







FORM FABRIC DETAIL

Edited by: Christopher Platt, Brian Carter and Mark Baines



DEDICATION

To all involved in commissioning, creating and constructing this building. May it repay that vision, thought and care to those who use it and call it their own.



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FOREWORD

Christopher Platt

“Buildings are intermediaries in the reciprocation between the hopes and intentions of people, in the present and in the past. They are the mineral interval between the thoughts and actions that make them and the thoughts and actions that inhabit them.”¹

Preparing for a life in architectural practice is a long and complex process. Only a small part involves attending a higher education institute such as the Glasgow School of Art. The remainder involves the life-long learning processes of observation, reflection and practice. Paradoxically, we prepare for ‘doing it’ by ‘doing it’. Remaining a student after graduation, amidst a tsunami of professional demands is a mark of distinction within the creative professions, and for architecture in particular. The choice to remain inquisitive and restless; the desire and the impatience for needing to know; the interest in searching out the difficult questions all mark out a special kind of creative practitioner. Within the contemporary architectural profession, such practitioners are urgently needed.

We study the architecture of the past to help us invent the architecture of the future. Any new building being constructed on the doorstep of a school of architecture therefore is an educational gift to its students. So it has been with the Reid Building, the Mackintosh Building’s new neighbour, designed by Steven Holl and Chris McVoy in New York and JM architects in Glasgow. What better way to learn about architecture than to study the past and to experience the future as it rises

up in front of you. For the past two years, we have had the opportunity to visit the Mackintosh Building and simply cross the street to observe the Reid Building taking shape. So, what is this particular building teaching us about architecture?

“Architecture becomes the art of appropriate selection of details in the devising of a tale. A plot with the appropriate details becomes a fully developed and successful ‘tale.’ ”²

This book, the second undertaking involving three stage 4 students from the Mackintosh School of Architecture, explores selected aspects of the Reid Building. The book does not claim to be the definitive guide to the building. Its title, *‘Form, Fabric, Detail’* announces the themes for the drawings, photographs and invited essays it contains, which, in this final version have become seamless and interchangeable. ‘Form’ for example, could be used to describe the building’s massing, and equally be applied to the bespoke light fittings or hand-rail brackets. The building itself, made up of so many pieces and fragments, can be regarded as having become a new ‘detail’ of the city within which it is located, as much as a balustrade is a ‘detail’ of the building. The crystalline, external glass rain screen, which forms the external envelope, is referred to as the building’s ‘fabric’, a word often used to describe the urban condition, and also associated with the more malleable world of fabrics.

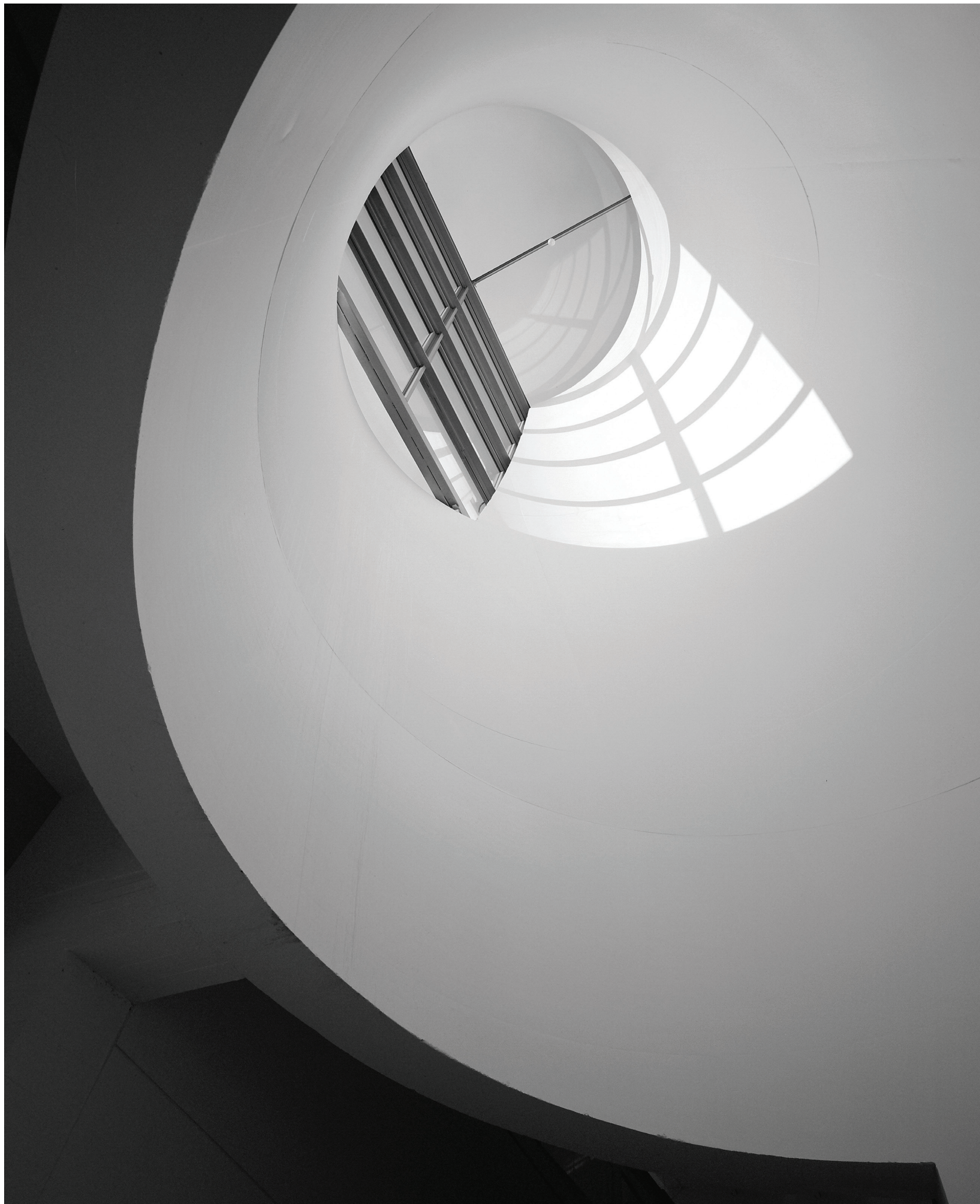


The distinctions between the themes in this book are blurred by size and scale. We have discovered that what began as a study of construction and detail has become an exploration of the broader aspects of architectural design, viewed through the lens of the fragments. The essays reveal characteristics of the holistic creative process, which is concerned with orchestrating elements of built matter towards a particular purpose: a place for design students to work. Whilst the original ambition was to create a book of ‘anatomical’ architectural drawings revealing what literally lay beneath the building’s external skin, the result also sheds light on what might loosely be described as the building’s genetic blueprint; its DNA. The study of fragments has, then, directed our gaze and understanding towards the underlying concepts and design rationale.

Perhaps the mark of any building’s significance is its enduring ability to accommodate: firstly, its ability to accommodate purposes and activities, including some that were not foreseen at the time of its realisation; secondly, the ability to accommodate scholarship and research and offer fresh insights into its own particular qualities as well as into aspects of architecture in general. And while a building’s purpose only really makes sense once people start to use it, our engagement with inert material can also be seen as the stuff of our dreams, our art and of our identity. We see things not as they are but as we are.³

In the space of a few short years leading up to its completion, the Reid Building has attracted considerable journalistic critique, academic papers, a public exhibition and two books. More importantly, it is now alive with the chatter and concentration of its youthful occupants and as such, is being put to the test within the reality of use. In time we hope the building, like its esteemed partner across the street, may well reveal as yet undiscovered qualities that inspire a new generation of creative practitioners.







FORM

Space, Structure, Material, Light

Chris McVoy

We began by analyzing the School of Art designed by Charles Rennie Mackintosh. Now over 100 years old, the Mackintosh Building's fine proportions, qualities of light, inventive materiality and detail continue to inspire students, artists and architects. The 'Mack' was formative to both Steven Holl and myself in our education as architects (as students, Steven attended historian Herman Pundt's lectures devoted to the building; I attended Kenneth Frampton's). Mackintosh brings daylight into the spaces of his building in more than 20 ways through variations of top light, side light, clerestory light, north light and direct light. His studios of expansive height and great light have proven to be adaptable through time to the changing needs and media of making and teaching art. In designing the Reid Building, we set out to make a deep connection to the 'Mack' through similar generous studio volumes and by using a new language of light, inspired by that of our predecessor.

Like the Mackintosh Building, the Reid Building is organised with studio volumes as the basic spatial module. The plan is simple: five bays of 15 metre studios in the East/West direction, and spaces either side of a central, open, social 'circuit of connection' in the North/South direction. The studios' generous proportions and light aim to create an atmosphere conducive to creative work and open to the evolving future of making and teaching art. The studios and social spaces vary in height as they rise through the building, with shifting horizons extending into the city in counterpoint to the vertically open circuit, culminating in the 7.6 metre high studios on the top floor.

The Reid Building's form is initiated by the varying ways light enters the interior spaces. North-light windows and clerestories tilt out to gain maximum sky exposure and shape the building's North profile. South, East and West windows are clear or translucent, low and flush, or

high and recessed, for a play of direct light and shadow. Three driven voids channel light down through the centre of the 25 metre deep building. These are directly inspired by the three triple-storey windows of the Mackintosh Library, which push out from the stone façade and carve a volume of light. An homage to Mackintosh in space, the driven voids provide for the integration of structure, light and natural ventilation in the Reid Building.

We worked simultaneously from the inside/out and the outside/in. While studying the ideal studio space and light from within, we were shaping the massing and proportion on the exterior. Standing in Mackintosh's double-height studio during the competition, Steven Holl conceived to recess a garden terrace into the Reid Building at the same elevation, a doubled volume inverted as an exterior space across the street. This urban space subtracted from the building breaks the mass into a tripartite profile that shapes the street with Mackintosh's 'L' profile. Inside the terrace, the refectory opens out from the circuit giving views of the city that are framed by landscape.

Stepping down a storey from the terrace, a cubic cut in the façade, lined with a reflecting pool, doubles a view of the original School of Art from the circuit within. Along the street, views into the public exhibition spaces, the 'Window on Mackintosh' and the School's galleries, link the School's activity with the city. The cubic entry lobby is set back with the top studio floor, creating a forecourt with the adjacent 1930's Assembly Building, a fine stone urban corner that was integrated with the Reid Building. Above the Reid Building's entrance, Martin Boyce's fine-grained coloured glass and thin-steel rod installation, *'A Thousand Future Skies'*, pivots between the lobby and the street space.

*"Considering the impact of a work of architecture on its site . . . the outside is always an inside"*¹ Le Corbusier



Rhythmic Structure and Movement

The matte-glass skin and concrete structure of the Reid Building: thin skin, thick bones, was conceived in complementary contrast to the carved stone wall and steel frame: thick skin, thin bones, of the 'Mack'. The exposed concrete frame shapes the interior spaces. The North/South concrete shear walls are set at 15 metre centres across the site for an ideal studio proportion. They shape the studios along with the north and south exterior concrete walls. The north walls are beams spanning between shear walls allowing continuous, sloped-glazed windows and clerestories across the façade illuminating the studios. The 6 metre diameter concrete driven voids carry the central loads down through the building.

Structure and Space are fused and provide robust surfaces that hold up to the wear and tear of an art school. The concrete walls are formed with thin wood slats, a forgiving fine-grained texture at the scale of the hand that catches raking light. In contrast, the driven voids are formed with sheet steel cylinders for a silky-smooth, scale-less finish ideal for reflecting light and shaping it as volume. The organically shaped openings in the driven voids – a form of detail – were derived from subtracting rectangular volumes from the tilted cylindrical driven voids (subtracting void from void), and formed in reinforced concrete by CNC-milled plywood block-outs for precise geometry. These methods were worked out with the contractors from Sir Robert McAlpine who provided many mock-ups and excellent execution.

Against the rhythm of the structure, the social core of the building, the 'circuit of connection', traverses the driven voids back and forth as it

travels up through five storeys. The circuit's stepped ramps and walkways alternately meander around, alongside and through the voids, creating unexpected perspectives that heighten awareness of space and movement. Views up to the sky and down the building's section reveal the creative activity within and encourage collaboration. When I was last in the building I saw a Silversmithing student take a mannequin she had seen from the circuit up to her studio to make a necklace/scarf hybrid.

*"With clarity of rhythmic structure, grace forms a duality. Together they have a relation like body and soul. Clarity is cold, mathematical, inhuman, but basic and earthy. Grace is warm, incalculable, human, opposite to clarity, and like the air. Grace here is not used to mean prettiness; it is used to mean the play with and against the clarity of the rhythmic structure. The two are always present together in the best works of the time arts, endlessly, and life-givingly, opposed to each other."*² John Cage

Material over Surface

The matte-glass skin, with natural grey-green colour created by the iron oxide within its composition, heightens the heavy, sculpted stone of the Glasgow School of Art and registers the changing atmosphere of Glasgow, appearing whitish in direct sun, greener in grey light, and when viewed obliquely pulling the colour of the sky across it. The etched finish, translucent interlayer, and open cavity behind the panels absorb and diffuse the sky's light into the Mackintosh studios to an extent that closely approximates an open North sky.



A new technique of embedding ‘ghost fittings’ inside the laminate of the glass was developed to make the fixing less prominent, giving the glass a weightless abstraction that heightens its atmospheric qualities and defers to the tectonic intensity of Mackintosh’s original stereotomy and metalwork.

Four types of glass in varying transparency and translucency amplify the transformation of the building’s appearance in varying conditions of daylight: matte-glass rain-screen panels over opaque grey wall; matte-glass rain-screen panels over inner glass; translucent insulated glass; and clear insulated glass. At dusk, previously unseen areas of inner glass begin to glow through the rain-screen and translucent glass panels are washed with light to give the building an inviting soft glow in the city. The bead-blasted stainless steel overhangs extend the glow upward.

We focused small-scale detail where the hand touches the building: handrails and balustrades, ash wood desks, exterior bead blasted stainless steel benches, interior ash benches and in the custom wall sconces. A bench niche that is carved into the entry vestibule is one of a series of details that extends to the entry door handles.

Instead of attempting the handcrafted detail of the Mackintosh, we pushed current technology and production methods to realise a new glass materiality through advanced lamination, fabrication & etching techniques; and smooth steel-cast, self-compacting concrete voids with CNC-milled geometrically complex openings.

