

The OPTIMUM

Name Story

In the first years of our engineering education, we learned that there are 4 main principles that we should pay attention to in our designs. Our constructions should have been designed at the optimum level around these 4 main principles: **safe, economical, aesthetic and sustainable**. On top of that, we have created an optimal solution with a certain amount of combinations of these principles. Due to this difficulty during the design process, we decided that the name of the team should be **'The Optimum'**

Concept

When we started our design, we aimed to be balanced, lightweight and at optimum strength. In line with this goal, as in many engineering fields, we have benefited from the creatures that exist in nature. We were inspired by wings, just as birds of prey were inspired to design combat aircraft used in the army. We designed our bridge within the context of this concept.

Story of The Design

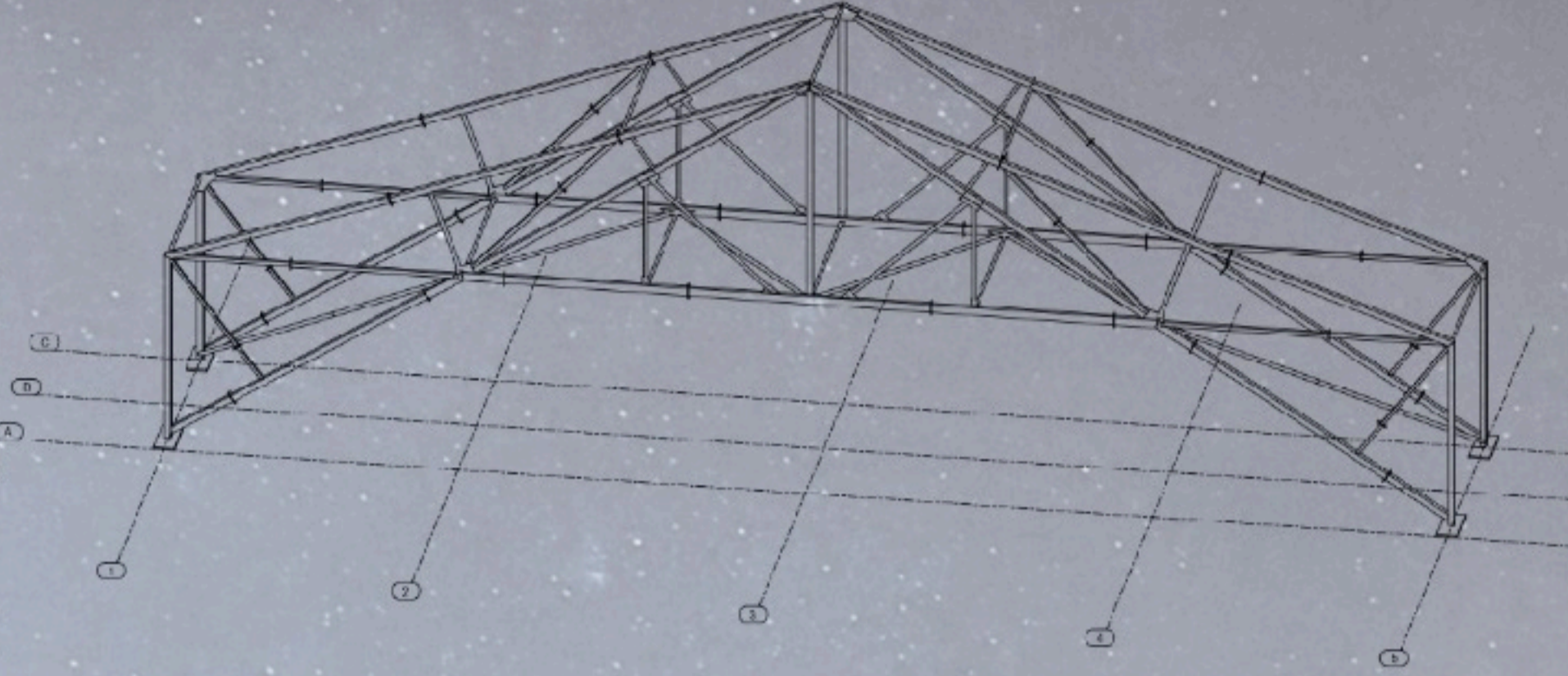
A view from **The Fall of Icarus...**

We were very impressed when we first saw this painting, which was painted in the 1560s. A craftsman who has made many inventions, who was called a great engineer in ancient times, is imprisoned in the tower with his son by Minos, king of Athens. Daedalus couldn't let his son die with him. He makes a wing out of bird feathers that have fallen the tower and with wax left between the boards.

At the same time, **the figure of the wing**, which we were inspired by based on this story, **represents balance, power that goes against many physical rules that have come out of the hands of an engineer**. So while we were doing our design, **we flew close to the sun like Icarus, pushing the boundaries**, but we tried to get a nice result from the design we made by evaluating the risk we took in an ideal way.

Type Selection of Bridge

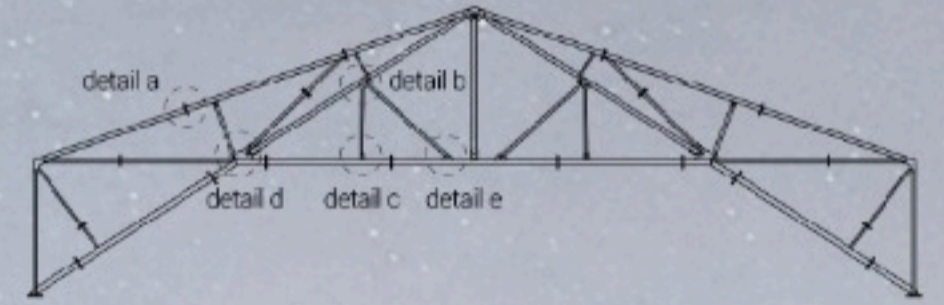
In the bridge, which we started with inspired by wings in our design, again we used **the static advantage of the triangle**, which is the geometric form of the wings. We paid attention to the fact that all the elements from the part to the whole are triangular, symmetrical and equal. The actual resolution of the forces that the loads will generate will depend on the design. For this reason, we worked the **compression and tension forces on the horizontal and vertical axis** on the most rigid. That is why we preferred the truss system as the optimal solution.



Axonometric View



Side View
Scale: 1/5



Front View
Scale: 1/15



Top View
Scale: 1/15

Detail A



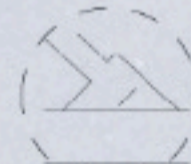
Detail B



Detail C



Detail D



Detail E

