

## Case Study 11

### Design Studios, Chalk Farm, London

Location: Chalk Farm Road, London, UK  
Date: June 1991  
Architect: Ron Arad and Alison Brooks  
Engineer: Atelier One

Although designing with lightweight membranes utilizes the latest computer technology for form finding and stress calculation and often involves the use of twentieth century materials such as high-tensile steel and PTFE, the resultant architecture does not necessarily have to belong to the high-tech category.

In the studios and gallery for One Off, Ron Arad and Alison Brooks have produced a unique solution, where a lightweight membrane roof has been used in conjunction with an expanded metal shell, primarily for its sculptural and expressive characteristics. The almost *ad hoc* way in which the membrane roof envelops the remains of a crumbling Edwardian warehouse in Camden Town, London, comes remarkably close to the images of urban metamorphosis conjured up by Peter Cook and Ron Herron in the 1970s magazine *Archigram*.

The building originally housing Chalk Farm dairy (used later as a piano workshop and garment industry sweatshop) was in a state of decay when Ron Arad took it over in 1991. The timber pitched roof over the first-floor warehouse was in need of replacement and a curved metal roof was initially considered. However, Arad and Brooks wanted the roof to have a soft, 'quilt-like appearance'. The PVC and expanded metal roof that covers the gallery, studio and workshop spaces arose as a result of a collaboration with Neil Thomas and Reg Allen of Atelier One consulting engineers.

#### Roof structure

The roof construction is unique in employing Expamet weld mesh in compression to form an expanded metal shell. The tensioned fabric and metal structure grew out of the requirement for a covering that was translucent, lightweight (so as not to unduly load the existing brick construction) and quick to build. Load testing at the City University in London was required to determine the buckling capacity of the mesh and to ensure it would meet the engineers' requirements. The weld mesh is held in compression between pairs of curved steel angles that form arches fixed to the existing brick wall. These span onto seven calligraphically shaped steel 'columns' which were individually cut from 6 mm mild steel using sheet steel templates. The doubly curved, enclosing membrane provides weatherproofing and assists in stabilizing the structure. The 'columns' sit on a steel clad, concrete edge beam running the length of the external wall of the studio space. Closed cell foam was used to seal the gap between the weld mesh and the fabric at eaves level. Permanently fixed, 2 mm thick transparent PVC sheeting is used to fill the gap between the

