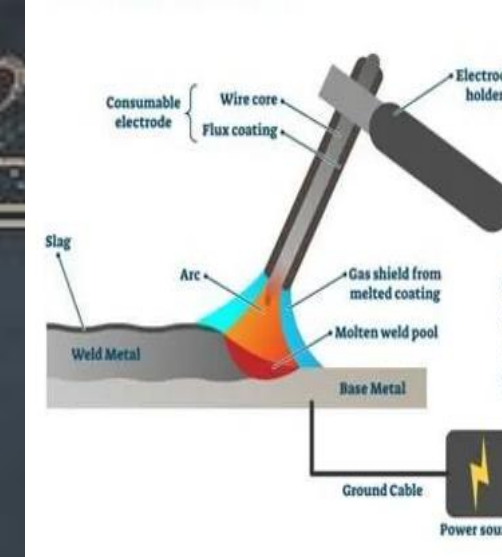
(www.sciencedirect.com, n.d.) **6**.

SMAW

'With this particular welding procedure, the welder follows a manual process of stick welding. This type of welder uses a consumable electrode stick, and electric current is used to form an arc between the stick and the metals to be joined.

Shielded metal arc welding is often used in the construction of steel structures and in industrial fabrication to weld iron, steel and using the open V-Groove when welding with mild steel pipe.

It is vital that the welder must be able to weld to a level in which their work can pass a destructive type of bend test. While shielded metal arc welding is used to join carbon steel, alloyed steels, stainless steel, cast iron, and ductile iron, it can also be used for some non-ferrous metal applications like Nickel and Copper. It is rarely used on Aluminum.' (Lanni, 2014)



FCAW

'This was developed as an alternative to shield welding. The semi-automatic arc weld is often used in construction projects, thanks to its high welding speed and portability. This method has many variables making it applicable in a variety of welding projects. Variables often depend on the type of welder being used, and what type of wire was chosen for the application.

The flexibility is broadened by the many operating angles, voltage levels, polarity used, as well as the speed of the wire feed. Due to the potential of faster welding speeds, the newly joined metal cools quicker. If the welder is using a flux cored wire, he or she must be on the lookout for porosity in the welded joint.

Flux Cored Arc Weld type is best used in either outdoor settings or under industrial ventilation hoods, due to the amount of smoke and fumes created during the weld'



Find out about the different types of plywood used in scenic building. You may need to think laterally on this one and look much further afield than just books in the library. Explain how they can be used in a context

•Why use plywood?

- Light
- Easy to cut
- Easy to assemble
- Easy to paint on
- Easy to take down
- Versatile
- Economical

You can dress plywood up in any way you like to recreate the set that you want. It is especially preferred by TV stations and in TV series where a quick turnaround is required. Building a set and using plywood go hand-in-hand because the former is usually the more economical choice, and the latter is cheaper than other building materials like lumber.

Skinning Ply

Not as durable but can be repaired with filler.

Lightweight, economical.

Easily altered, easily attached (glue and nails)



(Blogspot.com, 2025)

Malaysian Ply

Compiled of hardwoods, more durable. Higher weight capacity. Heavier and more expensive. Easily altered. Better for trucks and such

Shuttering plywood

'Shuttering plywood is known for its durability and strength. It can withstand heavy loads and harsh conditions, making it ideal for formwork and scaffolding. Its robust nature ensures that it can be reused multiple times, providing excellent value for money.

Versatility: One of the key benefits of shuttering plywood is its versatility. It can be used in various construction applications, from creating molds for concrete structures to providing support for scaffolding. Its adaptability makes it a favorite among builders.'

(Al Yusr International LLC, 2025)





What are the benefits of using metal to build scenery? Show at least three examples to illustrate your answer and show that you understand these. This means that your answer should not just be a picture but be accompanied by notes referring to these points.

Name four ways that flats or sets can be joined together. Explain the advantage and short comings of each method.

Joining flats:

Batten and Dutchman

The Dutchman refers to Muslin hat is glued via paint to the openings between the flats. These can be quite bulky which means they will be difficult to transport. There is a risk of the muslin cracking and drying out.

(Blogspot.com, 2025)



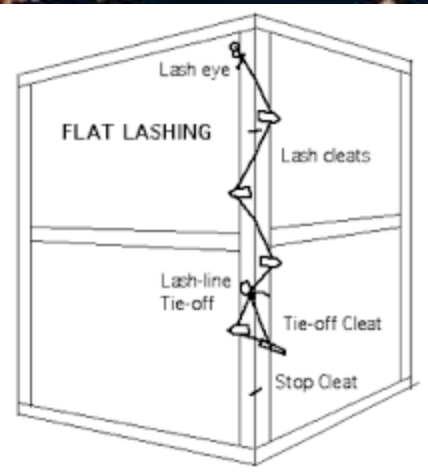
Hollywood Flats

Nails and screws into the flat, and glue.

Lash Lines

A lash line is run from lash eye to the other flat and back again. The lash line alternates between the two flats in a stitch-like pattern.

(Blogspot.com, 2025)