Light through Time

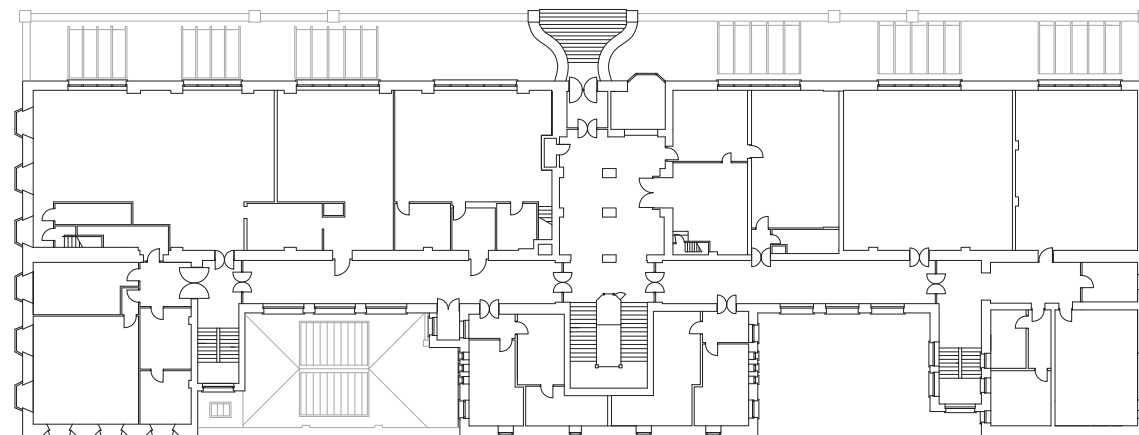
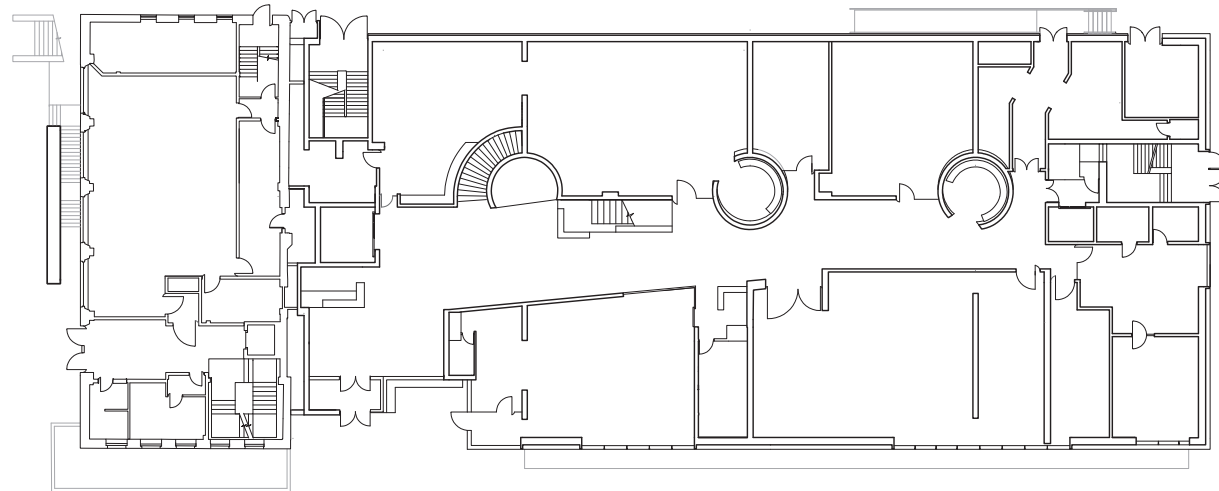
The spaces are animated by the varying ways light enters the building - clerestories, windows angled to the north sky, windows focused east/south/west, and diffusing etched panes. Within a luminous envelope, the driven voids, like extruded oculi, connect the interior with the sky and its changing light. They bring slices of light into the studios and circuit, shifting from warm to cool, from soft to bright in the changing Glaswegian light – a kind of pulse for the building tilted 12 degrees toward the South and carved with subtractive openings.

Like caesura, the driven voids, empty of matter but full of light, make a space, a clearance in time, a moment, an interruption. They register universal time through the changing daylight, and link it to the immediate subjective time of a person moving along the circuit which cuts through them. Oriented to the sky, their openings allow horizontally views from differing vantage points, a cross-section revealing the school’s activities: from the studios one sees the school’s social life and the Mackintosh beyond. From the circuit one sees framed views of the studios.

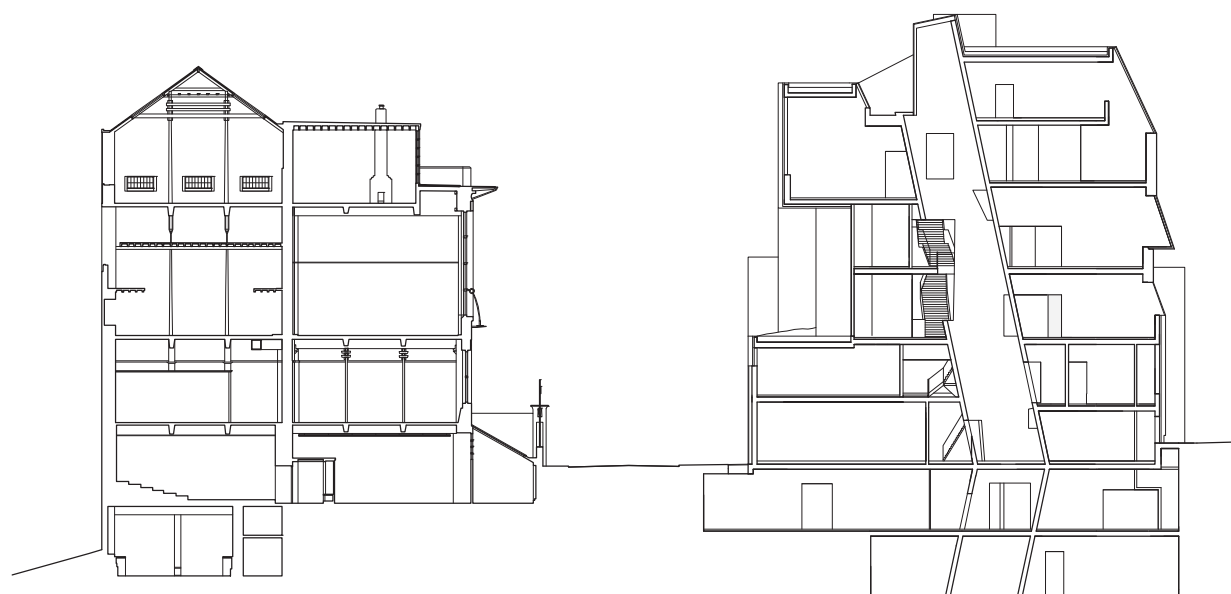
At their base the voids are circular gathering spaces for socializing or sky gazing. We have been thrilled to see how they have already provoked the students and faculty to make installations and performances: the ‘ready-made’ colour wheel of household objects the students created, or the impromptu violin concert held by a professor with students looking on through the full height of the void.



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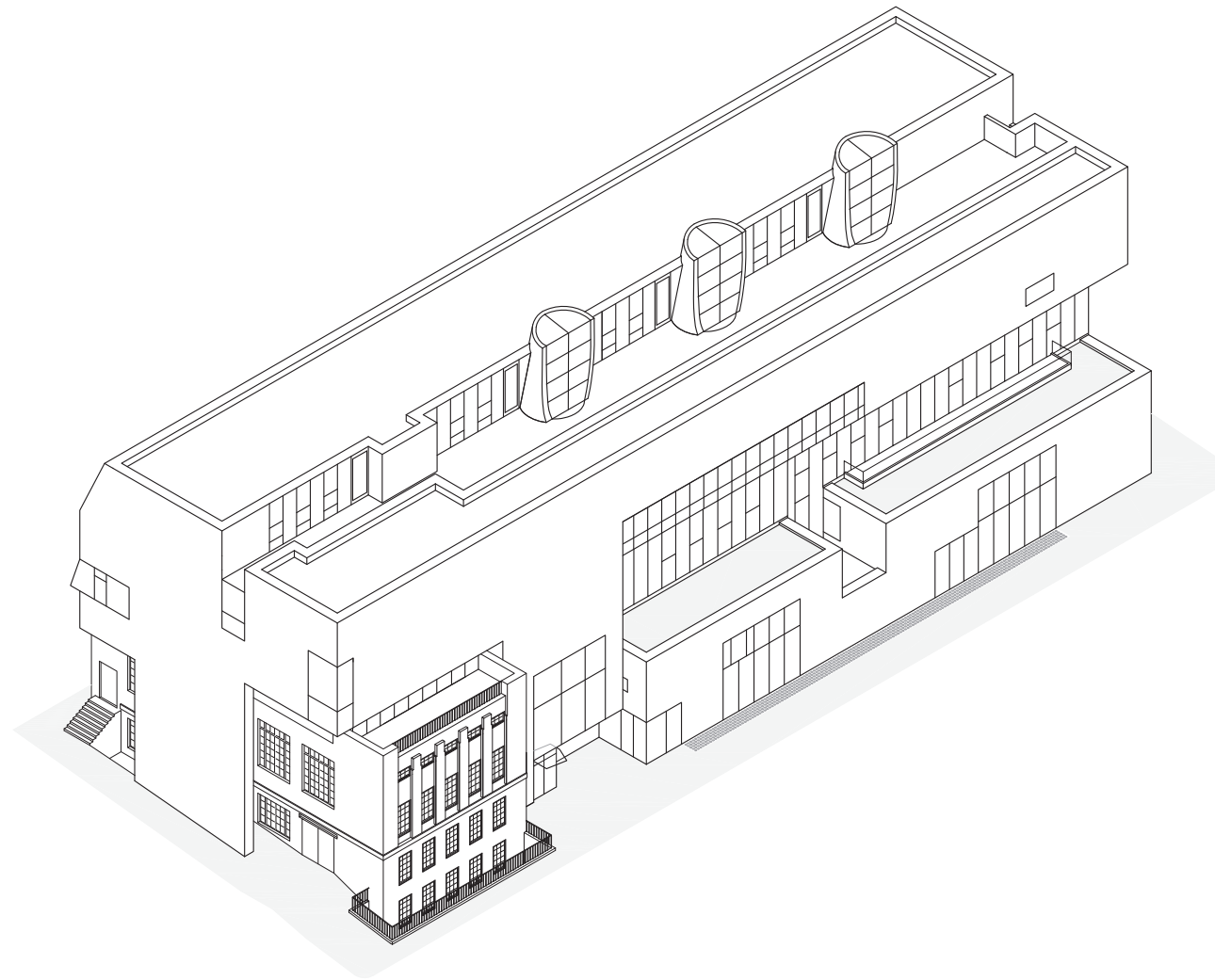