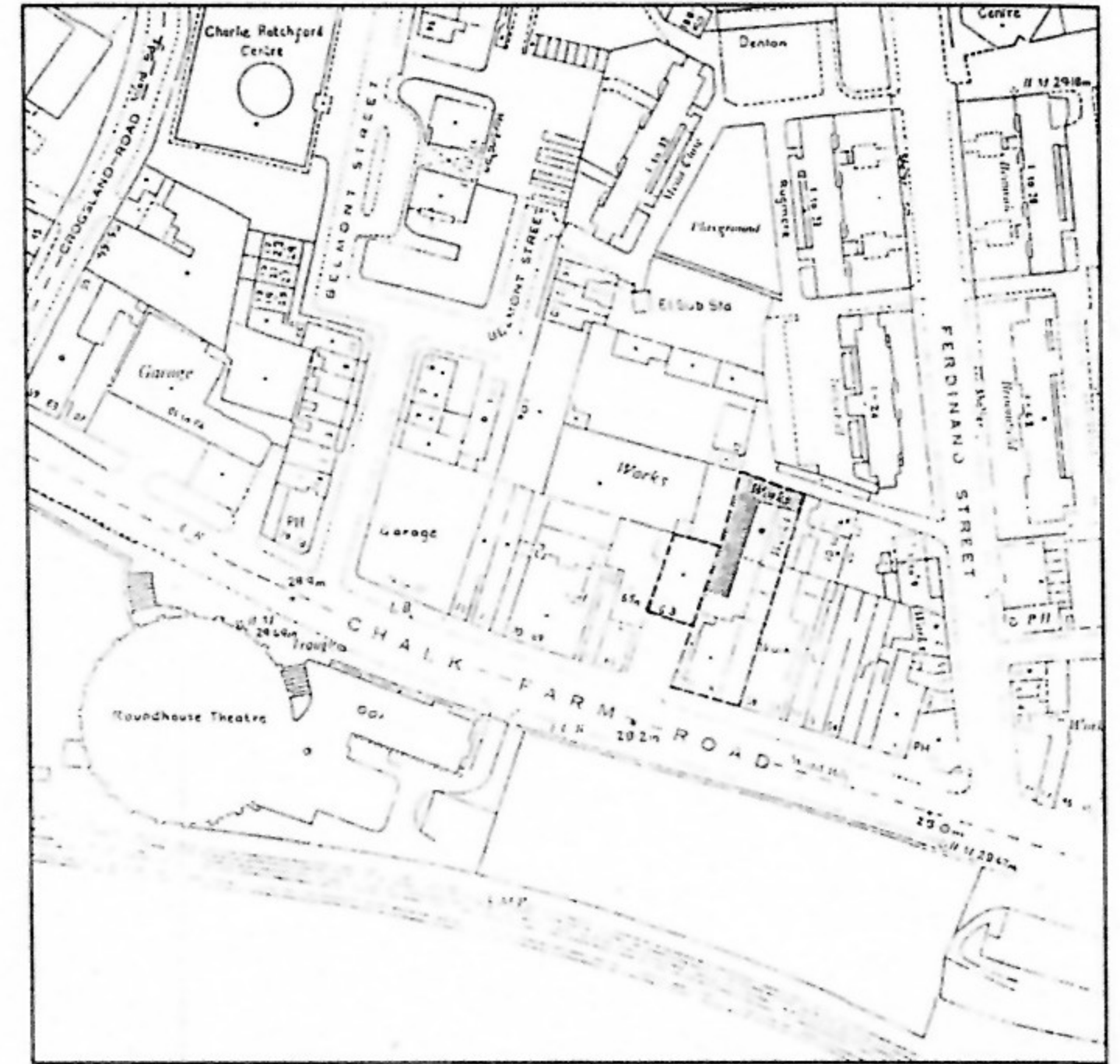


Figure 10.11.2  
Site plan

