

DOCTA MANUS DRAWING STRUCTURES

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Drawing constitutes a very powerful and critical tool of conceptual design. Drawing constructs thought, it acts as a communication interface between the work and the mind and between different disciplines; it is the most powerful language of communication in the working together between architects and engineers.

The UE *Docta Manus* — *Drawing Structures* introduces the basic drawing techniques (sketch, plan, section, elevation, axonometry, perspective). Based on these techniques, we will further investigate analytical drawing methods capable of exploring structural concepts and their architectural solutions.

Through hand drawing we will analyse selected projects that embody an exemplary interplay of architecture and engineering, as e.g. the work of Mies van der Rohe, Jean Prouvé, Luigi Nervi, Robert Maillard or Eugène Freyssinet. Our main focus lies on the load bearing structure and its tectonic and spatial articulation as common intersection between architecture and engineering. Through analysis, students will enter into dialogue with construction in a direct way. They will get a sense for the adequacy of tools and refinements of solutions. We will investigate proportion, material innovation and tectonic articulation in relation to the structural idea and become aware of the importance of detail. Analysis will take apart and make transparent the parameters and dependencies of the design process and will open the work into a condition of possibility.

We will draw by hand, as this is the most direct and immediate way of becoming aware of technique in relation to intention (it forces decision-making).

Drawing by hand is a cognitive process where the dynamic relation between doing and thinking is essential. That is why 'the more you draw, the more you see' and vice versa. The construction of points and lines on a sheet of paper will sensitize students to the notions of scale, size, proportion, transparency and composition. The learning hand will build up tacit knowledge.

The construction of points and lines on a sheet of paper sensitizes students to the notions of scale, size, proportion, transparency and composition; it makes them aware of the importance of detail as a key moment of construction, as a mediator relating a structure to the perceiving subject.

This third publication shows a selection of 22 working drawings from an atelier of 27 students in civil engineering and architecture that took place during the autumn semester 2022 at EPFL. Each student analyzed one out of five selected projects of Mies van der Rohe, exploring adequate scales, drawing types and techniques to understand the project's structure and construction principles. The drawings thus include dimensioning and fabrication notes up to catalogue of elements, mounting principles and sequence. The careful construction of layers of information by hand builds up into tactile working drawings that embody the spatial and tectonic ideas as well as the construction process of a structure. These 'meta-drawings' allow the observing eye to survey from one detail to another in a synchronous manner while integrating all information into a mental construction.

I draw by hand, but I don't like free-hand sketching. Of course, when designing, it is inevitable to make sketches, especially when collaborating with someone. A quick sketch remains the most efficient way to communicate to others early ideas or observations about a design scheme. Free-hand sketching has become so normal that it feels like sketching is a 'natural' thing to do, something that has always existed in the discipline and profession of architecture. However, this is not true. The rise of the sketch is concomitant with the rise of the architect as author, which happened between the 15th and the 16th century.

The earliest known sketches by architects date back to the early 1500s, and the artist and architect who exploited this technique more than anyone else at that time was Michelangelo Buonarroti. The famed artist—who was a painter, sculptor, and architect—was however reluctant to be involved in architectural design, because he felt that this profession lacked the expressive immediacy of the other mediums. For this reason, when designing architecture Michelangelo used the same technique that painters and sculptors used to design their works: free-hand sketching. In this way, Michelangelo contradicted the established practice of drawing architecture with pen and ruler. In fact, since ancient times, architectural drawing had only been conceivable as *geometric*, i.e. as precise and eventually measured notation. Although not always drawn to scale, as it is common today, an architectural drawing was always expected to be very different from the kind of drawings painters or sculptors produced.

Leon Battista Alberti argued against pictorial representations of architecture and encouraged designers to rely only on the precision of geometric notations. Michelangelo broke from this tradition and drew architecture in the same way he would draw a human figure. His architectural drawings are very pictorial, as

in his famous elevation of his project for Porta Pia in Rome. In order to stress the pictorial nature of his drawings, Michelangelo was the first to use pencil—the famous 'sanguigna', a red pencil made of hematite. Since then, the architect's drawing became synonymous with sketching, so every great architect, from Francesco Borromini to Frank O. Gehry is known to be the 'true' author of their architecture because they have sketched it, *first*. This is the subliminal message of the architect's sketch: "*I'm the author, I'm the originator of the building I design*". Nevermind the countless people that work on a project or building—from designers to builders—until recently the sketch guaranteed the indisputable authorship of the architect. From mere tool of instant elucidation, the architect's sketch became, in the last four centuries, a real fetish—and today hand sketching is still believed to be a surplus of authenticity when submitting a project to a client or a competition.

I don't like sketches because they give a rather unprecise and too picturesque impression of architecture. Often, the person who sketches is more concerned with free-hand bravura than with what the sketch is meant to convey. But, above all, sketches elude the fundamental condition of architecture as a measurable thing. If I really have to sketch, I do it in the most simple and crude way without any embellishment. Otherwise, I avoid free-hand drawing, and draw architecture with a ruler using a 8H pencil, eventually retracing my drawing with a 0.25 Rapidograph. I love the mechanical nature of the architectural drawing, its geometric essence, its hardness, the fact that it has to be precise and immediately measurable. In my hand-drawings I don't like mistakes. There is something deeply reassuring in the precision of the architectural drawing, something that approximates happiness because, as a medieval theologian once said, only perfection brings happiness.

Dear Drawing,

I am writing you because I am drawing you. I don't draw you because I am an architect, I am an architect because I draw you. Drawing you was my reason to decide to become an architect. Drawing you is not at the service of architecture. Architecture is at the service of drawing you, providing the draughtsman with a reason—an excuse—to draw you.

Drawing is a way to presence architecture in the body and the mind of the drawing architect. Only in the *moment* of drawing architecture dwells. Subsequently, 'building' the drawing is only a matter of utter disappointment. Disillusion. Anger, sometimes.

For many people the architectural drawing is a subservient instrument, a waiting room before one is permitted to encounter architecture as the real and built outcome of the drawing, the expected offspring of the drawing. In those unenlightened minds, the drawing merely is the failing representation of the built result. I disagree on this. For a building architect—and I have been one of them—it is clear the built offspring of the drawing is an aborted stranger, merely the failing representation of the phosphorescent energy that resides in the drawing, or more precisely, in *the moment* of drawing. That moment of drawing is the pinnacle of the life of the drawing architect, the promise-in-fulfilment, the desire-in-satisfaction, the future catapulted into the presence, yes, *that phosphorescent moment of drawing architecture*.

So.

Drawing is a verb, much more than a noun. Drawing is rather a moment in time, not so much a place in space, or an object on a table or a wall. In fact, the drawing (noun) is the instrument that permits

the draughtsman to be transported into this utterly energetic presence of the architecture he is drawing (verb). Architecture is only and really present in that moment of drawing.

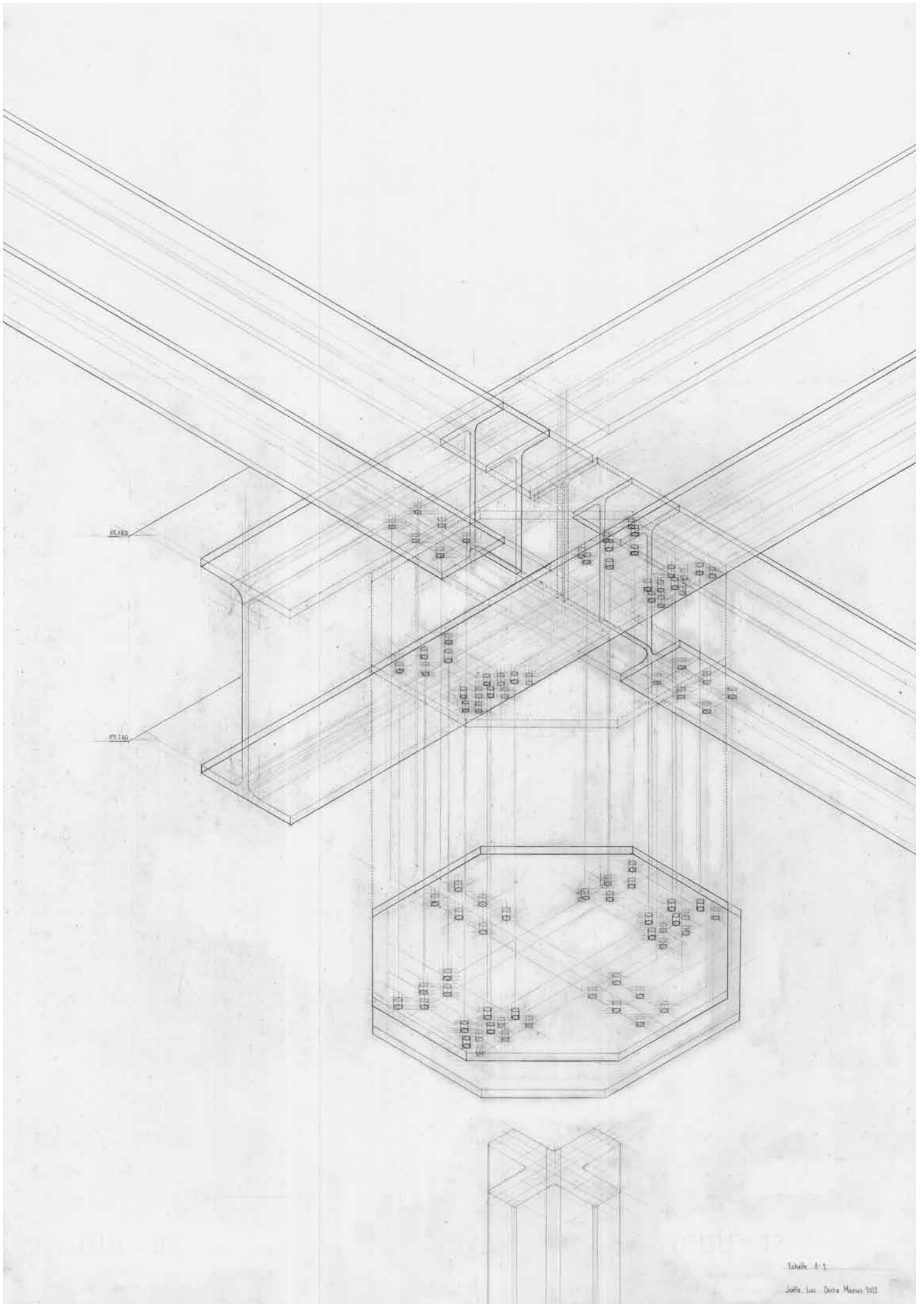
Another thought, for another moment perhaps: writing about drawing seems a bit odd to me. In fact, I am wondering if we would become capable of drawing about the meaning of drawing, instead of writing about the meaning of drawing. What would that *feel* like? Indeed, drawing is about physical *feelings* situated in the tip of the pencil that becomes the ultimate extension of the nerve system of the draughtsman. This physical feeling seeps into the draughtsman's emotions—the draughtsman slides into a trance. This trance is the draughtsman's time of *kairos*, the indispensable sphere of pre-cognition out of which embodied cognition, knowledge and meaning can emerge.

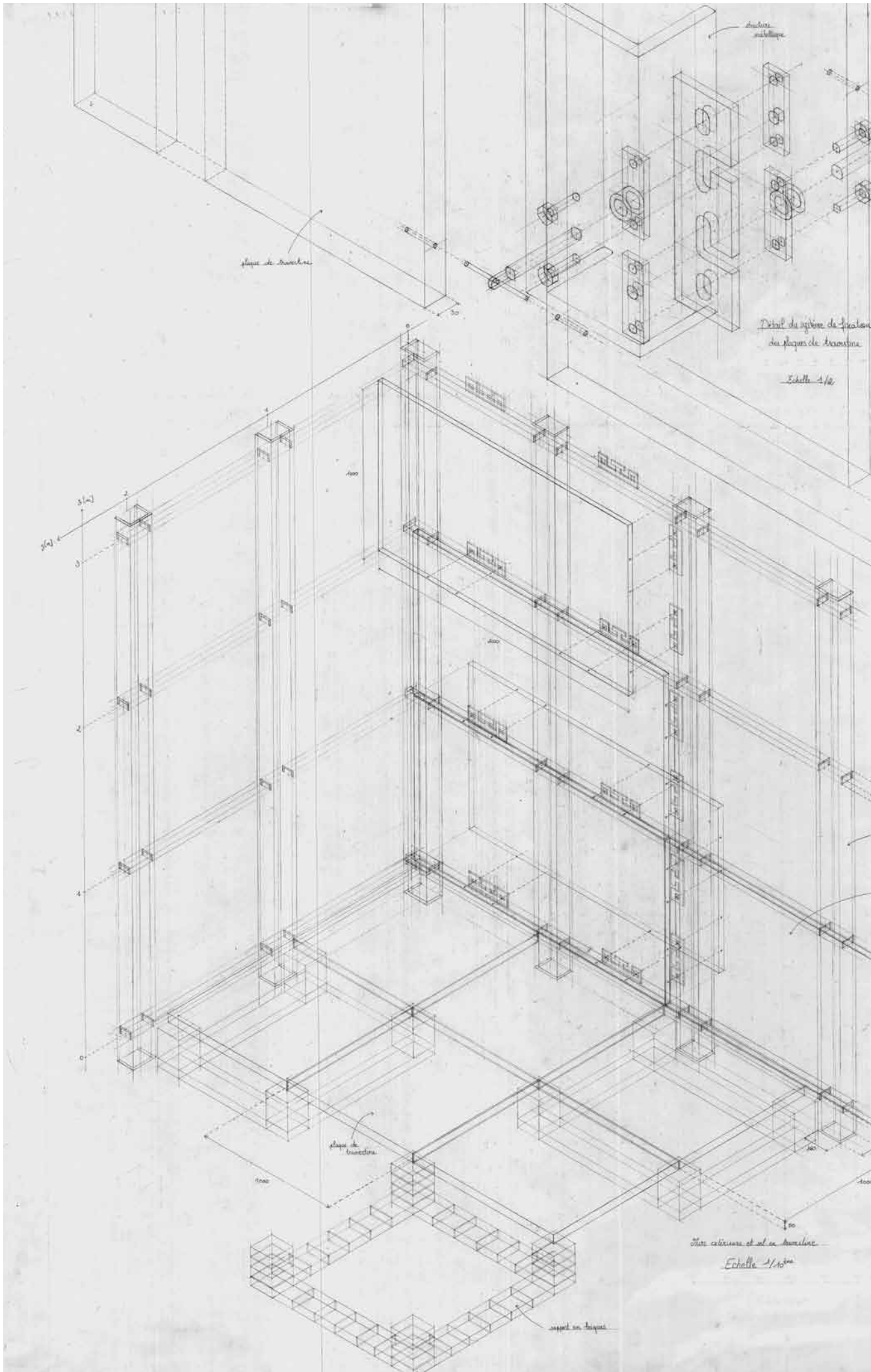
I think I know what it would mean: drawing about the meaning of drawing you, instead of writing about the meaning of drawing you. But I cannot put it into words. I can only put it into emotions erupting from and in the moment of drawing you.