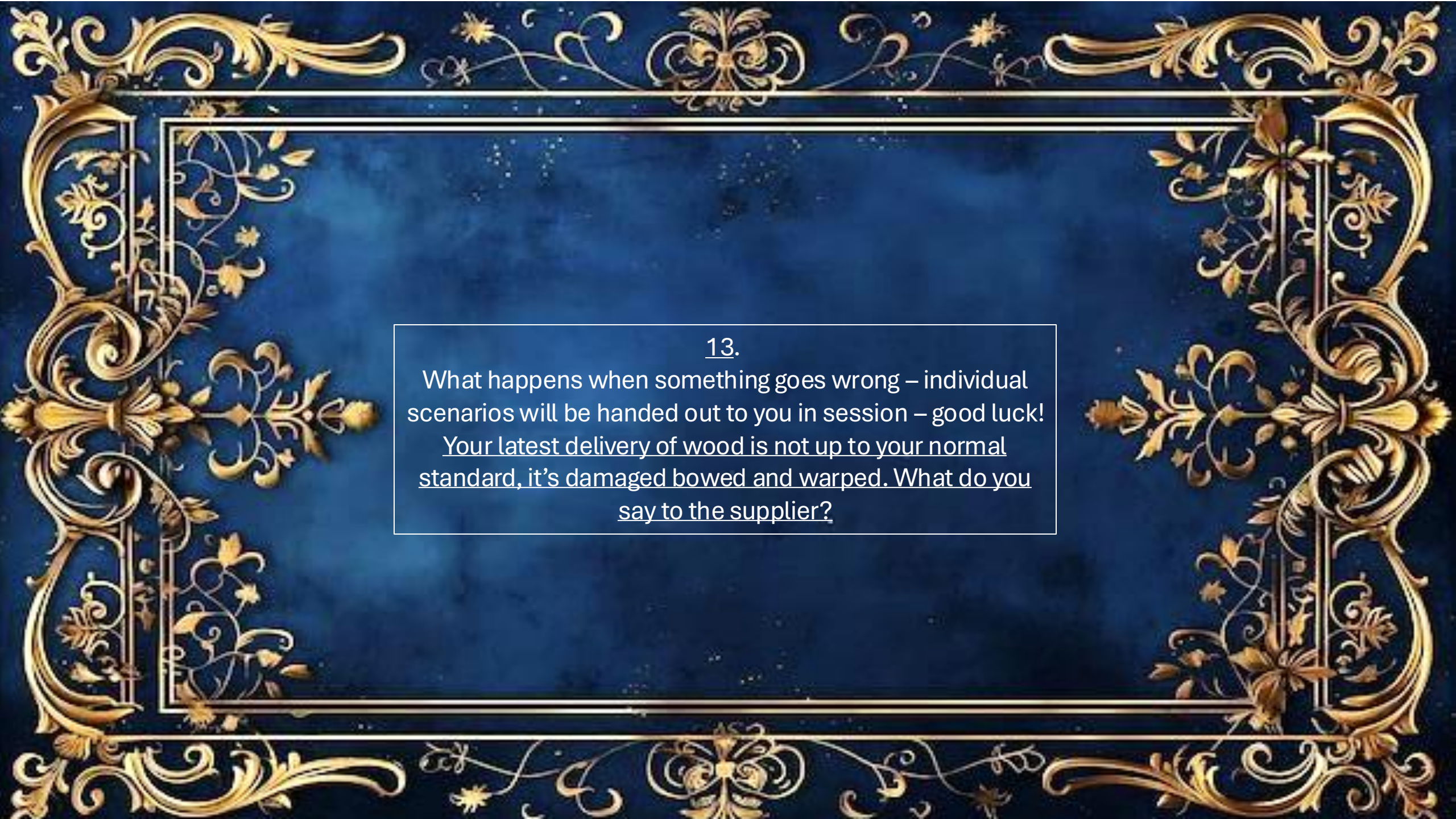
Broadway canvas flat

These flats are made for scenery backdrops and such. They are flatter, easier to store and transport. They are covered with canvas cloth. The glue is painted onto the wood and the cloth pulled down over it. The glue must be mixed with water. This soaks up into the cloth which causes it to expand and pull tighter over the frame. The glue then keeps it in place.

Using metal in scenery construction as opposed to wood.

The metal sheets are also cheaper and lighter

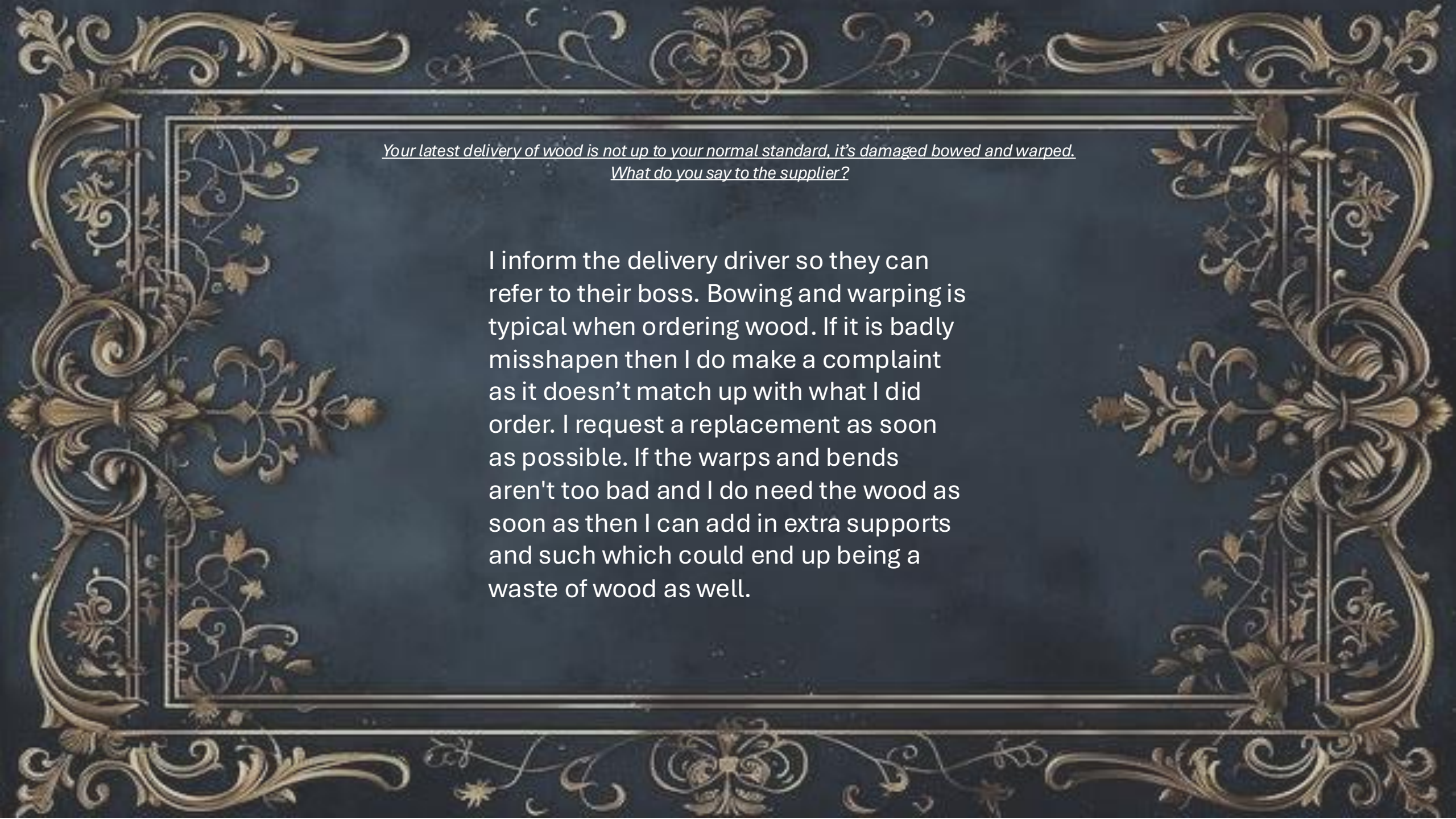
As one of the strongest materials used in the construction industry, steel can easily outperform timber in terms of tensile strength. In terms of fire resistance, steel will always outperform timber. Steel frames have higher resistance to moisture and will not allow rot to set in like it would in a timber framework. Using galvanized steel eliminates the chance of the pest infestations that are likely in timber. Precision designed steel frame buildings can be better insulated or soundproofed. (Team, 2024)

The background is a dark blue, textured surface. It is framed by a highly ornate, gold-colored border. The border features intricate scrollwork, floral motifs, and leaf patterns, particularly concentrated at the corners and along the sides. The overall style is reminiscent of classical or baroque decorative arts.