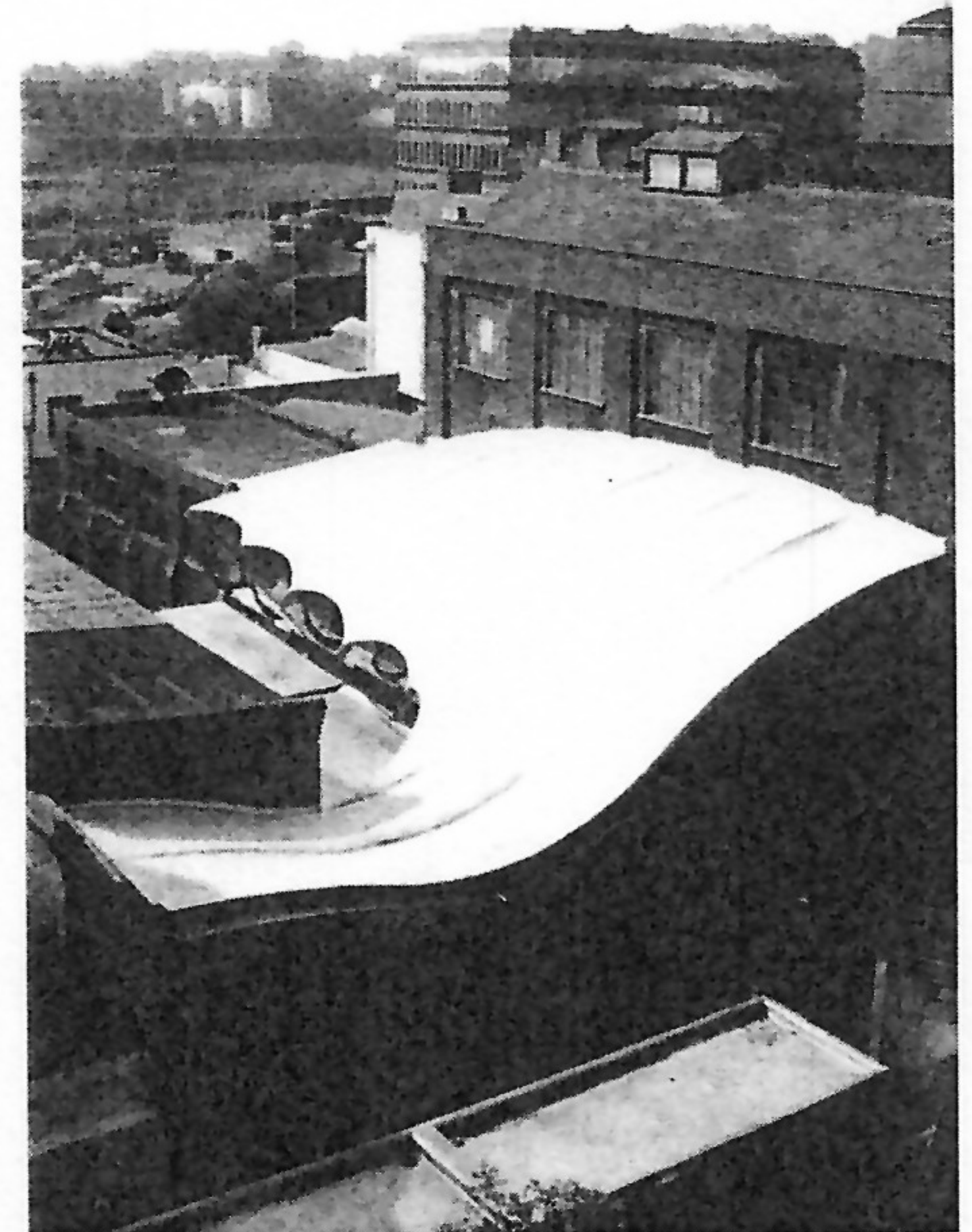
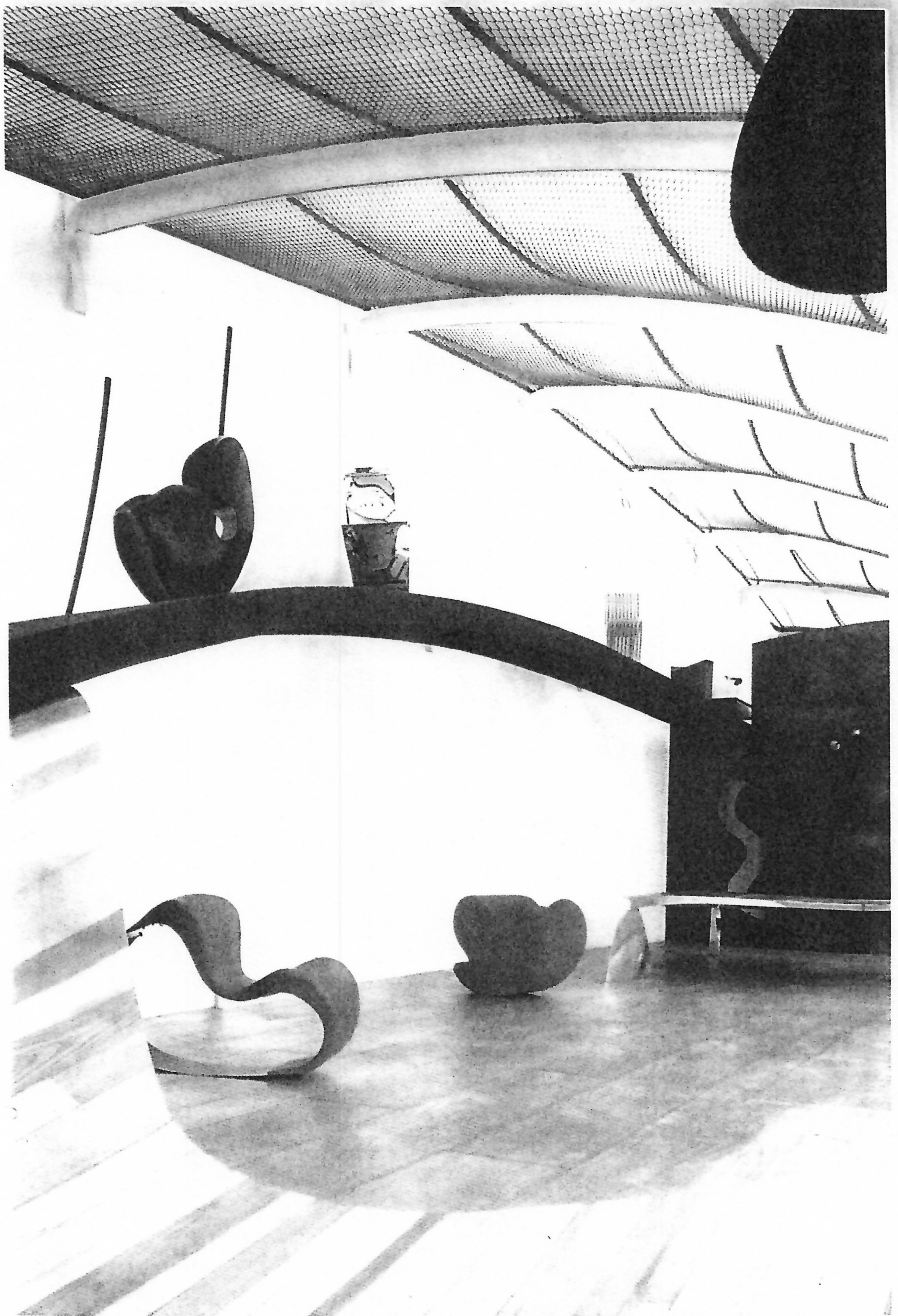