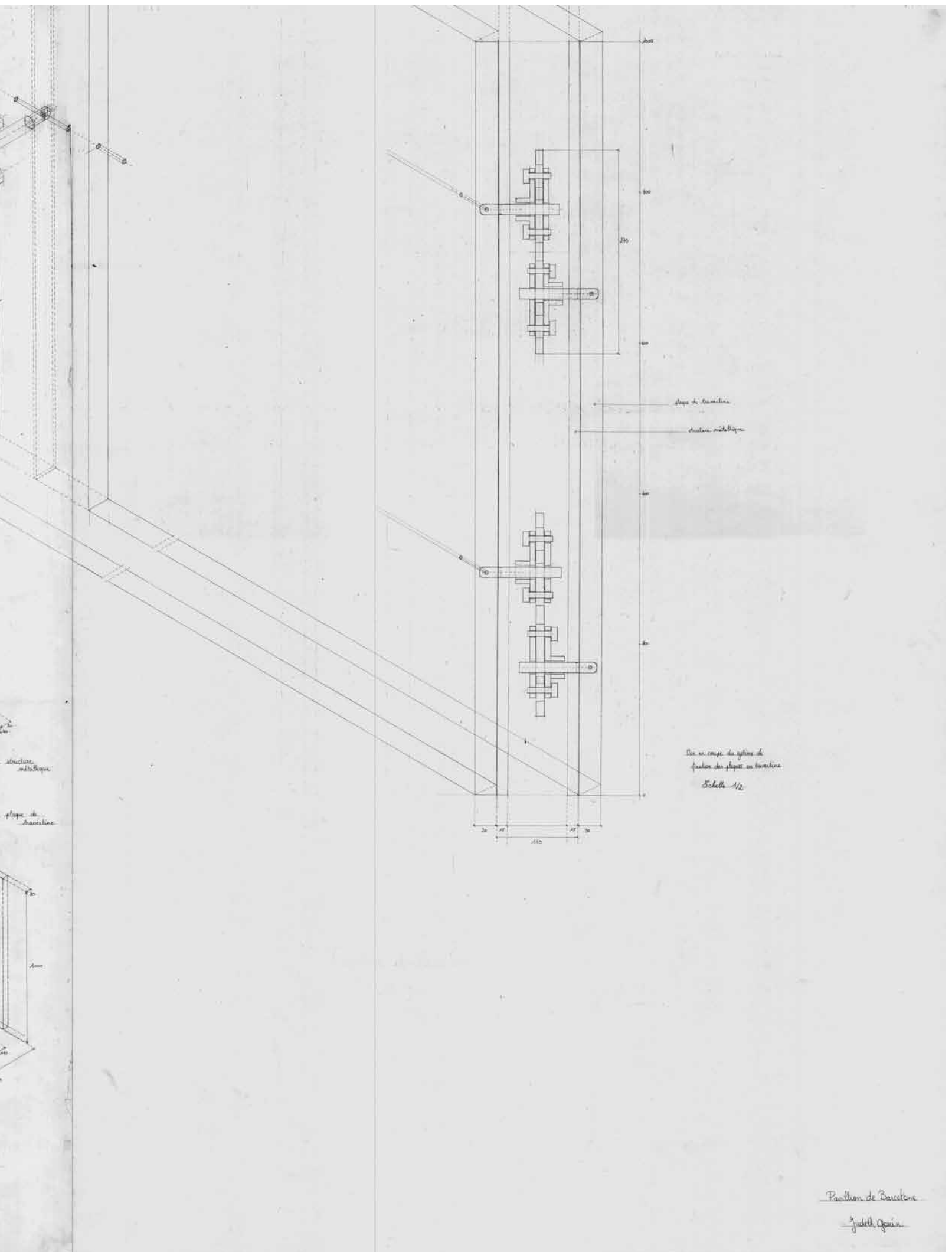
Drawing: what a glorious *time* this can be!

Sincerely yours,
Jo Van Den Berghe
July 25th 2023.

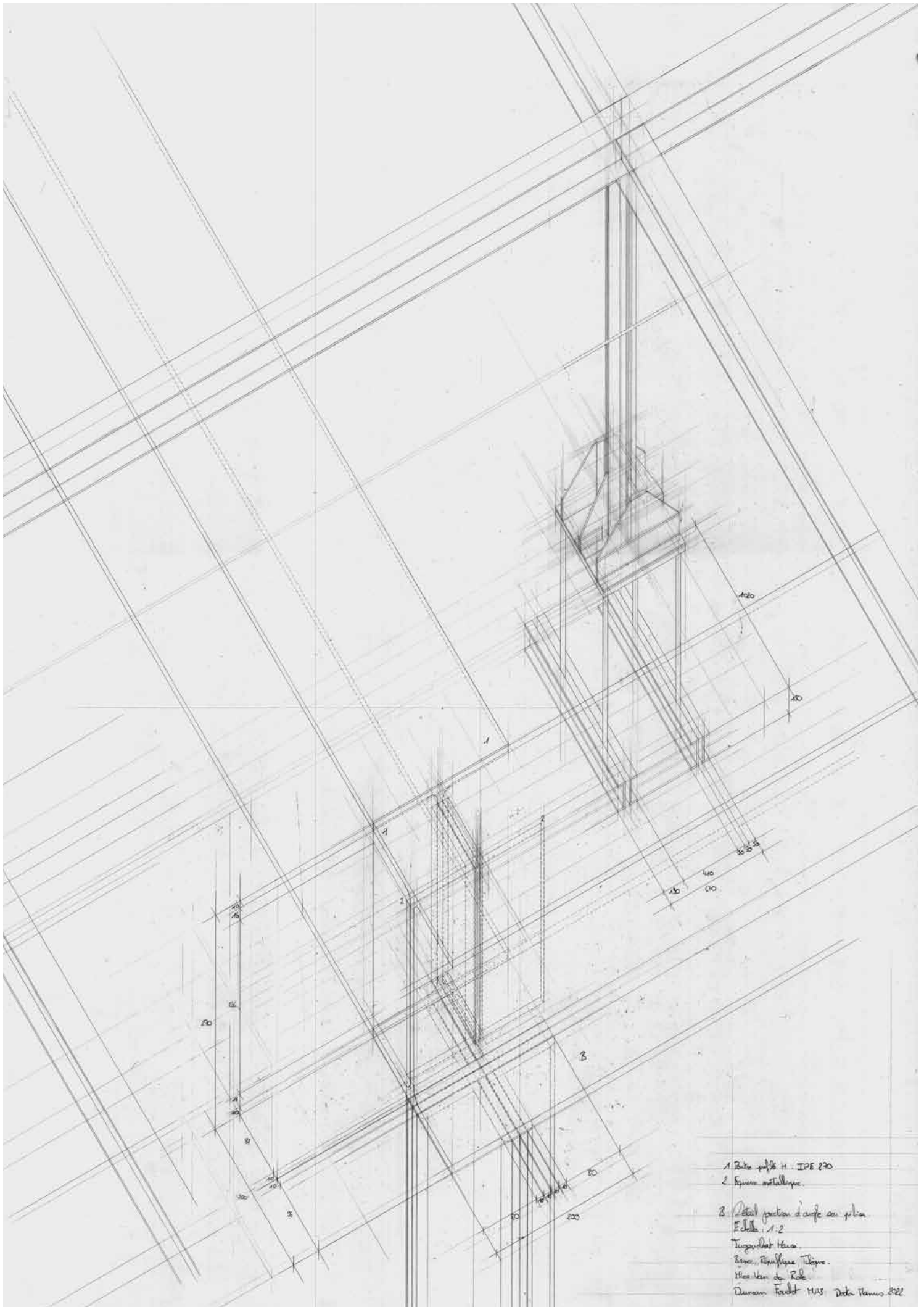
BARCELONA PAVILION,
BARCELONA, 1928-29 / 1983-86