13.

What happens when something goes wrong – individual scenarios will be handed out to you in session – good luck!

Your latest delivery of wood is not up to your normal standard, it's damaged bowed and warped. What do you say to the supplier?



Your latest delivery of wood is not up to your normal standard, it's damaged bowed and warped.
What do you say to the supplier?

I inform the delivery driver so they can refer to their boss. Bowing and warping is typical when ordering wood. If it is badly misshapen then I do make a complaint as it doesn't match up with what I did order. I request a replacement as soon as possible. If the warps and bends aren't too bad and I do need the wood as soon as then I can add in extra supports and such which could end up being a waste of wood as well.



What is the role of a Production Manager and art director as far as Scenic Construction is concerned? Consider their full job description and responsibilities - find an example of a management hierarchy, typical of a theatre company and film set setup.

A Production Manager works with the management team, technical crew and designers to make sure the technical elements of a show are completed safely, on time and on budget. Production Managers work on a variety of different shows for a theatre company. (Arts and the Home, 2017)

The responsibilities of a Production Manager can vary and they can begin from the audition process and rehearsals of a production, through to the first night of performances and to when the show has finished its run. These responsibilities can include:

- Creating and maintaining a production schedule for each show
- Maintaining contact information
- Organising meetings for cast and production staff
- Working closely with Directors and other department heads to make decisions regarding set, costume, lighting and other aspects of a production and ensure these are within the budget of the production
- Ensuring decisions made regarding the set of a production are carried out safely
- Prepare budgets and monitor accurate expenses
- Create construction drawings for all scenery elements
- Organize the 'Get In' and 'Get Out' of the set and scenery

(Get into Theatre, 2024)

Management hierarchy

- Producer
- Stage Manager
- House Manager
- Director
- Music Director
- Choreographer
- Technical Director
- Wardrobe and Makeup Supervisor

(Human Kinetics, 2025)

Production Designer

A Production Designer is one of the first members of the crew to be appointed in pre-production by the Director and is responsible for bringing the director's vision to life. Starting early on a production, they are involved in location scouts, set design, visual themes and budgets.

As well as working closely with the Director, they manage the Art Department and are required to collaborate with heads of all creative-based departments.

(Giove, 2025)

Art Director

In a nutshell, Art Directors act as project managers for the Art Department and liaise between the department and the Production Designer. A highly logistical role, they are responsible for the budget and work schedule and work closely with the Production Designer to facilitate the creative vision for locations and sets. On a large production, they may start 4-5 months before shooting begins. They must be able to breakdown a script to identify specific items (such as key props) that will need sourcing and determine cost-effective solutions for construction and decorating. (Giove, 2025)

15.

Going back through your own experiences now, how would you have scheduled the build you have just undertaken? Where could time be saved, or planning altered? From the records that you have kept review how much each piece of scenery has cost (labour not included, though extra points for those who can show how many people hours were involved). Spend the next week going through this, putting together material suppliers and contact details and price lists etc. How much time and money was wasted? (This is a valuable learning curve and not one you are judged on).

During the Ghost Busters build we did spend quite a bit of time standing around 'talking shite'.

We also had different people sick and unwell multiple times which, if this were an actual show it would have wasted time which is money. From what I could find online the hourly wage of set design builders is between £11-£22.

21st Nov-11th Dec.

17 classes.

Three hours each- 1 CAD class

50 hours

£ 550-£1100 per person. Class of 10

Budget for manual labour= £5500- £11000

It should have been properly scheduled. We had (17) classes to do this, around three hours per class. We didn't set any stopping points no goals to hit, and this did let us down in terms of completions. The flats aren't finished, and we will need to work after hours come next term.

Rostrums or Rosta are areas of staging used to create variety, height and form in a stage design. Can vary in size. This however does add potential safety hazards. Height risk is usually an exaggerated saying. In reality it is a relative term. In reference to theater it is anything not at ground level. It is detrimental that we can identify risks and potential injuries before they can occur. Catwalks and loading bridges have guardrails with mid-rails and toe rails; fixed ladders will have appropriate fall restraint or arrest.

- **Open Orchestra Pit in Front of Stage.**
- **Elevated Platforms**
- **Trip Hazards.**

➤ Elimination or Substitution

Removing or replacing with something less hazards.

➤ Engineering:

Equipping safety guards such as railings.

➤ Administrative:

Create policies

➤ Personal Protective Equipment:

Providing PPE to workers and those on set whilst construction is undergone.

(NFHSOrg, 2021)¹⁰.

Block method

'To construct a rostrum the easiest way is to use the block method. The block method uses 18 mm ply to create an extremely durable and heavy block. To reduce weight, it is important to remove as much of the extra material as possible' -Blogspot.com, 2016

Harvard Referencing.

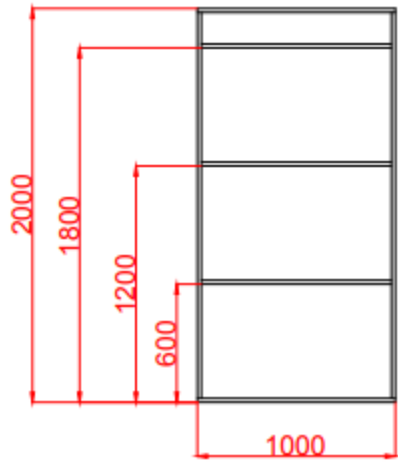
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An ornate, symmetrical floral border in shades of teal, green, and gold. The design features intricate scrollwork, large stylized flowers, and dense foliage. The border is set against a light, misty background that fades into the center.

