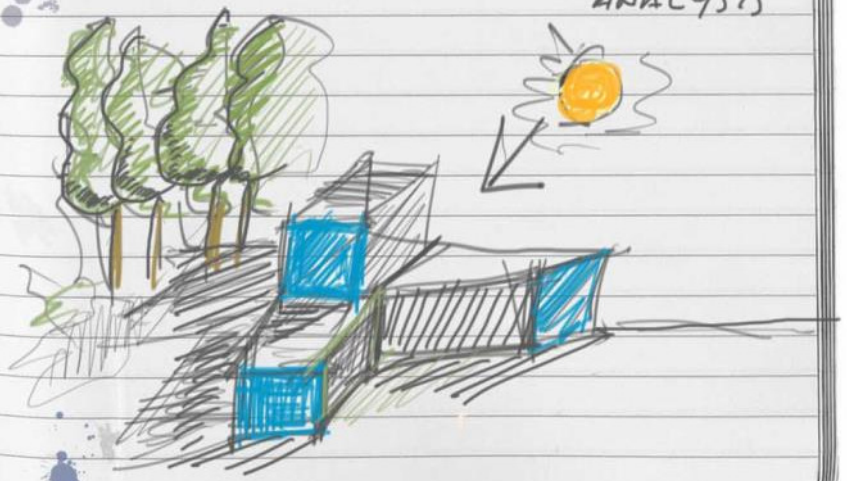
DESIGN STUDIES

1. SKETCHBOOK
2. SKETCH UP
3. AUTOCAD
4. REVIT
5. IES ANALYSIS



102CAB DESIGN STUDIES

220 STUDENTS

24 WEEKS

4 HOURS/WEEK/STUDENT

20 CREDIT

APPRECIATE DESIGN PROCESS

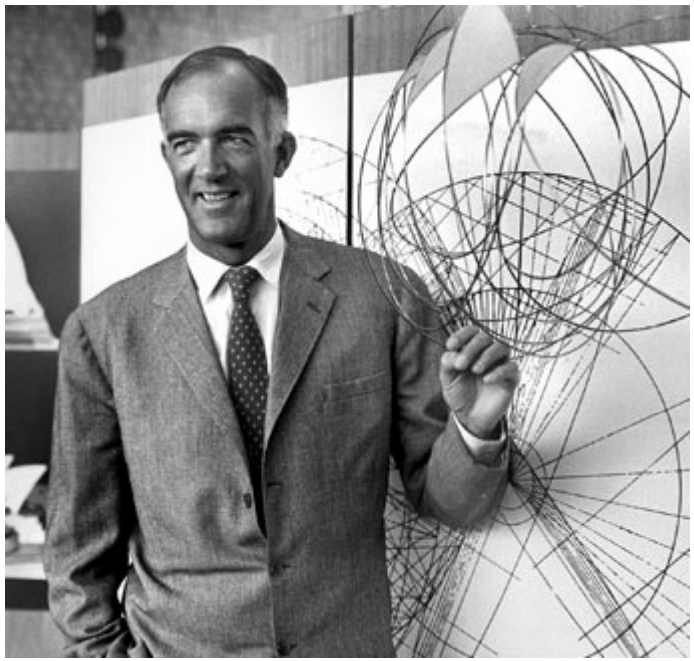