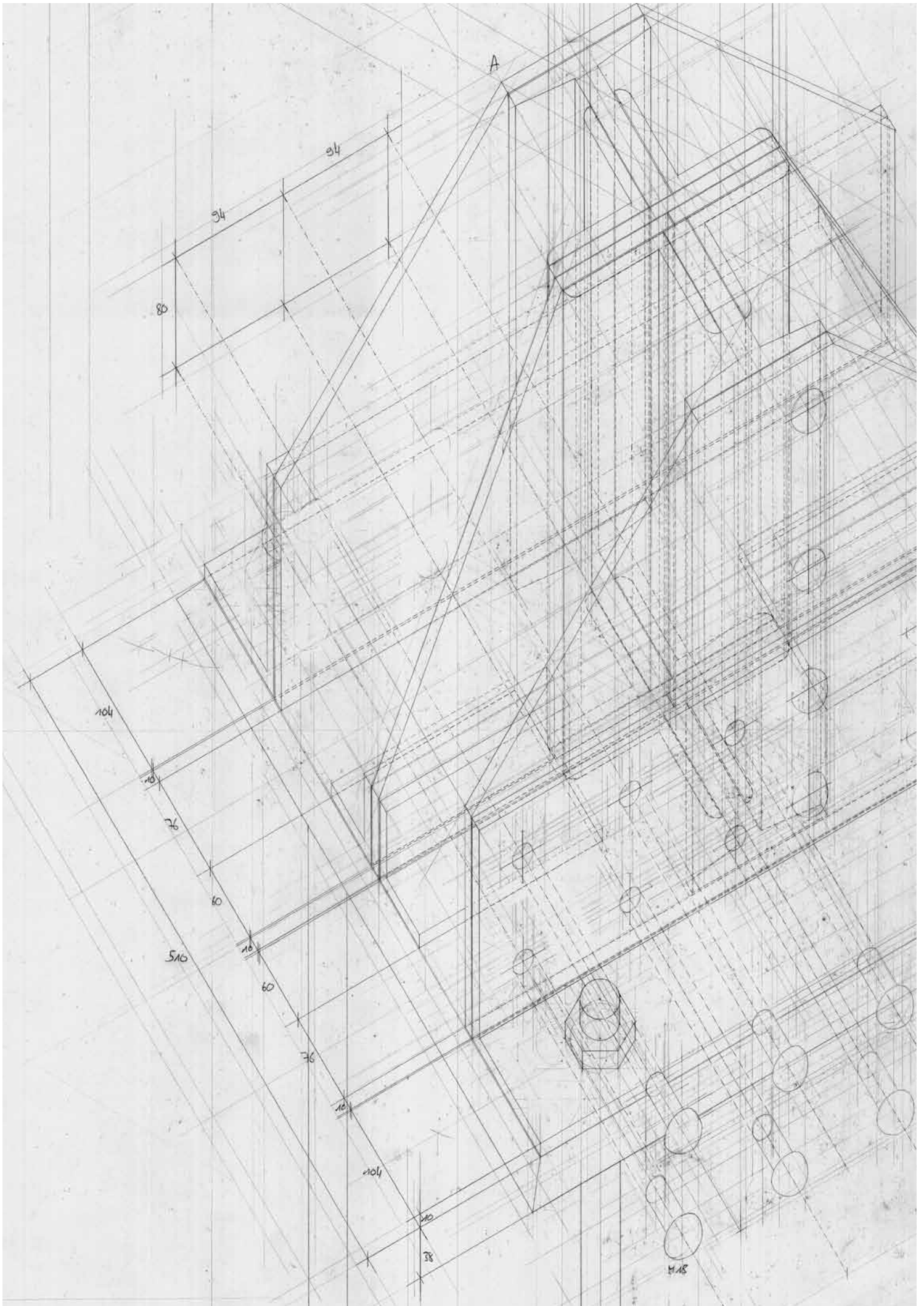


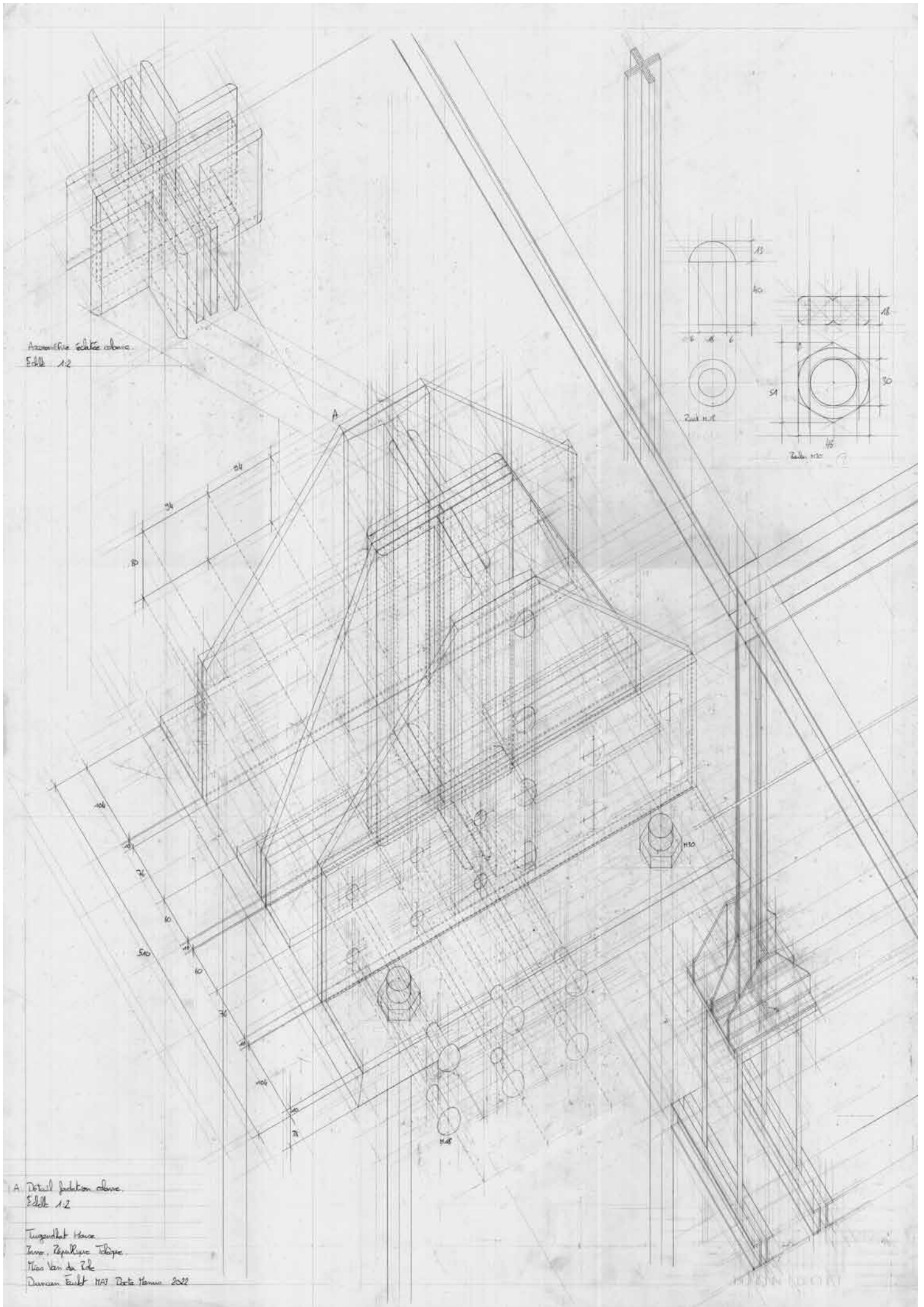




VILLA TUGENDHAT,
BRNO, 1928-30







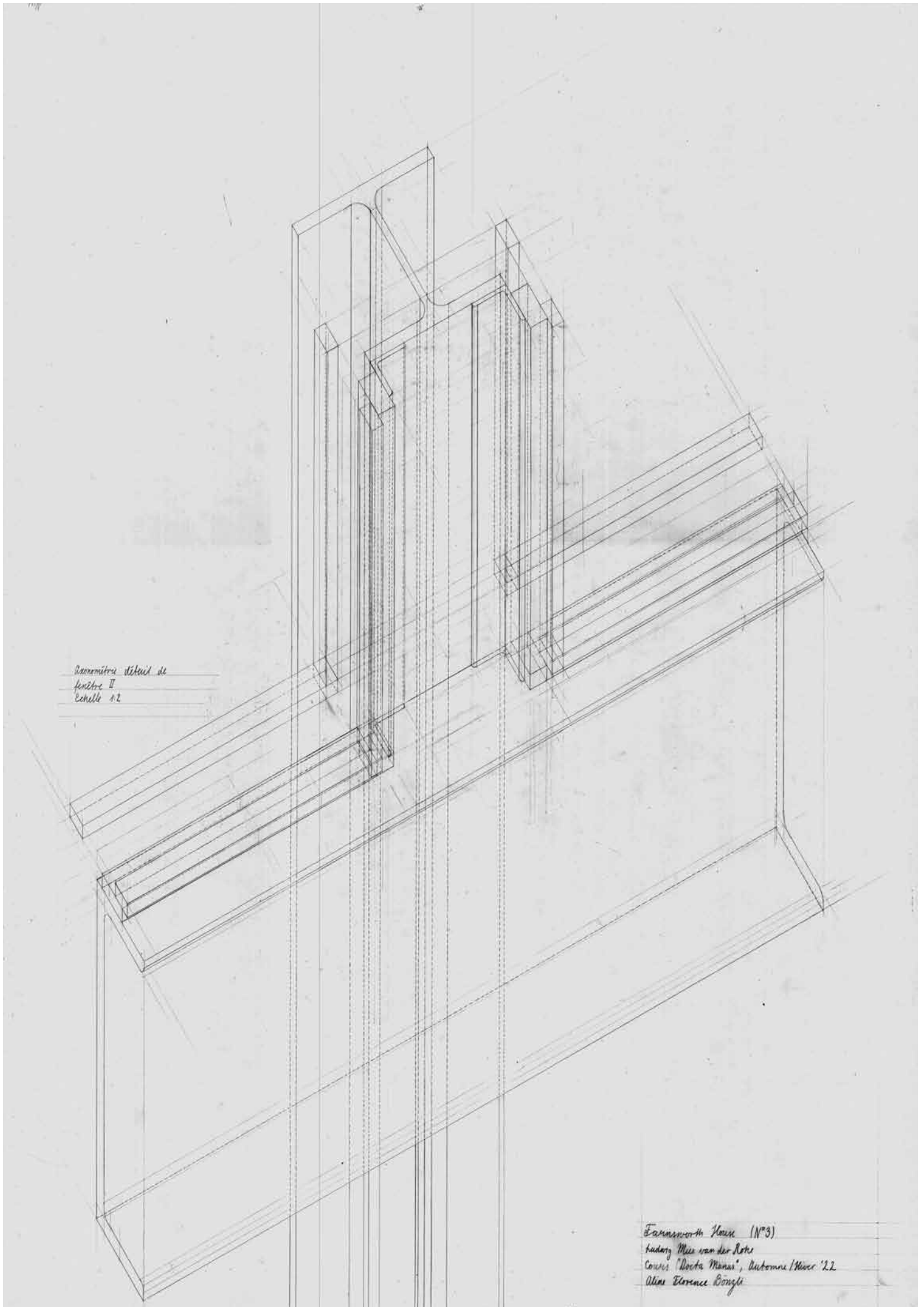
Asymetrische schäfte oben.
Maßstab 1:2

A. Detail foundation above.
Maßstab 1:2

Tugendhat House
Zürich, République Tchèque
Hans Van der Pelt
Duncan Fouchet 11/17 Dorte Hanne 2022

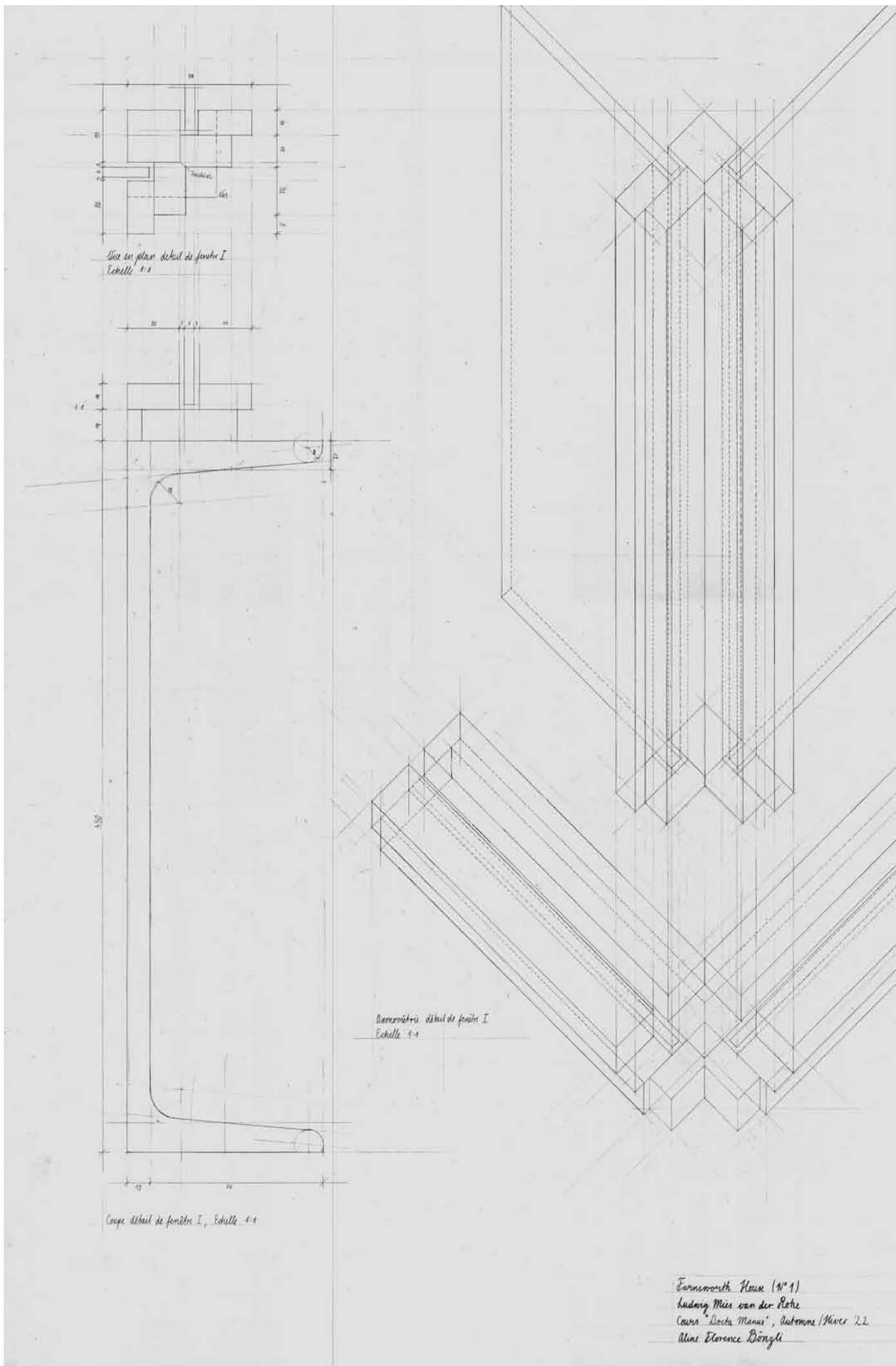
PROF. DR. D. FOUCHET

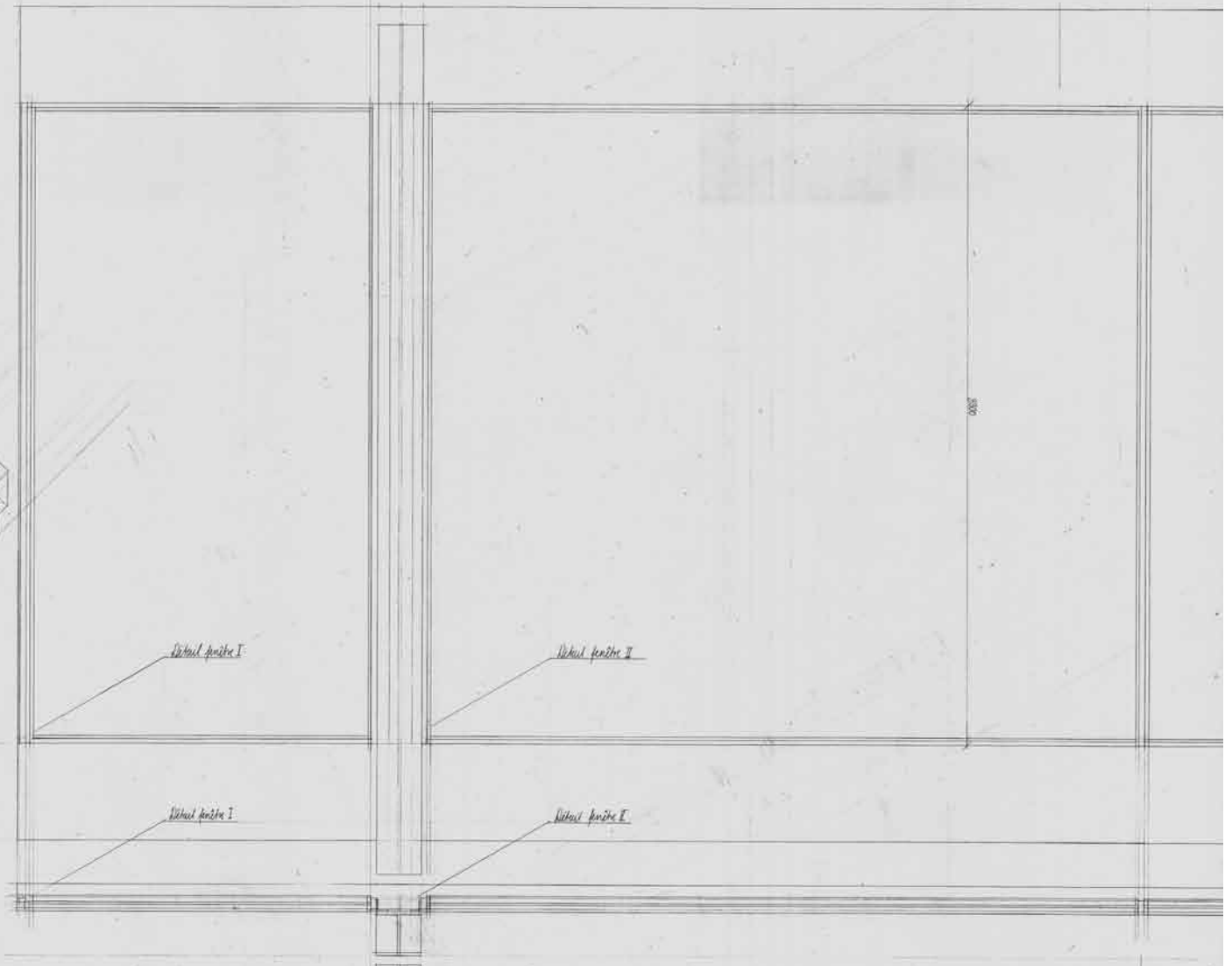
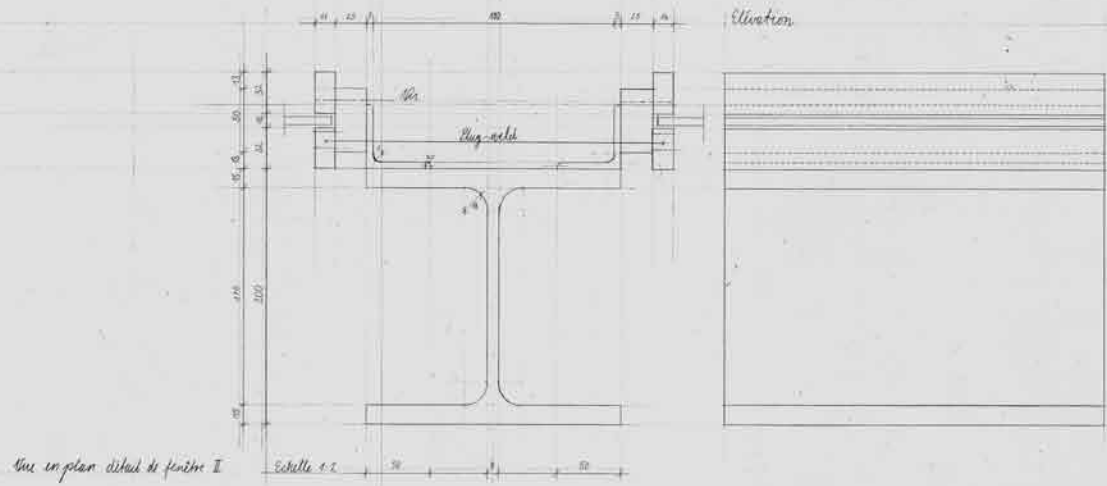
FARNSWORTH HOUSE,
PLANO, 1945-51



