

OPTION 1

Tension Stairs

The Tension Stairs design is an experimental cable tension structure. The Timber steps are used for their compressive strength as the members holding the structure in form, whilst the tension cables keep each step seperated and stable.

This design is likely to have significant movement when being used, and relies on extremely tight cables for all stability.

The cables are fixed to the timber steps through a stainless steel rod, which also stops each step from sliding along the cable.

OPTION 2a

Flowing Surface

The flowing Surface is a continuous membrane. It is ideal for steeper stairs, and transfers all loads through the entire structure.

The folds in the steps create the horizontal surface required for each step.

Offsetting the folds constricts the user to which foot they can use per step, however it is also creates a single diagonal element through the centre of the stairs (from base to top) through which all the loads can be effectively agglomerated and transfered to its base.

OPTION 2b

Flowing Rods

The same aesthetic form as Option 2a, however very structurally different. The Flowing Rods transfer the loads horizontally to a metal side-rail. This side rail transfers the loads to the ground, and is simultaneously supported by the tension cables overhead. These cables hang the structure from the floor above, ensuring it maintains its form and carrying some of the load.

The connections within the stair itself are welded rods, whilst the tension cables are held on by fixed positions along the railing.

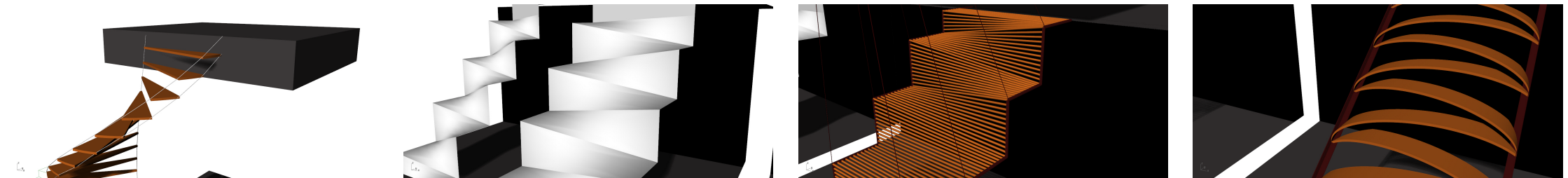
OPTION 3

Spring Steps

A significantly different concept - the Spring Steps uses a side-railing similar to that of Option 2b, however most of the concentration is within the timber step itself.

The arched step is designed to absorb much of the force through bending, and transferring the remaining loads to the side rails, which in turn transfer the loads to the ground.

The key to this design is ensuring the side rails are fixed and cannot buckle under the outward pressure, and that the timber is selected appropriate to its designed task.



At this stage in the project we have decided to develop a number of concept. These were drawn in the initial concept generation stage of the project. From here we will refine one of the above typologies and resolve the design and detailing issues concerning the selected stair.