Figure 10.11.3  
Membrane roof



**Figure 10.11.1**  
*View into the upper studio*

roof and the windows. The windows themselves are frameless, consisting of 8 mm thick flexible transparent PVC sheets cut from a roll, and are sealed with the aid of Velcro fabric fastener.

By classifying the space under the roof as semi-external, the designers avoided the question of how to insulate the roof membrane. Since the designers themselves were the end users of the building, a certain amount of on-site improvisation and tailoring of the design was possible during the construction process, as necessitated by the experimental nature of the design.

## References

*Designers Journal* (1991) *Metalmorphosis*, September

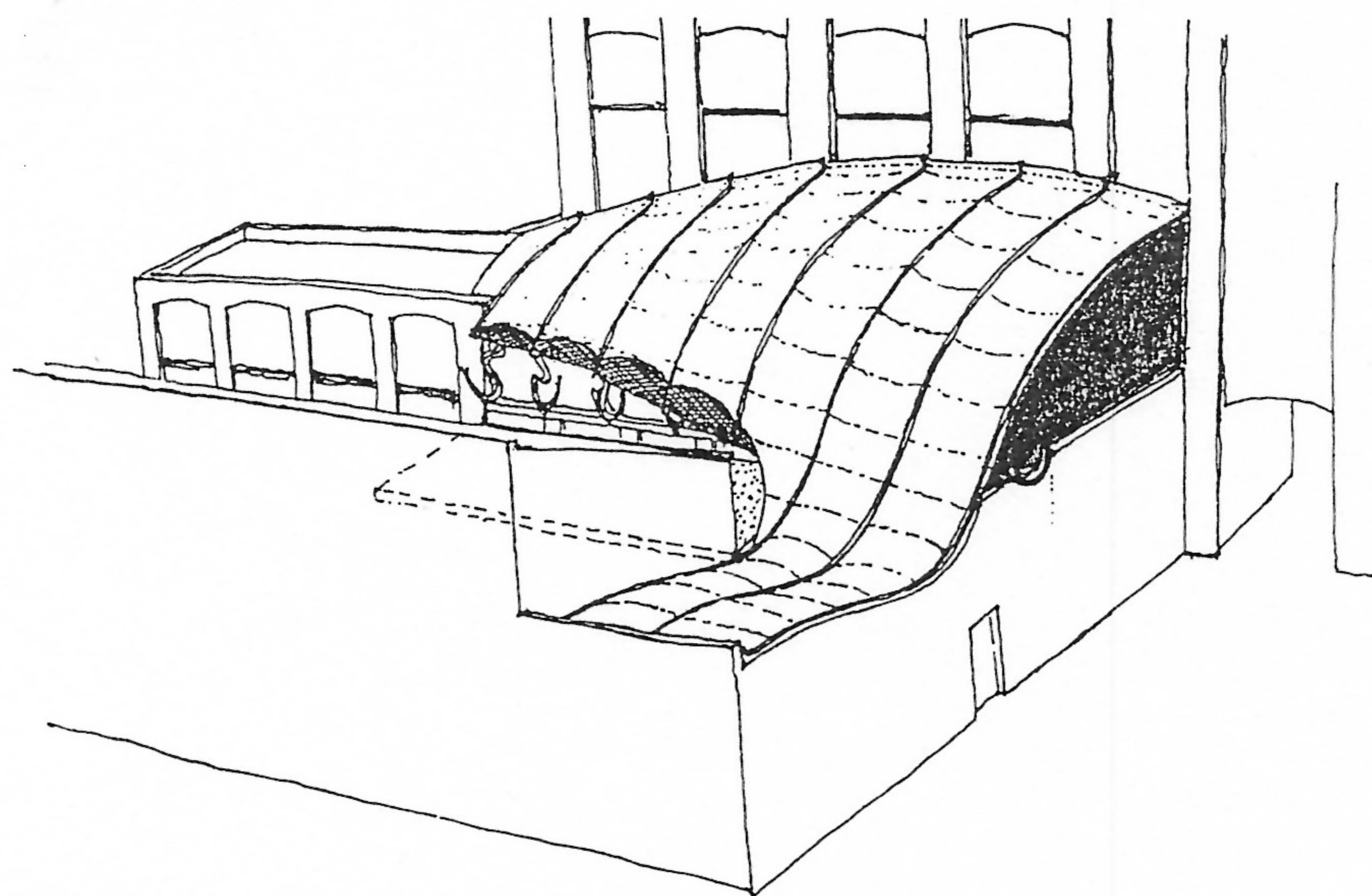
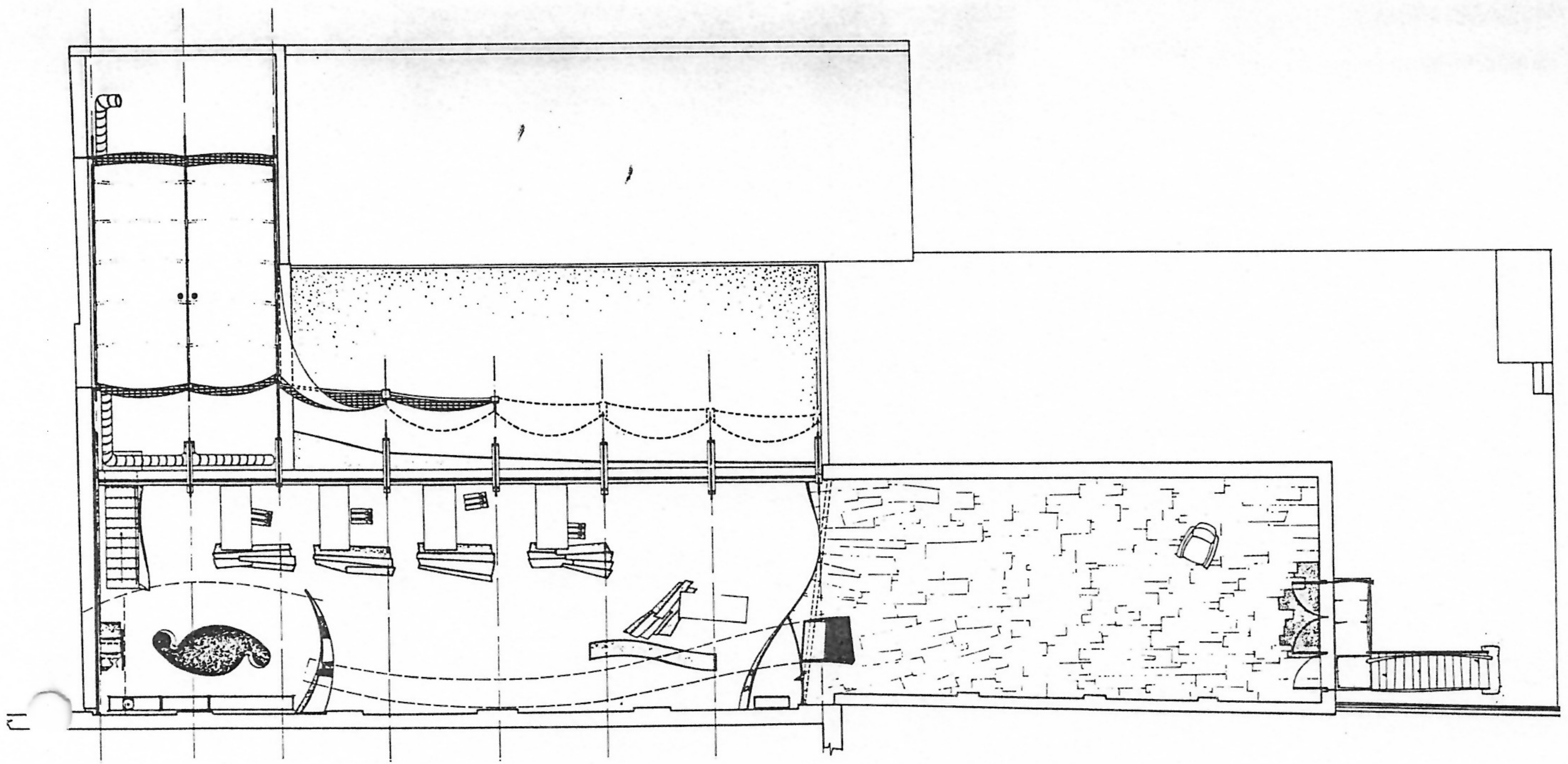
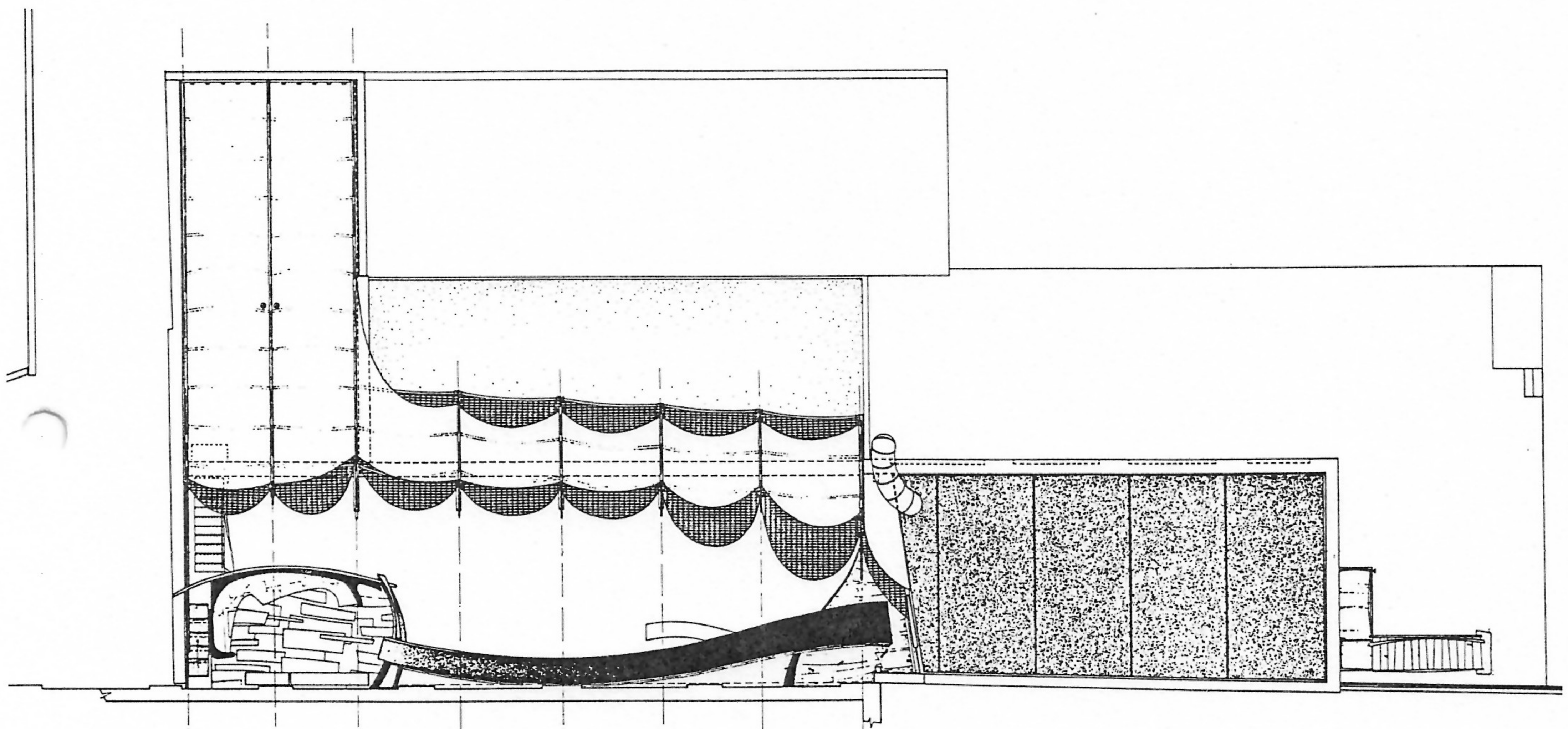