VISUAL COMMUNICATION

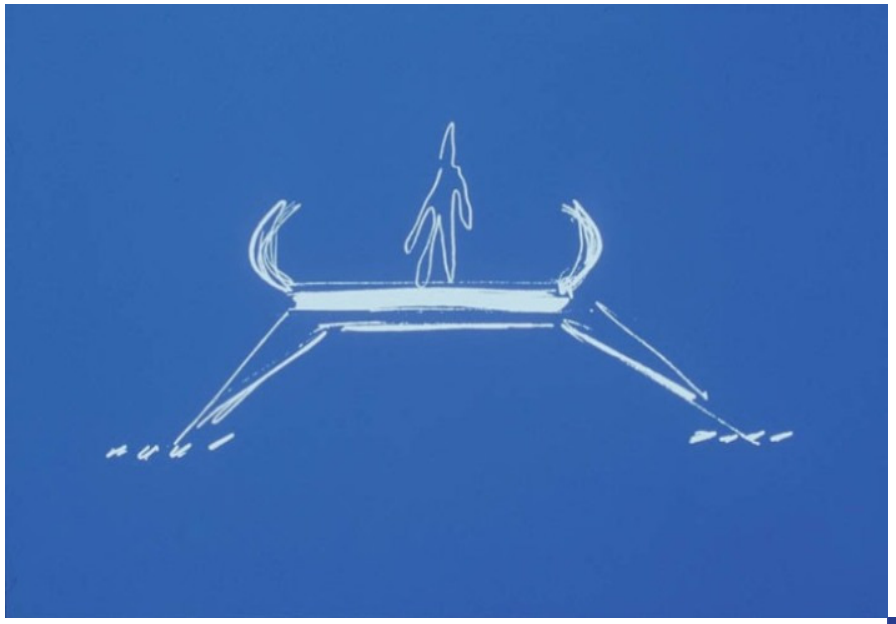
SKETCHING EXERCISES

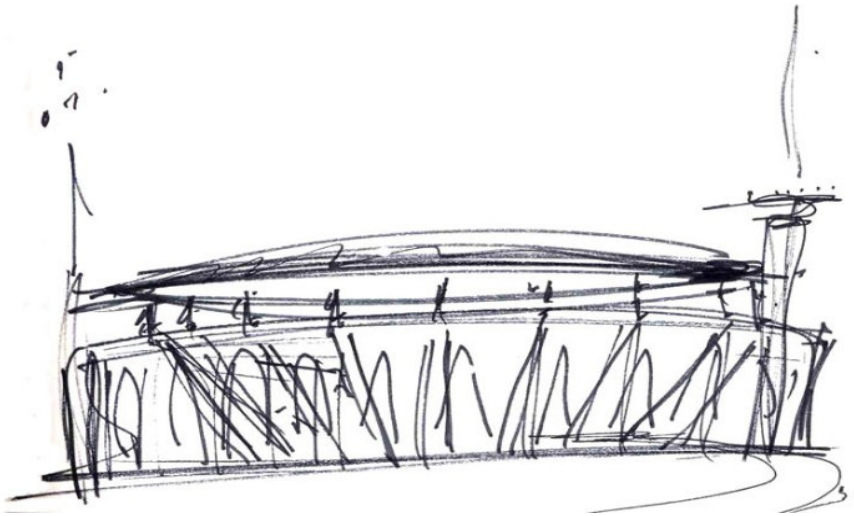
SKETCHUP MODELLING

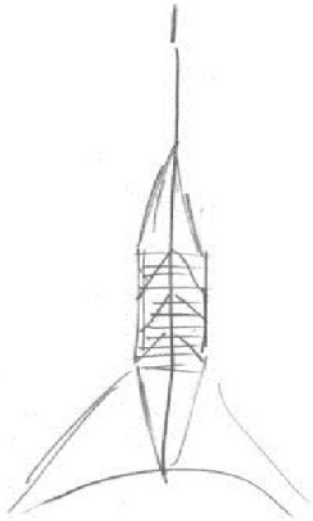
AUTOCAD DRAFTING

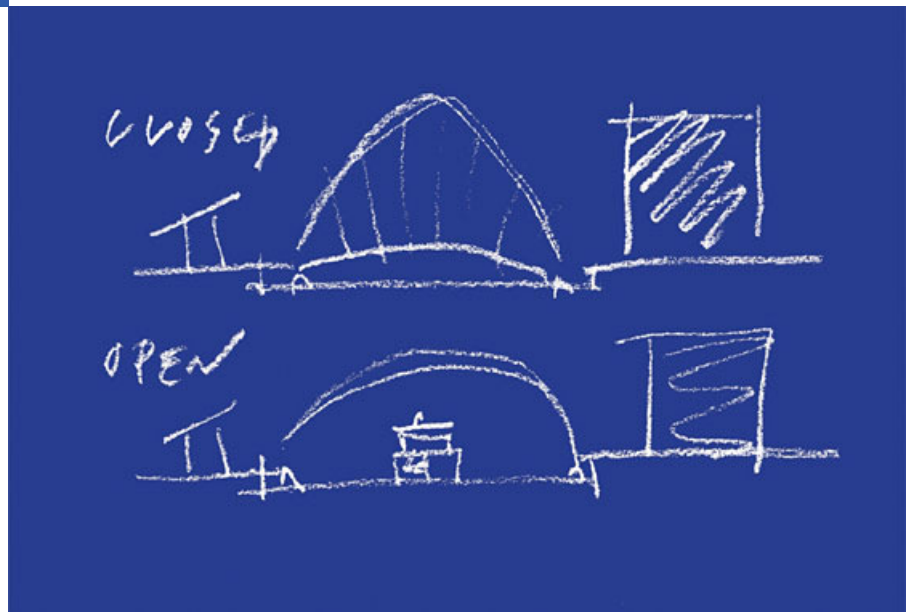
REVIT (introduction)

