Mies in America

from Chicago to New York

Mies in America

- The process of crystallization, giving permanent form and structure to a substance, and the phenomenon of transparency together define the physical and poetic reaches of Mies's art. Within ten years after arriving in America, he had forged the prototypes for his two major built form from the industrial steel section and the transparent substance of glass: the Miesian clear-span and high-rise would become iconic forms of twentieth-century architecture.
- The Farnsworth House and the apartment towers at 860-880 Lake Shore Drive both sprang from problematic of space and structure that had long preoccupied Mies.
- His texts and drawings for European projects of the 1920s and 1930s clearly prefigured each of these archetypes which continued to evolve throughout his practice in America.

Mies in America

Project: Illinois Institute of Technology, Chicago, 1940. Final scheme

Designing the campus and buildings for the Illinois Institute of Technology was the crucible that defined Mies's American oeuvre, presenting him with a rare opportunity, perhaps comparable only to the challenge met by Thomas Jefferson in designing the University of Virginia (1817-26). Unlike Jefferson 's Neoclassical campus set amid the rolling, verdant landscape of Eighteenth century Virginia, Mies was called upon to insert a modern campus for an evolving institution devoted to technological education into the flatlands of the dense urban slums on Chicago's Near South Side, and to design buildings that could accommodate a growing emphasis on scientific research.

Mies in America

In September 1938 in his inaugural address ad Director of Architecture at the Armour Institute of Technology (Illinois Institute of Technology soon after) Mies said “in its simplest form architecture is entirely rooted in practical considerations, but it can reach up through all degrees of value to the highest realm of spiritual existence, into the realm of the sensuously apprehendable, and into the sphere of pure art”.

Mies in America

In the Minerals and Metals Research Building (1942-43), his first American construction, Mies's use of the I-beam mullion was born. Mediating between skin and structure, masked by a continuous brick spandrel and a translucent glass wall, the relationship of mullion to structure was exposed only at the exterior end wall. A key question one must ask about Mies in America is where and when does he first encounter and begin to think about unmasked steel structure and the potential expressive power of the rolled steel section.

Mies in America

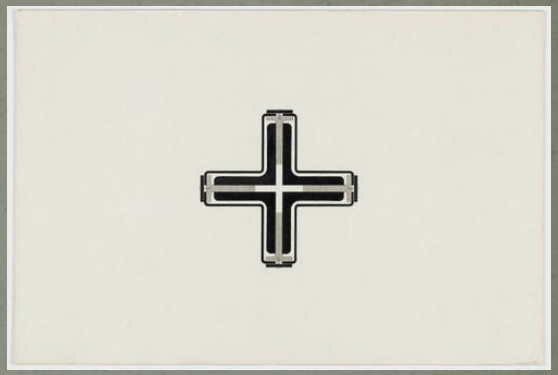
Certainly he began thinking in this direction when he entered the Berlin office of Peter Behrens in October of 1908. At that time Behrens was working on the AEG Turbine Hall and industrialization, much debated in architectural circles, was either demonized for producing the "lowest form of life that has ever existed" or valorized in utopian terms.

In 1922 in the first issue of the journal "Die Form" Behrens wrote "Whether or not technology can succeed in becoming a means to an expression of culture rather than remaining an end in itself is therefore a question of great historical importance."

Mies in America

Mies left Behrens's office in 1912, but the question of technology remained vital for him, and his own rhetoric came to embrace many of the terms articulated by Rathenau and Behrens. In his article "Industrielle Bauten" ("G", June 1924) Mies wrote echoing Rathenau " I hold that the industrialization constitutes the core problem of our time. If we are successful in carrying out the industrialization , then the social economic, technical, and even artistic questions will solve themselves. In the early 1920s through the legacy of K.F.Schinkel and P.Berlage, as well as the influence of Walter Gropius, Hannes Meyer, and others, there was considerable interest among architects in working on industrial building.

Mies in America



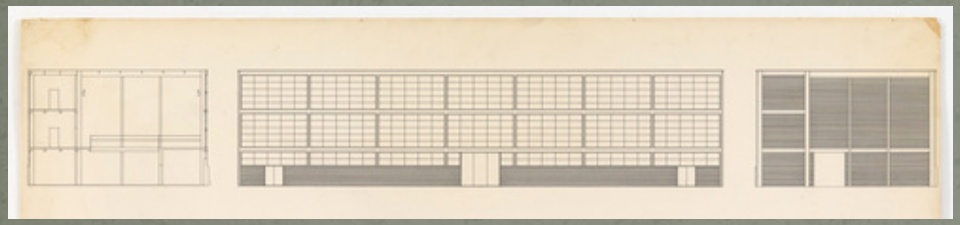
Mies's drawings of the late 1920s show the use of the steel sections, though they are hidden in the beams of the Mosler House in Berlin (1924-26) as well as in the project for the Weissenhofsiedlung and the roof framing of the Tugendhat House and Barcelona Pavilion. But as has often been discussed the columns of the latter buildings, were also masked, encased in highly polished chromed-bronze sheet metal. Their surface refraction and reflection suggested dissolution rather than support. The famous Mies's cruciform column continued in his early American projects such as the Resor House and the drawings for the AIT campus buildings.