Figure 10.11.4

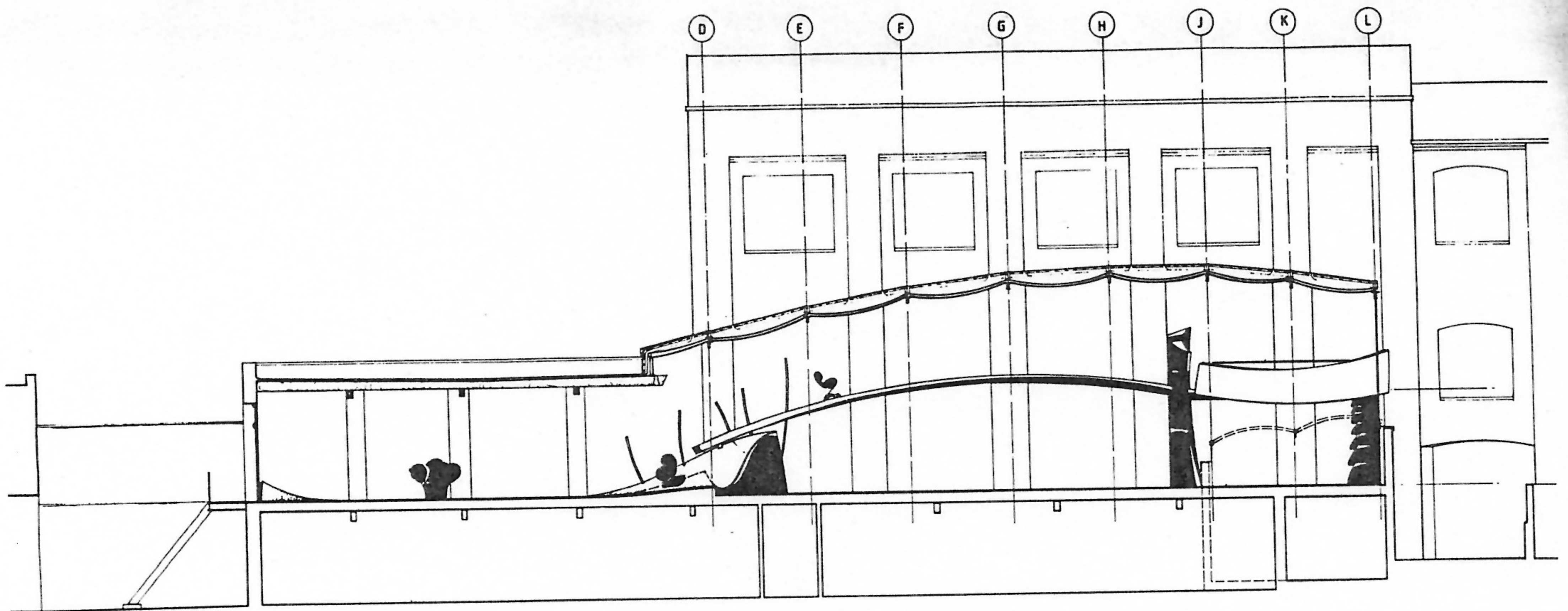
Sketch



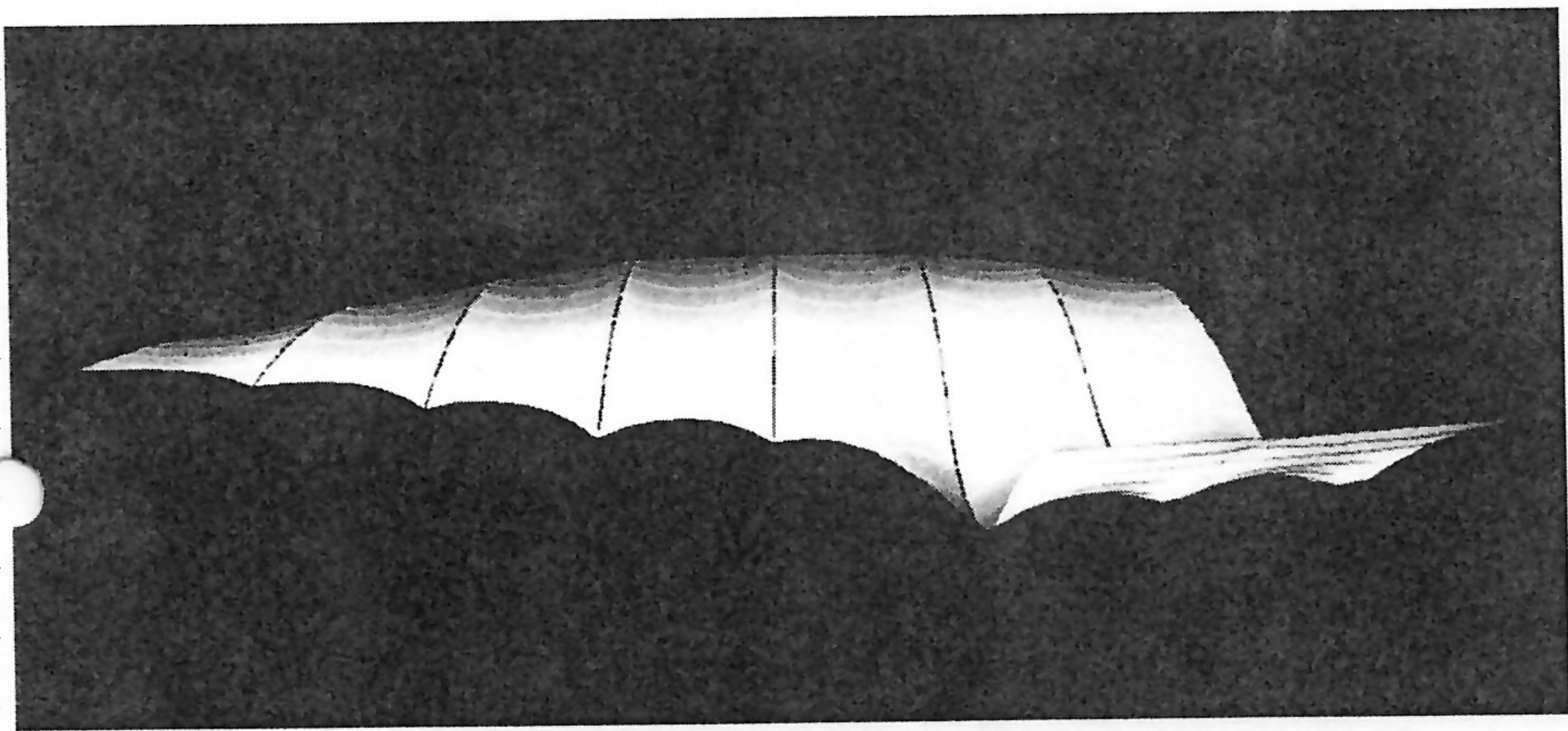
**Figure 10.11.5**  
*Plan at studio level*