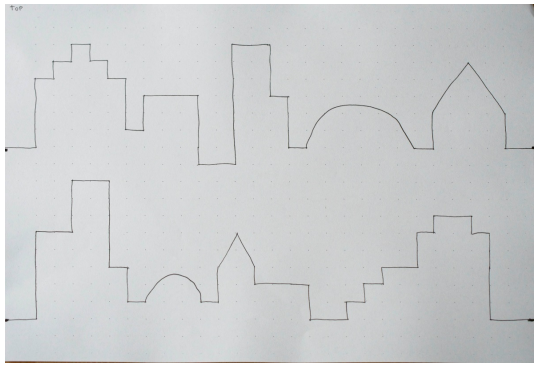


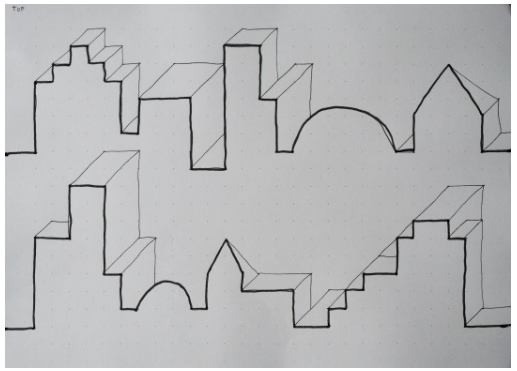


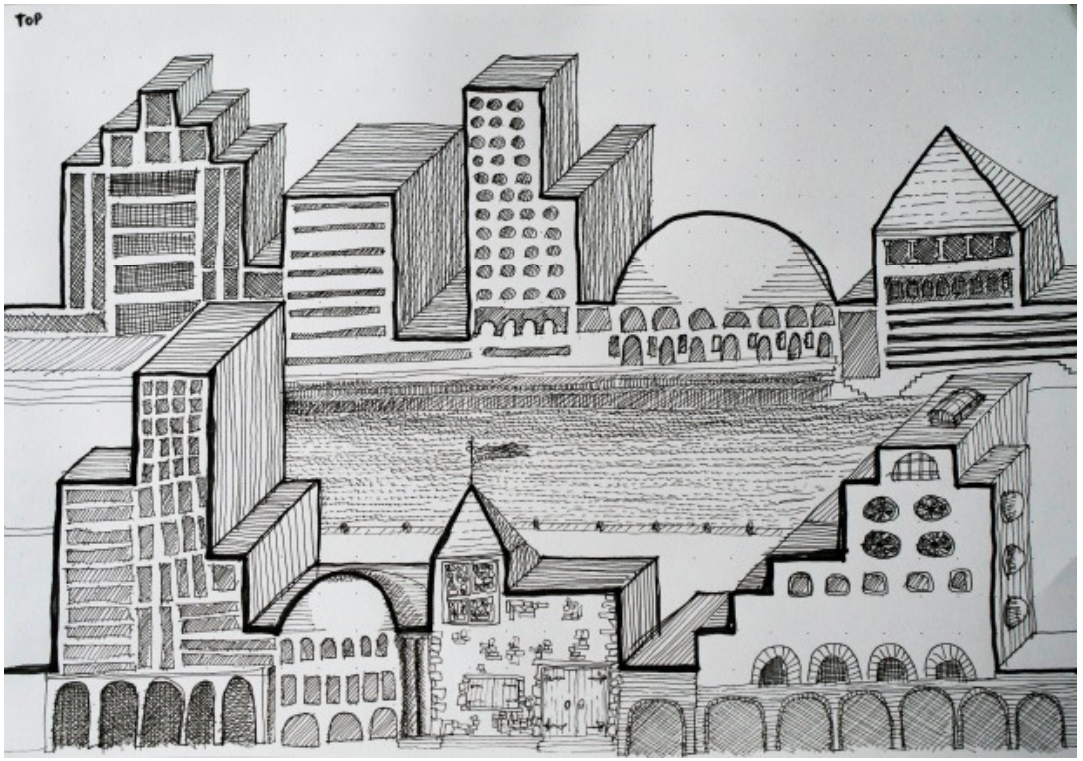


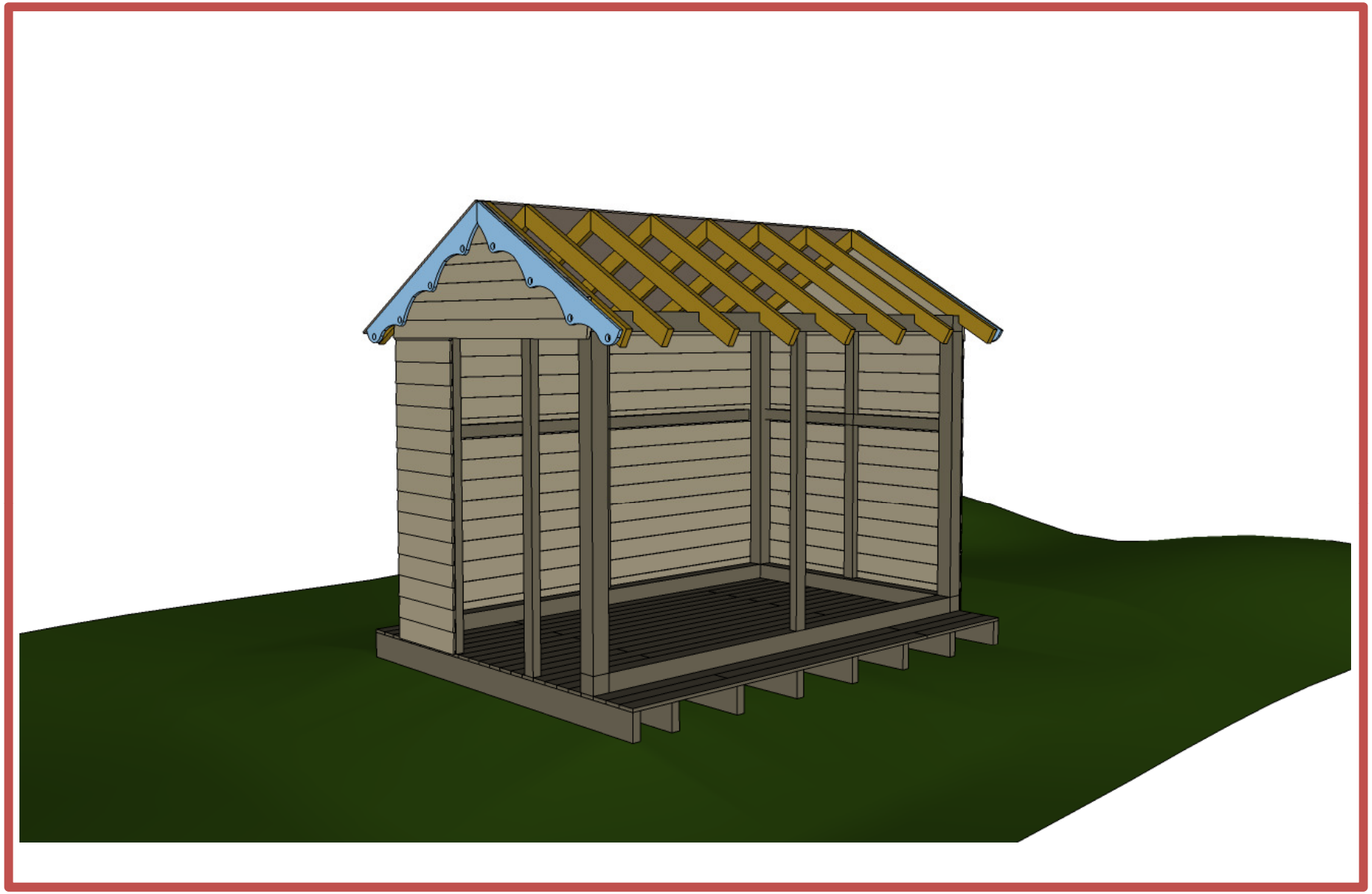


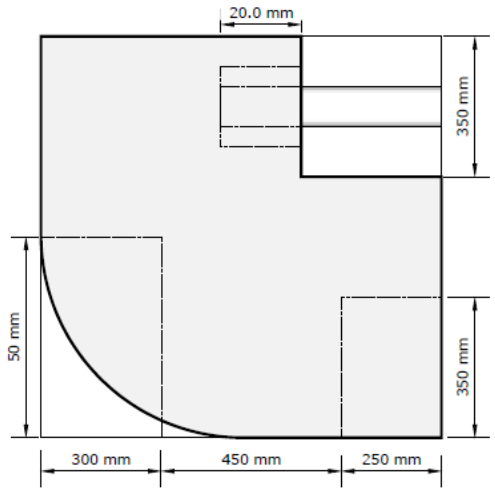

CLOSED
OPEN



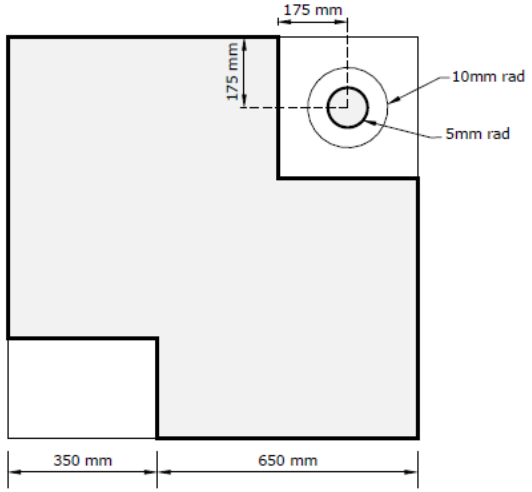



ToP

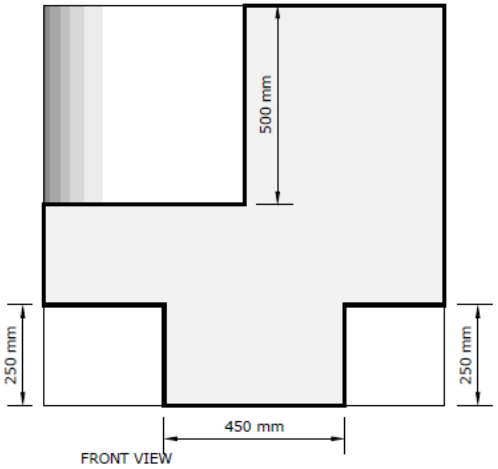




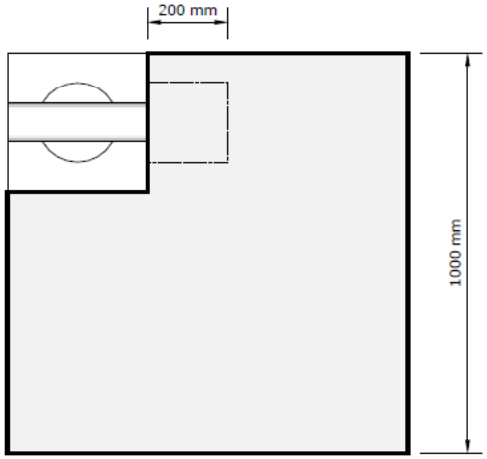