perspective detail de
fenêtre II
échelle 1:2

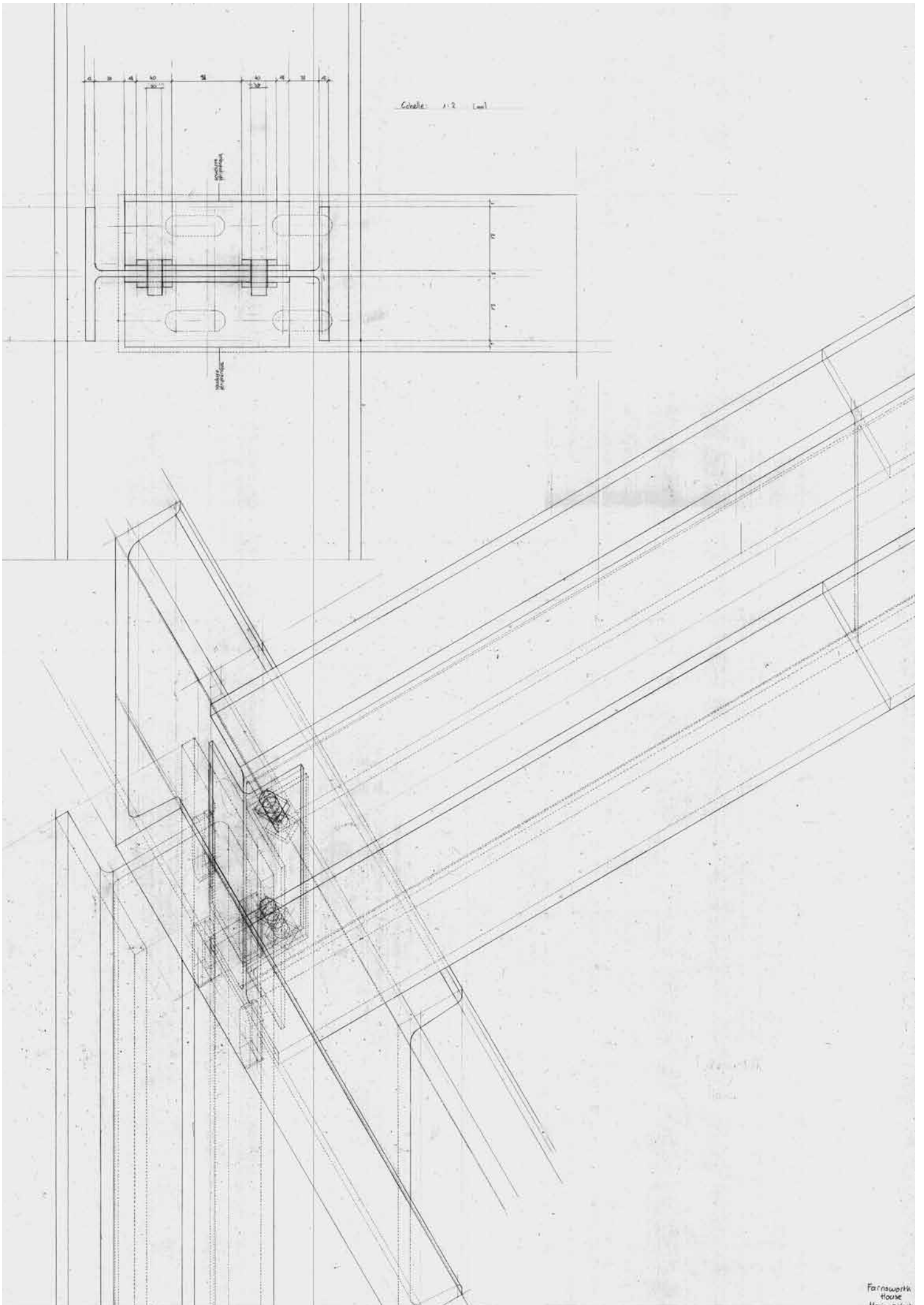
Farnsworth House (N°3)
étude Mies van der Rohe
Cours "Droits Manas", Automne/Hiver '22
Aline Blomance Bönzli

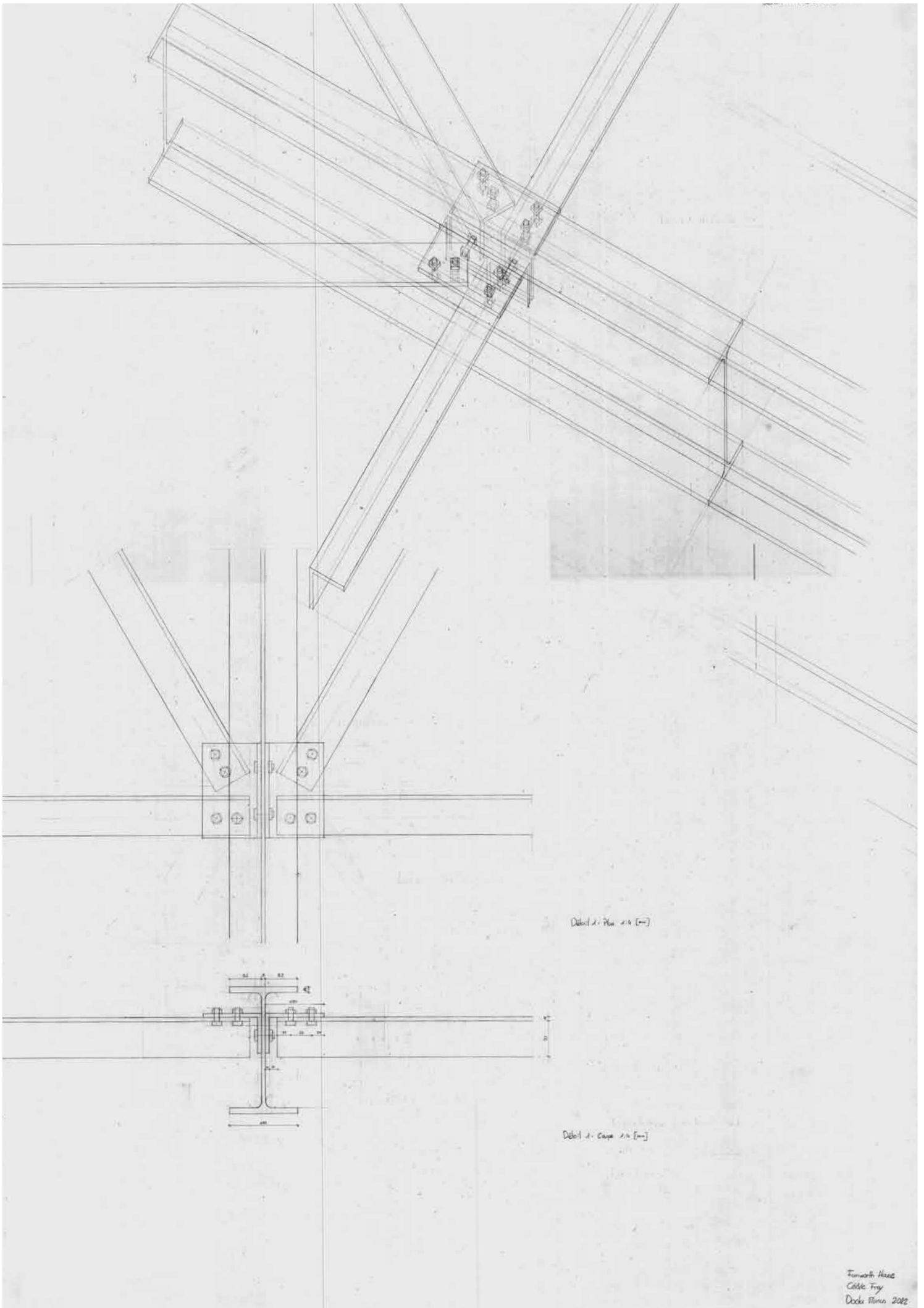




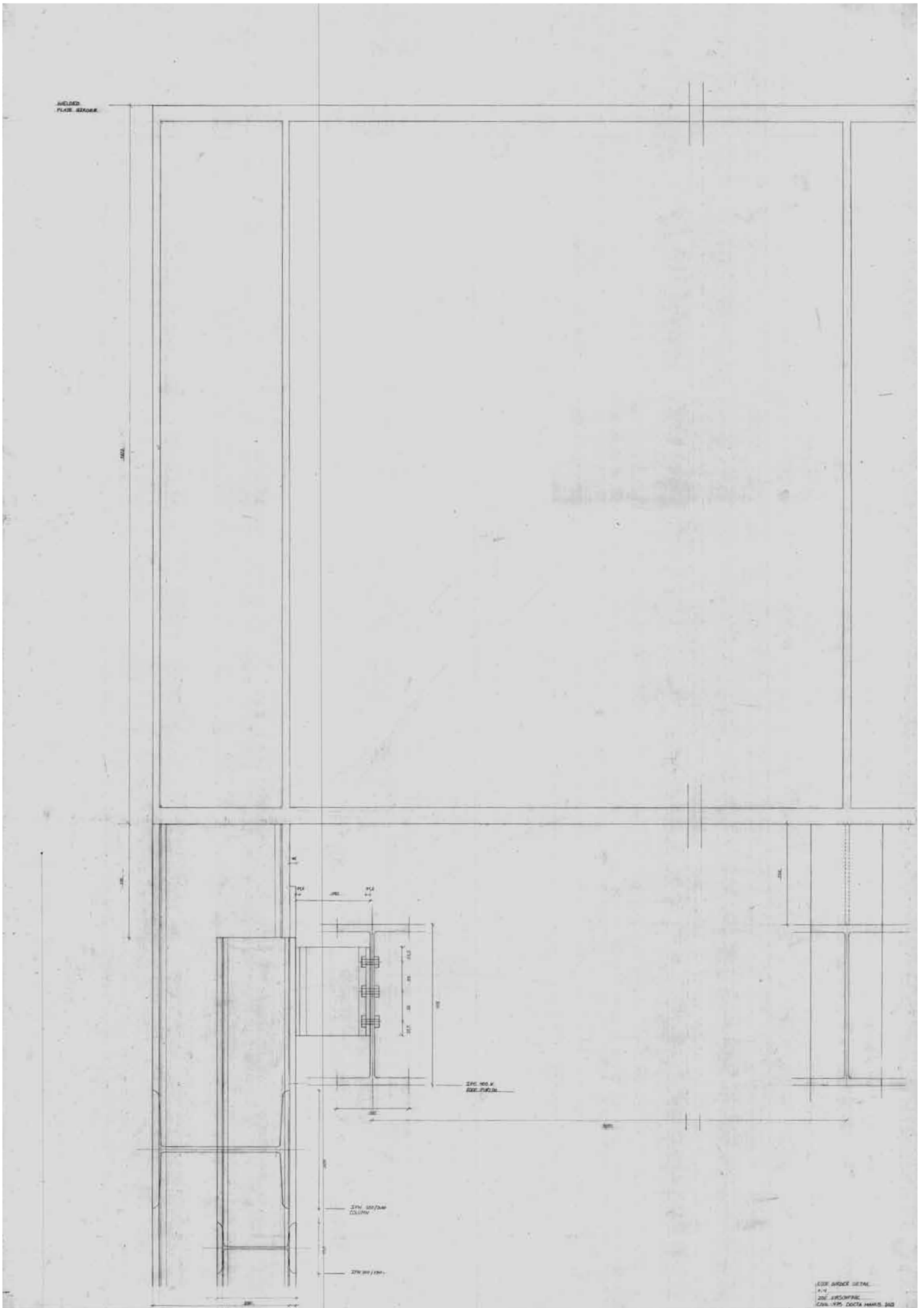
Vue en élévation de façade à une en plan détail de fenêtre
Echelle 1:10

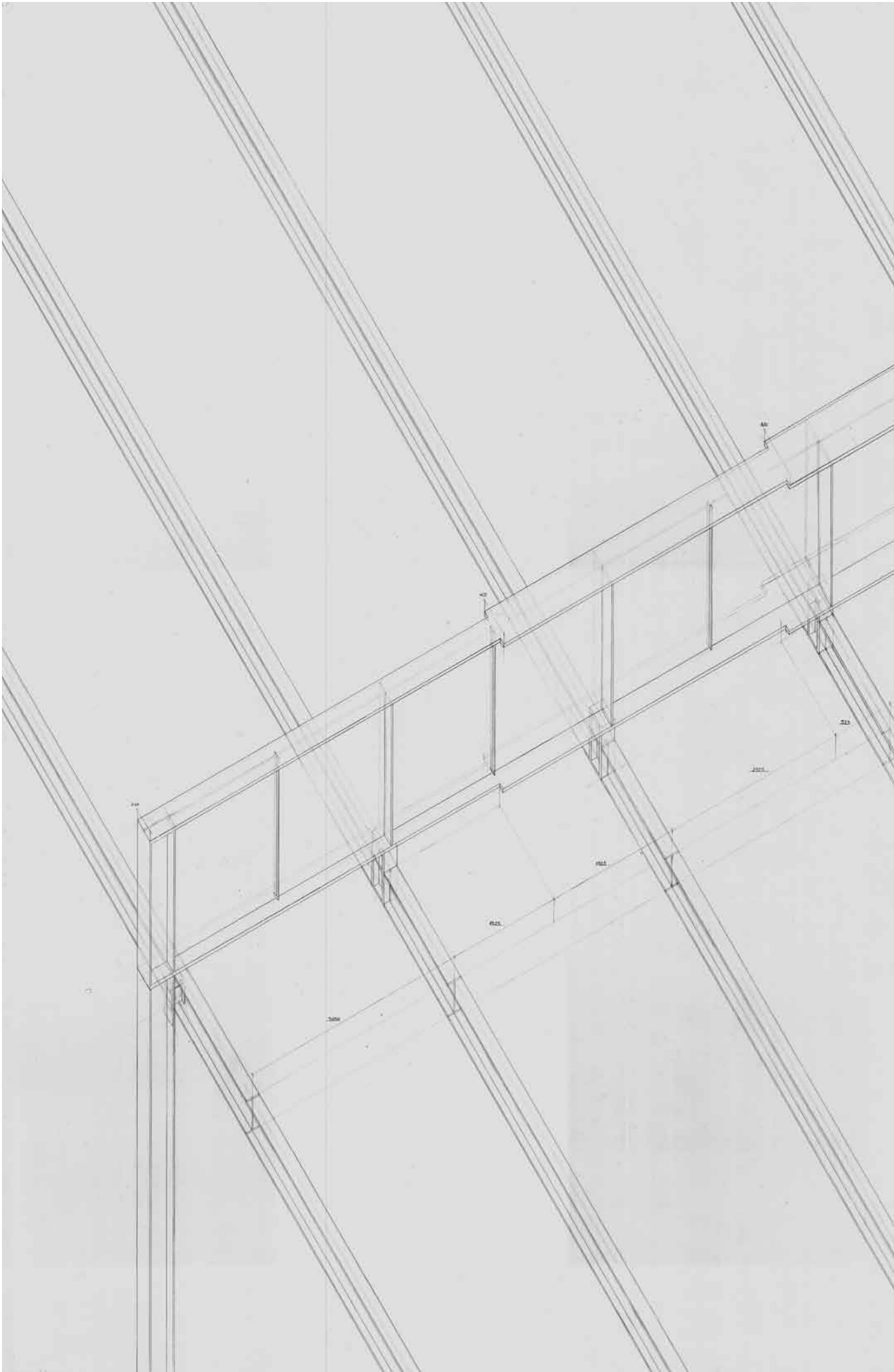
Farnsworth House (N°2)
Ludwig Mies van der Rohe
Louis "Roche" Manser, Autumnel Mover '22
Aline Florence Bönzli