Workshop Projects

Hollywood Flats

HOLLYWOOD FLAT



Cutting list

Cutting list 1st step

Rail: 1000mm $\times 8$

Style: 2000 Rail (width) = 2000 - 40 = 1960 $\times 8$

Toggle: 1000 - 40mm = 960mm $\times 12$

Wood 59mm 20mm

Start longest length

Hollywood Flat

Chop end of wood off for screw

Measure twice cut once

Always account for blade thickness

1500

1000

500

Plot hole

drill @ 2

Use set square & screw things together

Rail x2

Toggle x3

Style x2

Cutting List

Rail: 1000mm

Style: 1960mm

Toggle: 960mm

Style

2000 - 40 = 1960

1000 - 40 = 960

3x1

5mm Ply

RAIL

Toggle

Style

1000

75mm

RAIL

3x1

- Chd in 3rd plywood for back

- screw & glue together

- staple plywood on top

toggle/magging

Style

2m

2m

1m

RAIL

Check for deformities in wood

- Warping
- bending
- curving

only part & contact if moved

not this

weakness here

We build like this

Hollywood Flats



1. We started with by inspecting the wood. Looking for any deformities such as warping, bending or curving to make note of. Then we made a cutting list to get exact measurements.



2. Dave told us to always start with the longest length, so we started with the rails, 2000mm x2. We were mindful to account for blade thickness and used the lasers on the table saw to help with accuracy. Measure twice cut once, reduces waste.



3. After the rails we cut the style pieces 1960 x2 then the toggles, 960 x3. Once cut we aligned them up, using a set square to help with the exact 90° angle.



Frame done!

7. To make the faces, we measured out on a sheet of plywood. Used the factory cut edge as we know it is straight to measure from. We then used the rail saw to create a clean-cut edge. This was then glued down to the frame and nailed in place with the nail gun.



4. 1st Toggle starts at 500mm from the ground, the second is 1000mm from the ground and the third is 1500mm. Dave checked our measurements and was very happy with them. We were permitted to continue.

6. We always build with the styles in-between the rails so while they are being moved there is only one point of contact with the ground instead of providing a weakness. Once aligned we used wood glue then drilled pilot holes in the wood, bearing in mind to avoid knots in the wood. The holes were then used for screws to secure it completely.



9. We then added down the edges because we had time to and it stabbed me and I got a splinter from it. I was mortally wounded.



8. Repeated this on the other side. It wasn't quite flushed to the edges, so Dave whipped out a 4564645*(*&^%\$clamp to fix that issue while the glue dried.



Braces

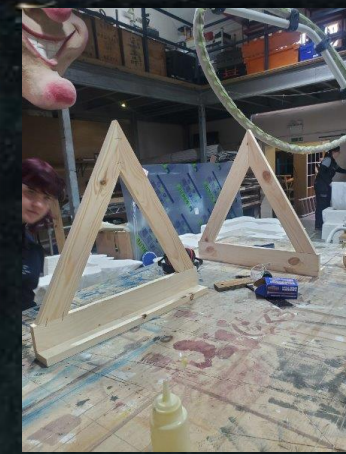


Precision things. So technical.

Stappled with a corrugated fasteners. (the squiggle staples)

Dave brought out boxes of wheels that came with mini screwdrivers

To brace these flats, we glued and screwed together timber pieces, one standing while the other lays flat beneath it. We then had to centre this with two more boards that would sit on top. Measured at a 30-degree angle they would meet in the middle.

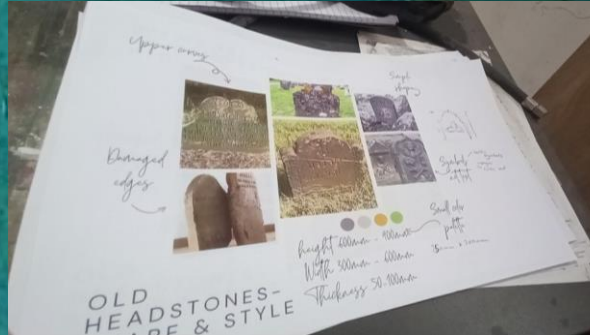


TADA!!!!



Gravestone 1

Our beautiful mood board:



Retrieved 12mm thick plywood from our waste section. We drew on our measurements and used the rail saw to cut it down to size. Repeat for the back. We were able to try out the jigsaw for the first time. My cut was quite wonky but I fixed it so you saw nothing!

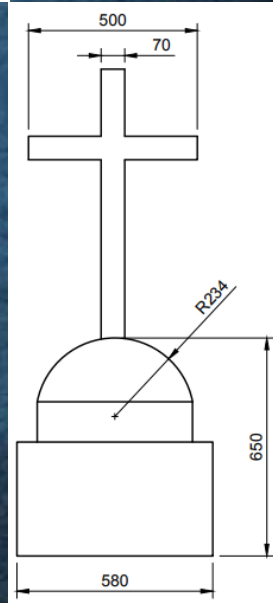
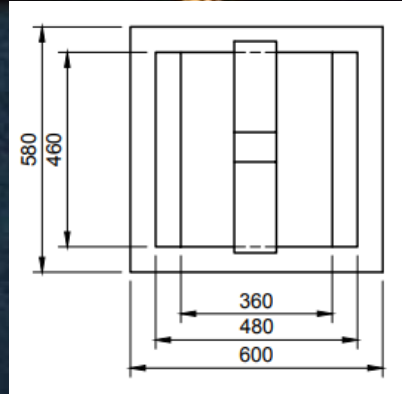
Step one was to design our personalized gravestones. Drew up dimensions

Now to make our frame. Measured at mm long and mm wide. Cut down via miter saw We insured they sat flushed at 90 degrees (checked with set square), then glued and screwed!

First time using expanding foam. We did this at the end of class so it would be ready and set for the next time. Used a very important tool (Kitchen knife) to carve down the foam to fit flush between the faces.

Now that its neat we can leave it for our scenic painting module.

Original Measurements



Gravestone 2

We were given
freedom to
change
measurements
if needed.



The three of us made the collective decision to begin with the cross and build the base around it. I suggested to make the planks sit into each other and attach the horizontal planks between the two front planks.



Beginning the frame for the base of the headstone, we began measuring out using the 2 by 1s on the shelves. Start with the longest and work our way down.

Gilly and I decided to attach two planks across the base of the bottom box. This would allow the cross to slot in neatly and keep it straight from the very start. This would hopefully stoop or at least reduce leaning.



The second box we fashioned from 12mm plywood and secured it to the bottom box with the help of clamps.