PLAN VIEW



RIGHT SIDE



FRONT VIEW



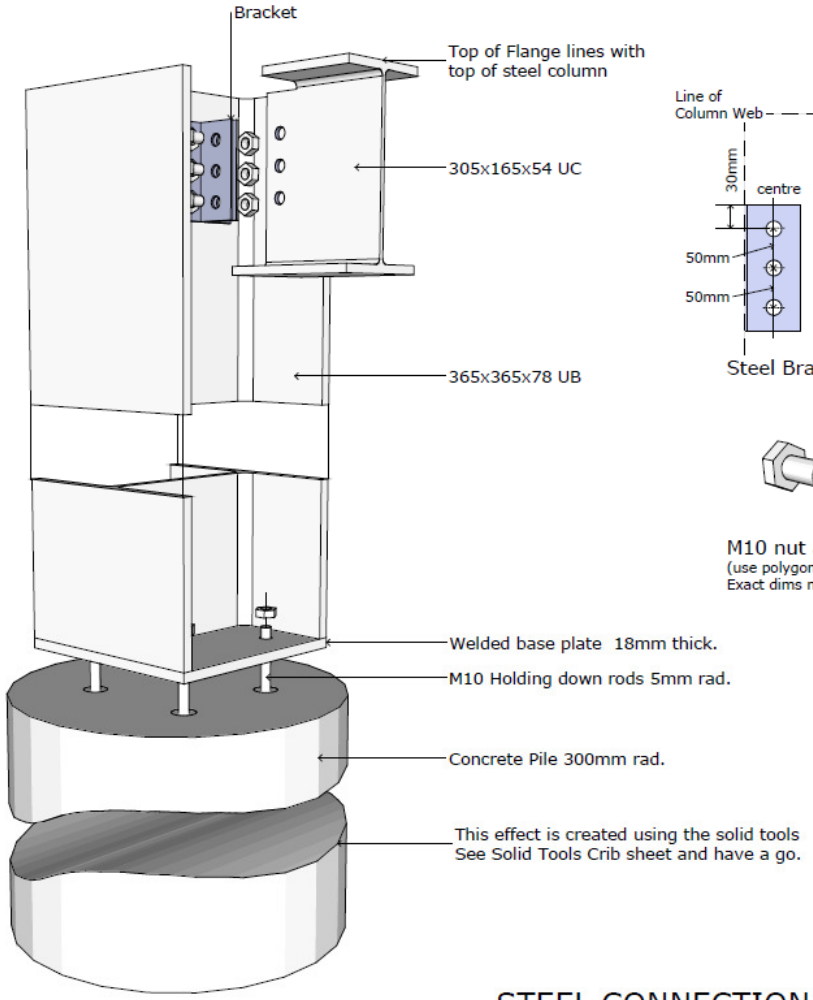
REAR VIEW

Sketch out a 3D view of this object in Orthographic projection and then try to model it in SketchUp.

Scan or photograph your sketches and add to Mahara.

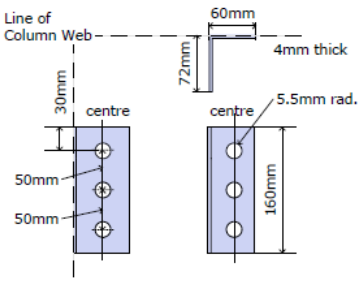
102CAB

Orthographic Projection