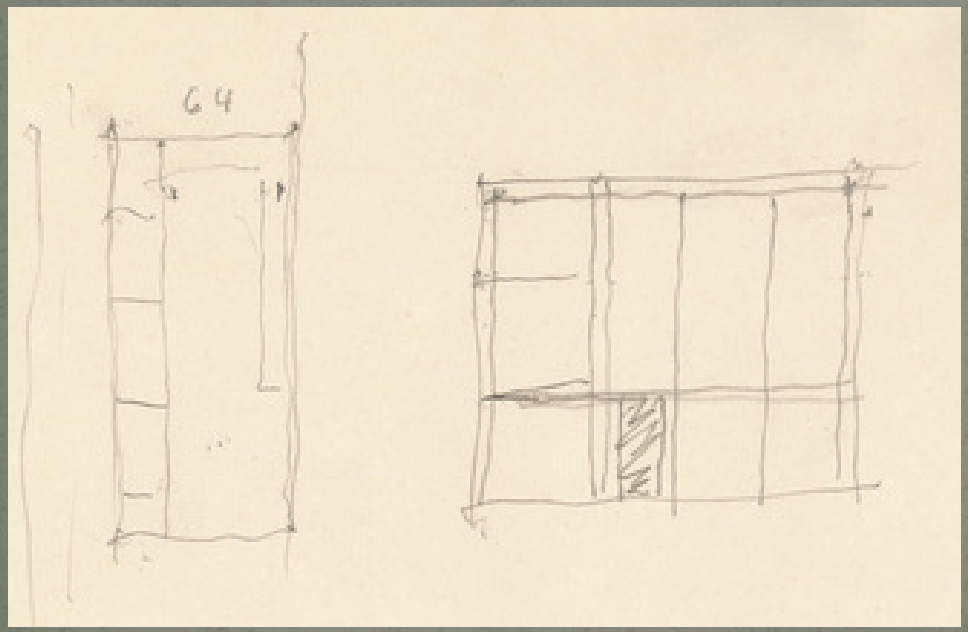
Mies in America

Mies in America

As his first American building, Minerals & Metals reflects Mies' transition from forms that had been "dear to his heart" during his days working in Europe to new forms that were "possible, necessary, and significant." Through multiple rounds of sketches, Mies made a "Herculean effort to adapt to the new conditions of building in America." Although the building is visually reminiscent of the Bauhaus in Dessau, its structural premises are very different. It is in the Minerals and Metals Building that we first see Mies use the rolled-steel I-beam as part of his structural grammar.

Mies in America



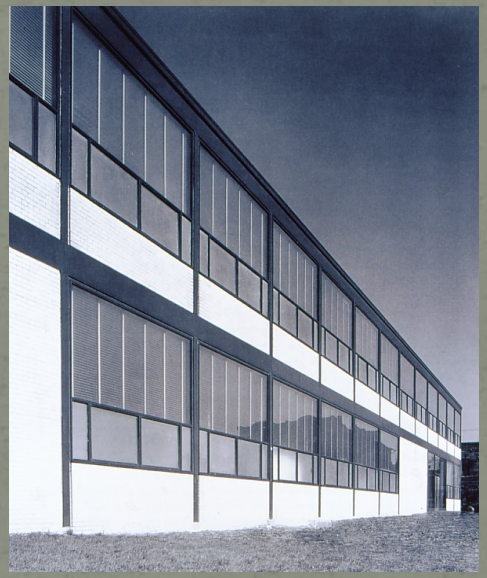


The steel, brick and glass Minerals and Metals Research Building stunned members of the architectural profession in the United States. The adoption of the common rolled steel section as a prominently exposed architectural element did not, however, receive comment. Instead, the end wall was interpreted as a form of homage to De Stijl, or more precisely, as having been inspired by it, and that was what arrested everyone's attention.

Mies in America

While the works of Van Doesburg and Mondrian were known to Mies, the north end wall of the building should be read as a clear transcription of the frame circumscribing the functional rationale behind the distribution of space: the single volume of the foundry hall, the three stories of laboratories and offices.