**Figure 10.11.6**  
*Plan at roof level*

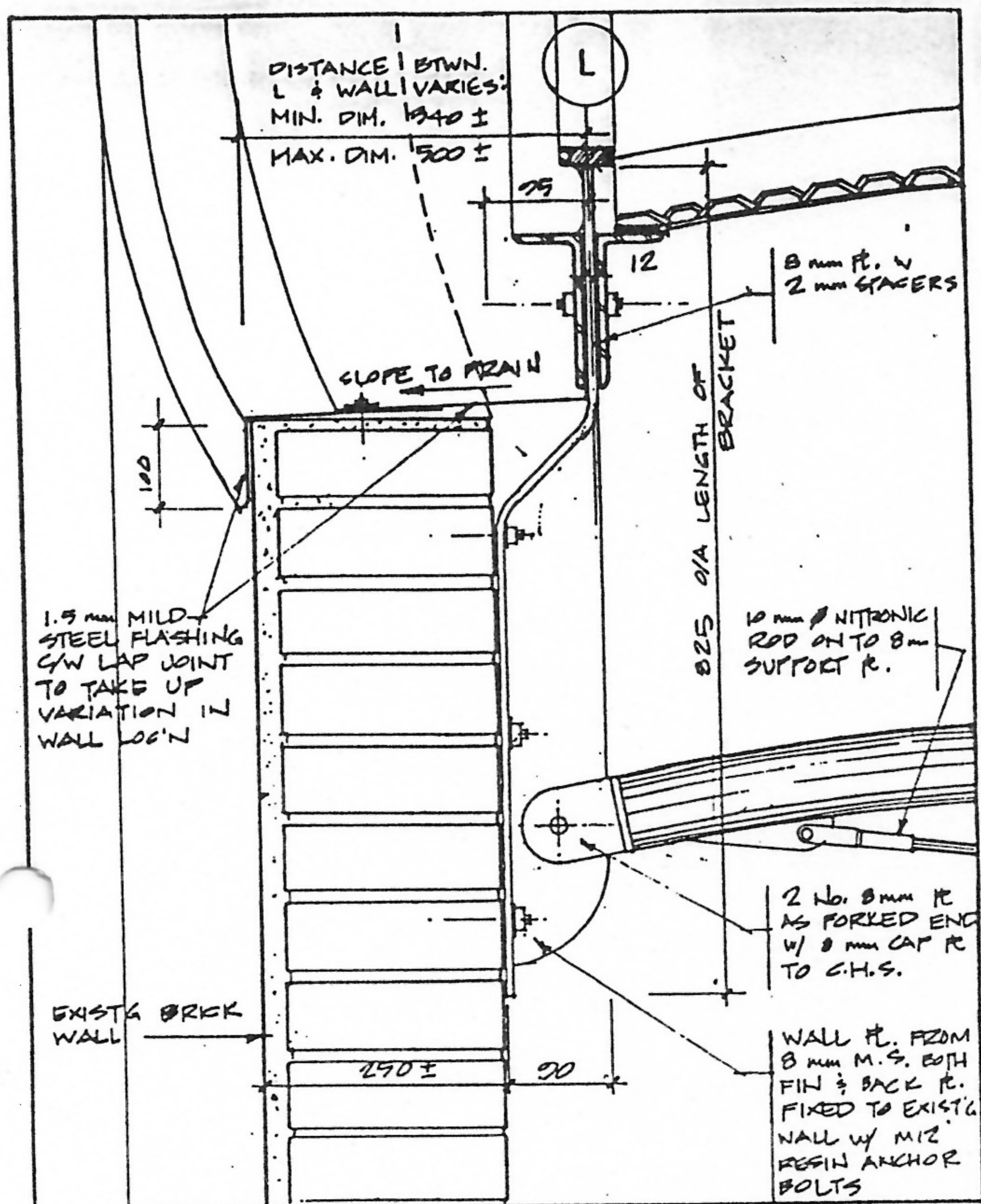


**Figure 10.11.7**  
*Section through the upper studio*

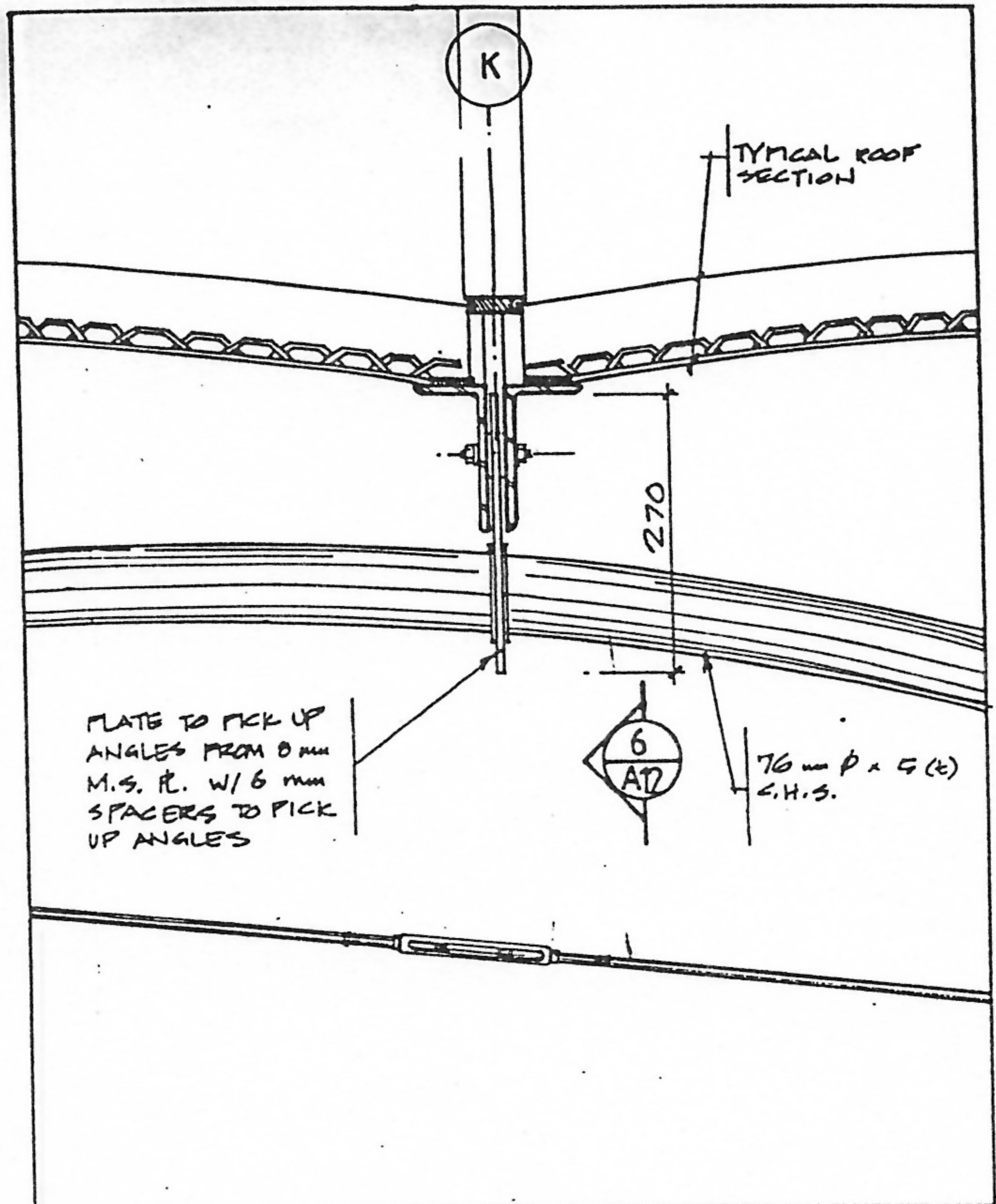


**Figure 10.11.8**  
*Computer-generated image*