CONNECTION



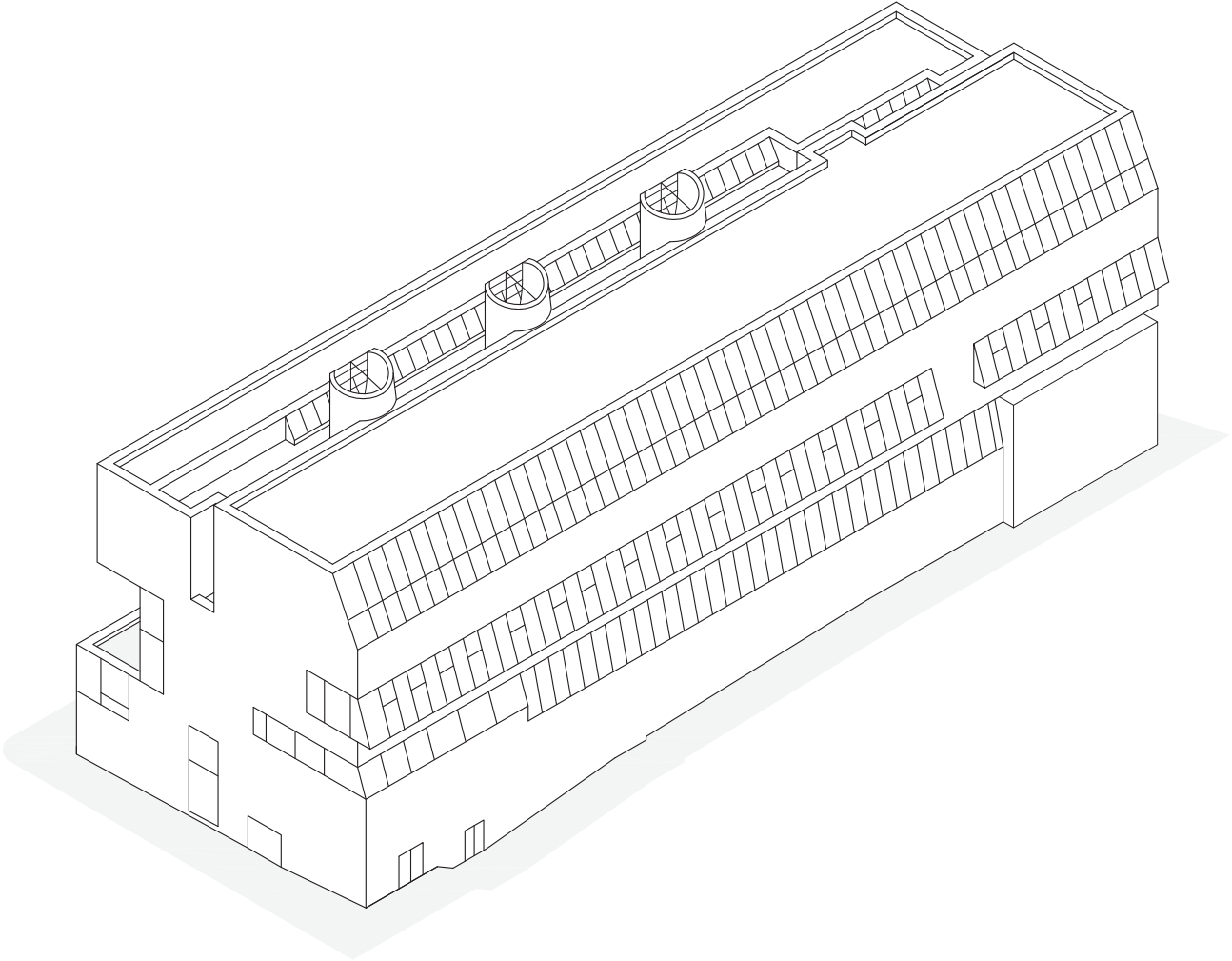


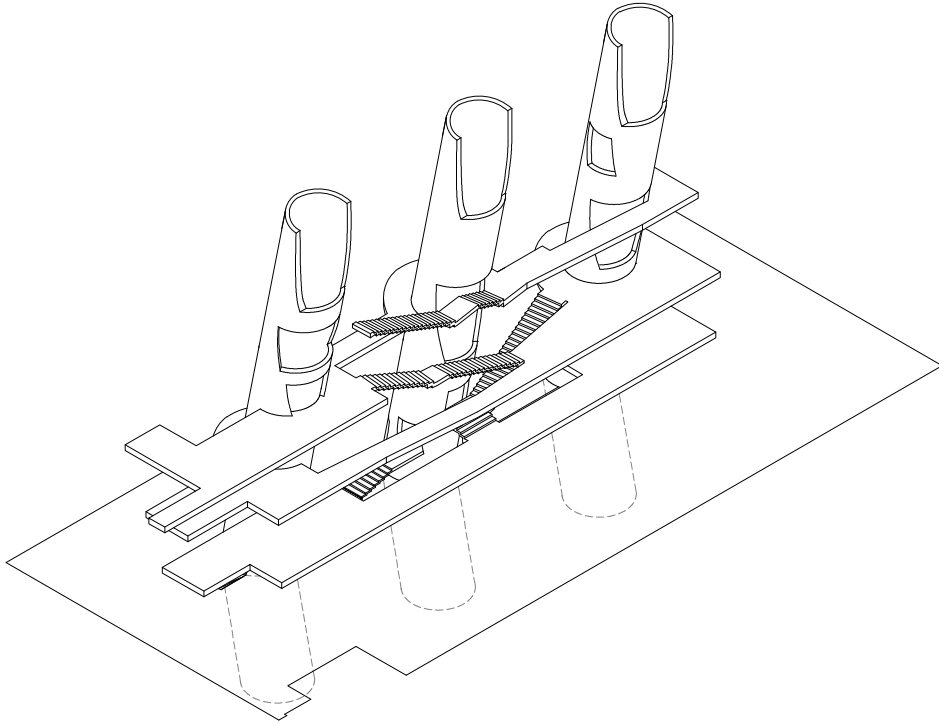
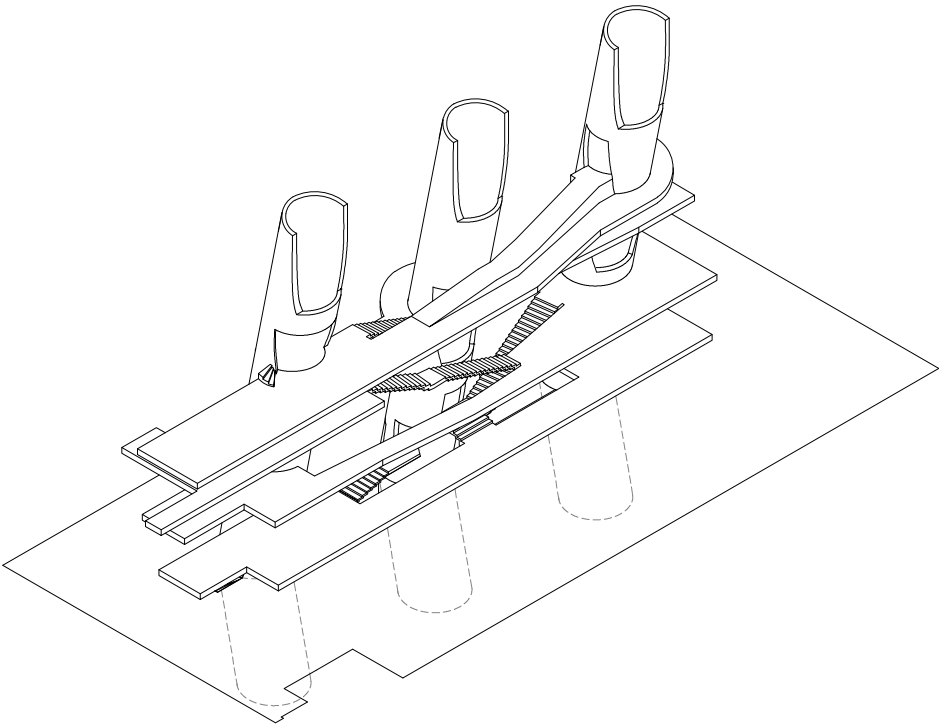
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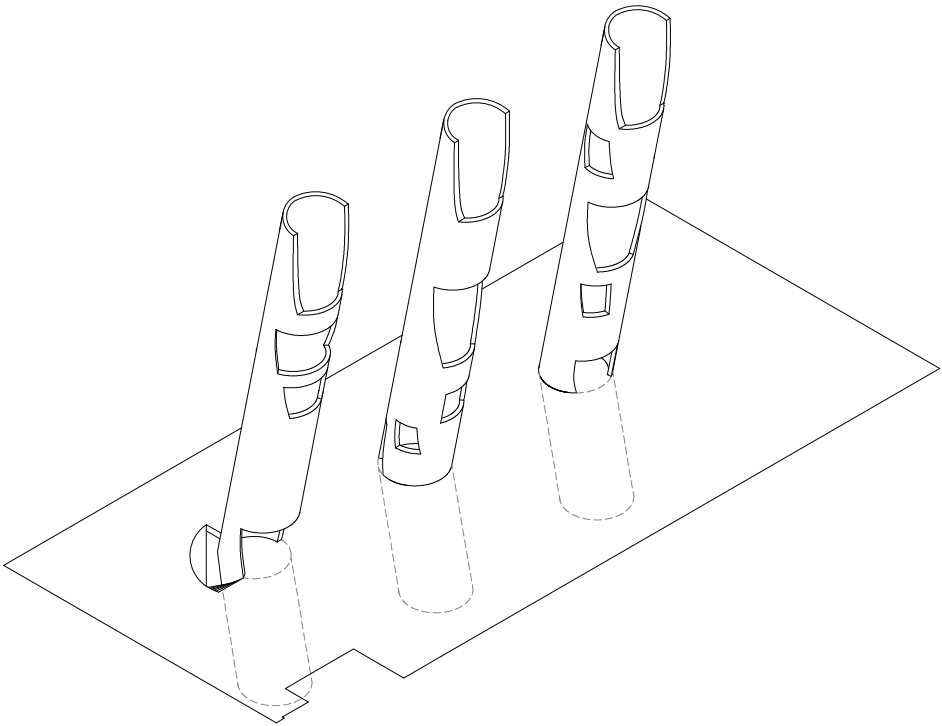
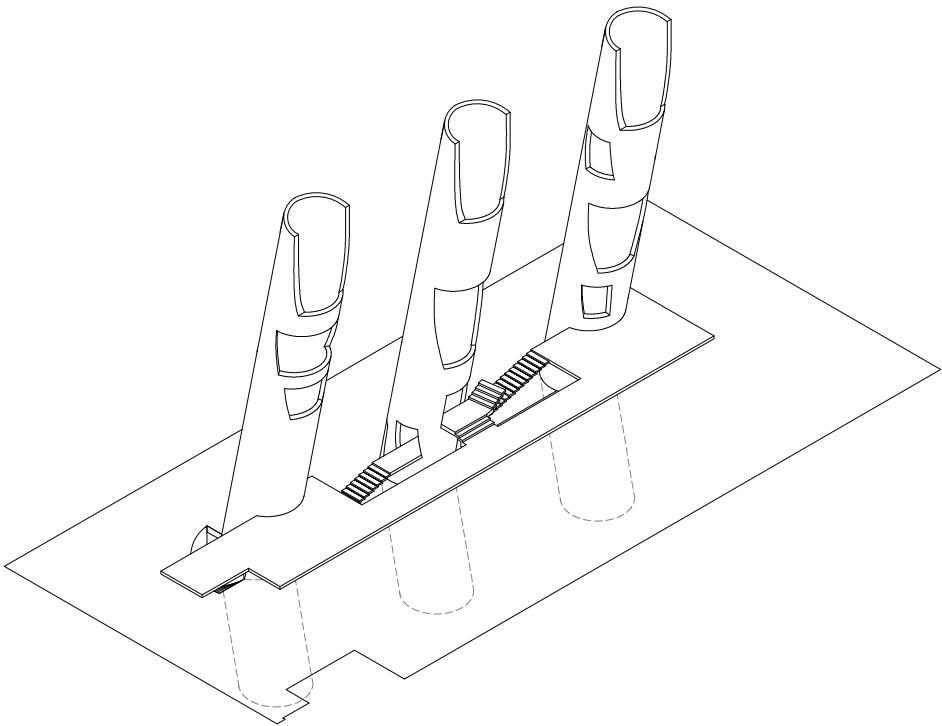
VOLUME

South-West & North-East Isometric



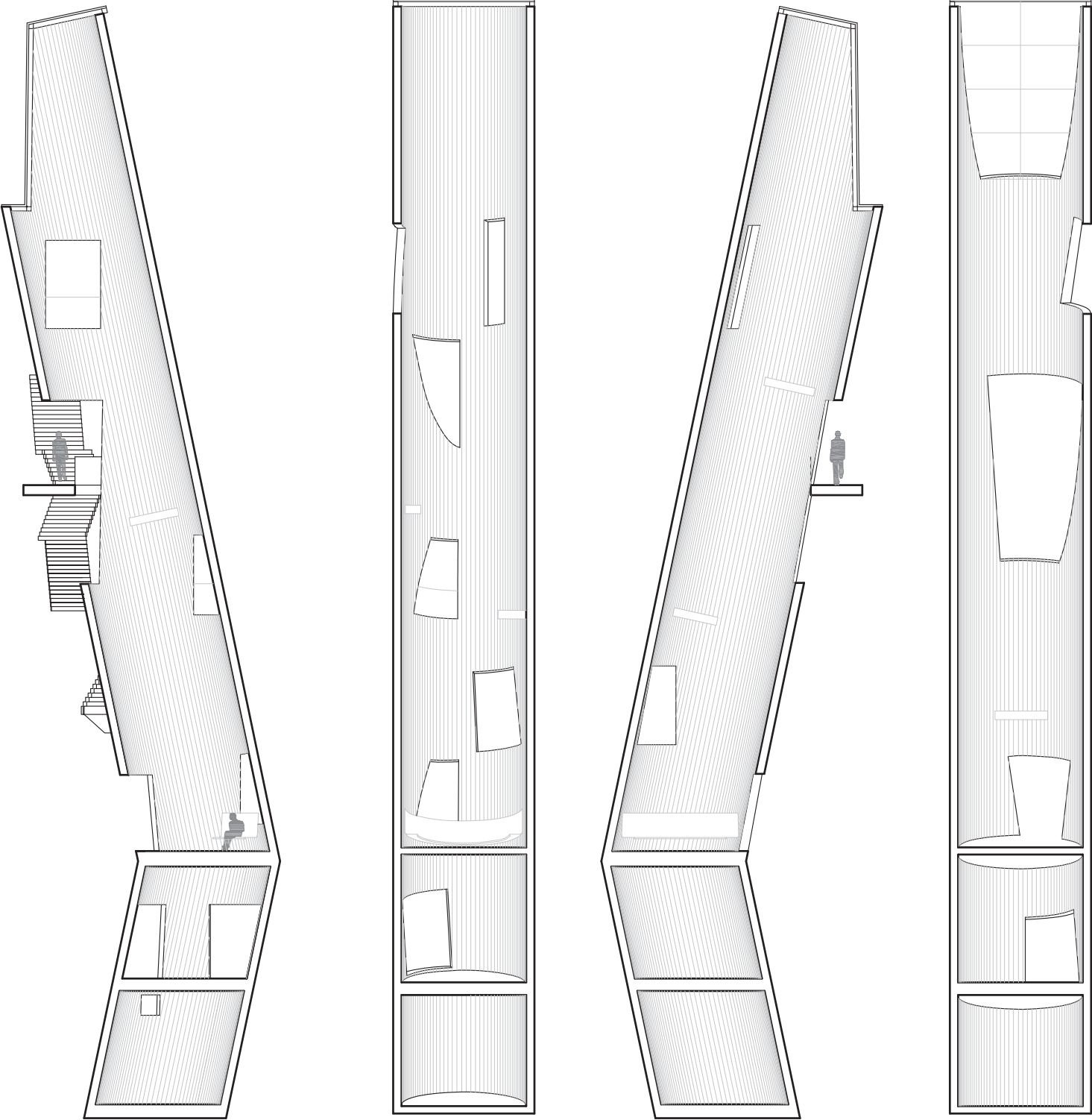


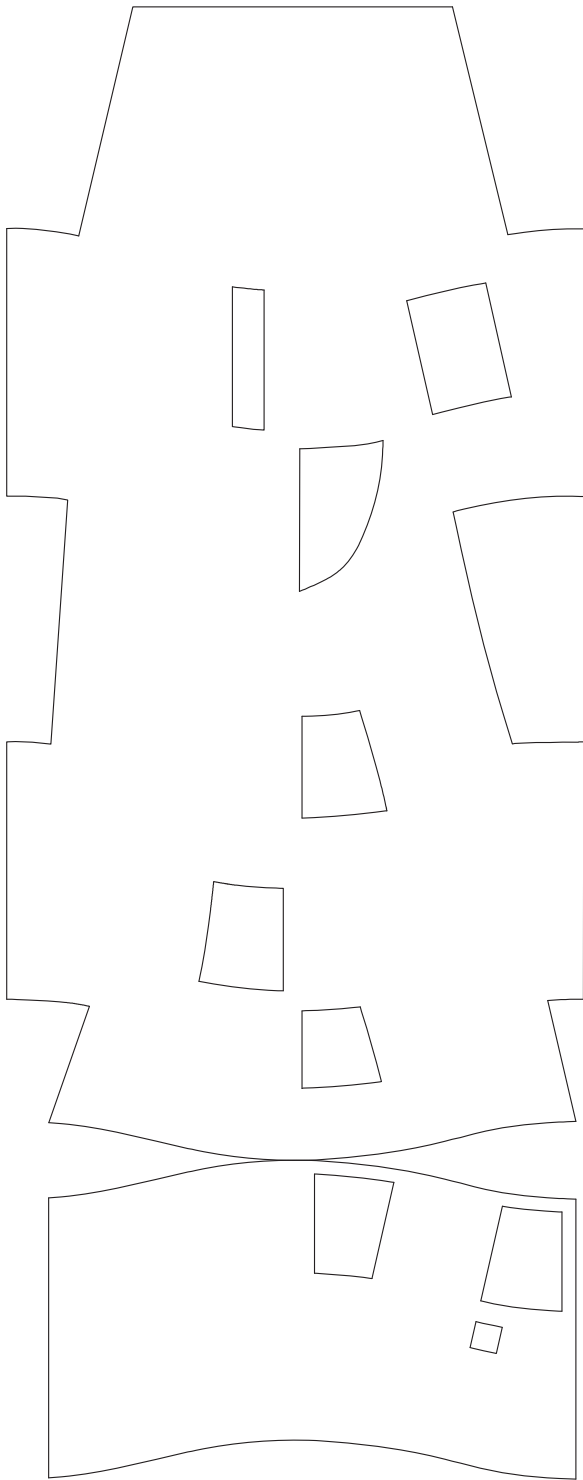
LIGHT & MOVEMENT
Driven Voids & Circulation





DRIVEN VOID
Sections & Roll Out













FABRIC

Thin Skin

Henry McKeown

Steven Holl first used the term ‘thin skin’ shortly after making his first visit to the Mackintosh building and the proposed site of the new Reid Building, directly across the street. The earliest manifestation of this theme appeared in one of his initial sketches he made during that visit.

This theme emerged from the reading Steven made of Mackintosh’s building; that of ‘thin bones, thick skin’ - in particular, a reference to the elegant, suspension structure, ‘bones,’ holding the library, in comparison to the heavy masonry ‘skin’ of the facade. His sketch depicts a section across the school, showing a new building, in ‘complimentary contrast’ to the Mackintosh building, with a heavy structure and a ‘thin skin,’ as a representation of a new building.

As in all of Steven’s work, important first themes and ideas are pursued vigorously through the design process. In this case, the ‘thin skin’ prompted a quest for a material that could sit quietly beside, yet contrast with, Mackintosh. It was conceived as a material that would not be reflective, so as not to create glare in the northern fine art studios of the Mackintosh building.

It was also envisaged as a material that would act as a shroud over a heavy abstract sculpture. That shroud was also seen as an element that would respond to the extremes of Glasgow’s weather, the movement of clouds and the variable light conditions. It was, in his mind, a material with an ability to dematerialize in the light, one with the ability to hold the sky and light on its surface, become animated and playful in the ever-changing climatic atmospheres.

As this ‘thin’ material was investigated it became obvious that there was no standard product that could be specified. In spite of being made of

glass the desired surface materiality that was being sought was more like a mute, alabaster finish that could capture light on its surface, change mood and generate its own unique qualities.

Similarly, the research into a fixing method, to hold the screen in place, prompted some highly technical issues that taxed the team. Early options explored minimal clipping details, hanging systems and a ‘spider’ fixing arrangement, with a through fixing which would register on the outside face of the facade. Each of these techniques caused a pattern on the facade, and the introduction of a second material on the surface of the facade, that would compromise the concept of the ‘shroud’. The glass had to be held in a manner that would not be obvious or apparent. To this end, the term ‘ghost fixing’ was suggested and, like the glass, there was no standard product that could be specified.