Mies in America

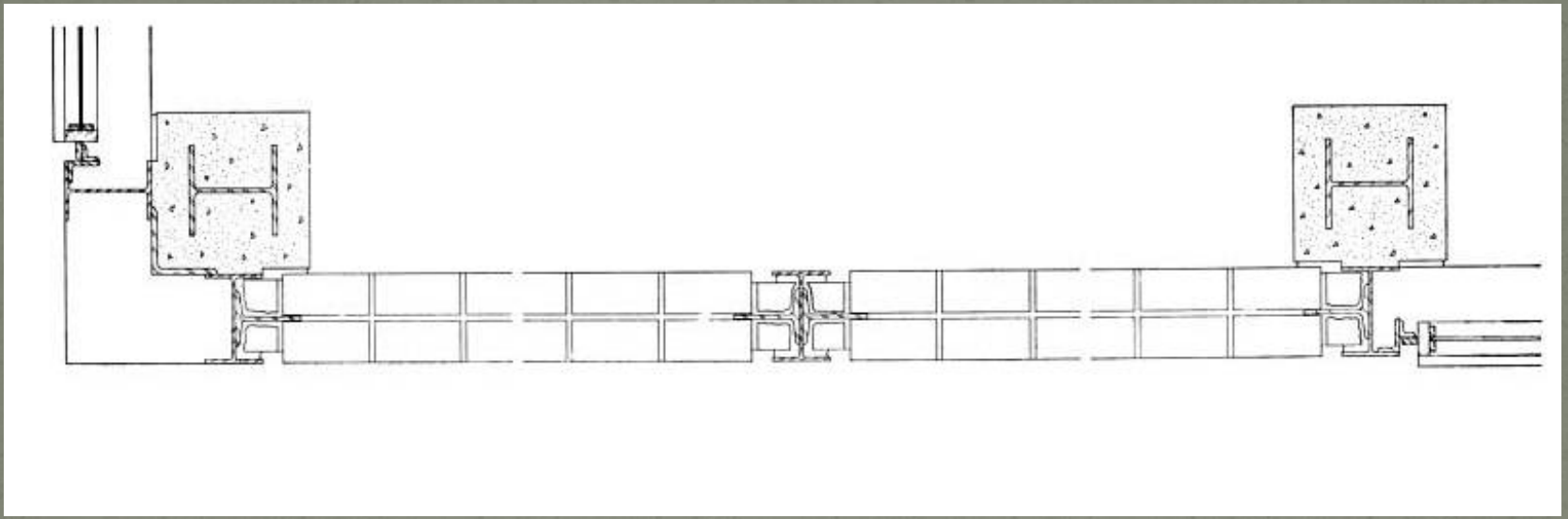


The Navy Building (Alumni Memorial) like Metallurgy and Chemical Engineering, was intended to house classrooms as well as a large, open, armory, and code required that the steel structure of the building be fireproofing. Mindful of the fact that , for the west wall of the Minerals and Metals Research Building the necessity for fireproofing had not resulted in an architectural solution, Mies sought one for the Navy Building.

Mies in America

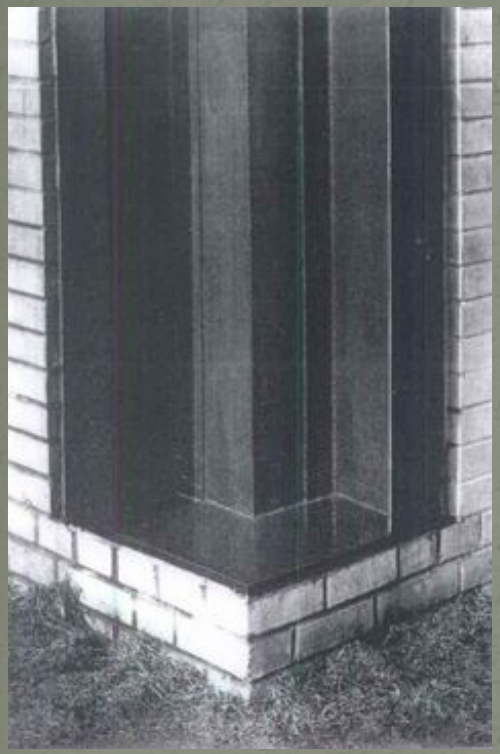
He moved form the Minerals and Metals condition, where the brick and glass skin was placed in front of the mullion, to bring the enclosing elements into alignment with the mullion, whose flanges embrace the brick and glass assembly. This solution resulted in a strong rhythm of vertical members every twelve feet, creating a reticulated façade.