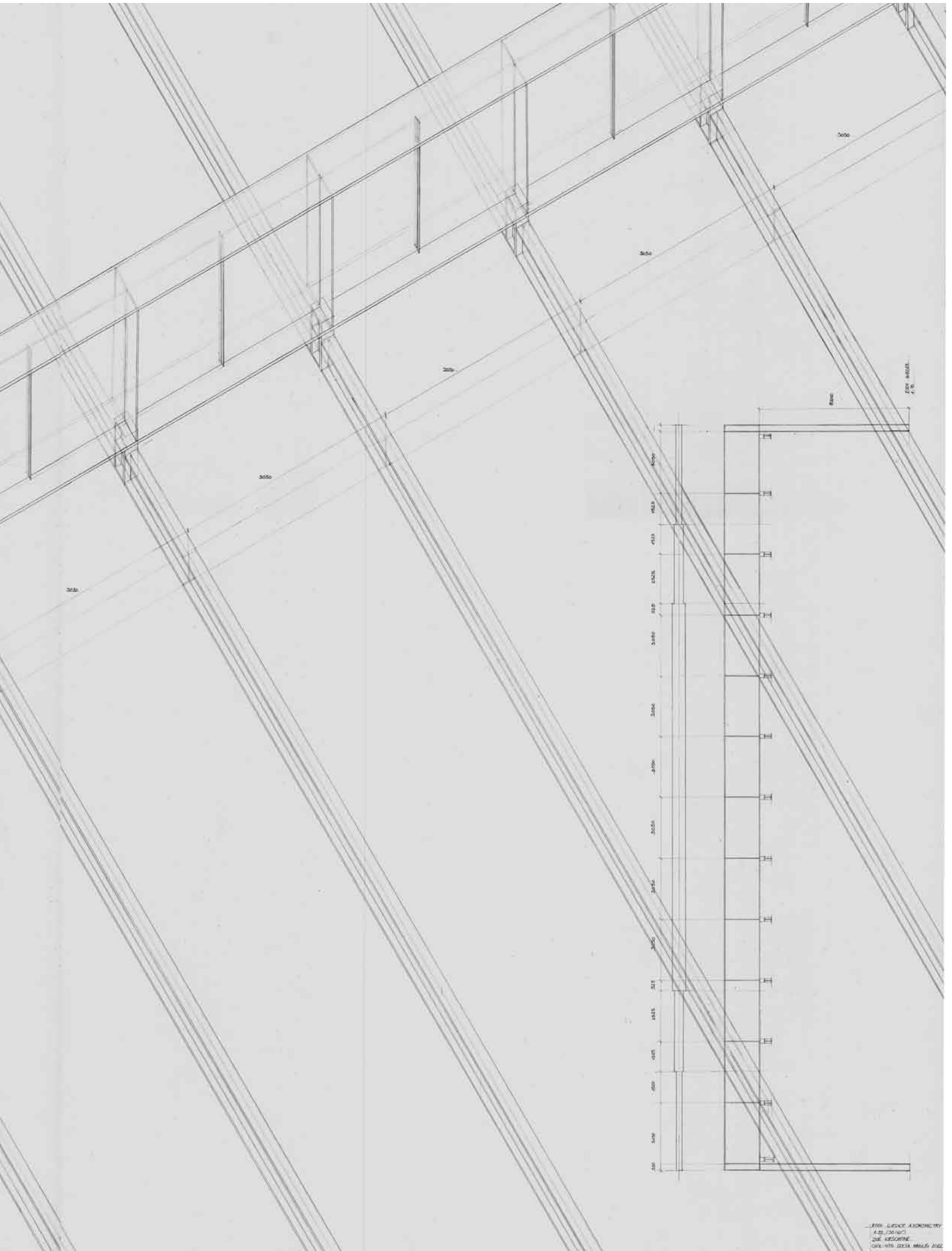


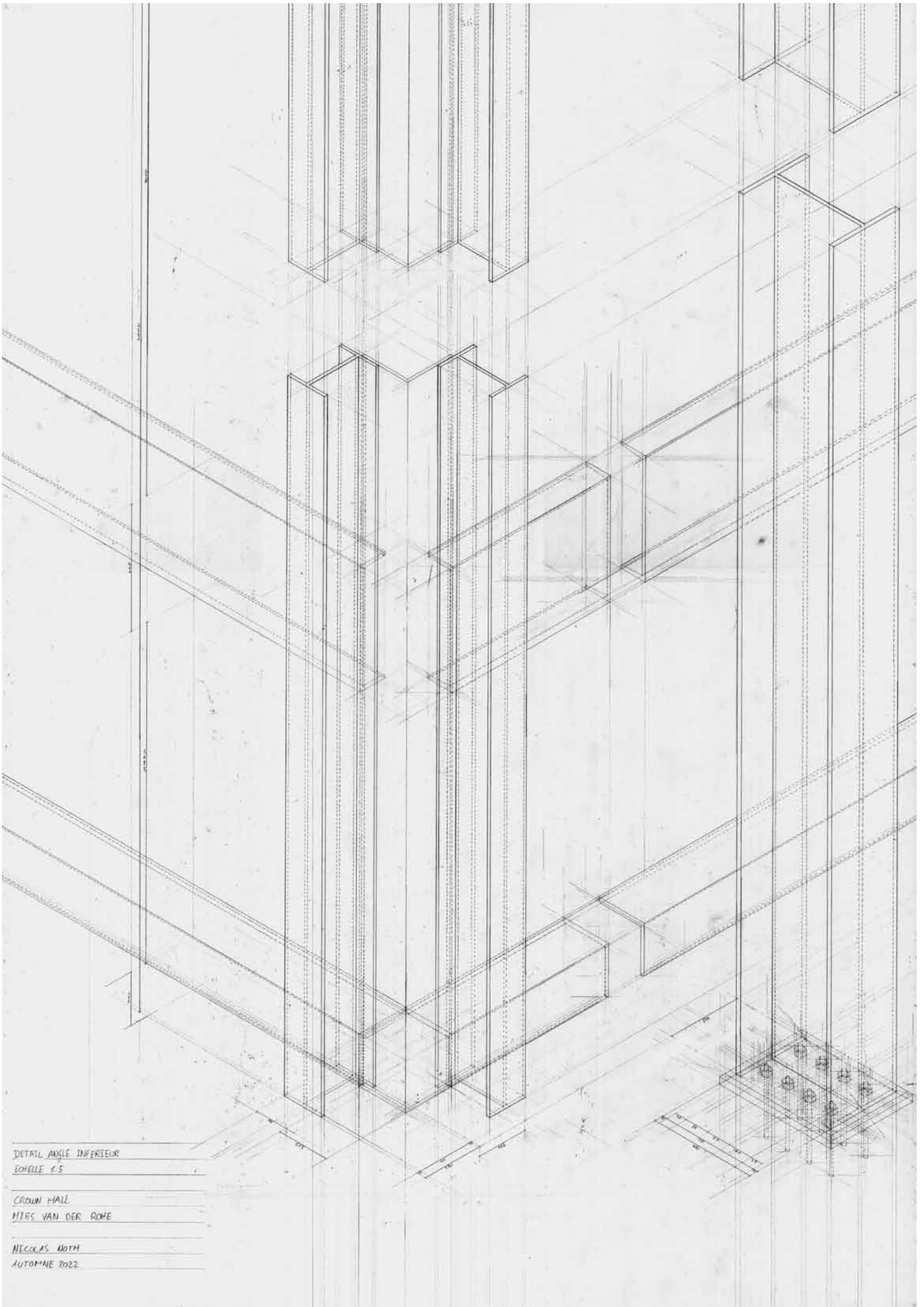


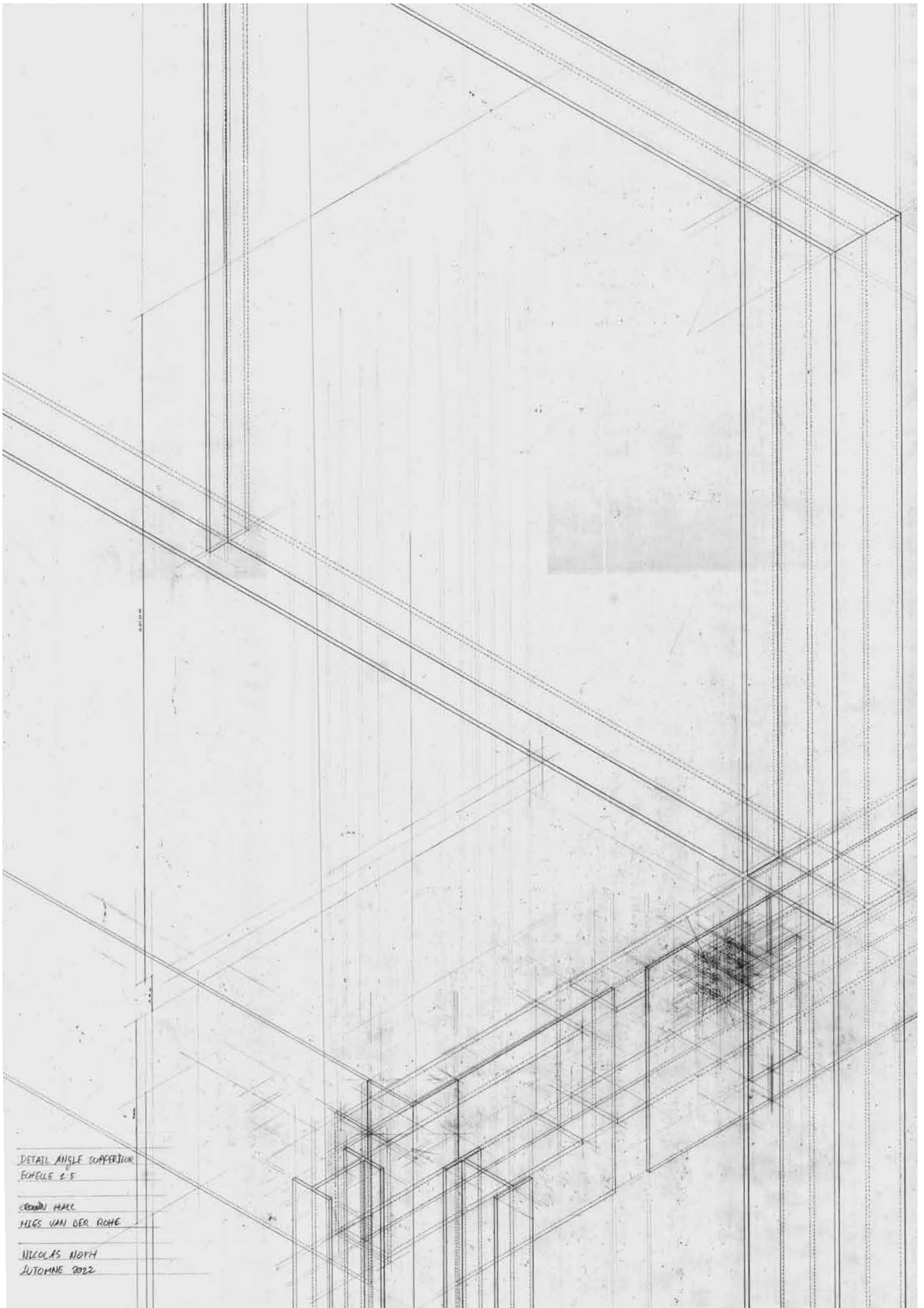
CROWN HALL,
CHICAGO, 1950-56





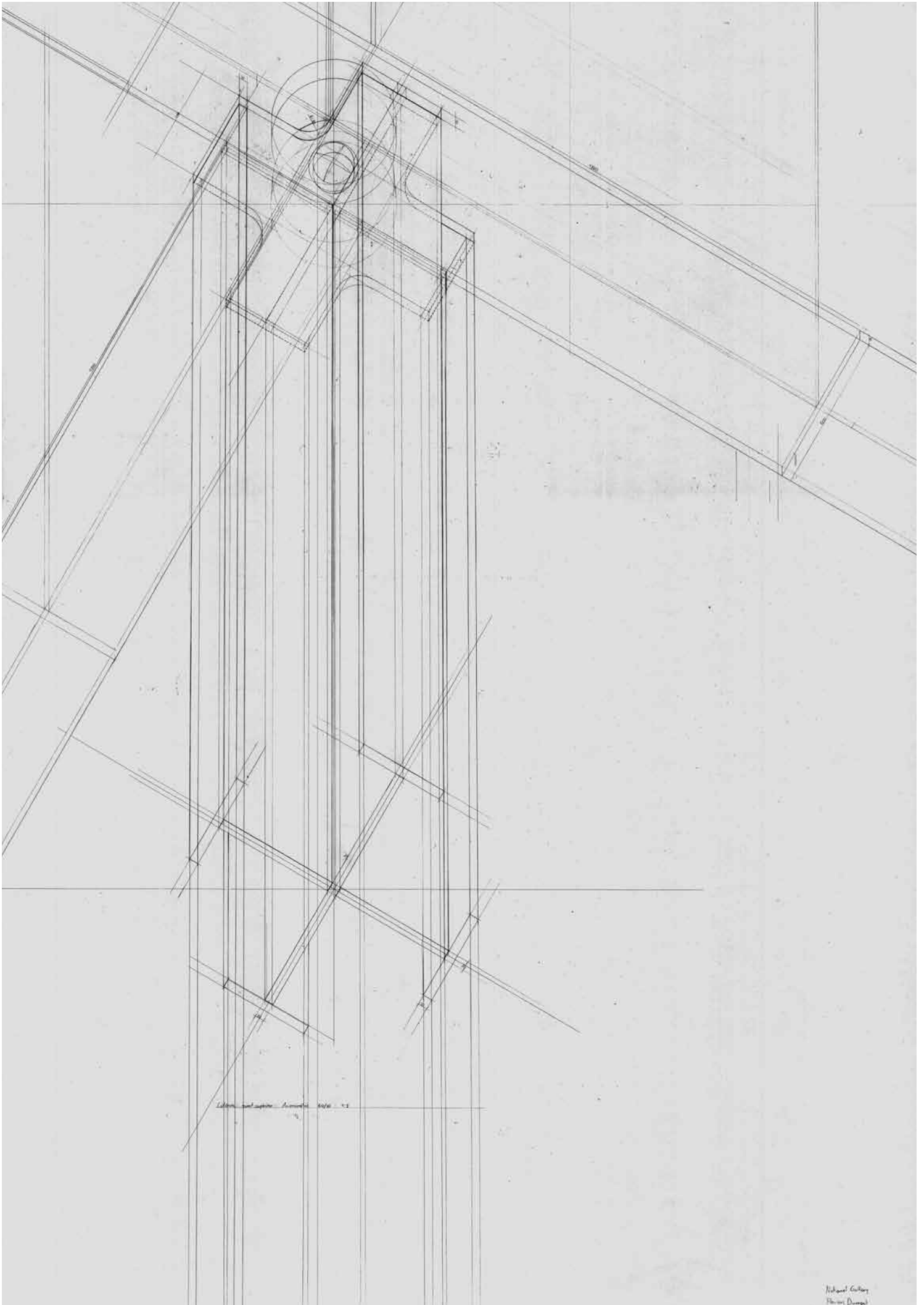