Stopping to rethink and discuss we made L shape pieces at a length of ---- and glued and screwed them into the top part of the base frame. This would support the second box.

The first box was then clad in 3mm by using the rail saws to cut down sheets of it.





The covering for the second box was made from the same thickness plywood and Gilly measured the centre as well as where the cross would need to slide through. He then drilled starter holes and lined up the jigsaw. There were a few crooked measurements at first here, but they were soon fixed. The lines to find the centre weren't quite centre from the sides.



Using the Kitchen knife again we cut another opening wide enough to fit the cross through.



Another group was ahead of ours so we learned through them that bending the plywood wouldn't work as well, even with the semi-curf cutting they railed into it. The curve was.

too great, and it was too much of a bend for it to sit without snapping. Instead, we used foam and traced the semicircles, end to end, to get those measurements.

While Gilly was busy with that, I made a start on the semicircles. I simply drew it on paper to get an idea of how it would look and my measurements are in a previous slide.. I used a massive compass to get the radius from the centre point.



Once the toggles were attached and the foam cut to size, we used the glue Dave gave us impact and let this sit.

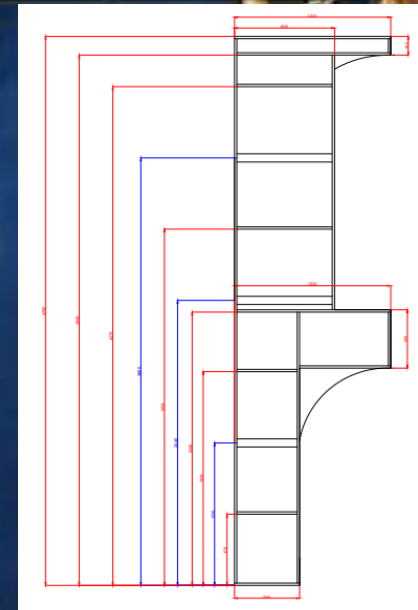
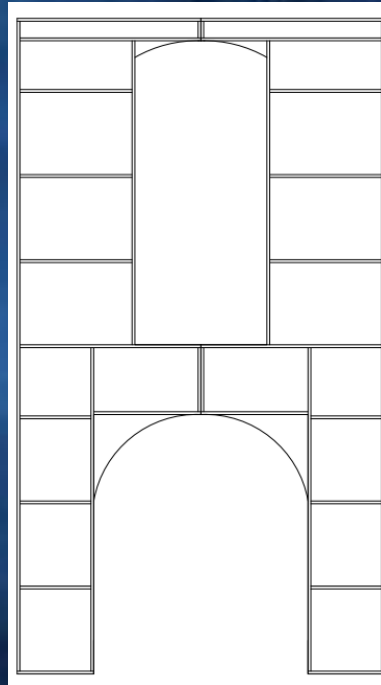
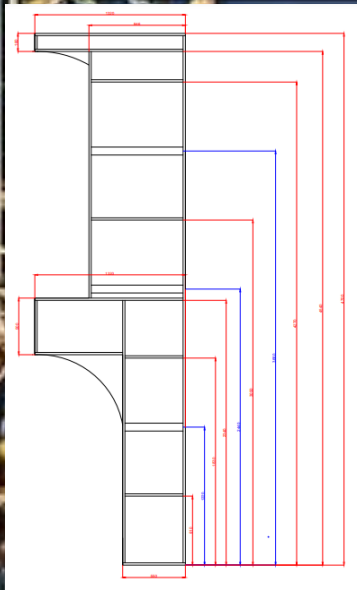


Realizing that the semicircles did bend away from each other. To solve this, we made small toggles to pull either side together. We made -- of them with --- measurements and positioned them at the - - - - points and glued and screwed.

Because of the way I cut the semicircles, it created an overhang with the foam so we whipped out the kitchen knife again and carved it down, so it fell sloped, creating a more attractive finish. Then sanded down the edges.



Ghost Busters



First drawings and scale
module.

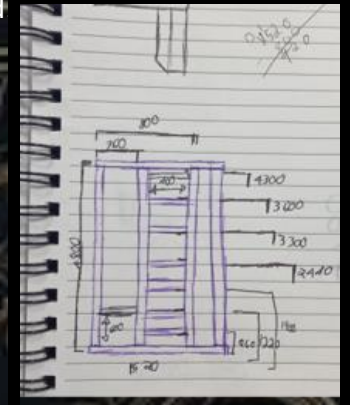
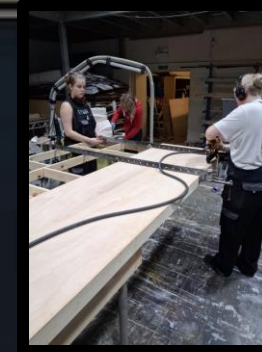
We did struggle slightly if figuring out the first steps. It was only for a short period though. Once someone spoke, we started bouncing ideas off each other, then we did our calculations based off Daves beautiful drawing, then the cutting list became coherent.

Side Flats:

We also started on making the skirting above the window. Using left over, already carved edges that was left over for a previous project. Styrofoam was used to shape the **Cornice**

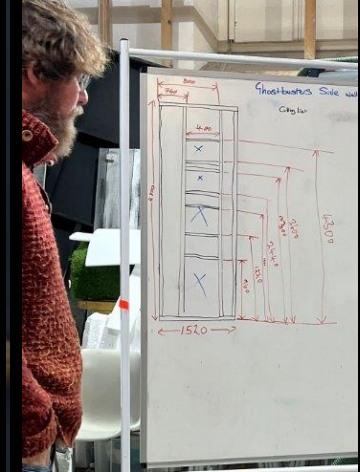
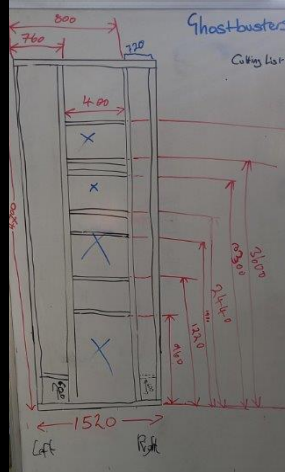


Banding together, the ten of us (twas a little chaotic) made our way through the toggles. Myself and Eysr measured their positions from the base. A little readjusting was needed but we managed

