

P.C. HOOFTSTRAAT 138

Welcome to the P.C. Hoofstraat. Over the course of the 20th century this street has developed into one of the most luxurious shopping streets of the Netherlands. Located in the heart of the Museum quarter, this 19th century street filled with traditional Amsterdam townhouses, has grown into a place where heritage and design meet each other.



The recent, most remarkable developments in the P.C. Hoofstraat are taking place at eyelevel; with a contemporary, fresh take on the streets' façades. You might have already spotted some on the way. The façade you are now standing in front of, P.C. Hoofstraat number 138, is a design made by UNStudio named "The Looking Glass". Octatube was involved as a Design&Build partner for this remarkable piece of architecture and we're excited to take you along some of the technical highlights.



First, let's look all the way up and take this façade in. You see the three curved glass panels descend from the upper floors, they resemble the flow of frisky fabrics. The panels are bonded with structural silicone to the adjacent glass panels. Slender stainless steel profiles in between the panels define the glass box shape. You are now standing in front of the end result, but of course we started somewhere else.



We started with a pre-engineering phase beginning of 2018. There is a beautiful design on the table, but is it technically feasible? That's what we aim to find out during pre-engineering. During this phase we can optimize the design, resulting in better cost-efficiency and an idea of potential risks in the process. For this façade it came down to precise detailing and a constant pursuit of quality. We teamed up with the client, UNStudio and ARUP to collectively clarify the wish and the vision of this project.

As you can see, the façade consists of three glass and stainless steel boxes with curved glass and multiple glass joints. It starts flush with the adjacent buildings and cantilevers outward while moving upwards. The fact that this

gradual movement takes place within one shape is pretty remarkable. It emanates a fluidity you wouldn't directly associate with glass.

Try to get a closer look at the joints of the glass boxes. How do the materials come together? The boxes are entirely bonded by means of structural silicone, no bolts were used. As the glass cantilevers outward the silicone bonding has to withstand higher levels of tensile stress. By doing extensive iterative calculations the structural silicone is able to accommodate this as well as the tolerances in temperature differences and tolerances between the curved glass and stainless steel (which is around 2 mm in all directions).

The clear glass panels are framed by sleek stainless steel profiles. The execution of these was a true technical challenge. Not only because of the complex geometry. The tolerances were extremely tight and the glass had to of course fit perfectly, so the tolerances on the stainless steel were precision work.



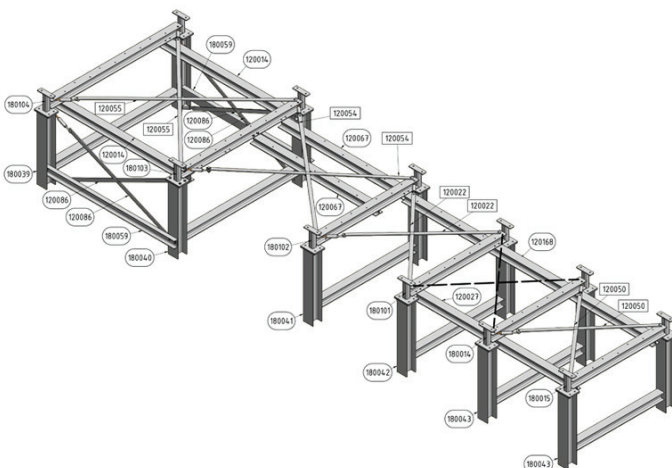
Some stainless steel elements were cut out curved in one direction and later bent in the other direction, creating a double curved element. This can be well seen above the front door.

You might have already noticed the special brickwork. Up until the first floor we incorporated a stainless steel strip in the joints. It pulls the traditional architecture together with the contemporary façade.



The glass boxes, measuring a no mean 8,2 x 1,8 meters, were installed as a single unit on site. Yup, we're quite proud of that fact! So, how did we manage that?

The boxes were horizontally glued and assembled in our factory and rotated on site to be vertically mounted into the facade. We designed a custom steel auxiliary frame that functioned as a rigid mold around the glass boxes during assembly and protected the boxes during transport and hoisting.



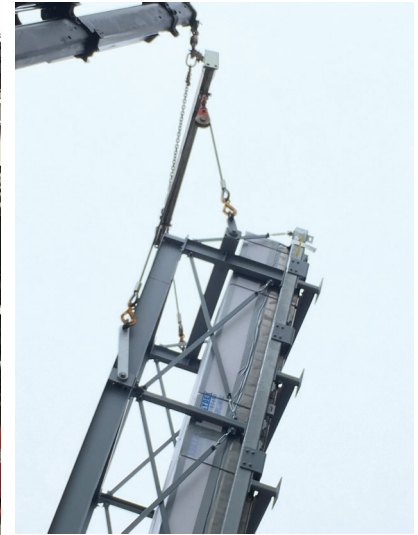
The custom steel auxiliary frame





The frame arrives horizontal on site and is rotated to be mounted vertically in the facade.

As the glass elements are being kept together by a structural sealant, it was important not to put a heavy load on them during transport and during the rotation from horizontal to vertical. The deflections of the glass boxes and the steel auxiliary frame had to be kept to a minimum and all stages of assembly were therefore calculated. Because of the advanced pre-fabrication in our factory the glass boxes could be mounted within just two days.



In many ways “The Looking Glass” was a job for a Swiss watchmaker. It all came down to the exact millimeters – from the silicone bonding to the glass and steel connections as well as the steel frame and the rotation on site. The end result is a showstopper. We hope you’ve enjoyed taking a closer look at this technical highlight, one of our favourite engineering feats of last year.

This façade, for client Warena Real Estate, came together in collaboration with UNStudio, ARUP, Brouwer & Kok and Wessels Zeist.