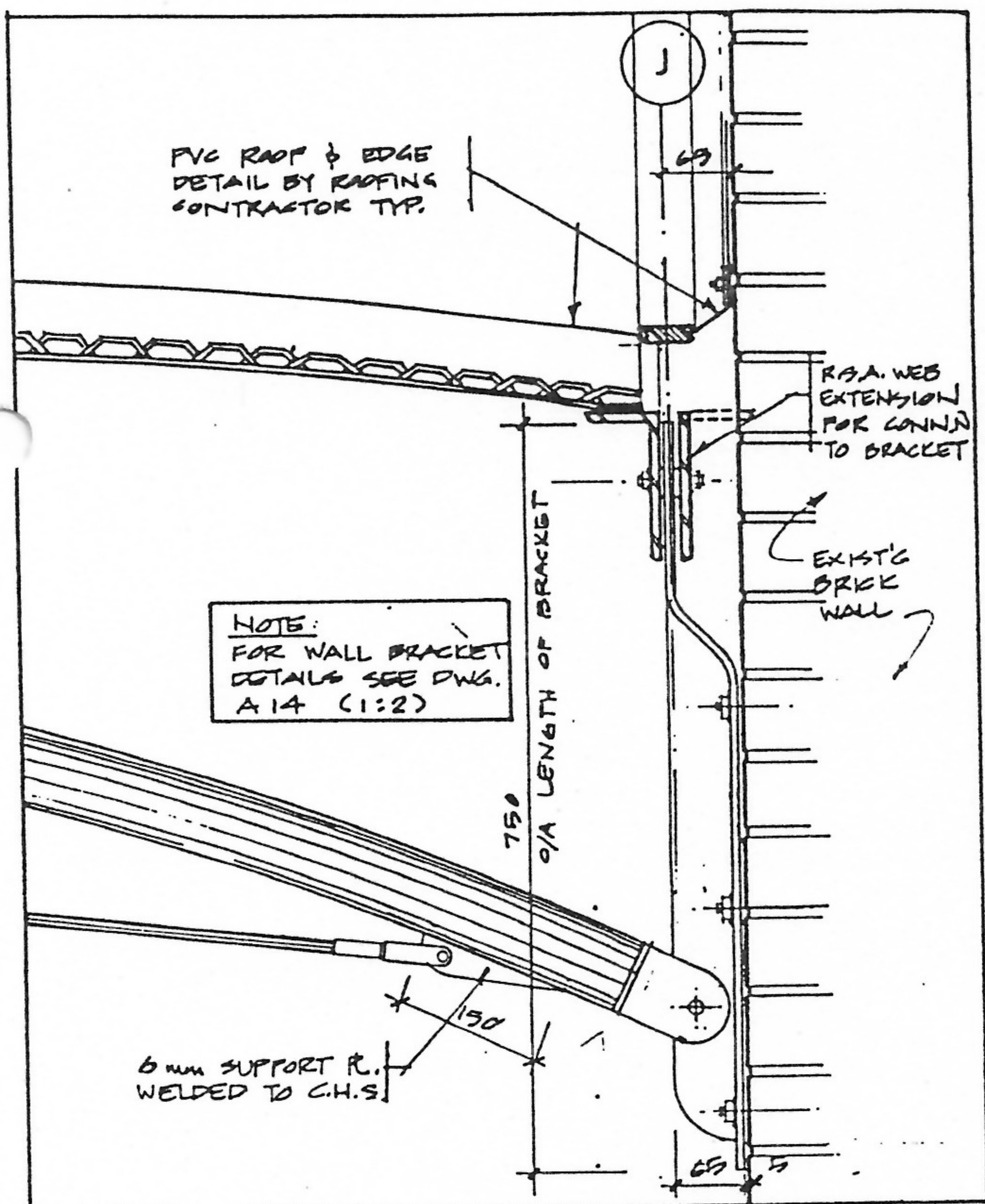




2 DETAIL SECTION TRUSS BRACKET (NORTH)  
A12



3 DETAIL SECTION AT CENTER OF TRUSS  
A12



4 DETAIL SECTION AT TRUSS BRACKET (SOUTH)  
A12

Figure 10.11.11  
Construction details

Figure 10.11.12  
*Column sketch*