Arup Facades began to develop the specification, and in collaboration with international glass manufacturing companies, established ideas on glass types and fixing techniques. This led to a system based on a series of layers. A 6mm toughened acid etched glass external leaf together with a multi-layered interlayer and a 12mm clear inner layer satisfied the requirements and provided a matt alabaster-like surface that was grey green in colour.

The 6mm thick outer layer of glass is heat strengthened and has a fine acid etched finish to its surface that alters the normal surface of the glass and gives it a denser, more solid tone. Behind the outer pane, and added just before the baking process is a fine film of white ceramic paint; the addition of this layer was to assist in the bonding relationship between the outer layer of glass and the interlayer behind it.



There are seven sheets of interlayer between the outer and inner glass sheets. The interlayer is a PVWR product; each layer is approx. 1mm thick, before lamination. The base colour of these interlayers is an opaque, opal colour; initially a white interlayer was considered but was not available in the time and consequently a white ceramic paint film was introduced.

The interlayer has two roles; it holds the separate glazing panels together and it provides a densification of colour to the assembly. Most importantly, it is also capable of holding the 'ghost fixing' from the rear through the inner pane of glass. The 12mm inner layer of heat strengthened clear glass is pre drilled to receive the ghost fixing head, which is slotted into the pre drilled hole prior to the lamination process. The whole assembly is then heat laminated, including the head plate of the ghost fixing. A critical performance requirement was that the fixing technique had to ensure that in the event of breakage the entire glass panel would remain fully intact, and secured to the structure.

The panels are delivered to site with the plate of the ghost fixing bonded to the glass, and are then offered up to the pre constructed bracketry on the building. The cavity between the glazed rainscreen and the external face of the wall construction is 300mm. The inner façade walls are pre-coated in a light grey 'Stamisol' waterproof breather membrane; a grey tone was chosen to help achieve a further depth of colour of the overall glazed assembly. Finally, a specially calibrated torque ratchet tool was used to fix the panels to the pre fixed bracket system.

Many glass types and interlayer permutations were studied, tested, sampled and explored before the final specification was settled.

Dematerialisation; De-ma-te-ri-al-i-sa-tion

A definition of this concept is:

"The economic concept of reducing the quantity of materials required to serve economic functions" 'doing more with less'

Another definition reads:

"to lose the apparent physical substance; to cease to have material existence; to make or become immaterial"

When these definitions are considered in the context of the concept of this building, and in particular with regard to the development of the rainscreen, the interdependence between the economics of construction, the idea and the architectural rigour required to realize the idea is revealed.

The unification of poetic intent and technical resolution, are the coming together of two critical disciplines in architecture that, when reconciled, make 'Architecture'. This is an enduring legacy of this design.

The process has been driven by a collective effort by all involved to take on the responsibility, challenge and the demands of designing and creating a unique building product; a product that could live up to the ideas of 'complimentary contrast' 'thick skin - thin skin', in such an important historical context.

In the intense dry light of the Scottish winter, the tone of the surface of the 'thin skin' is warm. And on duller grey days, that tone becomes more solid. In both cases however the surface is quietly animated, sometimes by the shadow of the Mackintosh building opposite. It is always changing and creates an environmental drama.

**Alabaster;** *Al-a-bas-ter*

a dense translucent, white or tinted fine grained gypsum; the quality or state of the achromatic colour of greatest lightness.

Achromatic; *Ach-ro-mat-ic*

relating to, using or denoting lenses that transmit light without separating it into constituent colours; without colour; not modified by accidentals (music).

It is interesting that, in trying to find the correct words to describe the materiality and sense of colour sought in the glass rainscreen, the words that seemed most appropriate were dematerialization, alabaster, achromatic - words that intertwine and relate to some of the underlying themes in the work of Steven Holl.

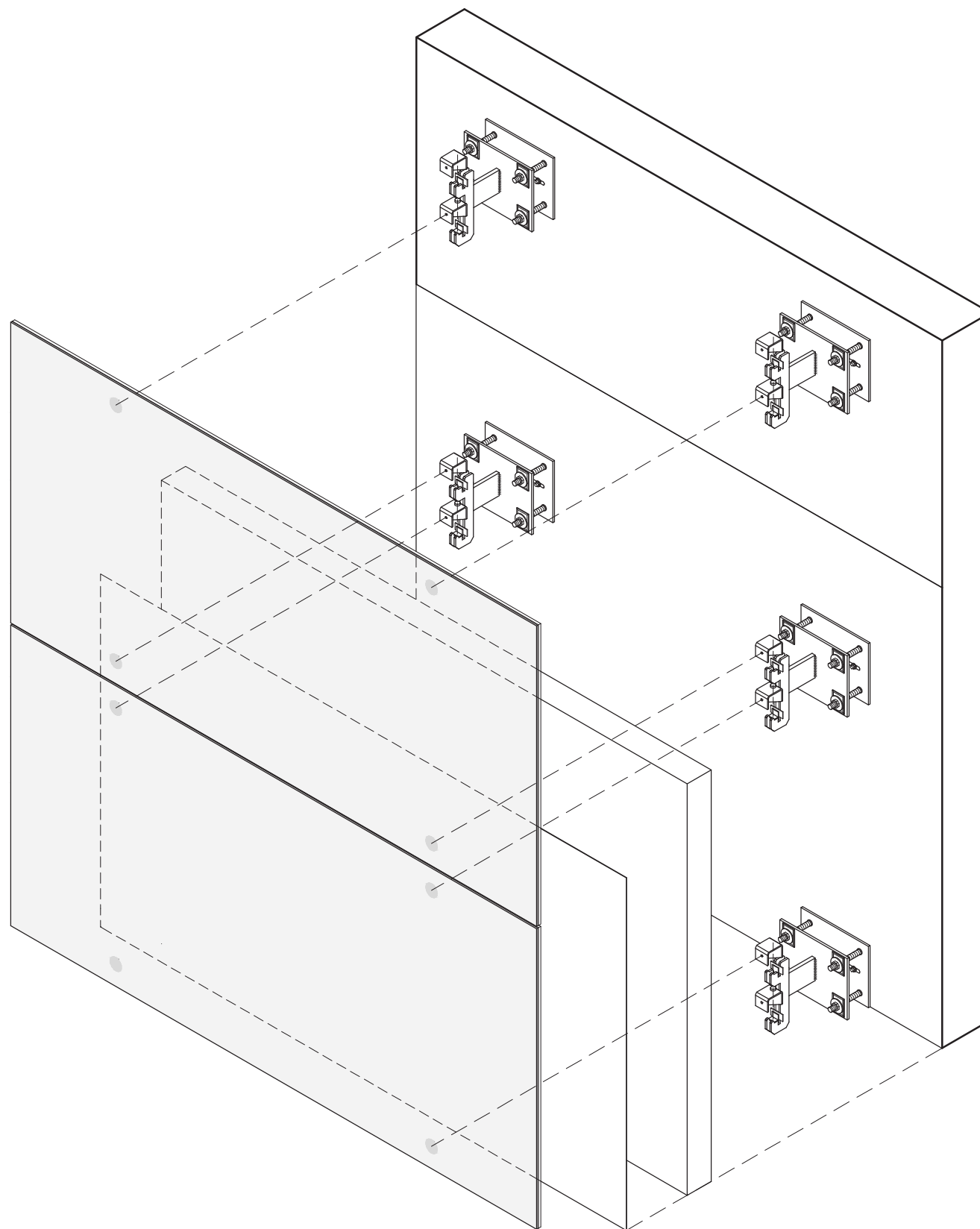
There may be some element of accident / coincidence at play in making this point, but nonetheless, interesting. For example the word achromatic was discovered in a definition of alabaster, but it also has other meanings in its own right. Beyond this, the word also has meanings in relation to colour (in this case) 'free from colour,' in relation to biology (of a cell structure) 'difficult to stain,' in relation to music, without changes in key. The fascinating link in these definitions is that the various themes (not biology per se) are recurring fields of interest of the work of Steven Holl Architects.

The physical outcome is a building that is mostly clad in a material that appears weightless. It creates a flat planar surface that can absorb seasonal light and dramatically alter in tone when cloud formations, or indirect sunlight, generate shadows and patterns.

There has been much discourse on how the driven voids capture light; Holl uses light as the most important of materials. The 'thin skin' also captures light; light is displayed across the skin, it is a surface that is never inanimate, an ever-changing display of fleeting, transient moments, and a constant reminder of the impermanence of the atmosphere.

The unique characteristics of the 'thin skin' are striking in many ways. The manner in which the tonality and complexion of the surface changes and flexes against the sun and the clouds is quietly beautiful. Sometimes this mute, still material can quickly become animated and give the street a new ambience. And while the surface of the skin can take on the transient essence of the atmosphere, the skin takes on another personality; particularly in those grey mornings, when Garnethill is shrouded in a light mist.

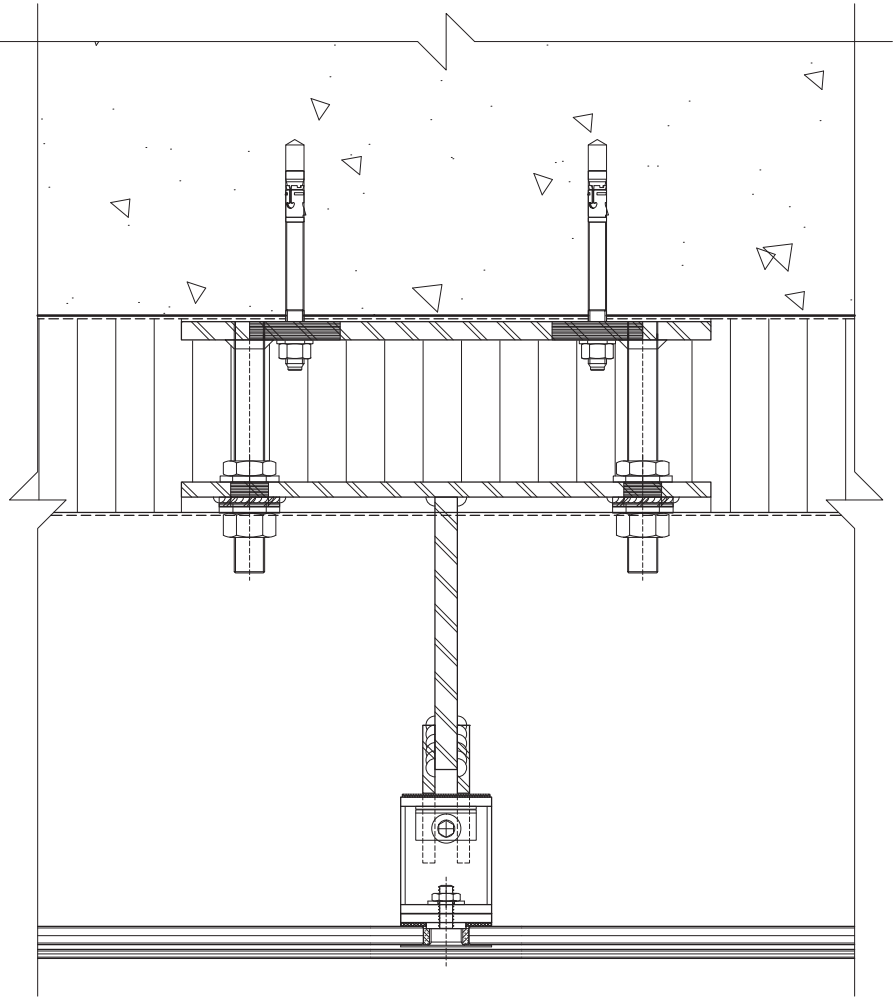
At night another set of characteristics occur. Light from within the building is diffused through the skin, interior spaces reveal themselves in soft glowing shapes, glass to glass edges creates a lantern effect and areas of solid mass are shadows, void of light. In these conditions the 'thin skin' takes on a subtle luminosity. It is like a surface that is reluctant to darken even on the darkest night.