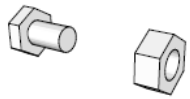


Finished Drawing

(rendered as a vector and exploded)

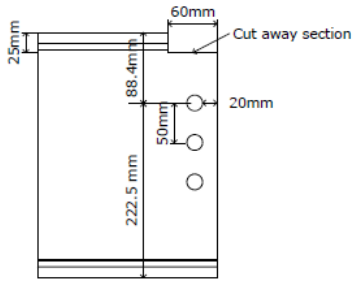


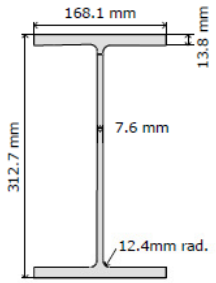
Steel Bracket 4mm thick



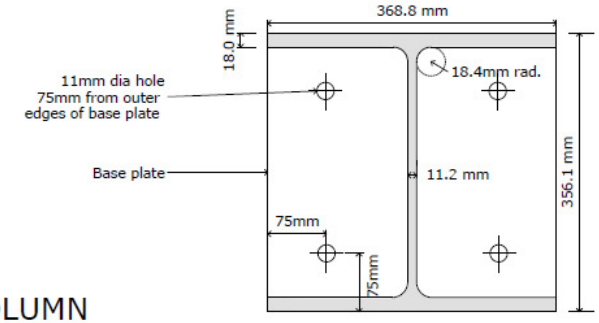
M10 nut and Bolt

(use polygon tool with 6 sides
Exact dims not required, just make it look correct)