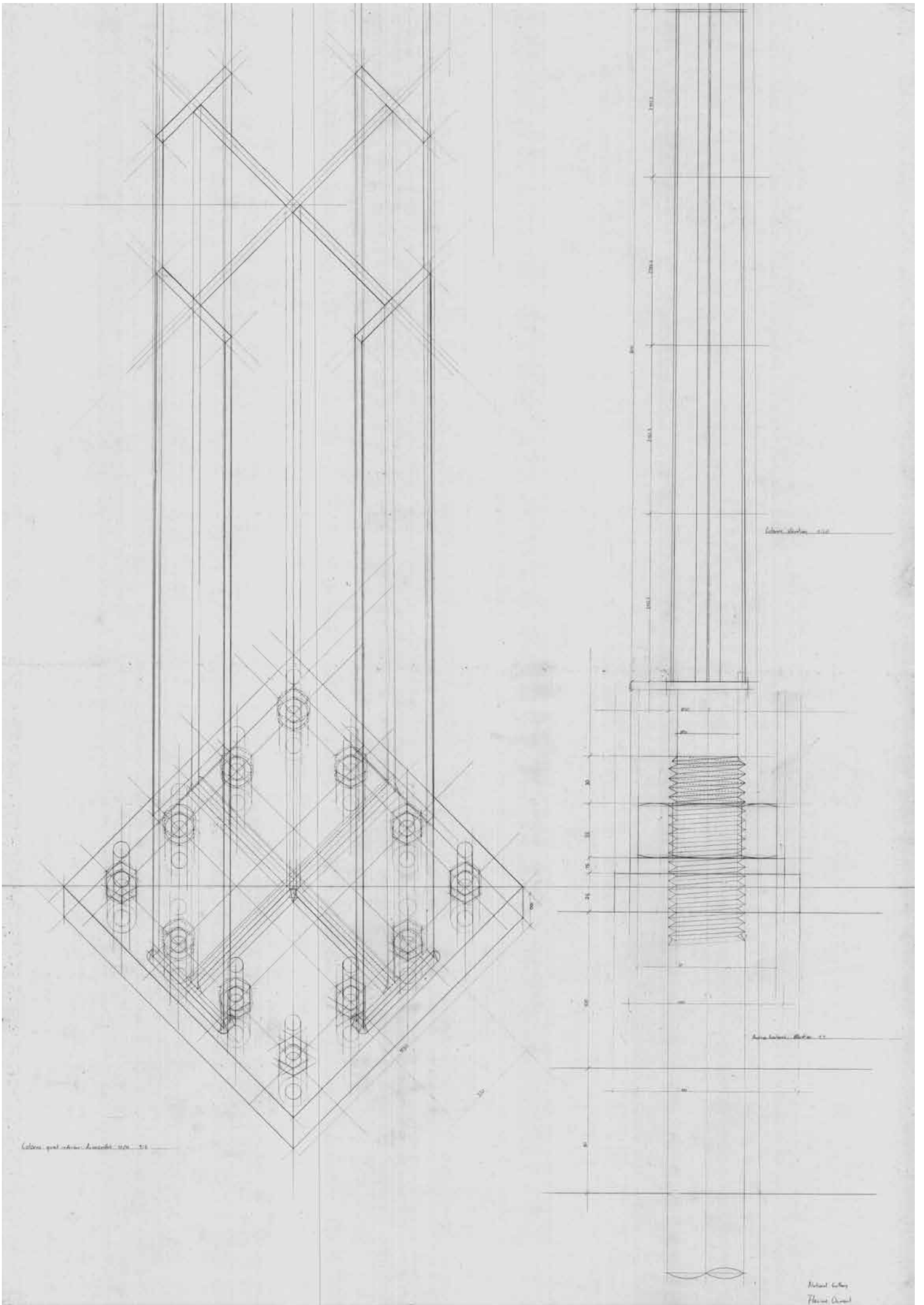


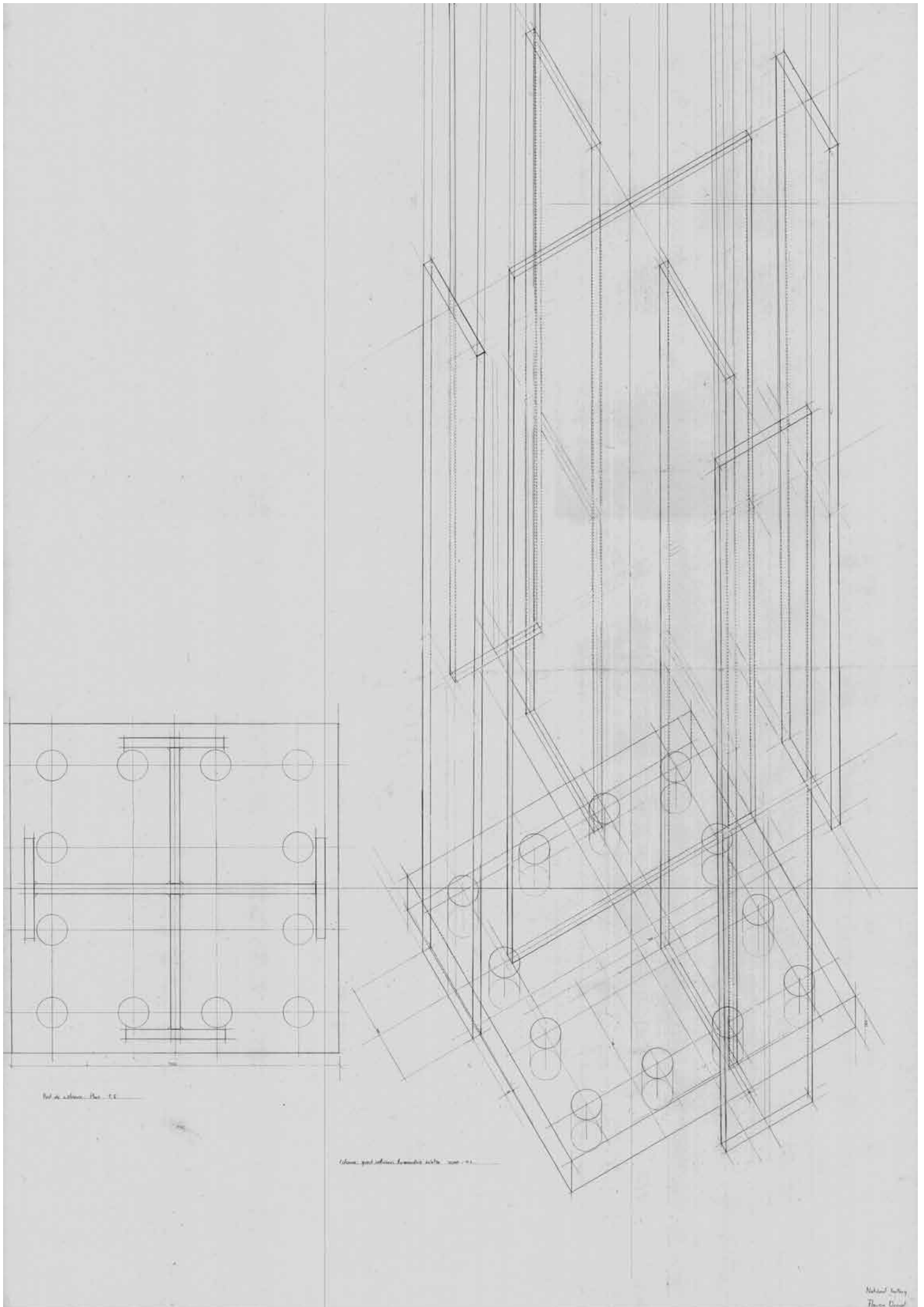


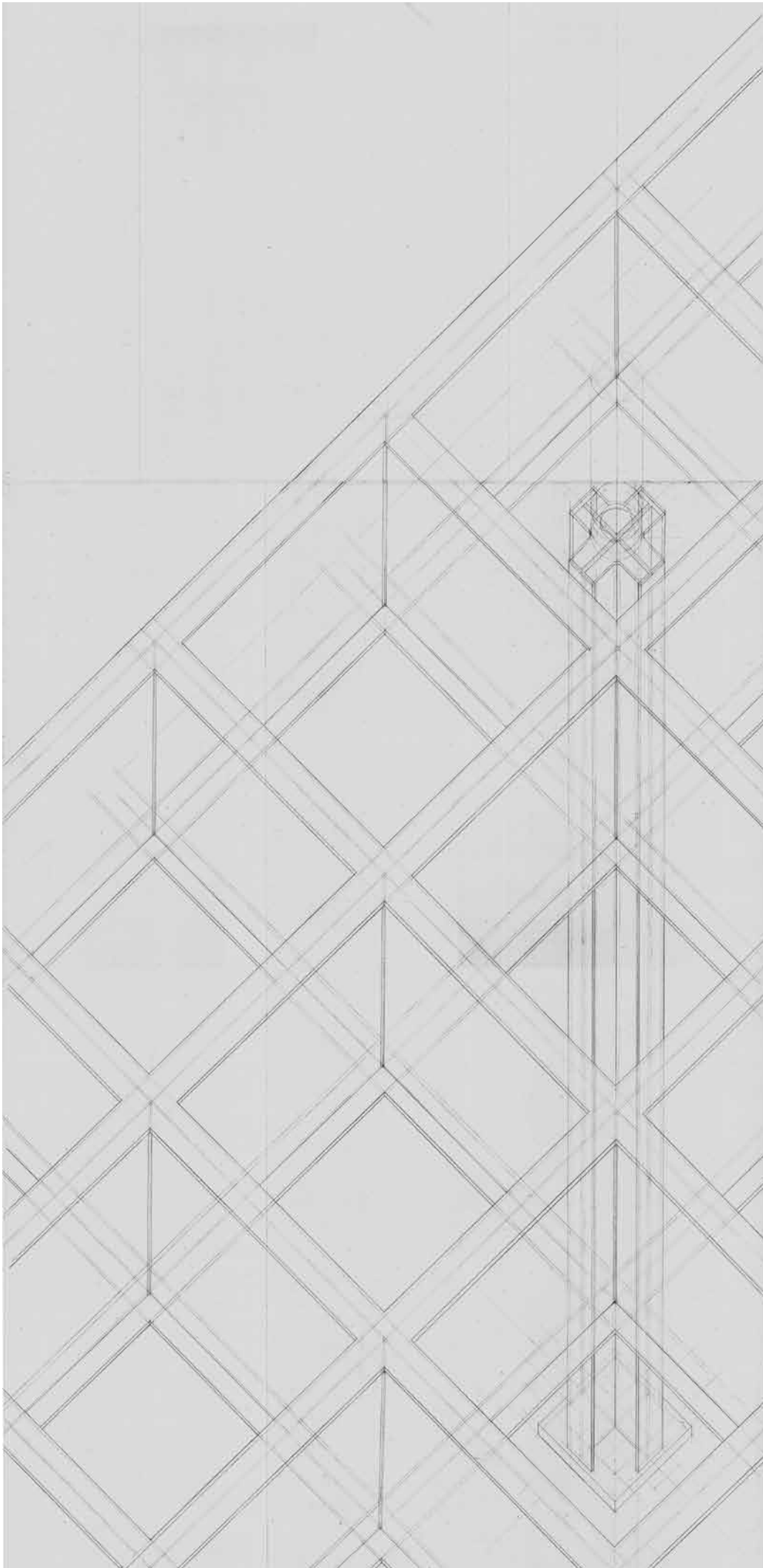
DETAIL ANGLE SUPERIEUR
EHELLE 1:5
CROWN HALL
HIGGS VAN DER ROHE
NICOLAS NOTH
L'ETOMNE 2022