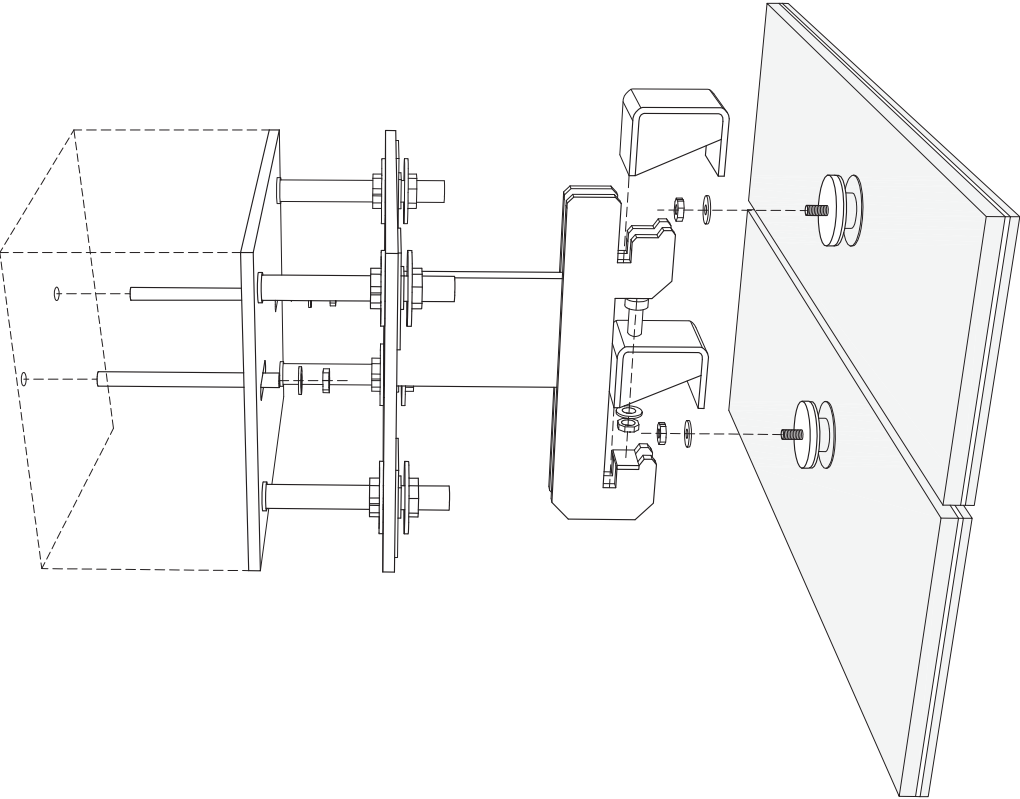
SHROUDING

Cladding System Build Up

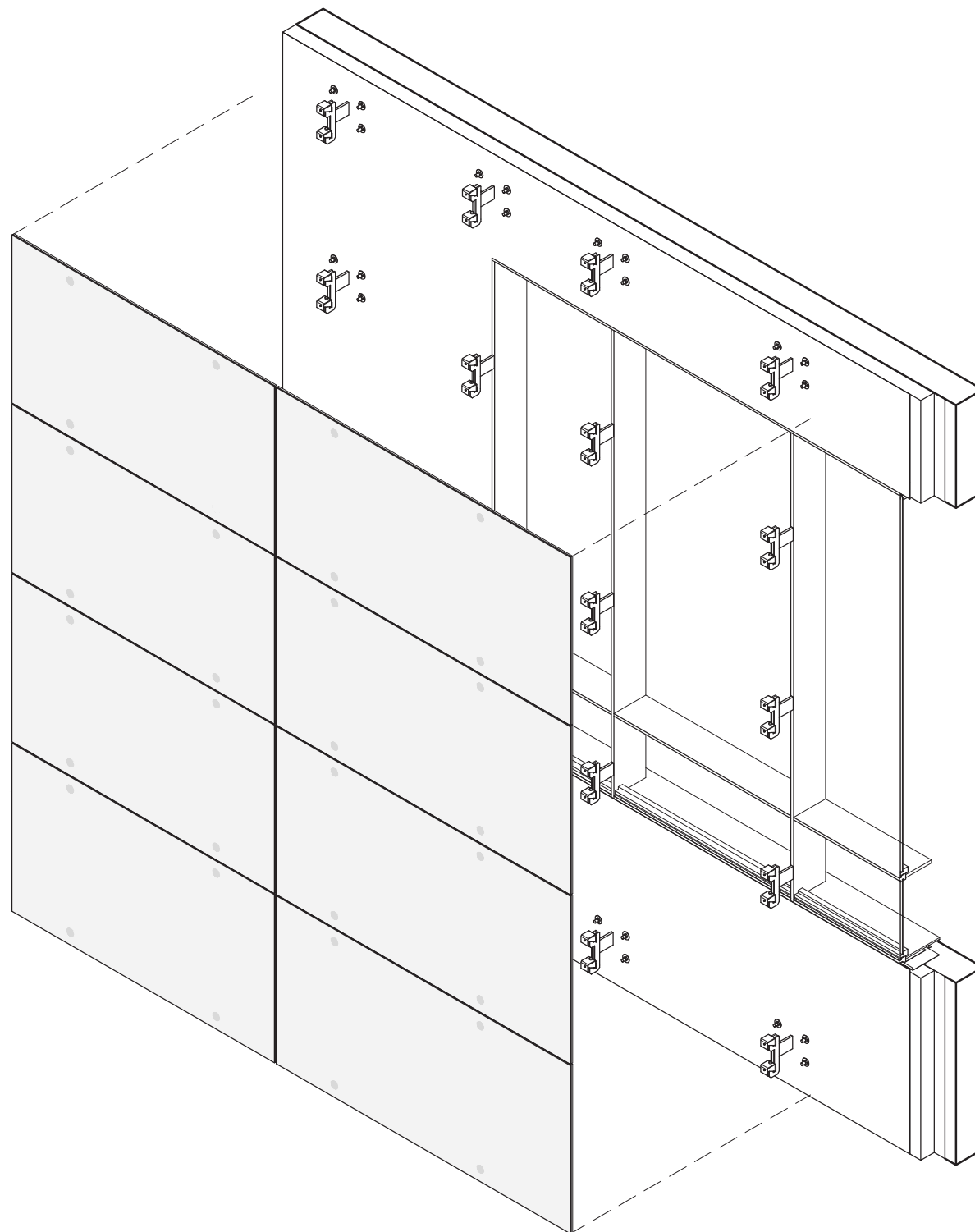
Translucent glass rainscreen system:
12mm toughened and HST inner glass sheet
Interlayer with satin stainless steel ghost bolt inserts
with 60mm face disc and 10/12mm shaft.
6mm outer glass sheet with satin acid etched finish
Satin stainless steel fixing bracket
Ventilated cavity
Colour breather membrane adhesively applied to
Rigid insulation fixed to substrate
Water proof membrane
Insitu concrete wall



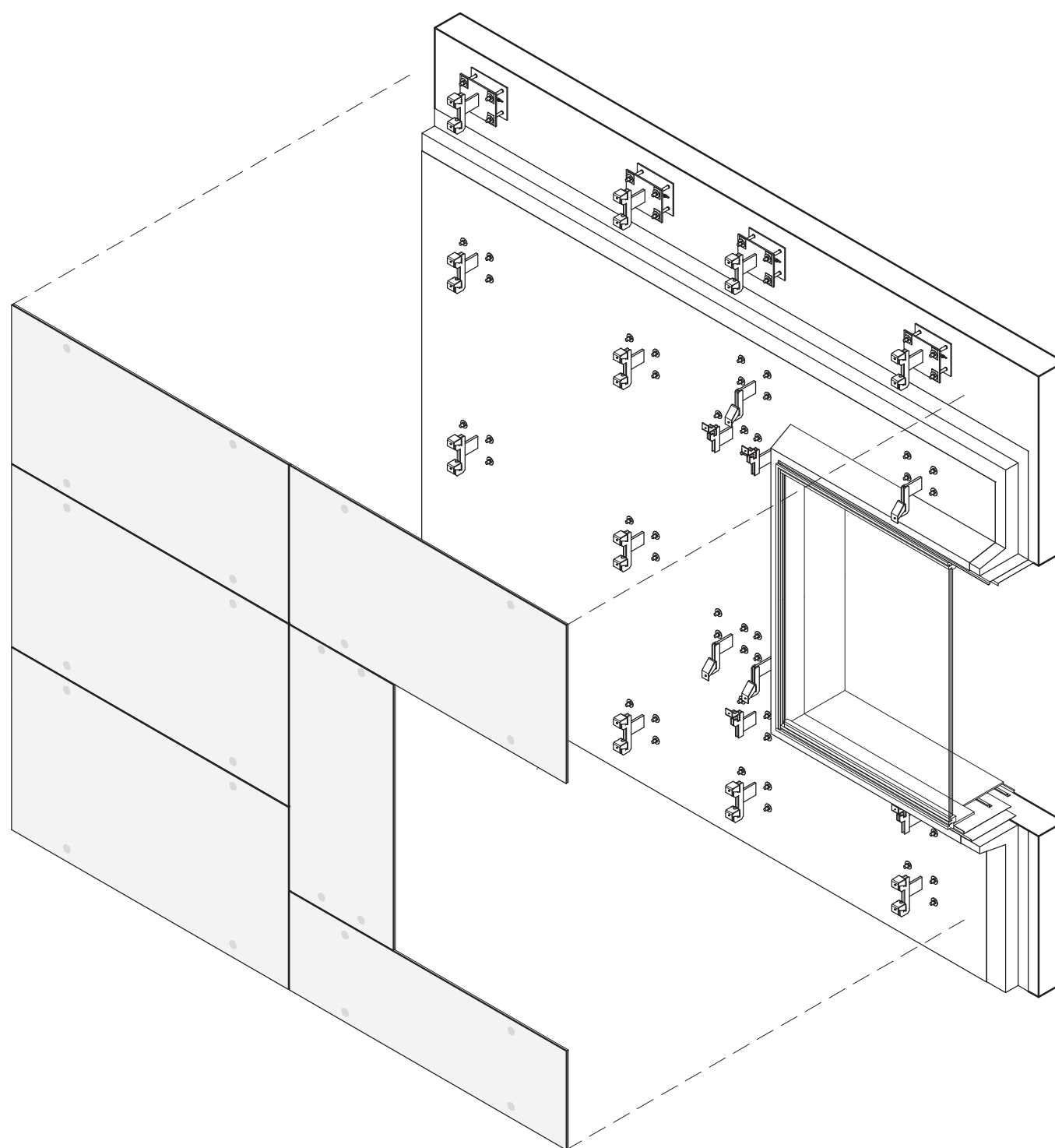
0mm 100mm



FIXING
Plan of Fixing and Exploded Perspective

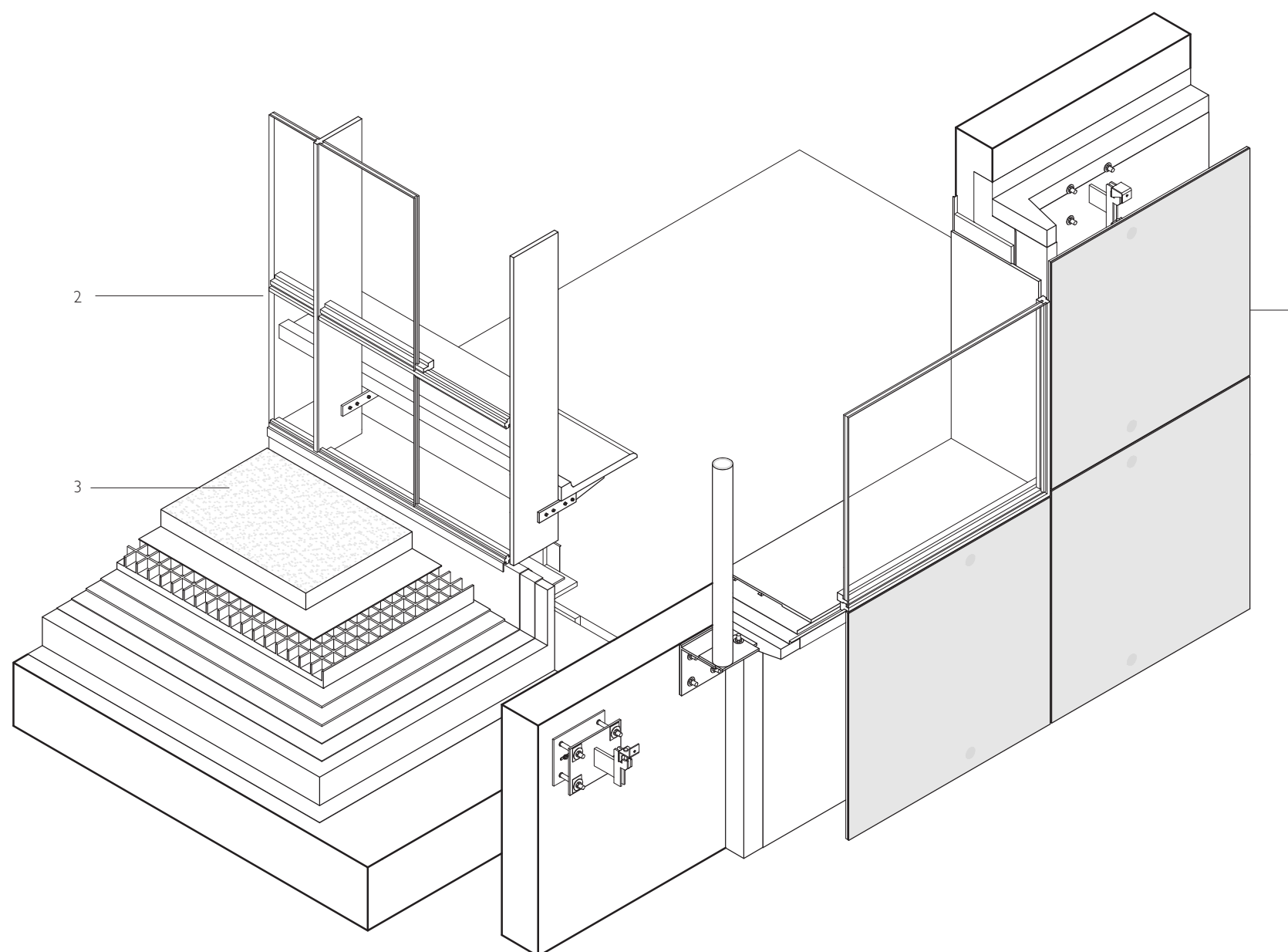


VEILING
Cladding system Over Window



FRAMING

Cladding system Around Window



CURTAIN WALL AND TERRACE

South-East Corner Base

1 - Wall:

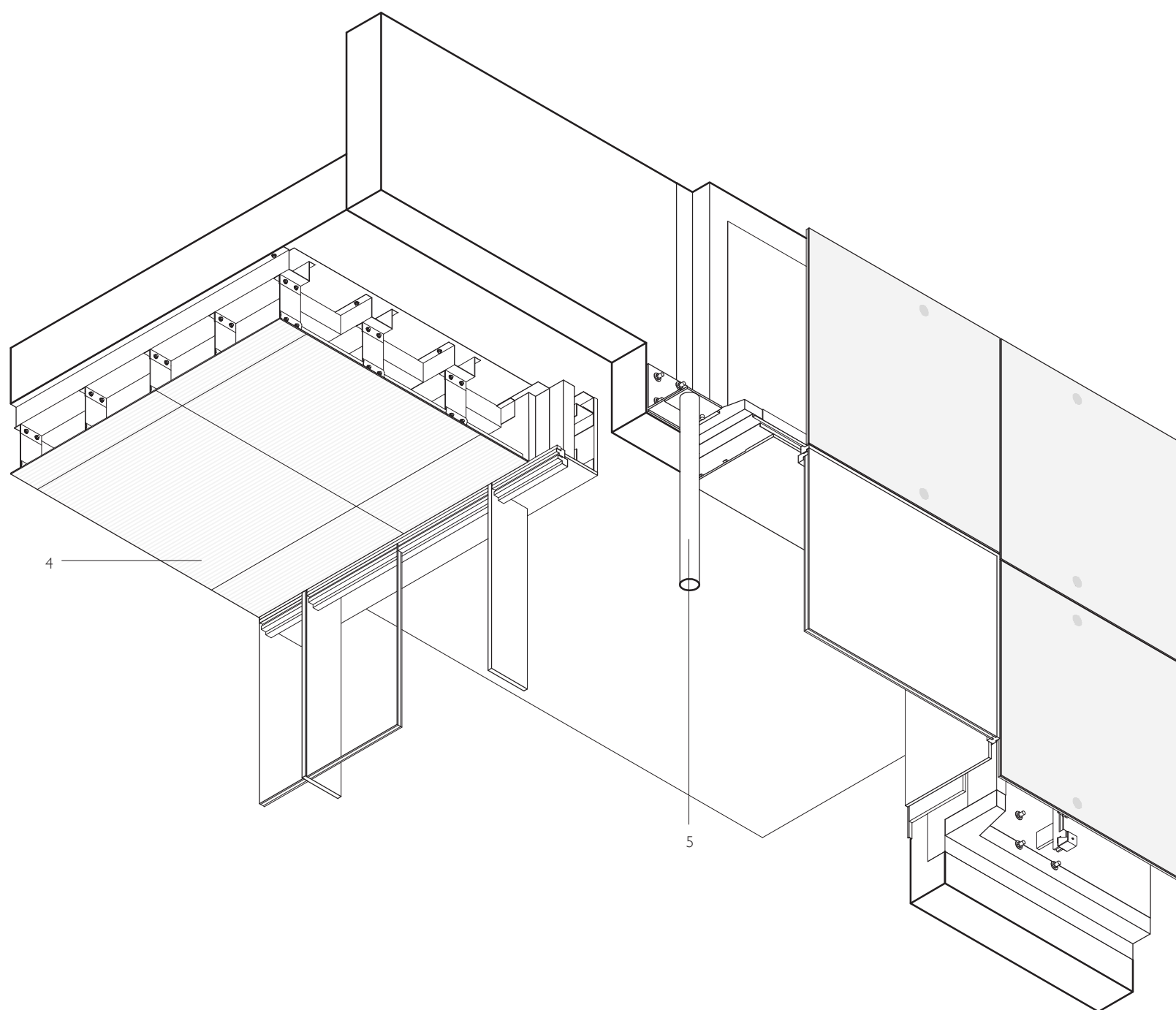
Translucent glass rainscreen system:
12mm toughened and HST inner glass sheet
Interlayer with satin stainless steel ghost bolt inserts with 60mm face disc and 10/12mm shaft.
6mm outer glass sheet with satin acid etched finish
Satin stainless steel fixing bracket
Ventilated cavity
Colour breather membrane adhesively applied to
Rigid insulation fixed to substrate
Water proof membrane
Insitu concrete wall

2 - Glazing:

10mm clear toughened outer glass
16mm argon filled cavity
13.5 mm clear laminated inner glass.
Supported by steel back ups

3 - Machair roof:

Planting on substrate
Filter fleece
40mm drainage and water storage board
4mm protection fleece
2mm PE Foil
5mm planting capping sheet
4mm underlayer
170mm rigid insulation
4mm torch applied vapour barrier
Insitu concrete substrate