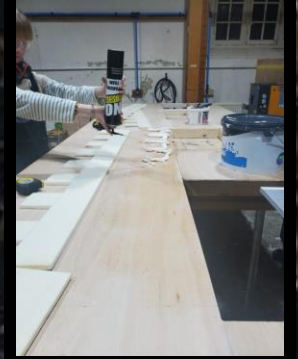


100% Wood
Cutting list (1)
• Styles 1660 x 20 (x4) ✓
• Rail 1520 x 20 (2) ✓
• Toggle (7) 100 x 20 (middle) ✓
Level = (8) 720 x 20 (left) ✓
(8) 680 x 20 (right) ✓

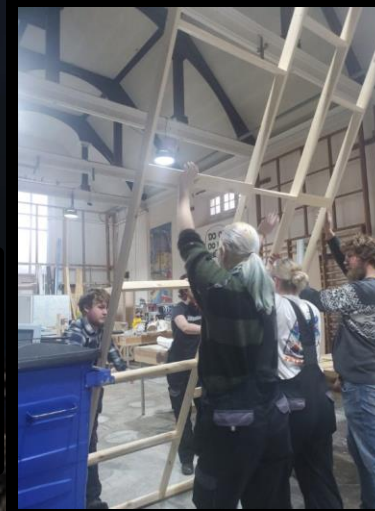
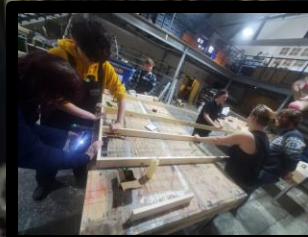
Cutting list (2)
• Styles 1660 x 20 (4) 645 ✓
• Rail 1520 x 20 (2) E 0 ✓
• Toggle (7) 400 x 20 (middle) E 14 ✓
• Toggle (8) 720 x 20 (left) E 0 ✓
(8) 680 x 20 (right) E 14 ✓



The second frame was made the same way and when it was close to being finished the group split. I stayed to help finish this flat while others began cladding the first flat. We quickly caught up and soon enough both frames were cladded in 3mm plywood, glued and nailed down.



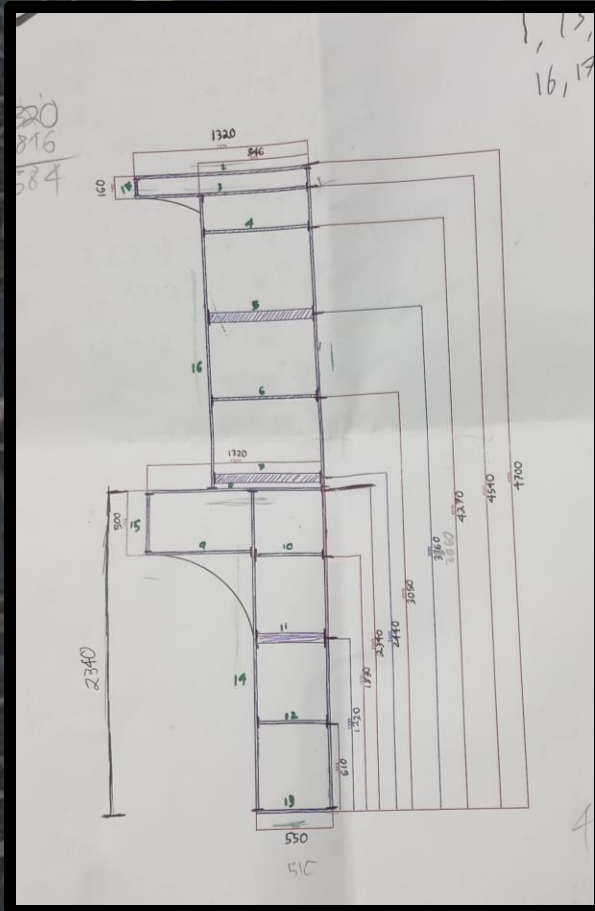
We assigned ourselves pieces to cut and made sure we had doubled the amount given that we had both the right and left side flats to do. Once this was done and checked we used the longest pieces (styles) and attached them to the rails. This gave us a frame to work off of. A slight miscalculation being that the beams in the room were too low down for the initial measurements, so we cut the difference off the top, simple fix.



To make the brick-like textures of around the window we used foam and carved out the brick shape. Instead of glue we used expanding foam as an adhesive, spraying the surface with water first. These type of foams require moisture from the air to trigger their chemical reaction. We then used filler to fill in the gaps in the build. We then took it in turns to 'walk it up' and get used to lifting it. Reach down to carry the weight and reach up to maintain balance. We also took it in turns bracing it with our feet.

Front Flat

Given Drawing



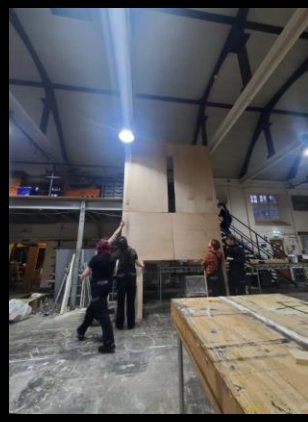
My Cutting List

Cutting List		AB	
1	460 x 20 x 2	✓	✓
14	2320 x 20 x 2	✓	✓
16	2180 x 20 x 2	✓	✓
8	1300 x 20 x 2	✓	✓
2	1320 x 20 x 2	✓	✓
3	1300 x 20 x 2	✓	✓
9	770 x 20 x 2	✓	✓
7,6,5,4	806 x 20 x 2	✓	✓
13	550 x 20 x 2	✓	✓
12,11,10	510 x 20 x 2	✓	✓
15	460 x 20 x 2	✓	✓
17	120 x 20 x 2	✓	✓

The front flat was done similarly in theory. The measurements were different and in order to fit it through the workshop doors we needed to half the build. The class split once again, and Gilly and I did the calculations for the cutting list. Once this was done, we made the cuts, had a little miscommunication where someone cut too many pieces of one measurement and not enough of a different one, but it was fixed in the end.



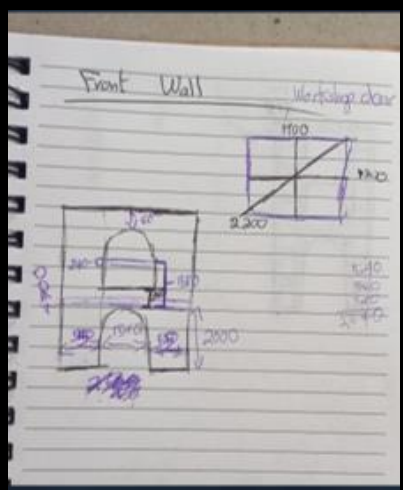
Front flat



The frames were structured a little differently, so we just went one by one and the outline slowly came into existence. The process for cladding was quite similar just different measurements. While measuring the flat for the plywood I noticed an inconsistency in the width which, as it turns out, there was a bend in the wood that most of us did clock at the start, but someone didn't seem to see this and instead of making the wood bend around the toggle, they cut it short throwing off the width. It was a simple fix as we just had to cut a new toggle, but it was a waste of wood and time, which costs money, especially if this was for a show.