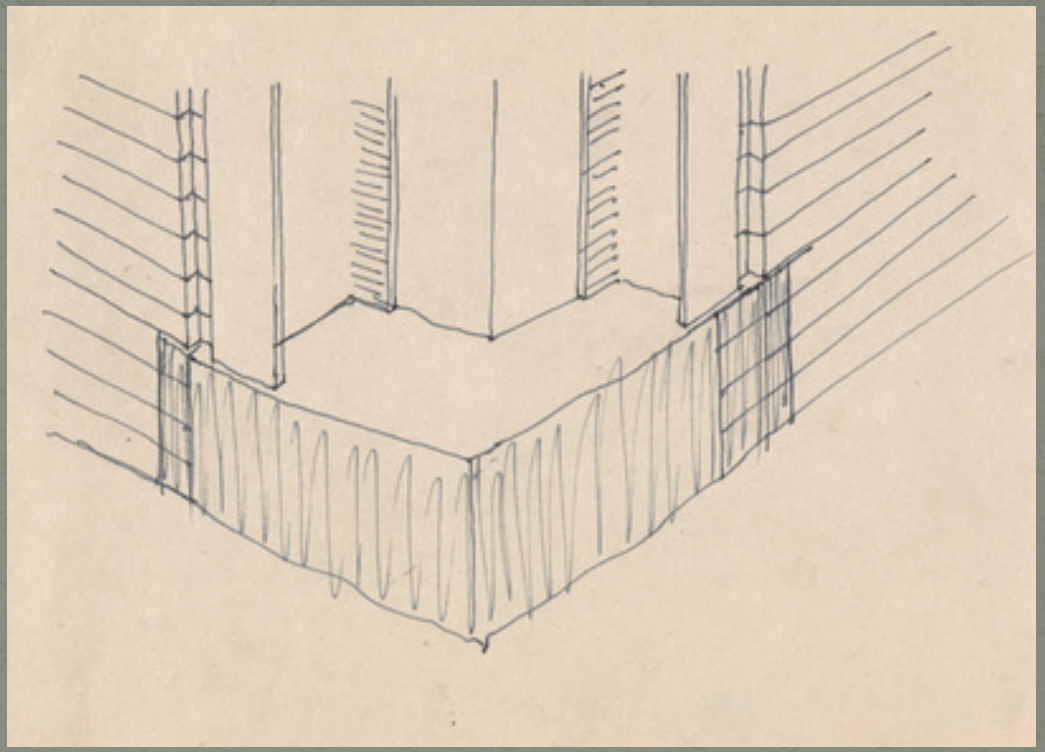
Mies in America



IIT Navy Building, Plan details showing relationship of the I-beam, glass and brick curtain wall to the fireproofed steeel structure.