CURTAIN WALL AND CANOPY

South-East Corner Head

4 - Soffit:

Bead blasted stainless steel cladding panels

Aluminium support system

Ventilated cavity

Colour breather membrane adhesively applied to

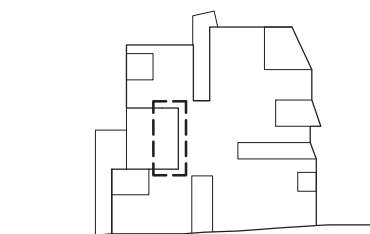
Rigid insulation fixed to substrate

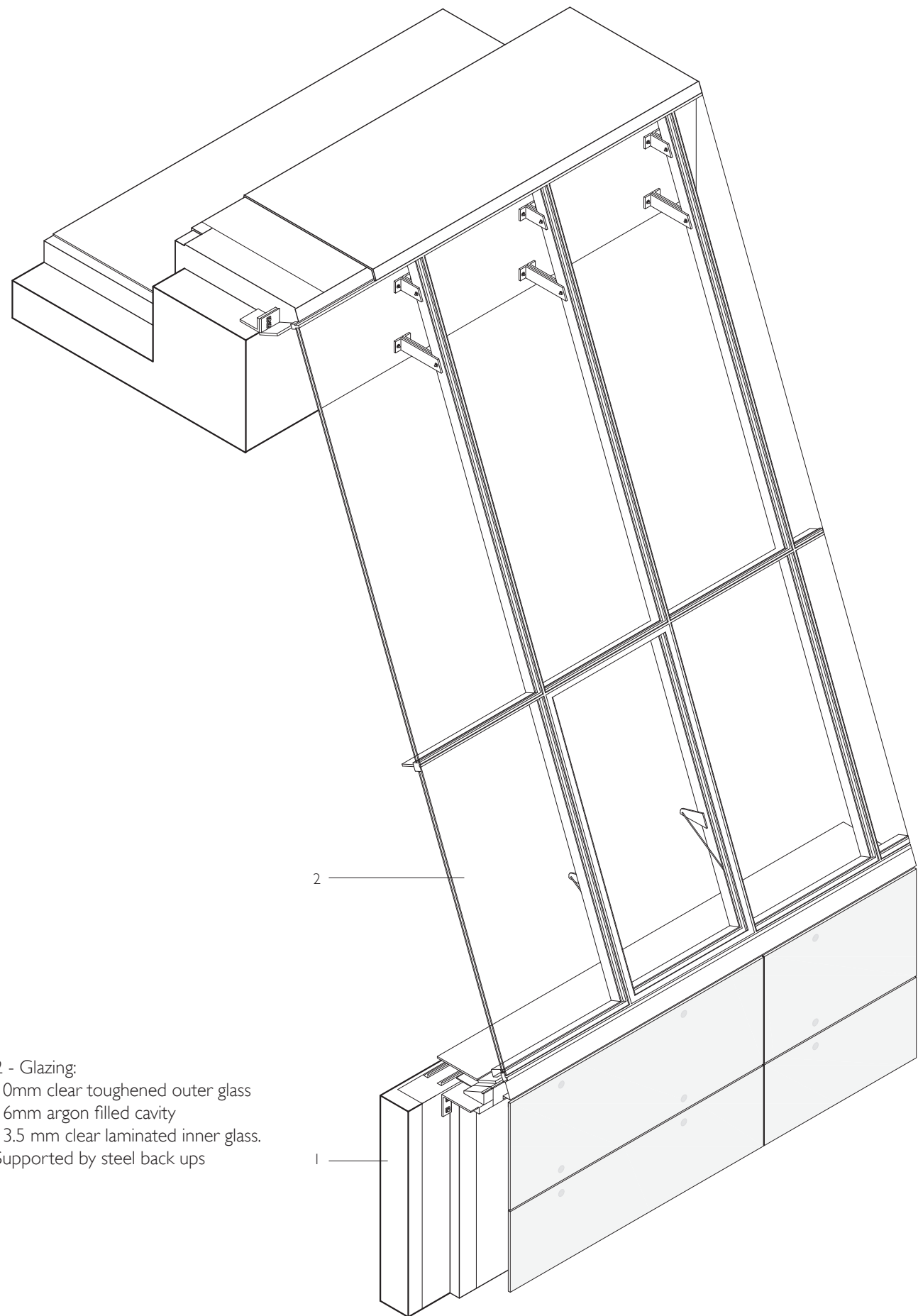
Water proof membrane

Insitu concrete slab

5 - Corner steel support CHS fixed to substrate

via satin stainless steel fixing bracket





NORTH LIGHT

Cladding system OverWindow

1 - Wall:

Translucent Glass Rainscreen System:

12mm toughened and HST inner glass sheet
interlayer with satin stainless steel ghost bolt inserts
with 60mm face disc and 10/12mm shaft.

6mm outer glass sheet with satin acid etched finish

Satin stainless steel fixing bracket

Ventilated cavity

Colour breather membrane adhesively applied to

Rigid insulation fixed to substrate

Water proof membrane

Insitu concrete wall

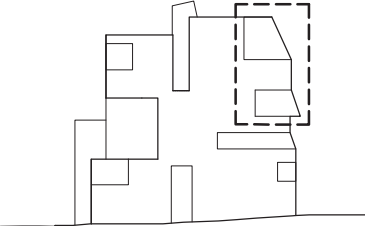
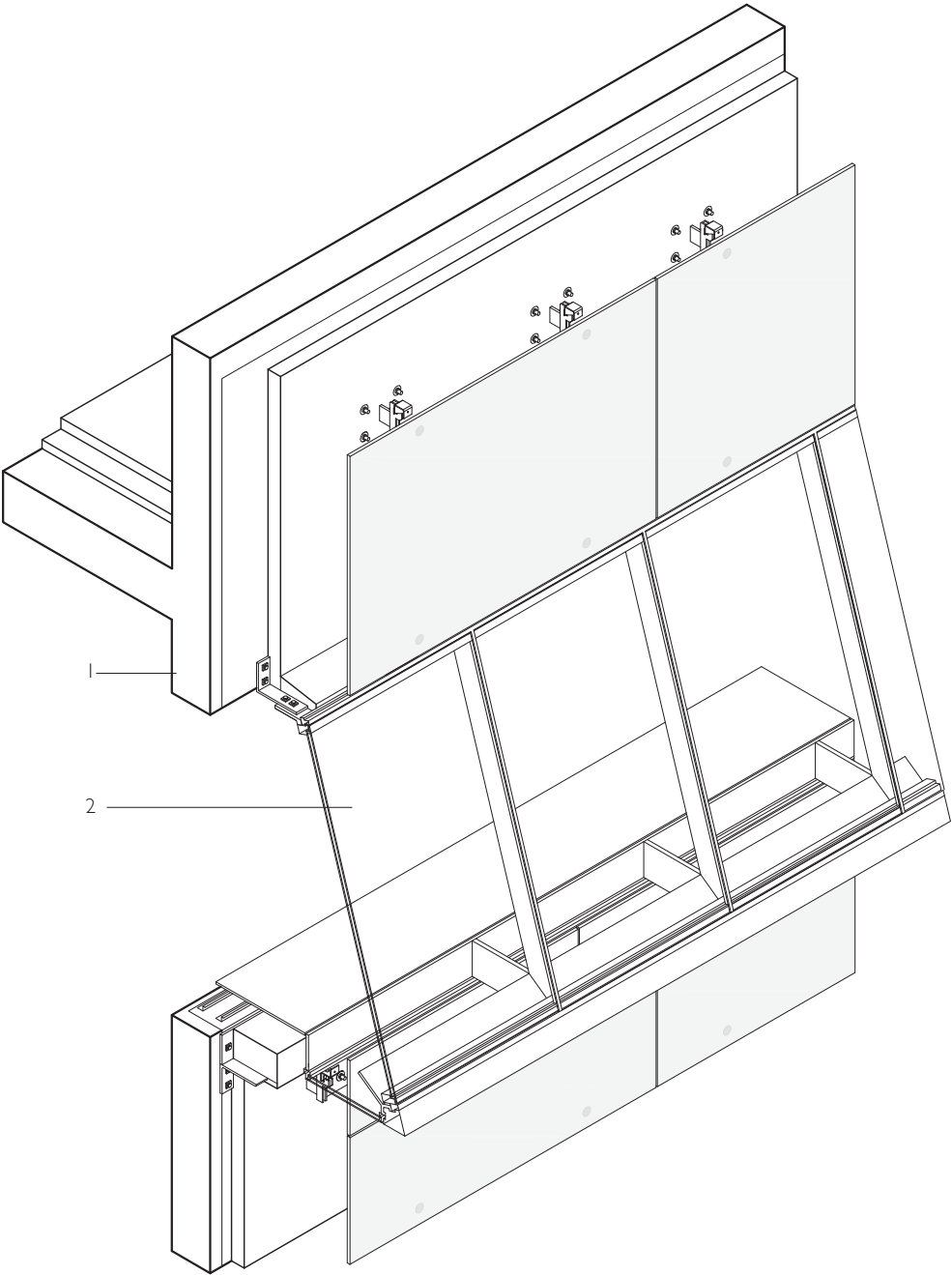
2 - Glazing:

10mm clear toughened outer glass

16mm argon filled cavity

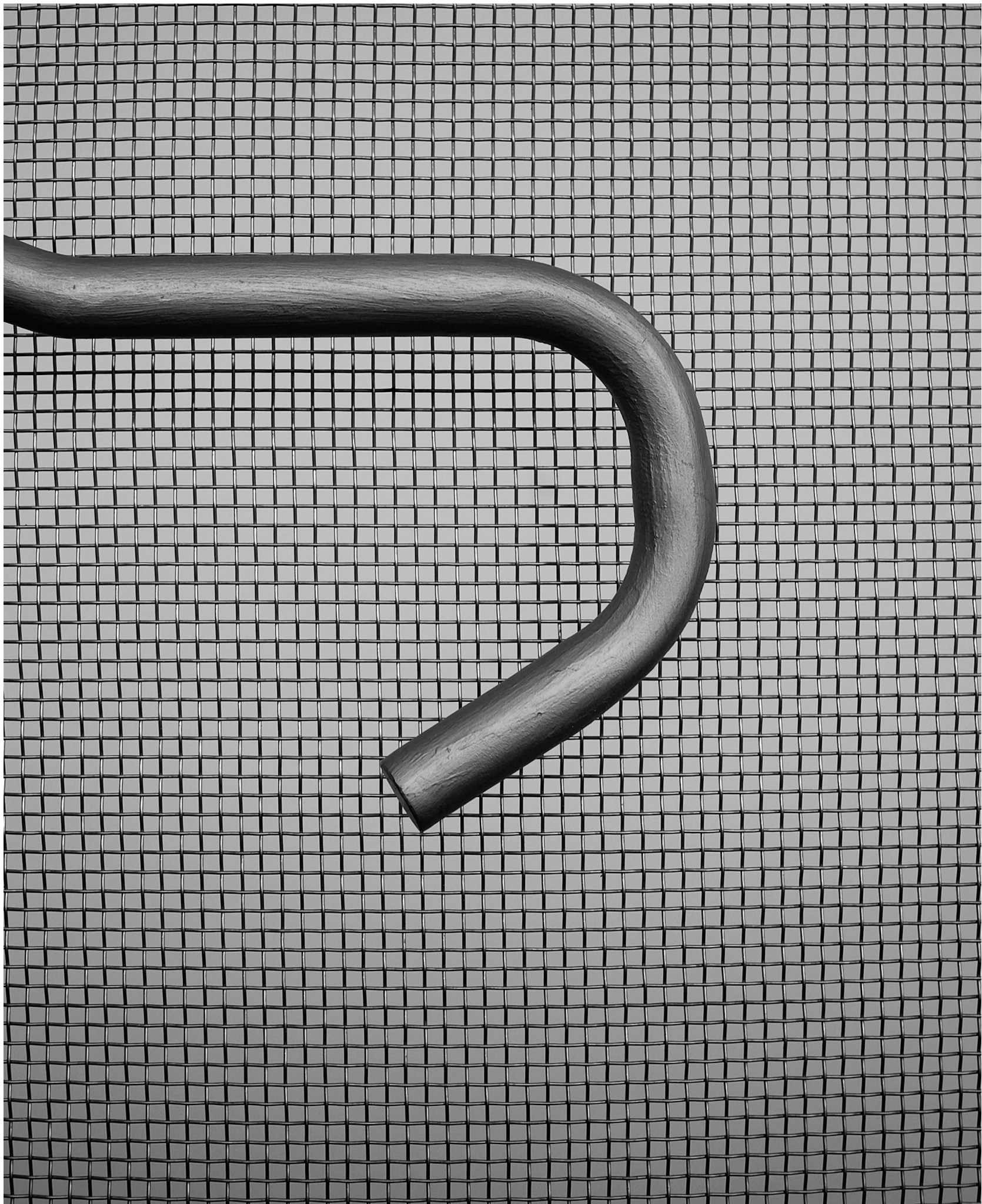
13.5 mm clear laminated inner glass.

Supported by steel back ups











DETAIL

Ideal and Reality

Brian Carter

“The soul has more need for the ideal than the real”¹

On discovering the words of Victor Hugo incised into the façade of a building in the American Mid-West Steven Holl and Chris McVoy were inspired. Working in a setting where reality is invariably given priority, these architects have assembled a portfolio of work that consistently recognizes the need for the ideal.

The Reid Building, a new addition to that portfolio, is a building of international importance. It reconfirms that need for the ideal at a time when instantly gratifying images appear to be all-too-familiar in contemporary architecture.

Like its distinguished neighbour, the building is enigmatic. It was first revealed in 2010, through a series of evocative images. The images, described by the architects as ‘d-r-a-w-i-n-g-s’ were made ‘with wet brushes and charcoal’.² They outlined the proposed organization for a new building by making use of familiar graphic devices: building sections, cutaway axonometric projections and annotated sketches. However, they also sought to highlight an approach to design. As Steven Holl had noted, ‘From initial concept to finest detail, our aim is for idea and phenomena’.³

In addition to outlining spatial organisation, those early drawings referenced the experiential qualities of the new building. They combined the spontaneity of the artist with the precision of making. Introducing views of the new building which sought to capture qualities of light and spatial sequences, textures, sounds and smells of spaces, they also noted materials, their characteristics and form. The focus on the ideal also

initiated a process that led to active engagements with reality – gravity and materials, time, use, weight and weather.

As the design for this new building advanced, other connections linking the ideal and the real were created. An early sketch by the architects had featured the original building designed for the Glasgow School of Art across from the Reid Building on the opposite side of Renfrew Street. Both buildings were sliced open dramatically. This annotated drawing scrutinized the two anatomies and suggested that Mackintosh had designed a building with ‘thin bones’ of steel and wood – spindly timbers and tendrils of metal – that were covered by a ‘thick skin’ of sculpted stone. Reacting to this examination of the existing, the architects of the Reid Building advocated contrast and went on to suggest that the design of the new building be based on ‘thick bones’ under a ‘thin skin’. As the proposal was developed those ‘thick bones’ became tubes that could also funnel daylight into the heart of the building and define paths of movement while the skin was to become increasingly smooth and almost translucent.⁴

Collaborations between architects, engineers and technical consultants, working on both sides of the Atlantic, enabled the further development of those ideas. Together they energetically integrated ideals and details with the demands of structure and material. In addition, research initiated studies of alternative materials and connections, methods of assembly, and the sequences of construction.