It was only when we put them together that we knew for sure that we made them correctly and even, but we did!

We used a piece of plywood to draw the bend in the curve for our door and window. Then used a jigsaw to carve alongside of it. We finished up with sanding down the rough cuts.



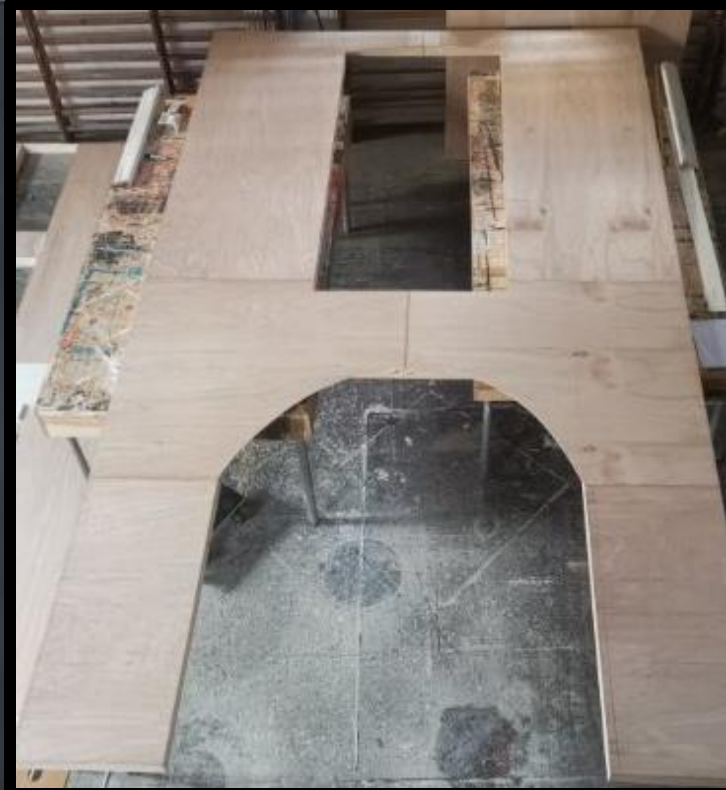
The other group were doing well with their half as well. I did spot that at the top, the arc in the wood made the measurement 170mm instead of 160mm. This would show past the cladding, so we made a new 160 toggle to pull it back in.

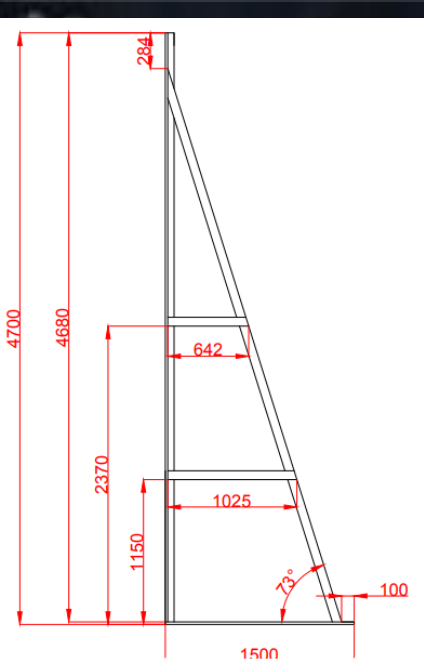


We used a large drill bit that we drilled through each side of the flat where they would meet and connected them together with bolts. We made Gilly hop up on the table to do so.



During my calculations I discovered it to be easier to number the lengths, largest to smallest as we always begin with the biggest. this was also to help keep them separated and not mixed them up or not account for one.

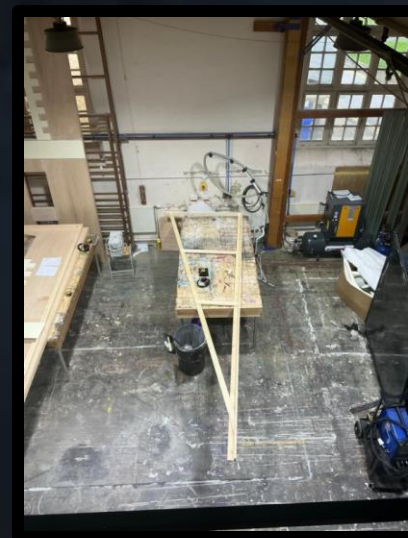




Due to the size of the flats, our braces needed to be a lot bigger than our other braces made.

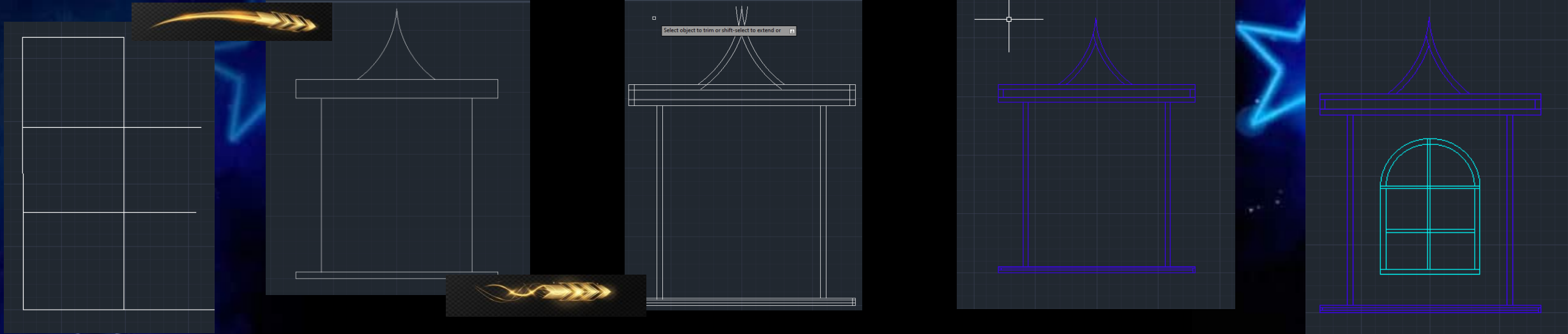
Braces for the flats

To help with stability we had two pieces connected in an L shape at the 4700mm. These pieces were then screwed into the base. The angles the longest piece had to rest at were