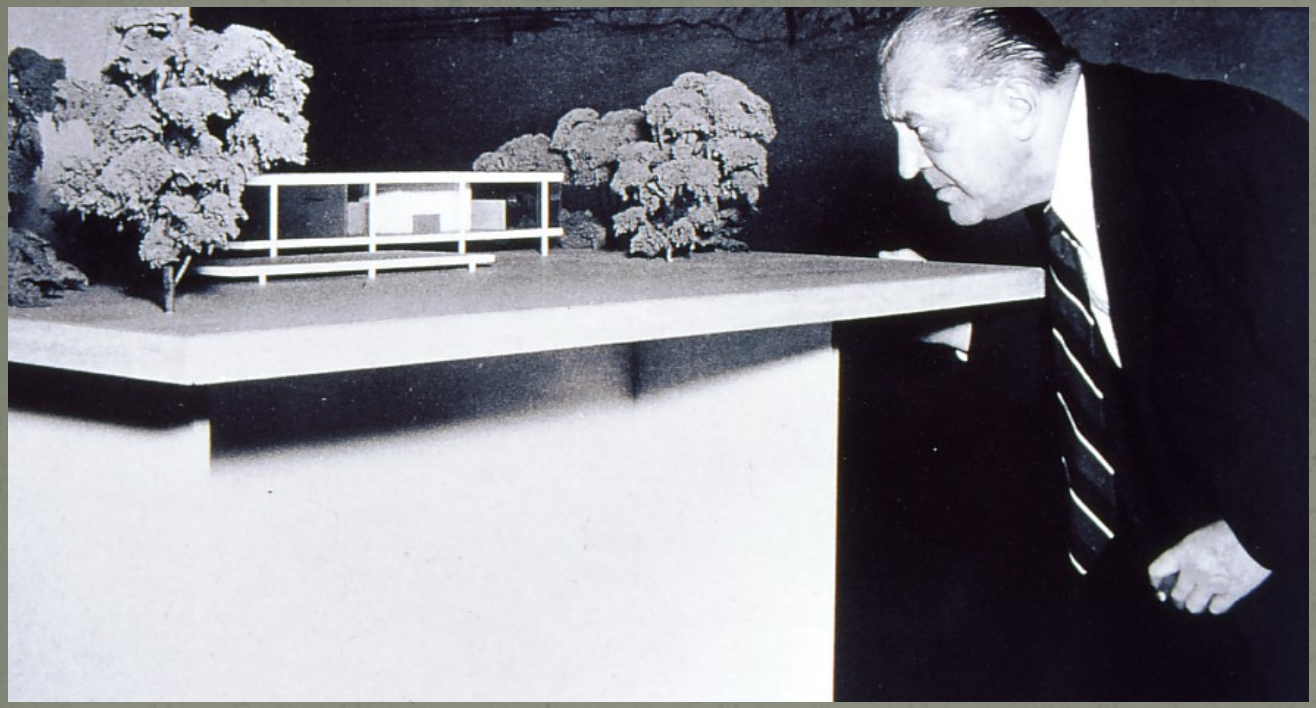
Mies in America





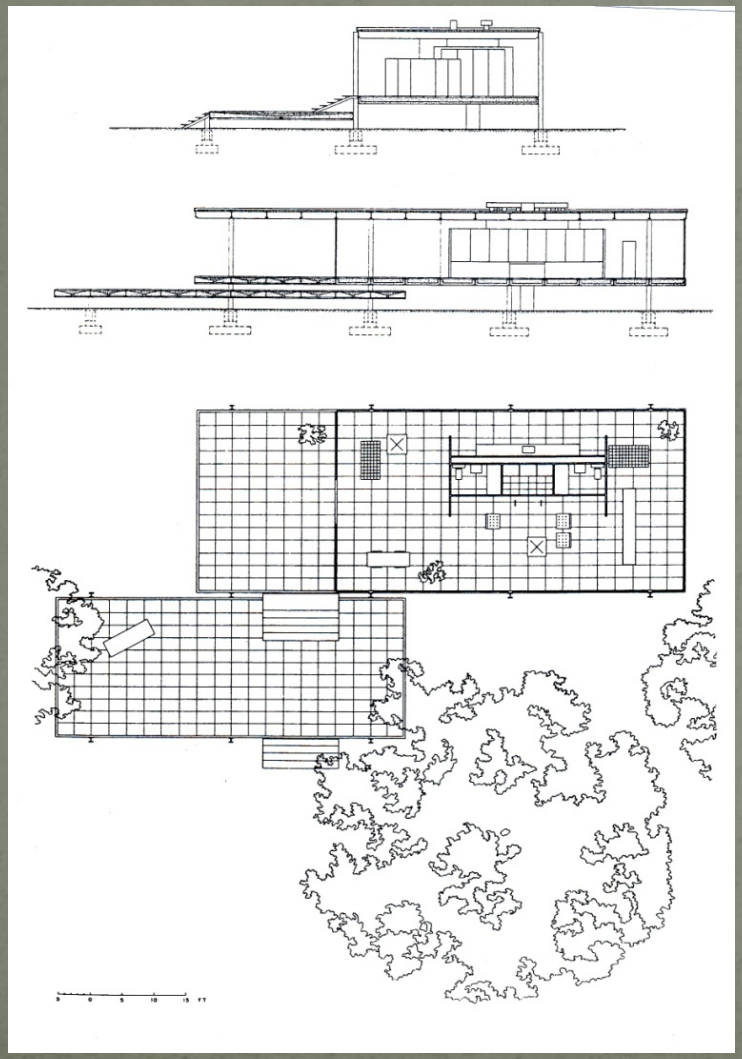
The brick base for the corner assembly is refined and a steel angle section covering the fireproofed corner column is welded to the symmetrical placed I-beam of the curtain wall.

Mies in America



Begun in 1945 and detailed and constructed late 1949 and early 1951, this clear-span building , pure glass and steel, pure space, was a most significant unfolding, a fusion of space and materiality that established the genetic code of Mies's clear span buildings. The program that the client, Edith Farnsworth gave to Mies, was quite simple: a weekend house for a single occupant who might at times have an overnight guest.

Mies in America

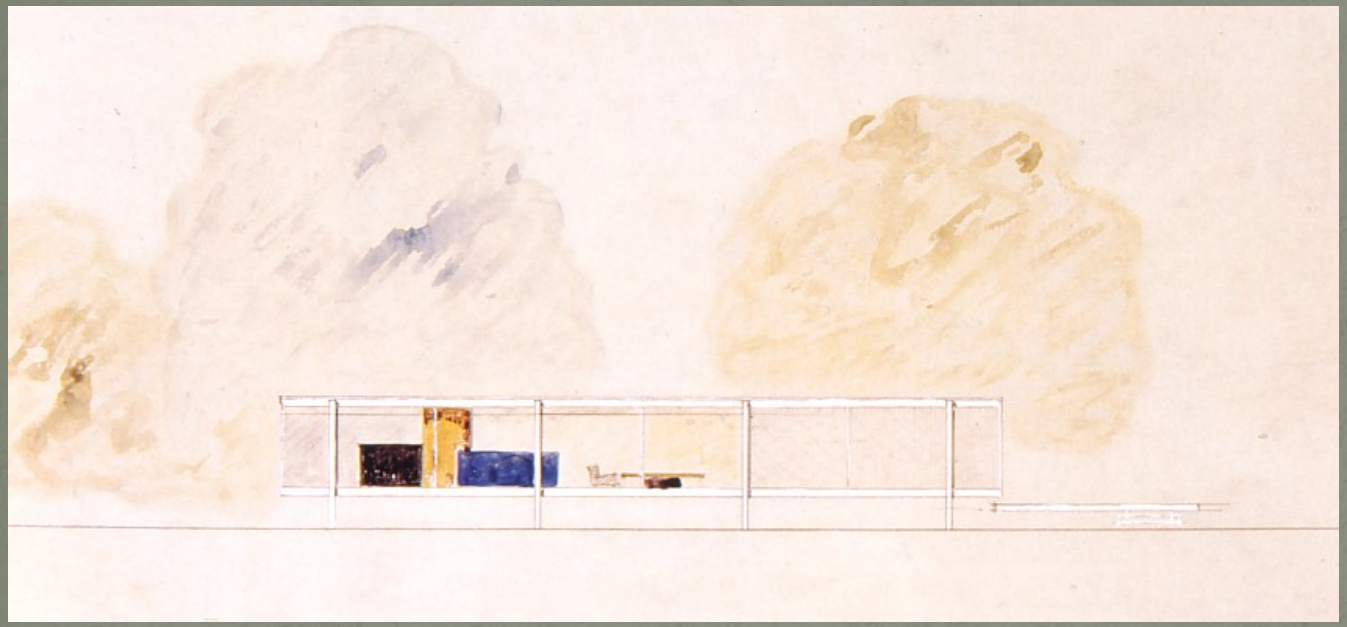


The complex spatial experience of the house itself begins with the entrance sequence as one tends to float up the five steps from the ground to the terrace/viewing platform, an d up the five steps to the open porch, which form another viewing plane and also a void where the two and half bay glass enclosure stops, though the floor plane continues into the sequence of overlapping living spaces inside.