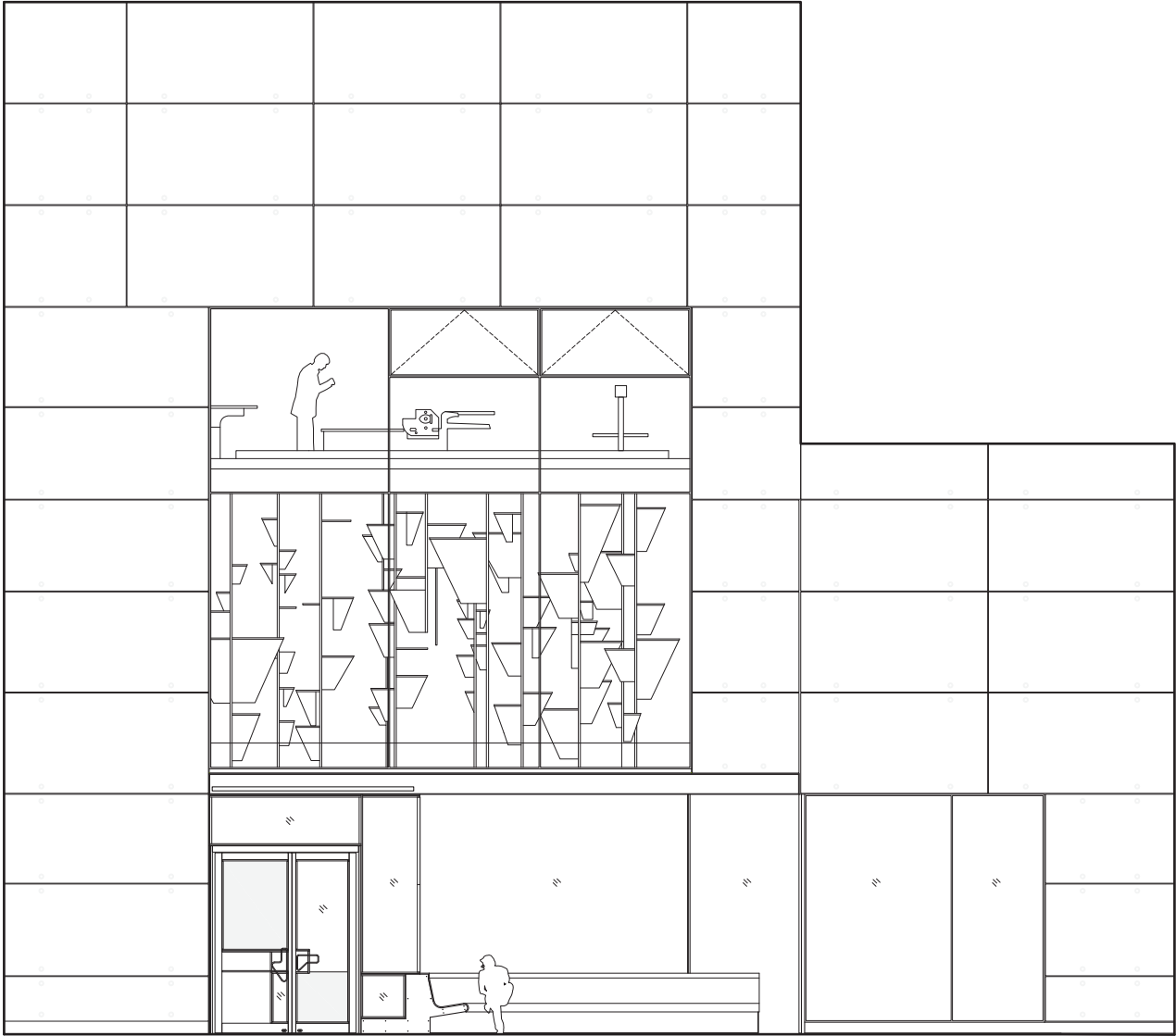
Ideas were tested and refined through making. Early in the detailed design stage of the project, three significant elements of the building were identified as a basis for further investigations. They prompted the construction of large-scale mock-ups to test components, examine finishes and coordinate systems. Each of these mockups, a series of prototypical fragments of the building, focused on important ideas embedded within the project. The decision to build them as a fundamental part of the process of the design and construction of the Reid Building was an inspired initiative that connected the ideal and reality.

The construction of the mockups also engaged builders in the development of design ideas and helped to make construction processes more vivid. For example, a series of large vertical panels, each 5 metres tall and 2.5 metres wide, were built to investigate different finishes and the construction of concrete walls while a full-size section of a tall reinforced concrete tube – a ‘thick bone’ that was also to serve as a ‘driven void of light’ – helped to provide better understandings of how to fabricate and finish these prominent elements. Another large-scale assembly examined the ‘thin skin’ that was to enclose the building. This skin had been consistently referenced in the drawings by a light blue wash that suggested an ethereal quality – a ‘phenomenal transparency’ that was in sharp contrast to the more familiar ‘literal transparency’ created by glazed walls.⁵

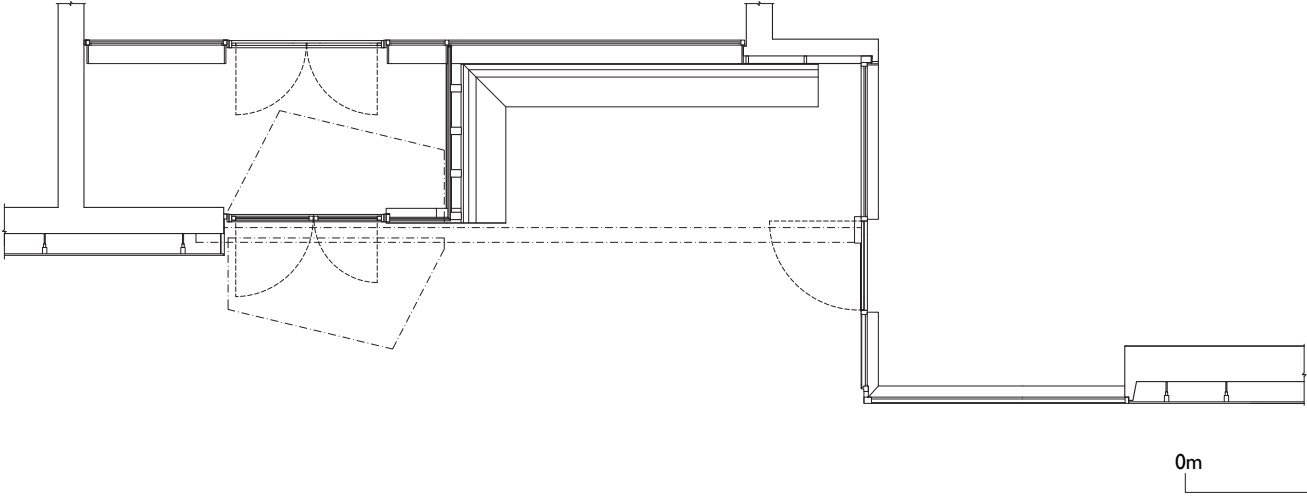
Reyner Banham suggested that the original building designed by Charles Rennie Mackintosh for the Glasgow School of Art ‘balanced uneasily between old and new’.⁶ The earliest drawings of the Reid Building

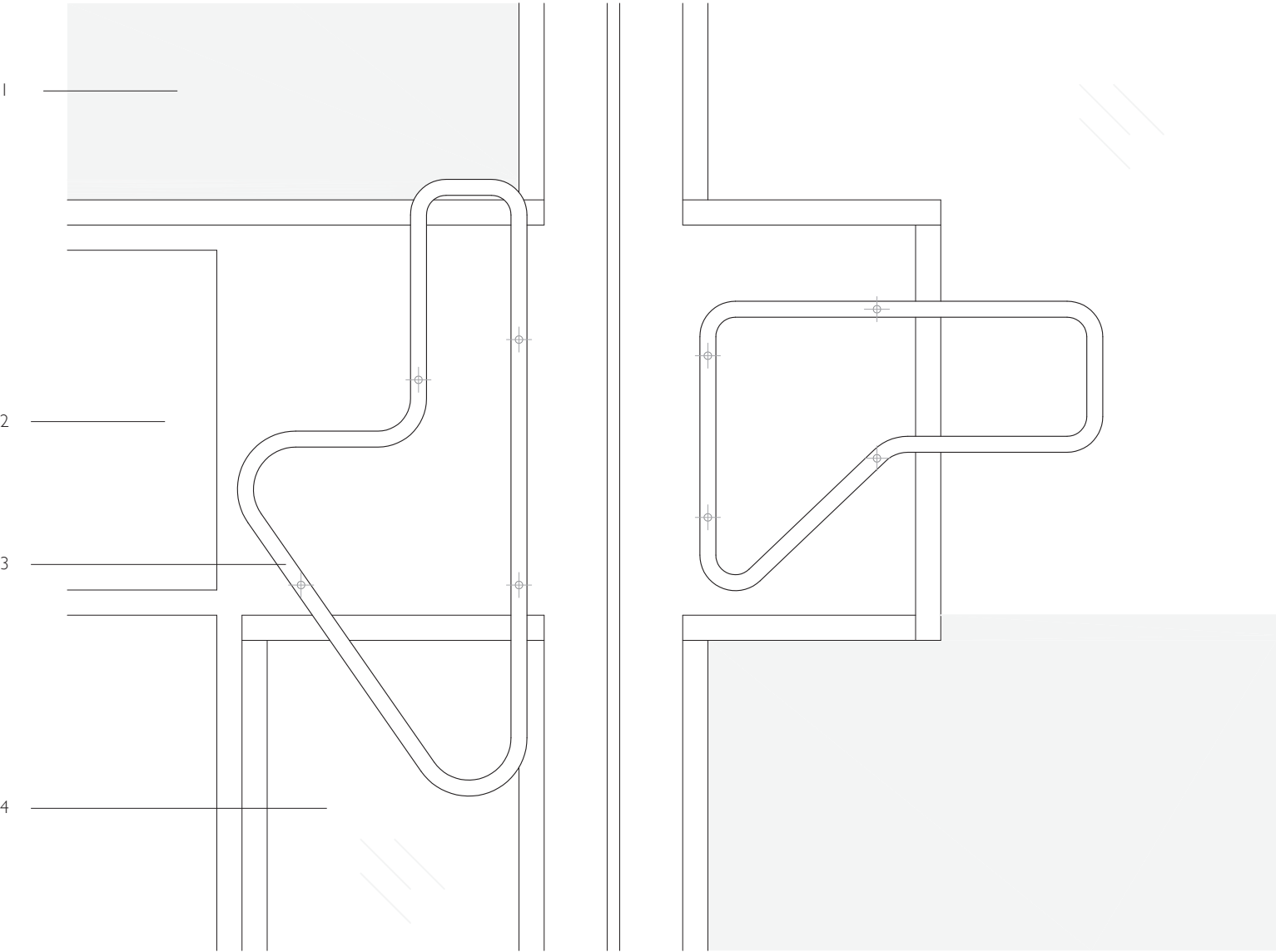
that were prepared by the architects juxtaposed Mackintosh’s School of Art with the building that was to be constructed on the site opposite and located Renfrew Street at the centre of the newly expanded school. The architects described this space, now framed between old and new, as a ‘caesura’ – a term borrowed from literature and music where it is used to describe ‘a break or pause in a line of verse; a pause showing rhythmic division of a melody’. They also highlighted a vision of that existing public street transformed into a space that could become an integral part of the newly expanded school.⁷ It is a vision that identifies the potential for a radical transformation of Renfrew Street and Glasgow School of Art. And, as the arcades of Bologna served as the campus of the world’s oldest university, so this inspired suggestion promises a new and truly civic space of learning embedded in the wider context of education, art, culture and the city. Located high above the city, the Reid Building stands as a surprising beacon that signals the remarkable presence of the Glasgow School of Art, the street and a community committed to both the ideal and the real.