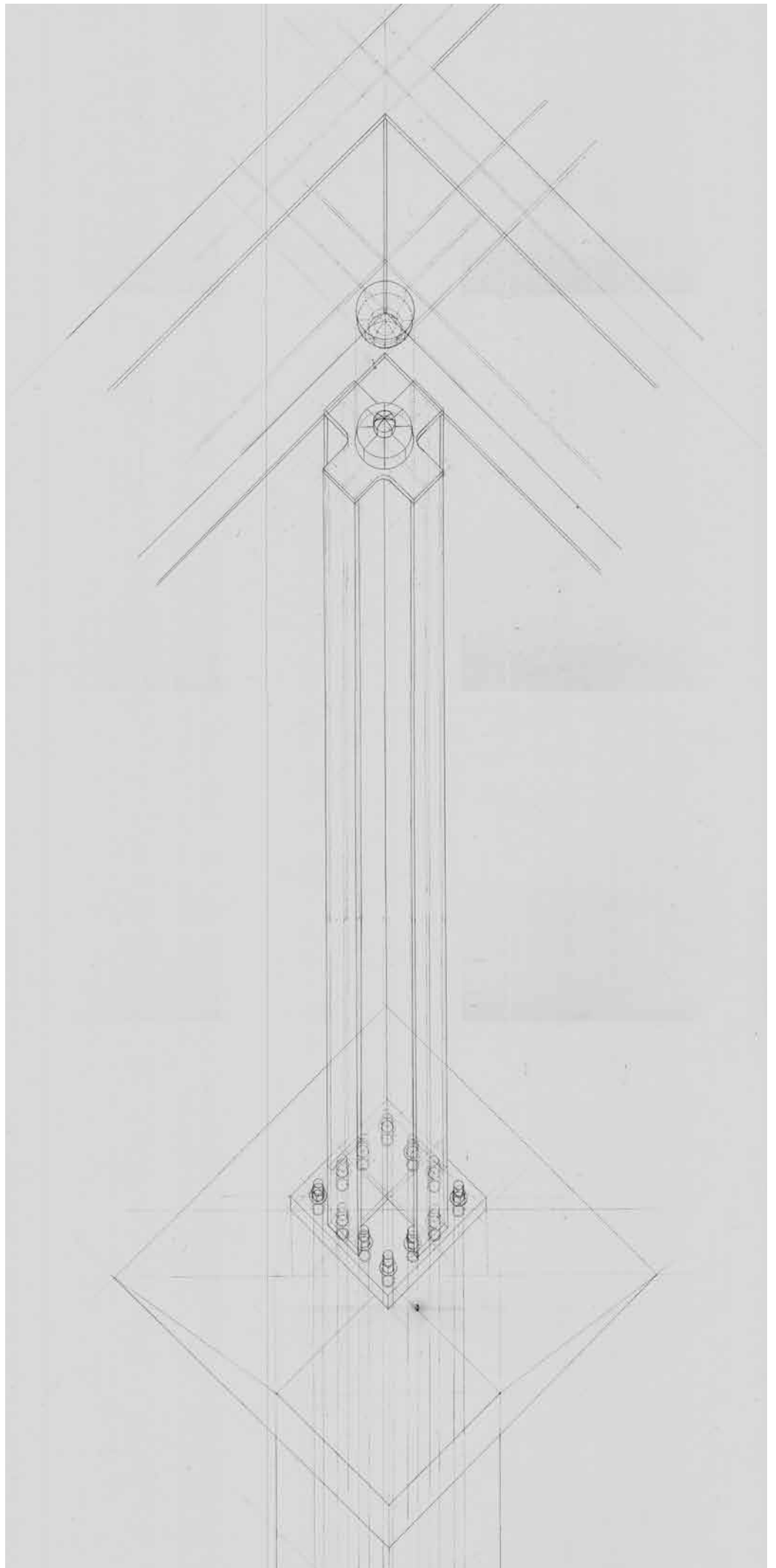
NATIONAL GALLERY,
BERLIN, 1962-68

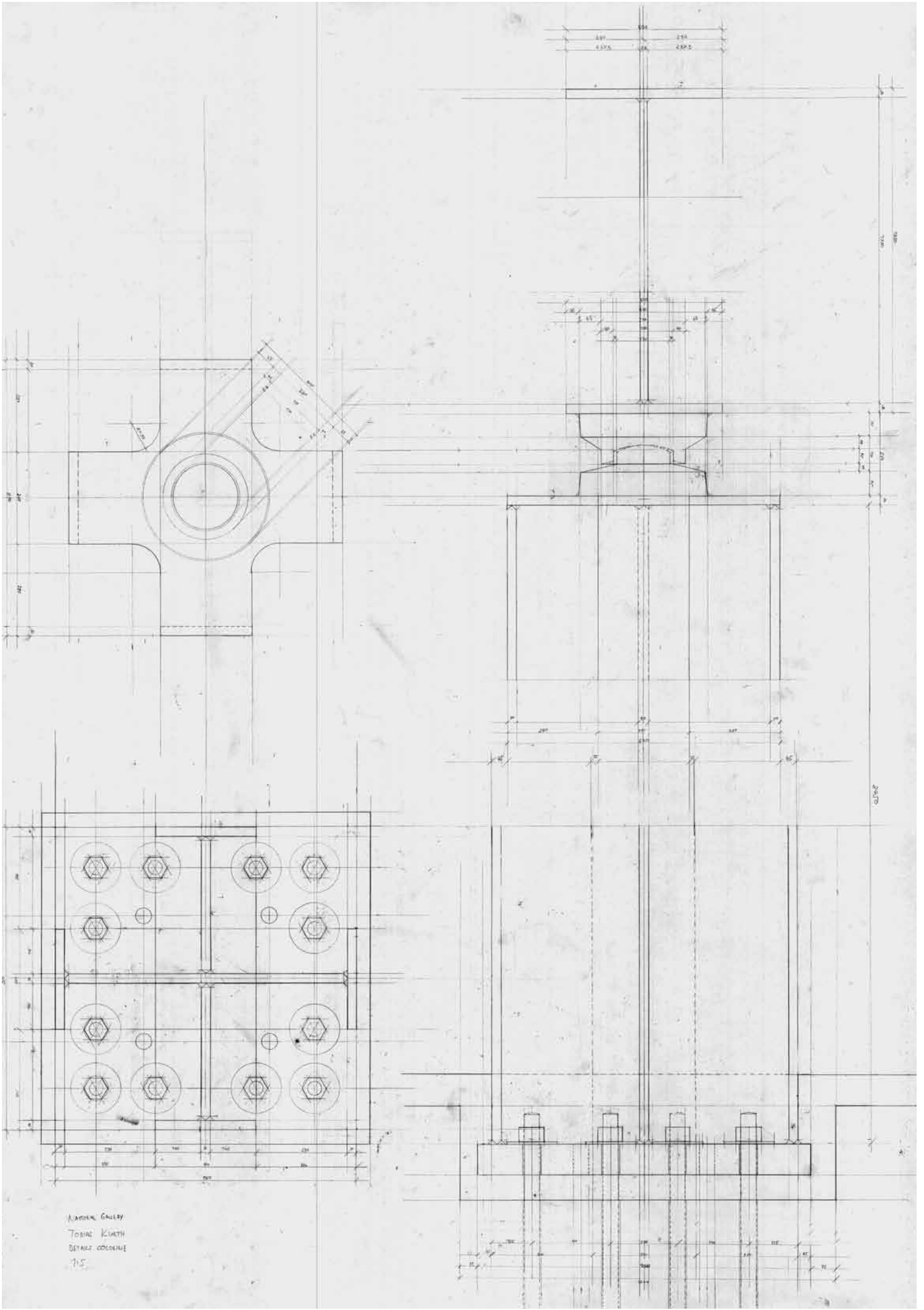


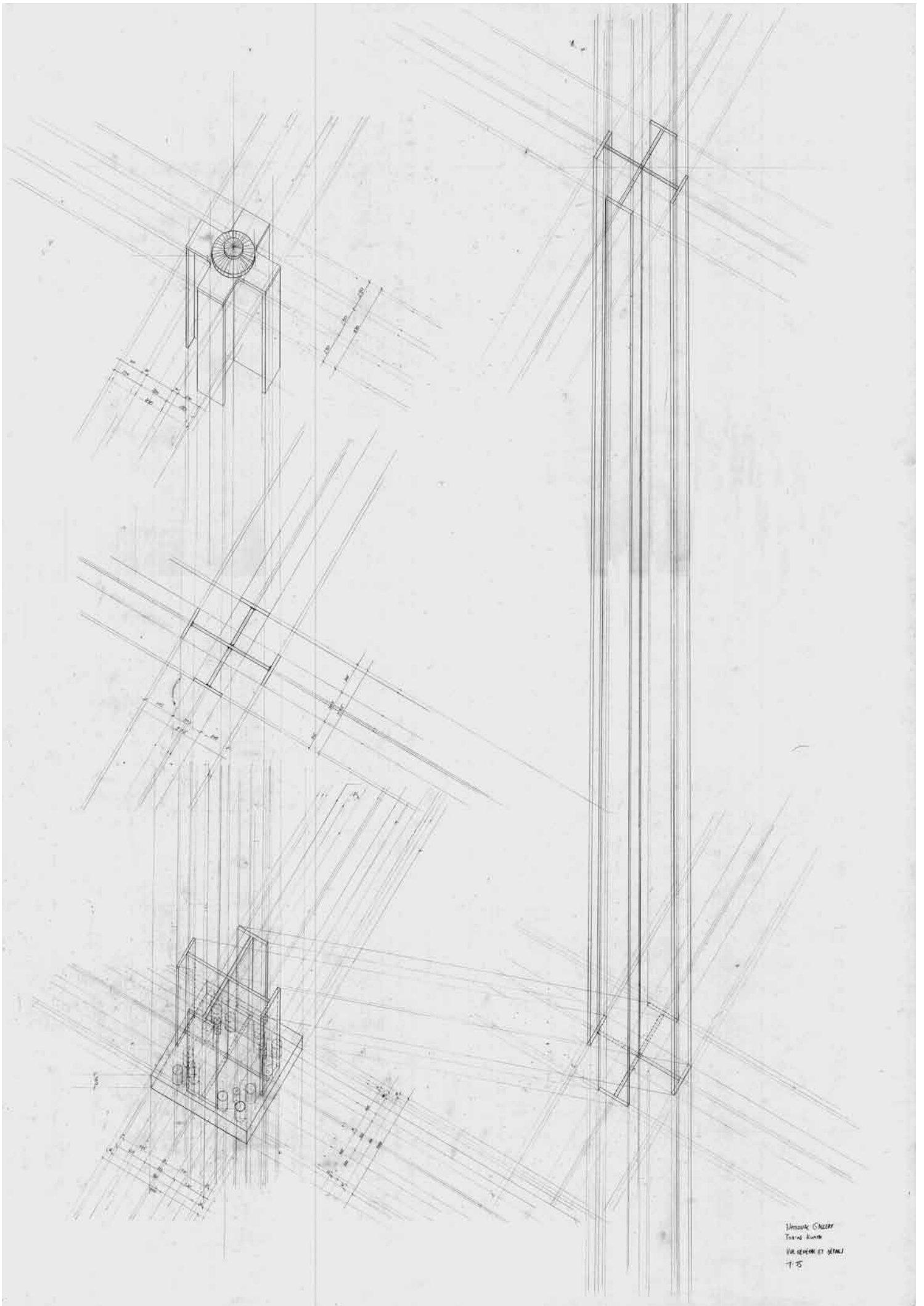




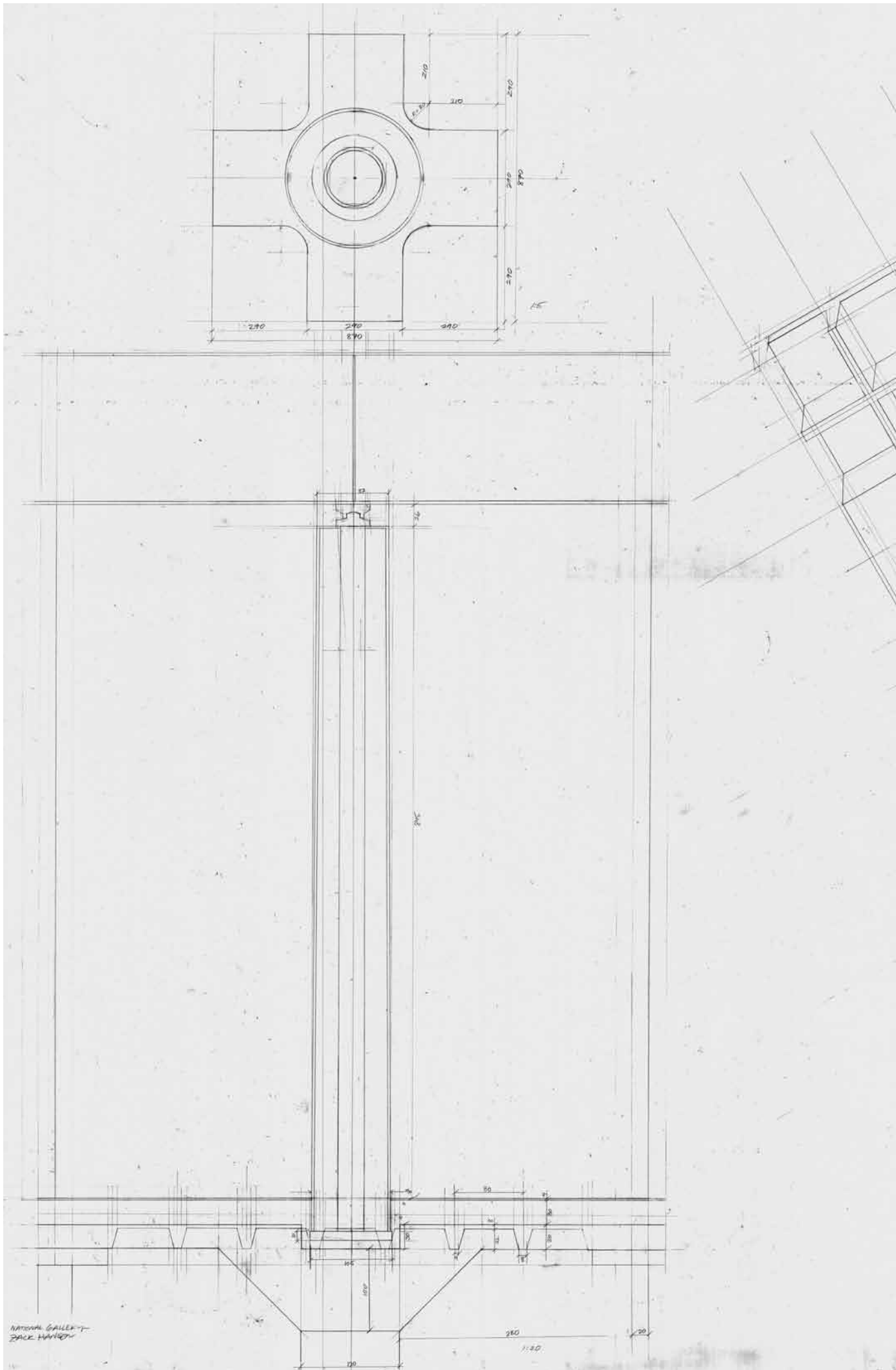


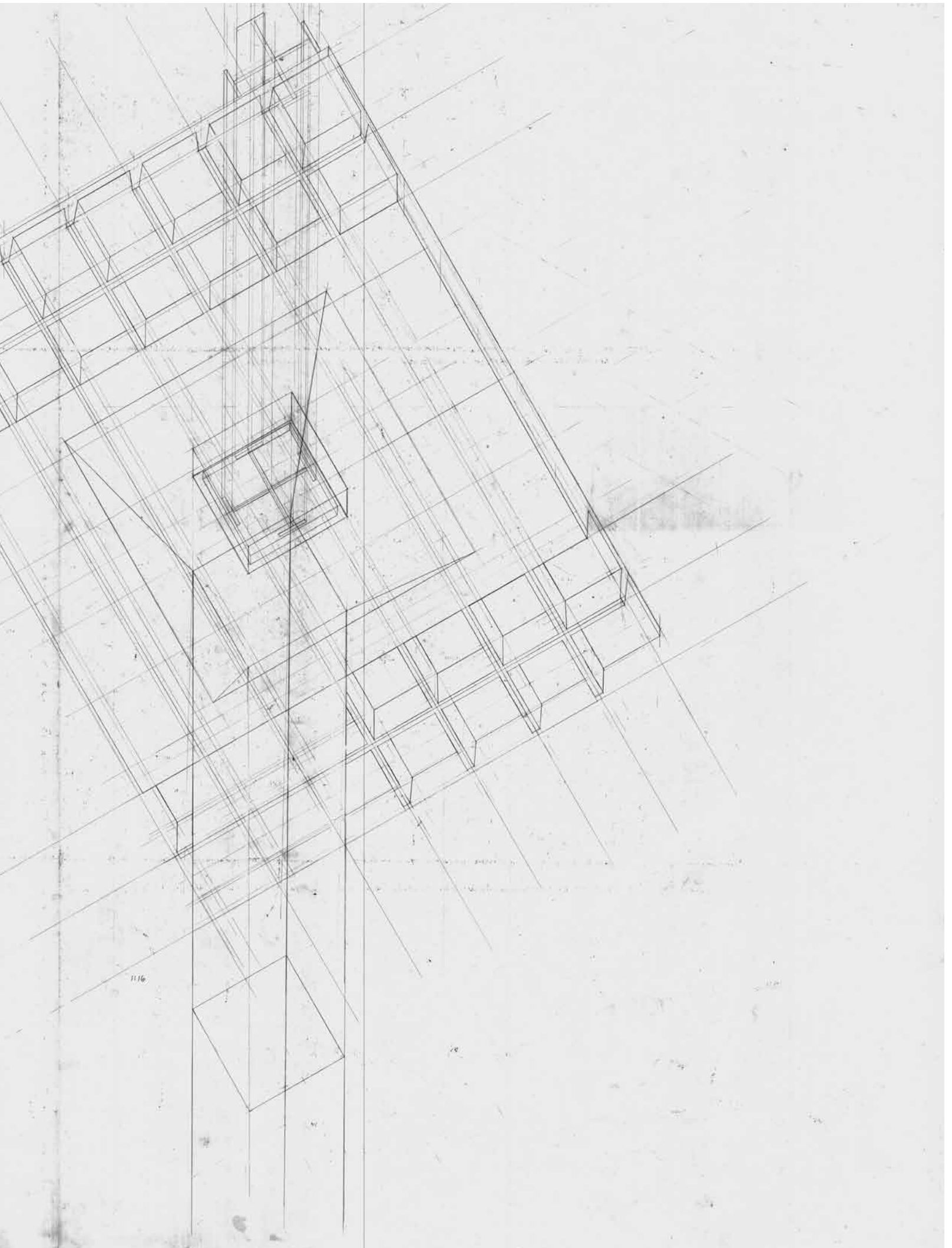


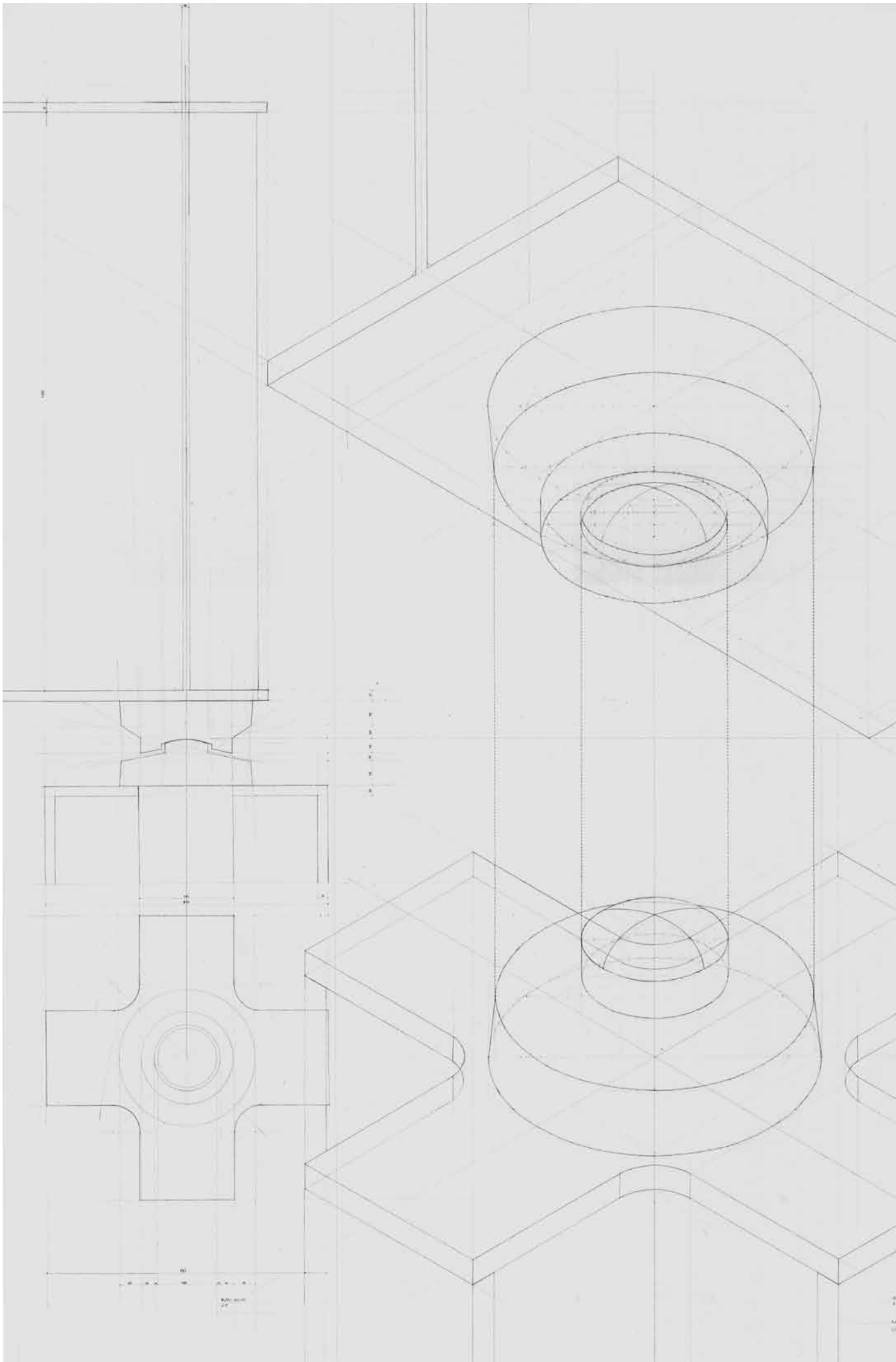


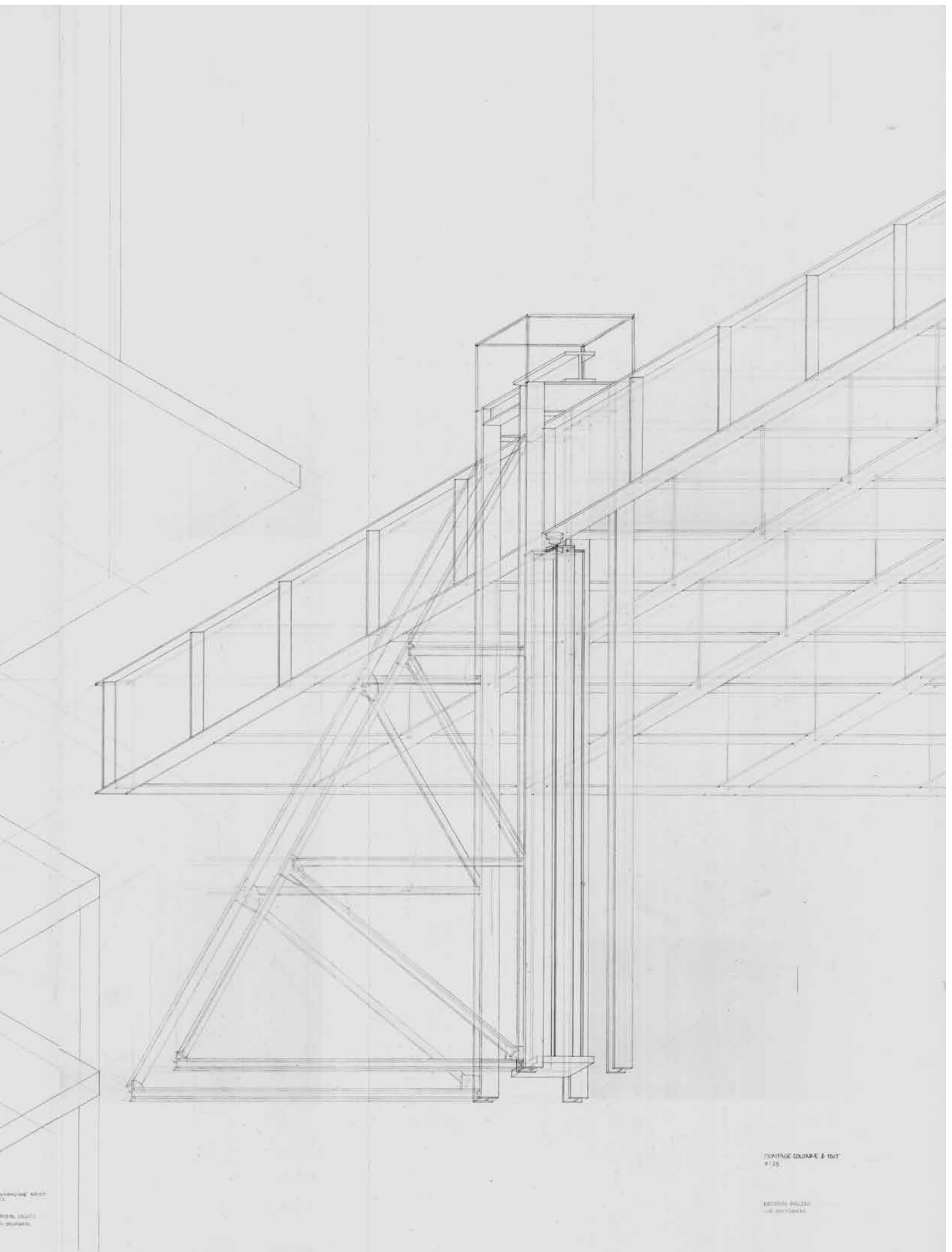


IMMERSO CANTIER
TAVOLA 1/15
VIA CANTIERE 17/18
1915





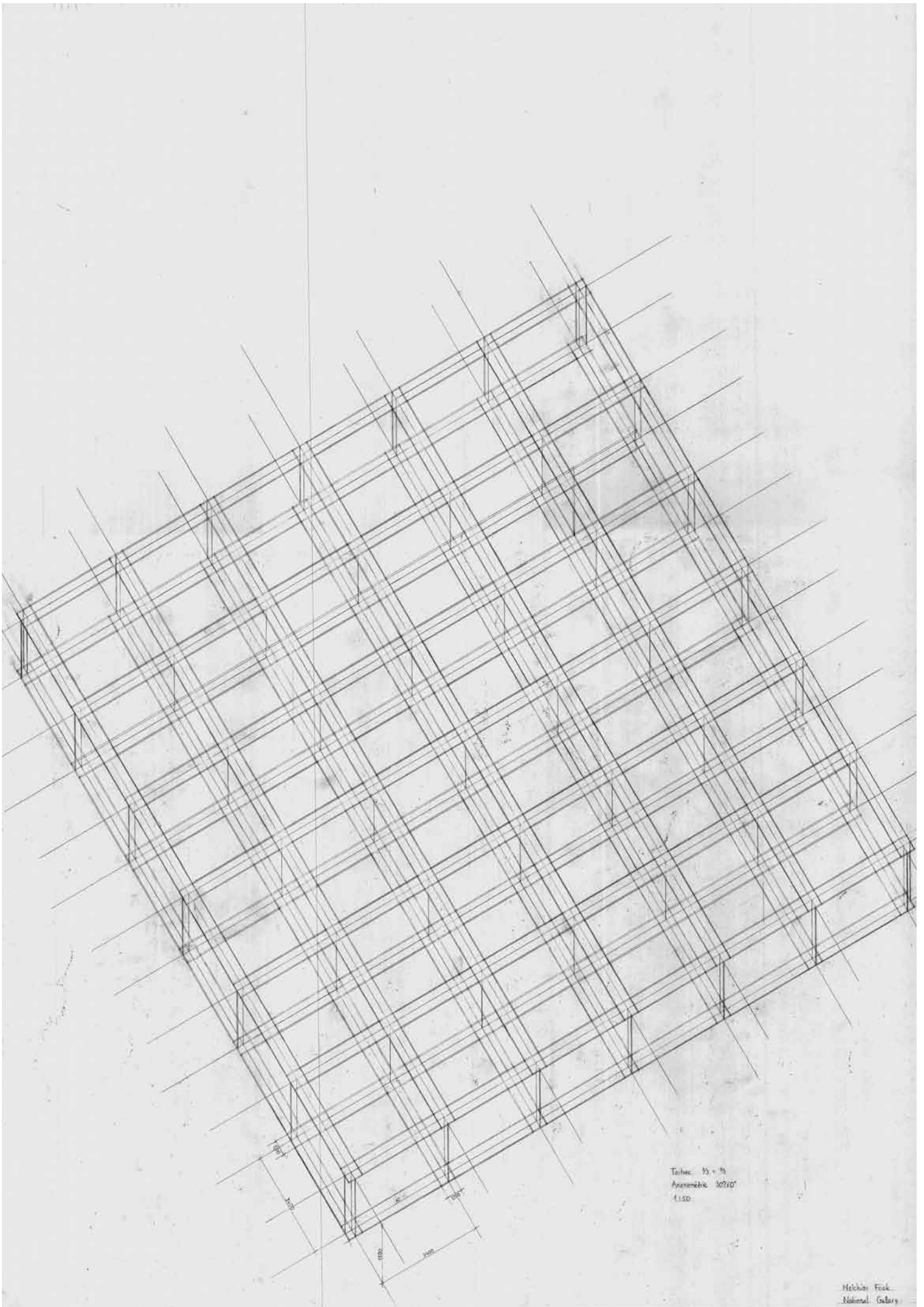




PROF. COLONNE & TOIT
1:25

BRUNO ZEVI
LISE BACHMANN

BRUNO ZEVI
LISE BACHMANN



DOCTA MANUS
DRAWING STRUCTURES

UE GC – EPFL

TEACHING TEAM

Patricia Guaita, architect, lecturer ENAC ALICE
Raffael Baur, architect, external lecturer ENAC
David Fernández-Ordoñez, engineer, fib,
ENAC IIC IBETON
Enriques Corres Sojo, Doctoral Assistant,
ENAC IIC IBETON

STUDENTS

Lise Bachmann
Aline Bönzli
Andrea Cabriado Ascencio
Jean Couson
Jordan Dessibourg
Flavien Dumont
Maxime Dunod
Duncan Fouchet
Guillaume Fauchereau
Marie Dupont
Michèle Frei
Cédric Frey
Melchior Frick
Léonard Gorjat
Judith Gouin
Léandre Guy
Zack Hansen
Diego Houtart
Sanad Jouhari
Zoé Kirschfink
Léa Klim
Tobias Kurth
Joëlle Lui
Lino Marcé
Nicolas Noth
Cédric Welt
Samuel Wey

STUDET ASSISTANT
Oria Abbas

EDITORIAL
Raffael Baur
Patricia Guaita
Oria Abbas

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Studio Otamendi, Brussels

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