Mies in America

The experience of Farnsworth house brought Mies to a new understanding of the relationship between architecture and nature. From the theoretical position of 1933 when he proclaimed that only with modern materials (concrete, steel and plate glass) “can we articulate space freely, open it up and connect it to the landscape”, to the 1950s, Mies came to the phenomenal understanding that “before you live in a glass house you don’t know how colorful nature is”.

Mies in America



The relationship of the house to landscape makes Mies's Farnsworth house his most sensually and spatially engaged work in America. In his conceptual watercolour of 1945, the house appears as a simple rectilinear frame structure poised on the prairie. Approached after a long walk across the open prairie toward the river, the space become compressed, with shrubs, the one big tree framing the nearby shoreline, and the terrace platform leading to the re-grounded plane of the house.

Mies in America

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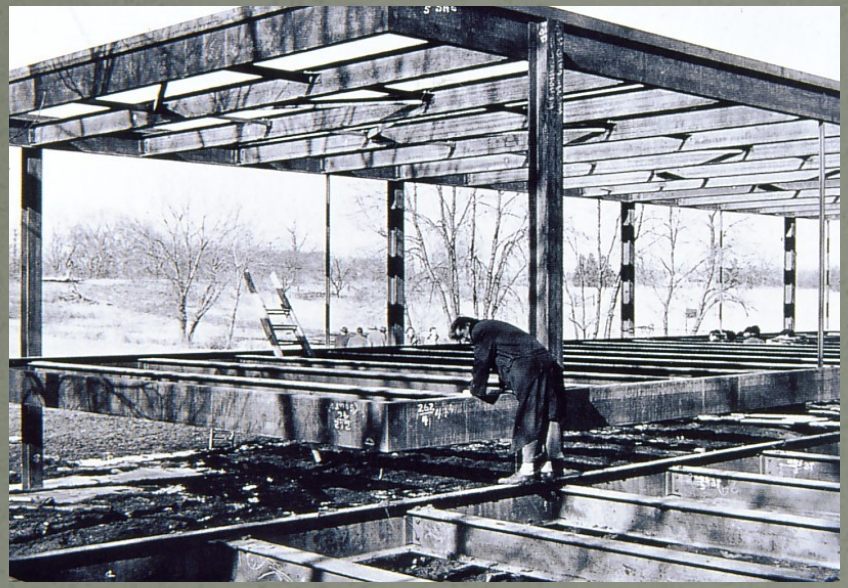


Eight exposed steel H columns support the outer edges of the floating roof and floor planes. The roof and floor edge channels are the same weight. Myron Goldsmith, the architect in charge who also trained as a structural engineer, admitted to having accomplished "something very clever structurally" in keeping the heavy floor from deflecting: "They are very heavy, called carbuilding channels, and the window mullion, that center division between two columns, was actually a structural member tying the two together, so that the weight of the floor is borne partially by those edge channels on the roof".

Mies in America

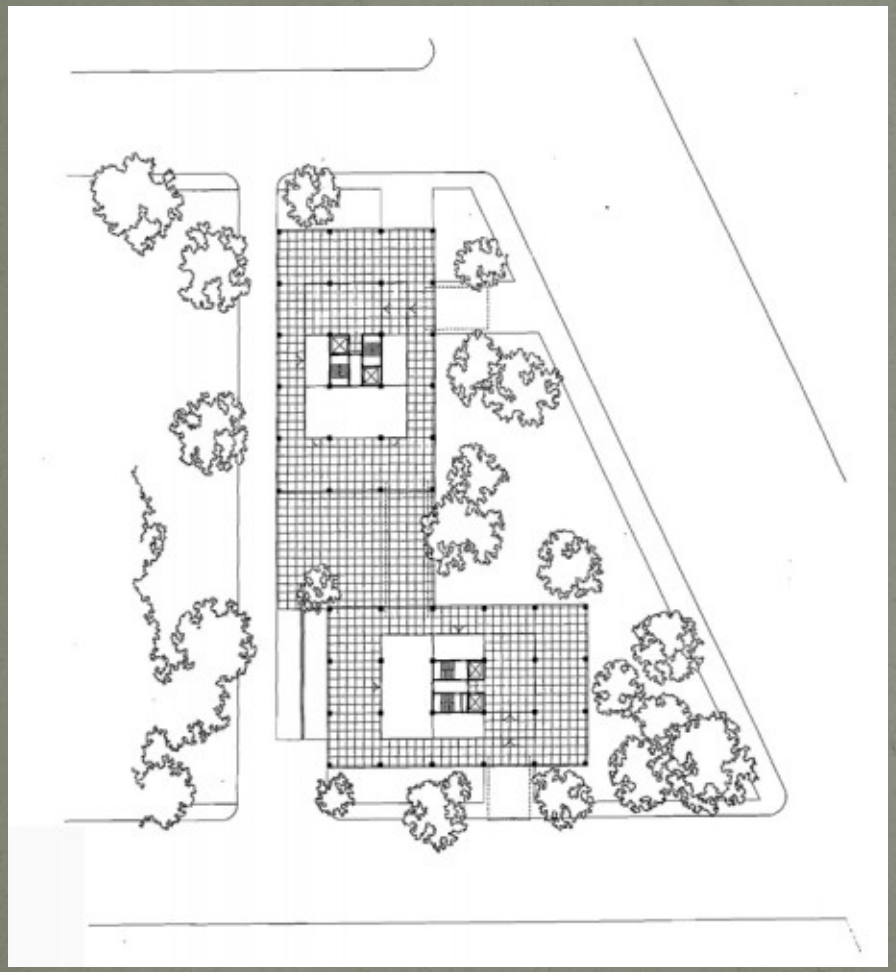
"Only skyscrapers under construction reveal their bold constructive thoughts, and then the impression made by their soaring skeletal frames is overwhelming....On the other hand, when the structure is later covered with masonry this impression is destroyed and the constructive character denied..We must not try to solve new problems with traditional forms: it is far better to derive new forms from the essence, the very nature of the new problem" (Mies, 1924).