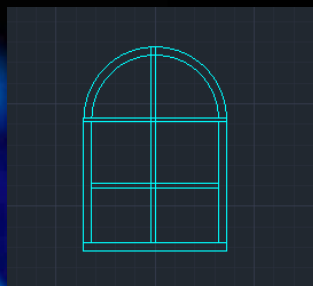
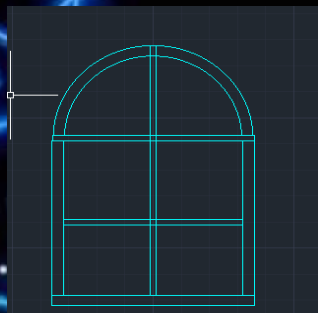
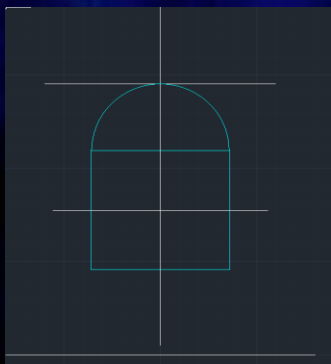


These were a little more awkward to manoeuvre just because of their shape but we figured it out. They were also much lighter which did help.



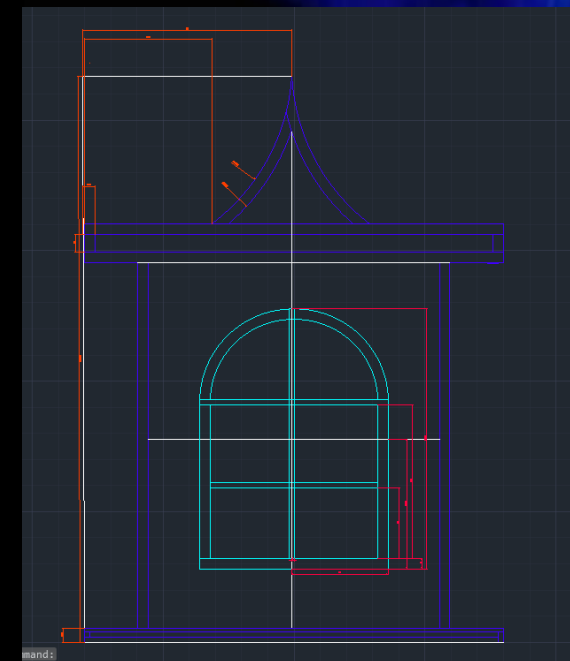


Our CAD drawing class consisted of just the one, but it is quite similar to SolidWorks which I used in secondary school for projects and such. It is a slightly different layout, so it took a little while to get used to it. In class we just made your standard flats. For our independent practice, I took inspiration from a model I made in our Product of Design Module with Stacey-Jo. I didn't stick to the design and just had a little fun with it. I worked in different layers, the first was my 'sketch' lines, just to guide me then I expanded from there making my carousel shape. I wanted to play around a little with curves, so this shape was perfect for this. I then made it blue. In another layer I made a start on the window. I wanted it to be central and curved. I did have to move the curved edge around a little to fit the lines already there. I used 'trim' and 'extend' when needed. I used 'offset' to make the extra lines as if it were made from wood and I was drawing the frame. I did try and use 'mirror' to help with the window.



Current layer: Dimension 2

Layers	Layer Name	Color	Linetype	Lineweight	Transp...	N.	Description
0	0	White	Continuous	Default	0		
Defpoints	Defpoints	White	Continuous	Default	0		
Dimension 2	Dimension 2	Red	Continuous	Default	0		
Dimension 1	Dimension 1	Orange	Continuous	Default	0		
eV	eV	Blue	Continuous	Default	0		
Invisible bi...	Invisible bi...	White	Continuous	Default	0		
wINDOW	wINDOW	Cyan	Continuous	Default	0		



Self Evaluation

I have thoroughly enjoyed this course. We were given the freedom I longed for in previous schooling. There was no micromanagement, only a calm person we bothered repeatedly with questions and stupid stories. I doubt we are Dave's favourites what with the crap we get up to.

This is the first thing I need to work on. I do like to have a chat with the others, and it does sometimes block other work that needs doing which isn't fair on anyone involved who were trying to do their jobs. It would save time and when actually working a job, it's not a reputation you want to build for yourself.

I did love the aspects of the module where we have to sit down and break apart what we were given. The cutting lists, so to speak. I did discover I seem to have a knack for this aspect of the process. I do struggle quite a bit when it comes to explaining my ideas and plans. I know in my head what it is supposed to look like, but I can't seem to be able to describe it in a coherent way. To try and get around this I have been doing doodles to 'paint the picture' and it does seem to be working.

I do enjoy the making process. Lining everything up perfectly and it is a great feeling of satisfaction when everything slots in just how it should. Such as when we joined up both halves of the front flat in our Ghost Busters building, and they aligned perfectly. I know it mightn't always be the case so I will enjoy it when I can.

I was able to carry over a certain method we were taught into my Products of Design module. I needed to make a curved wall, so I cut parallel lines into the inside face of said wall like how Dave showed us to bend the plywood.

Something I will admit is that the communication within the group spotty. In the F1 video we were shown, the teamwork and checking in were both extremely professional. It was a high stressed situation and seeing the people in charge keeping calm while the pressure piled on was inspiring. It is something that is difficult to mimic. People are stressed, tired and sometimes the lack of communication is clearer to see. This is something we have two and a half more years to get used to and I don't doubt that we will.

I did really enjoy the CAD drawings class we had. It reminded me of when I used SolidWorks to make 3d models. Same principle with a similar layout and it was just fun getting back into it.

My time management is another issue across the board. Hindsight is annoying and I don't enjoy dealing with 'should haves' but I should have listened to the second years about the progress workbooks. Mine could have been much more developed if I had and I myself would have been a lot less stressed.

A decorative border featuring various flowers and foliage in shades of teal, green, and yellow, framing the central text. The border is composed of several elements: a large teal flower in the top left, a large teal flower in the top right, a large teal flower in the bottom left, and a large teal flower in the bottom right. There are also smaller flowers and foliage interspersed throughout the border.

Go Raibh Mile Maith Agat!