Use 305x165x54 UC for the Beam



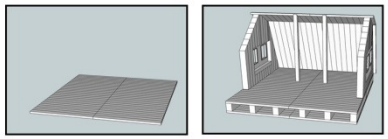
Use 365x365x78 UB for the Column

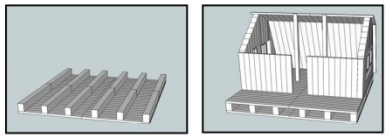
STEEL CONNECTION
BOLTED BEAM TO COLUMN

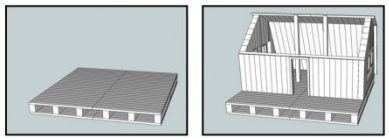
DO NOT SCALE FROM THIS DRAWING

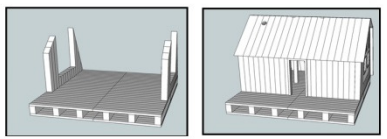
T1 ASSIGNMENT

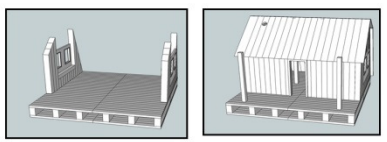
SURVIVAL SHELTER

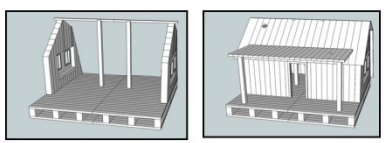


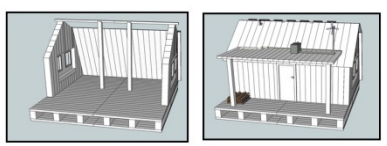


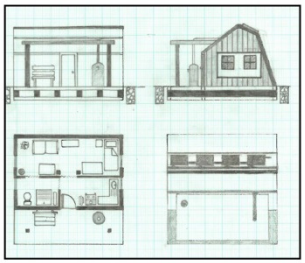











Initial Design Sketches - 1:100


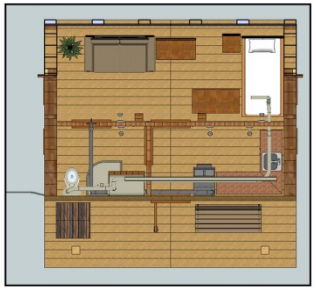
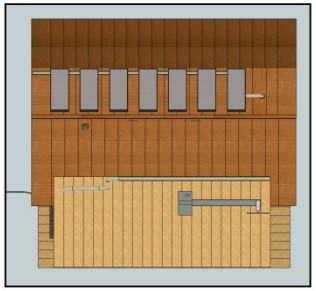
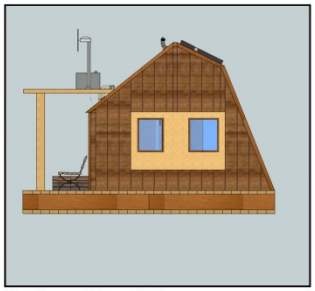
In order to heat my shelter, I will be using a wood stove. I will be using the wasted thermal energy from the exhaust fumes pipe to heat the shelter by having the pipe travel through the adjacent room before leaving through the vent stack in the roof.

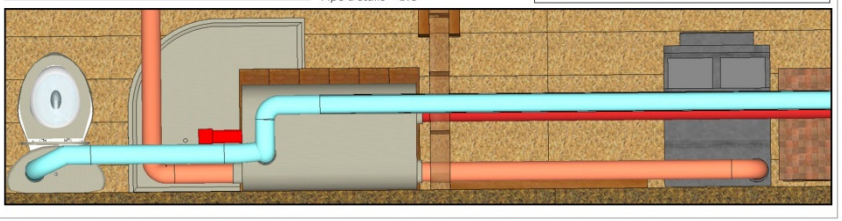
A wind turbine is used to power the lighting, the only electrical appliance in my shelter.

I will also be using the wood stove for cooking. As I do not have any refrigeration, I will use a mixture of fresh food and long lasting food to last the two weeks before the supplies are replenished.



For entertainment, I have a bookcase and will be taking a variety of books to read for entertainment. As it is summer and the shelter is near the beach, I will be able to take advantage of the occasional day of good weather.




Elevations and Plans - 1:50


The shelter is located on an island called Fuday and is part of an island chain off the west coast of Scotland. As I recieve fortnightly supplies, my shelter will be built near the shore.

As I am staying in the shelter for 3 months, I decided to design it with both comfort and sustainability in mind.

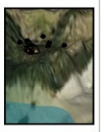
By having my shelter on top of the cliff, the solar water collectors are more exposed to the sunlight, the wind turbine has higher exposure to the wind and I avoid the tide from the sea.

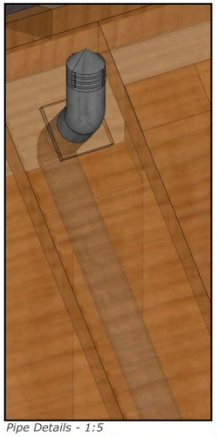
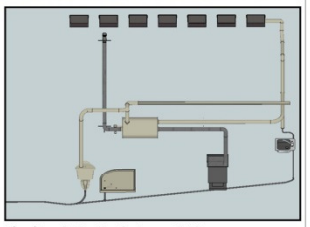
However, the higher incline to the south also provides protection from any possible storms.

In order to keep the timber foundations as dry as possible, the shelter is surrounded by a French Drain in order to direct any water away from the structure.

The waste pipe uses gravity to move the waste water away from the structure as the pipe can travel down the hill to a further away location.







Pipe Details - 1:5

Plumbing & Heating System - 1:50
In order to generate as much hot water and heating as energy efficiently as possible I am combining two sustainable systems. In order to heat the water, the exhaust pipe from the wood stove travels through the water storage cylinder. As the pipe will get hot when the stove is in use, the water will be heated. I have also combined this with solar water collectors to collect and heat water naturally. The high placement of the collectors, guttering and storage cylinder means that a pump is not needed as gravity moves the water. In the diagram below, the:

- blue pipe is cold collected rainwater from the guttering that is used for the toilet,
- red pipe is hot water from the solar water collectors,
- peach pipe is the exhaust pipe from the wood stove.

:: 105CAB :: Design Studies :: Survival Shelter ::

Dayle Wheeler :: 4207025 ::

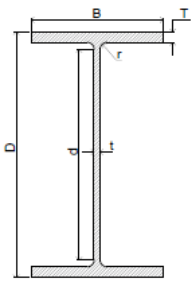
4:1 SCALE

2:1 SCALE

10.00

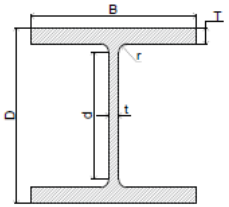
FEIKO WATCH: your name here Page 11

Assignment - 102CAB - Design Studies



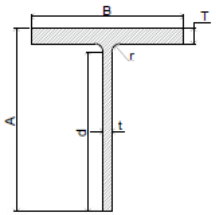
305x165x54 UB 1:5

B = 166.8mm
T = 13.7mm
t = 7.7mm
r = 8.9mm
D = 310.9mm
d = 265.7mm



203x203x86 UC 1:5

B = 208.8mm
T = 20.5mm
t = 13.0mm
r = 10.2mm
D = 222.3mm
d = 160.8mm

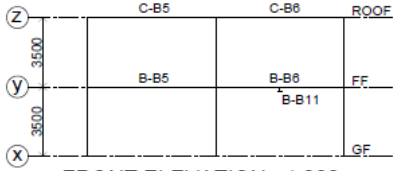


191x229x49 structural tee 1:5

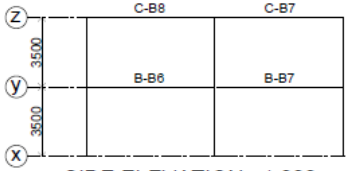
B = 192.8mm
T = 19.6mm
t = 11.4mm
r = 10.2mm
A = 233.7mm
d = 203.9mm