Mies in America

860-880 Lake Shore Drive Apartment Buildings, Chicago, 1948-51

The materials are common: steel, aluminum, glass. Yet these buildings are renowned for their structural clarity and composition. Using steel straight from the mill, Mies built with the eye and intent of an artist, striking the perfect balance between rational structure and irrational spirit. The vertical windows and columns emphasize height. He relied not on applied ornamentation, but rather on clarity of form achieved through elegant proportions —window width:height, spandrel:column, bay:facade—and exacting detail. Prior to this point, structure was hidden within architecture. Here, Mies merged the two by exposing the steel, realizing his own words: "When technology reaches it true fulfillment, it transcends into architecture."

Mies in America



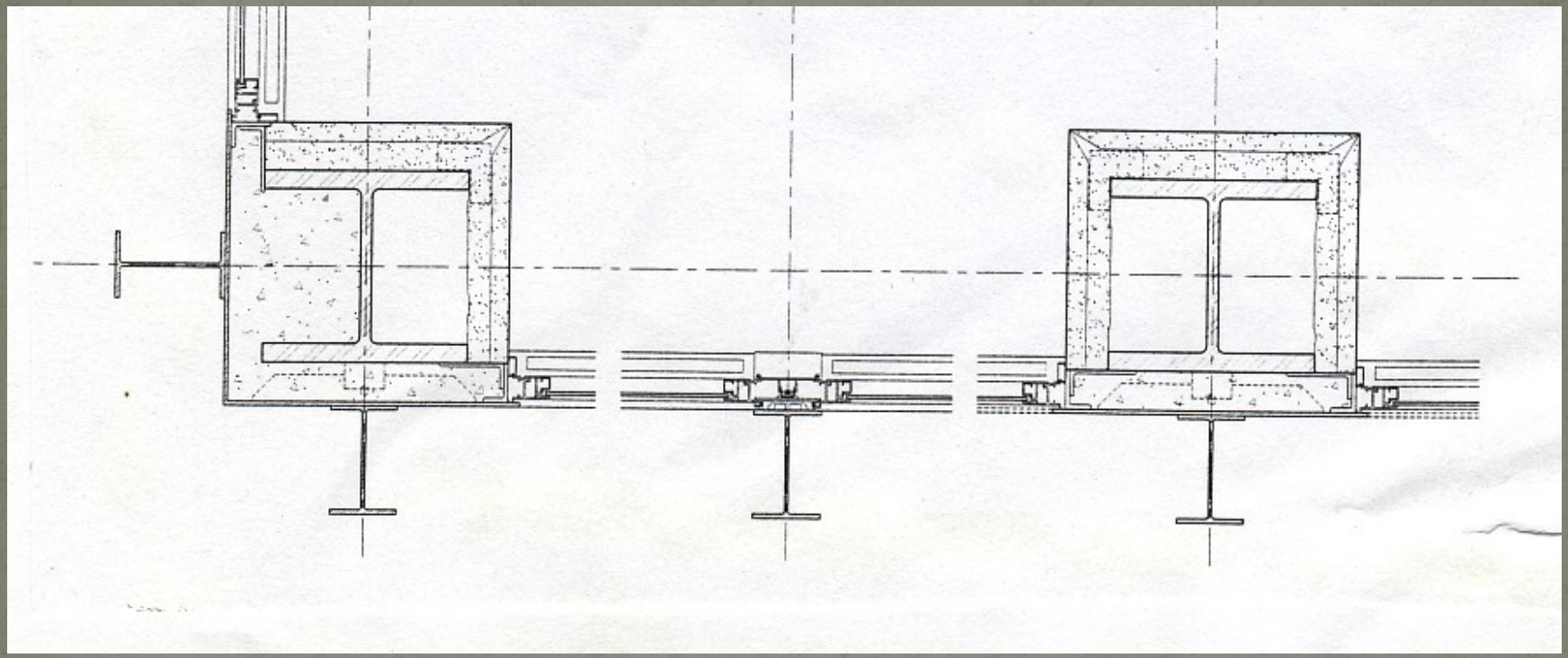
While each building alone is symmetrical, comprised of 21' square bays (5 across, 3 deep) with a total of 288 apartments, the buildings are related informally within this small site to create a dynamism similar to that found on the IIT campus.