Steelwork Details

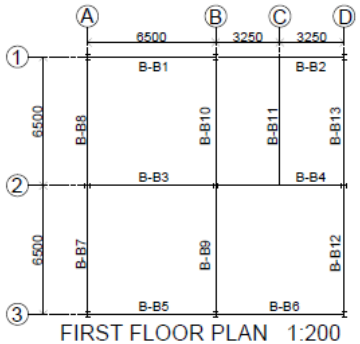
- Draw in Model space to full size
- Use the created Styles for appropriate text, dims and leaders.
- Drag extra content from template file on W drive \\W\EC\STUDENT\AutoCAD Support Material\CAD files\TEMPLATE
- Use Layers to control different geometry and text.
- Create Viewports to set up drawing on A3.
- Rerfer to drawing for Scale information.
- Check out video on Moodle for more information.



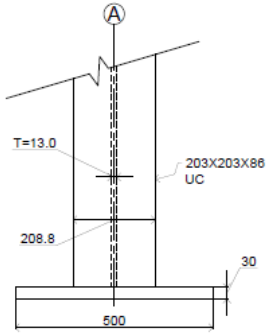
FRONT ELEVATION 1:200



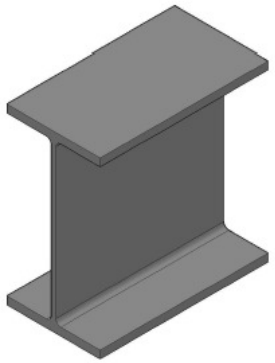
SIDE ELEVATION 1:200



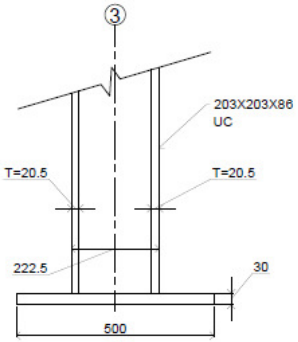
FIRST FLOOR PLAN 1:200
LEVEL (B)



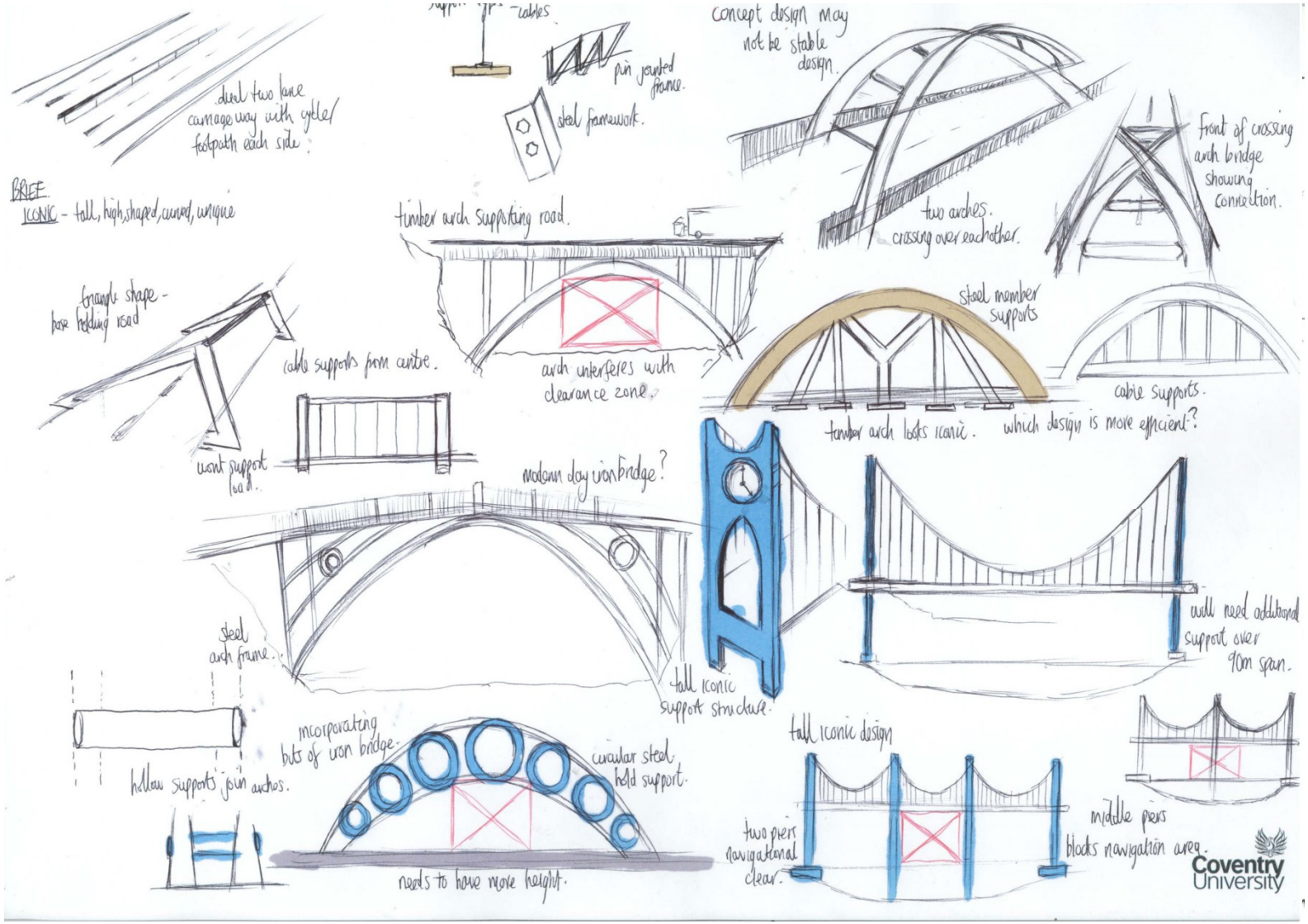
COLUMN ON GL A1 - DETAIL 1:10

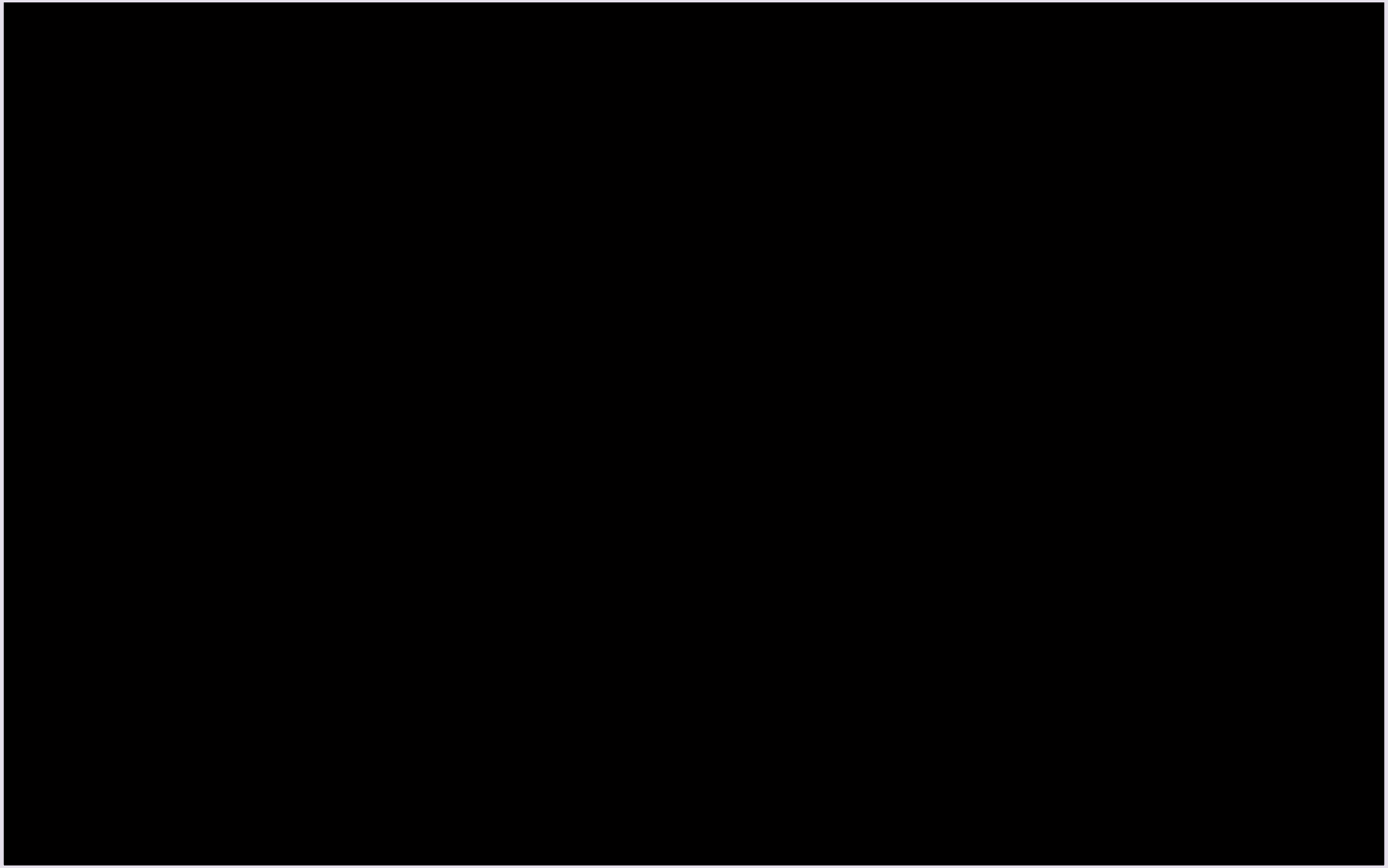


3-D view of 305x165x54 UB



COLUMN ON GL 1A - DETAIL 1:10


dual two lane carriageway with cycle/ footpath each side.
BRIEF
ICONIC - tall, high, shaped, curved, unique
-cables.
pin jointed frame.
steel framework.
concept design may not be stable design.
two arches. crossing over eachother.
front of crossing arch bridge showing connection.
timber arch supporting road.
arch interferes with clearance zone.
triangle shape - base holding road
cable supports from centre.
steel member supports
cable supports.
timber arch looks iconic.
which design is more efficient?
must support load.
modern day iron bridge?
steel arch frame.
tall iconic support structure.
will need additional support over 90m span.
hollow supports join arches.
incorporating bits of iron bridge.
curvular steel, held support.
needs to have more height.
tall iconic design
two piers navigational clear.
middle piers blocks navigation area.



Thank You