For the living spaces above, the building's slightly offset, perpendicular relationship creates an openness which seizes the breathtaking lake views. At the pedestrian level, the open plan creates a flow of natural greenspace amid the plaza, unprecedented at that time in a city.

Mies in America

The genius of 860-880 was the use of projecting I-beam mullions. Just as Mies has moved the enclosure at IIT from his position in front of the mullion in the Minerals and Metals Research Building back to a position within the depth of the mullion of the Navy Building, at 860-880 he pushed the skin further back to a position behind the mullion, so that the mullion projected beyond the enclosure

Mies in America

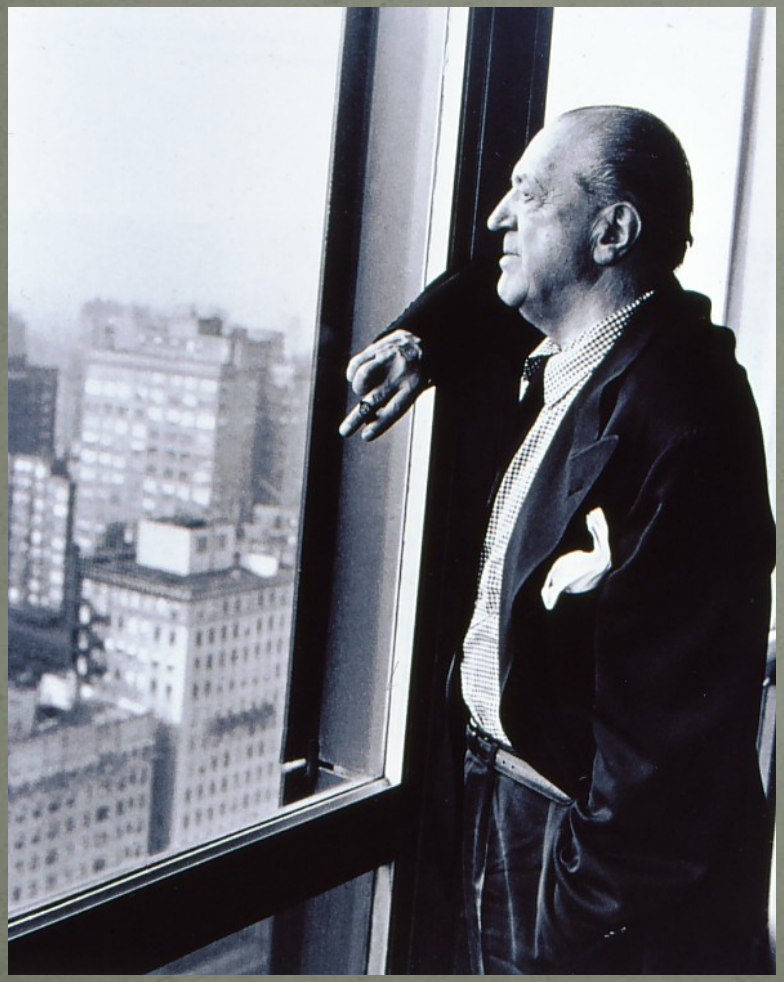


At 860-880 the skin is applied as a membrane over the outer, fireproofed surface of the structure: the steel plates are continuous, covering spandrels and column, and the glass is coplanar with the steel plates and attached to the back of the mullions

Mies in America

The skin is applied in a Classical manner , with the mullions at the center line of the columns , projecting at right angles on each corner of the building as a consequence of the two-way modular grid of the 21' foot square bay. The mullion functioned as a support for the window frame and wind-bracing for the full height distance between floor and ceiling. However, on the column, the mullion has no such function, and Mies's office colleagues objected.

Mies in America



"Now first I'm going to tell you the right reason, and then I'm going to tell you a good reason by itself. It was very important to preserve and extend the rythm which the mullion set up in the rest of the building. We looked at it on the model without the steel section attached to the corner column and it did not look right.
Now the other reason is that this steel section was needed to stiffen the plate which covers the corner column so the plate would not ripple, and also we needed it for strenght when the sections were hoisted into place. .Now of course, that's a very good reason, but the other reason is the real reason" (Mies, 1952)

Mies in America

Graphically, the I-beam stand out against the structural frame subdivided by the mullions into vertical glass rectangles , each proportioned according to the rule of the golden section, which have in turn been subdivided into squares and horizontal rectangles.
Within this fields , the I-beams emphasize the verticality of the building and establish a repetitive rhythm that orders the whole.