THRESHOLD

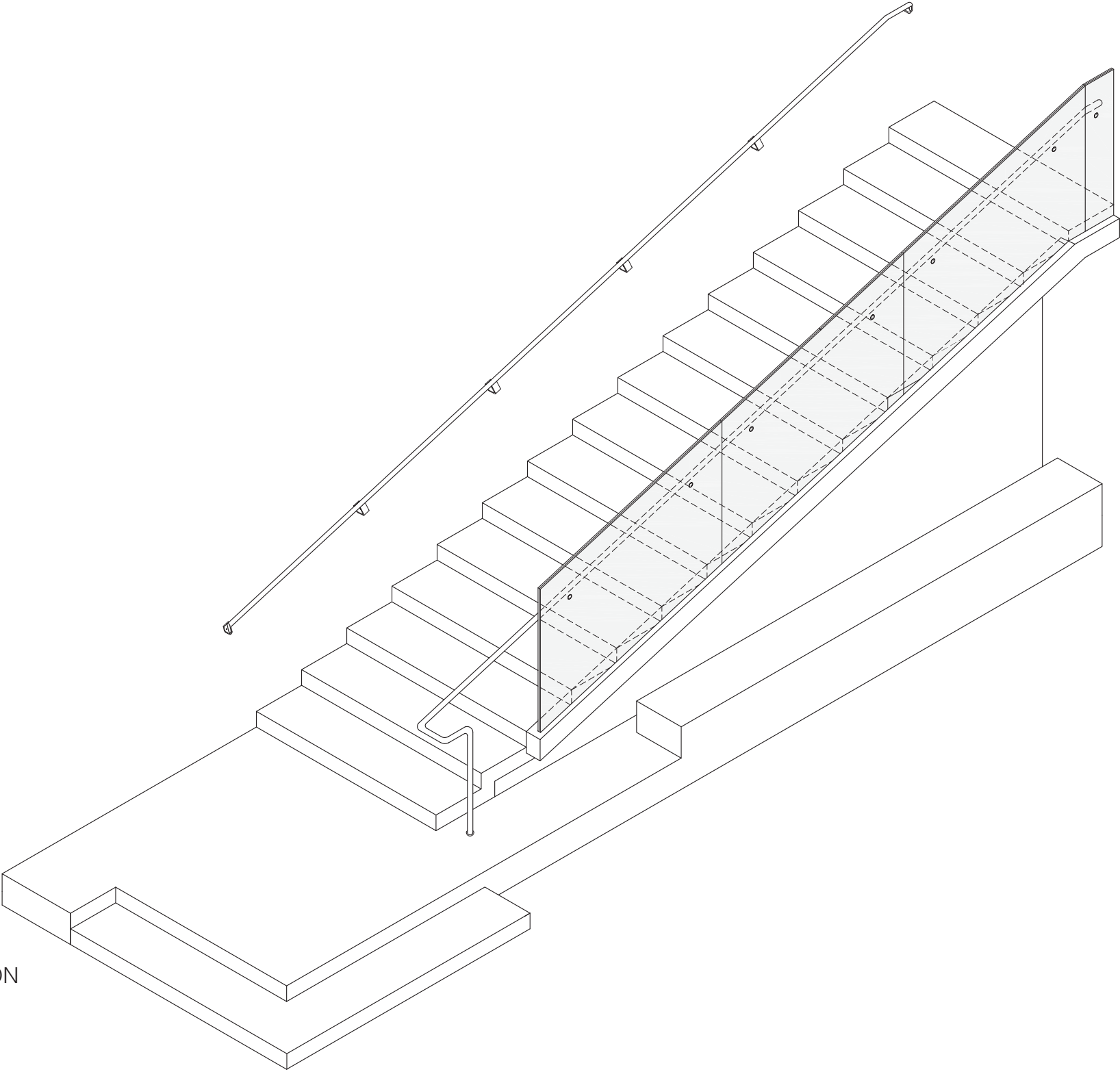




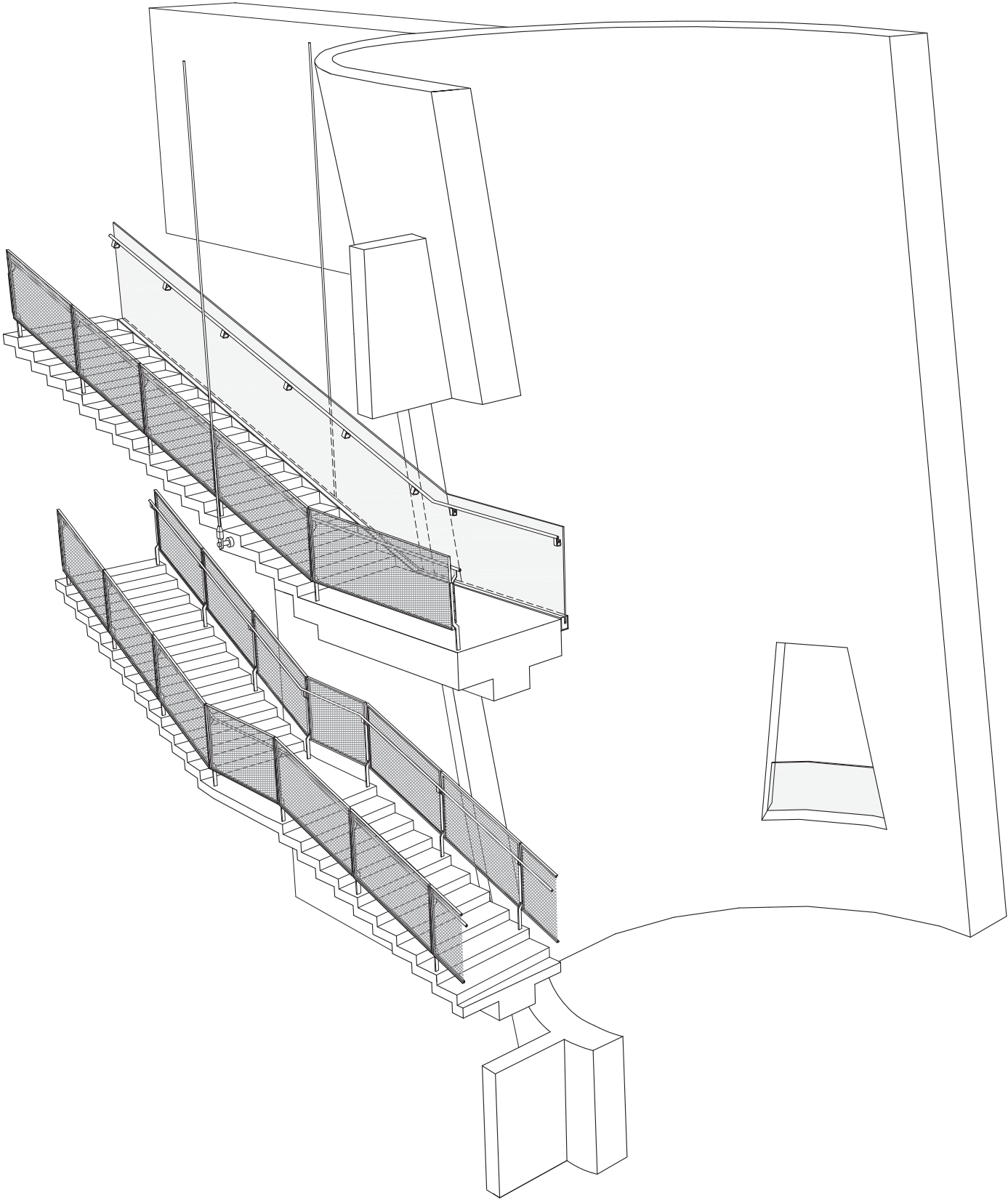
ENTRY PULL

- 1. Translucent glass
- 2. Steel
- 3. Brass handle with stainless steel fixing
- 4. Transparent glass

0mm 100mm

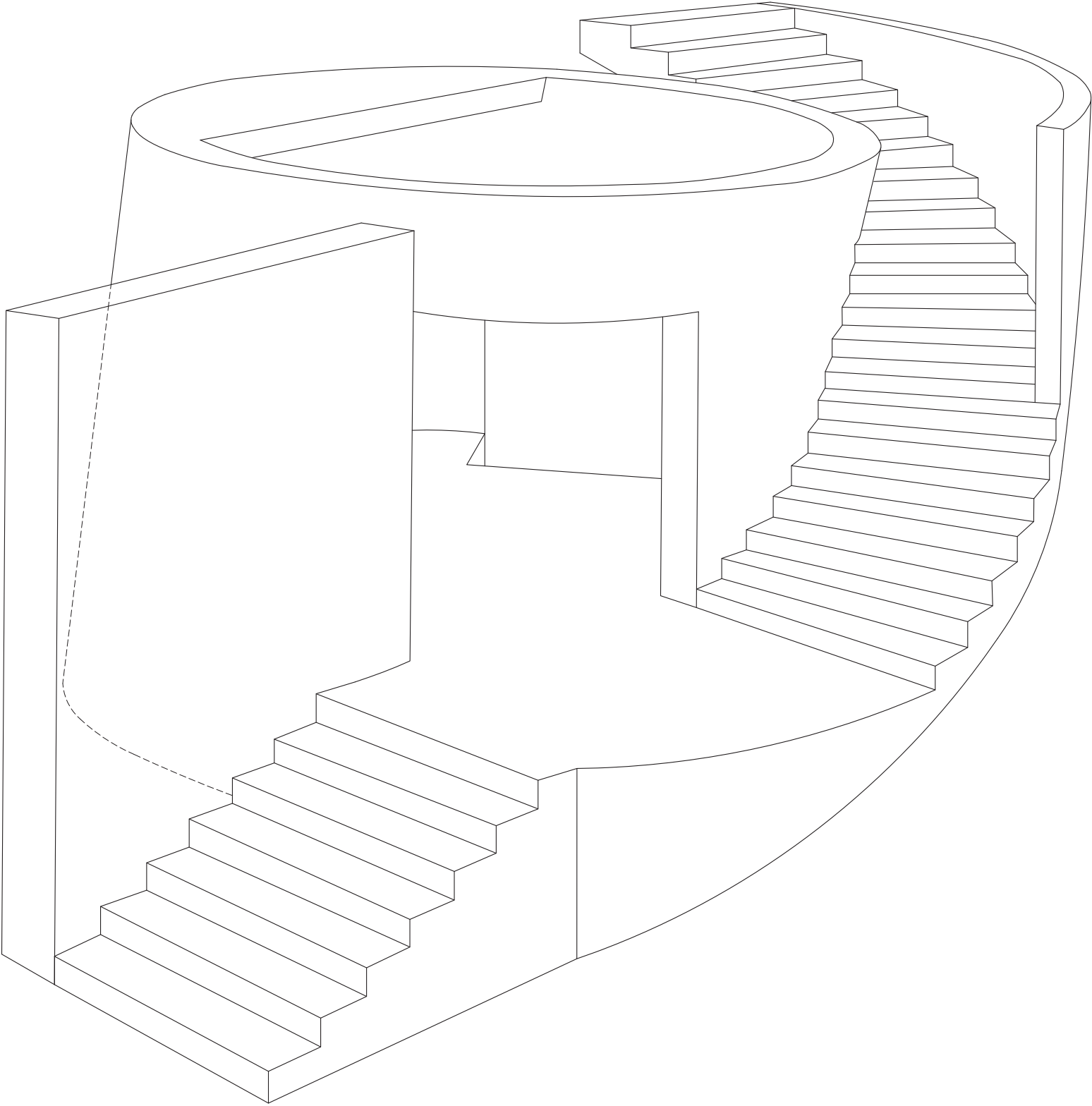


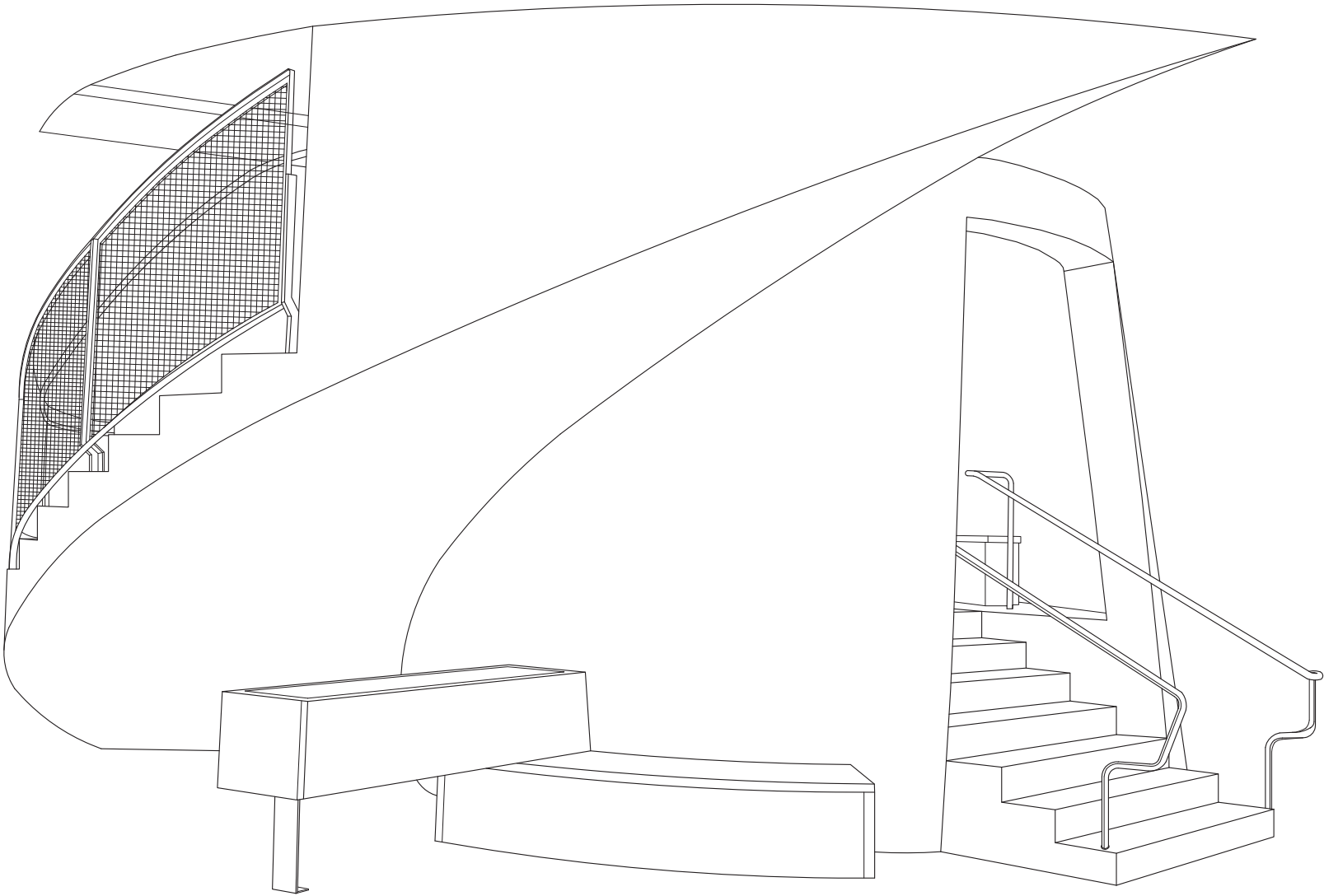
PROCESSION





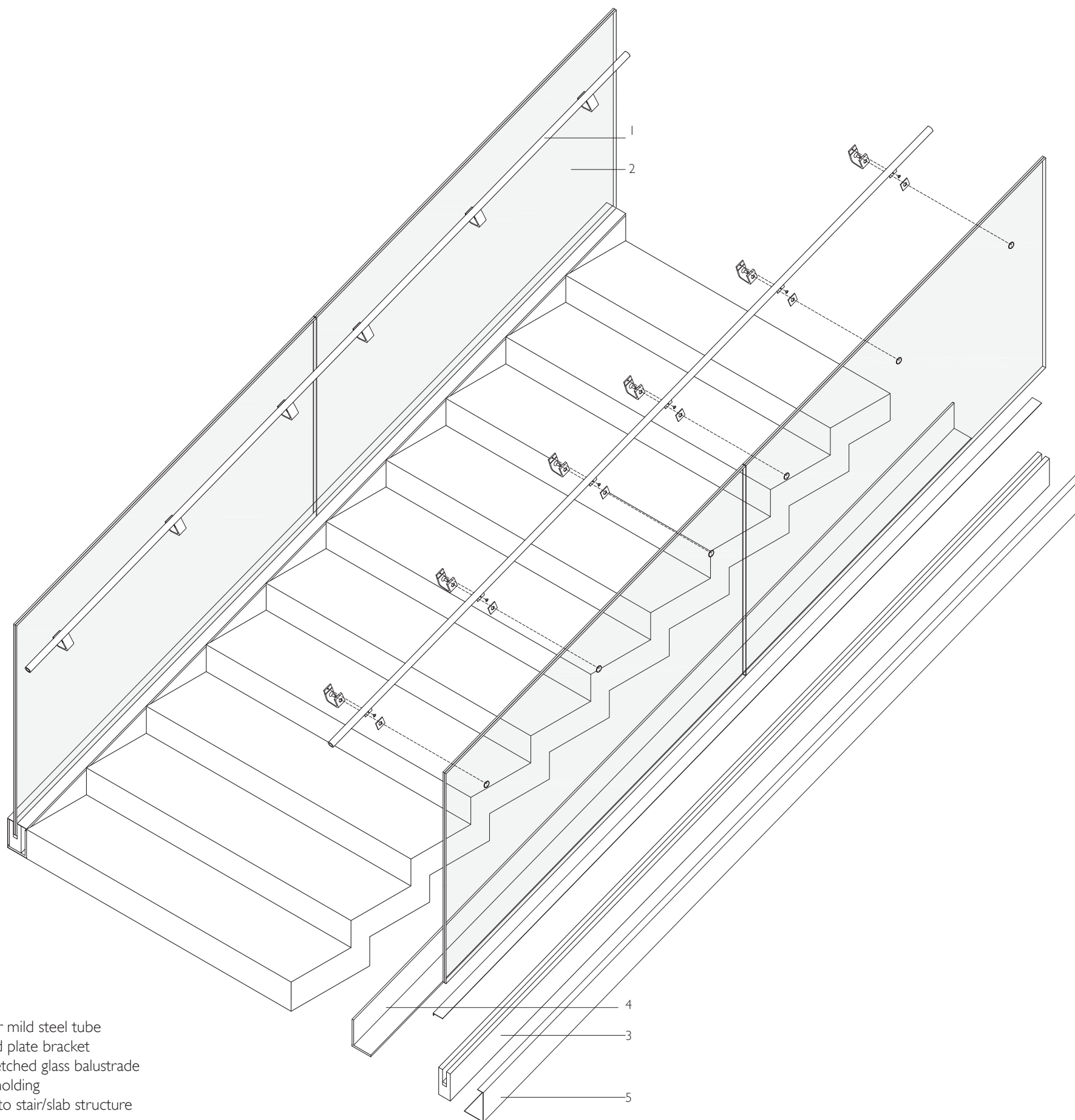
BASE





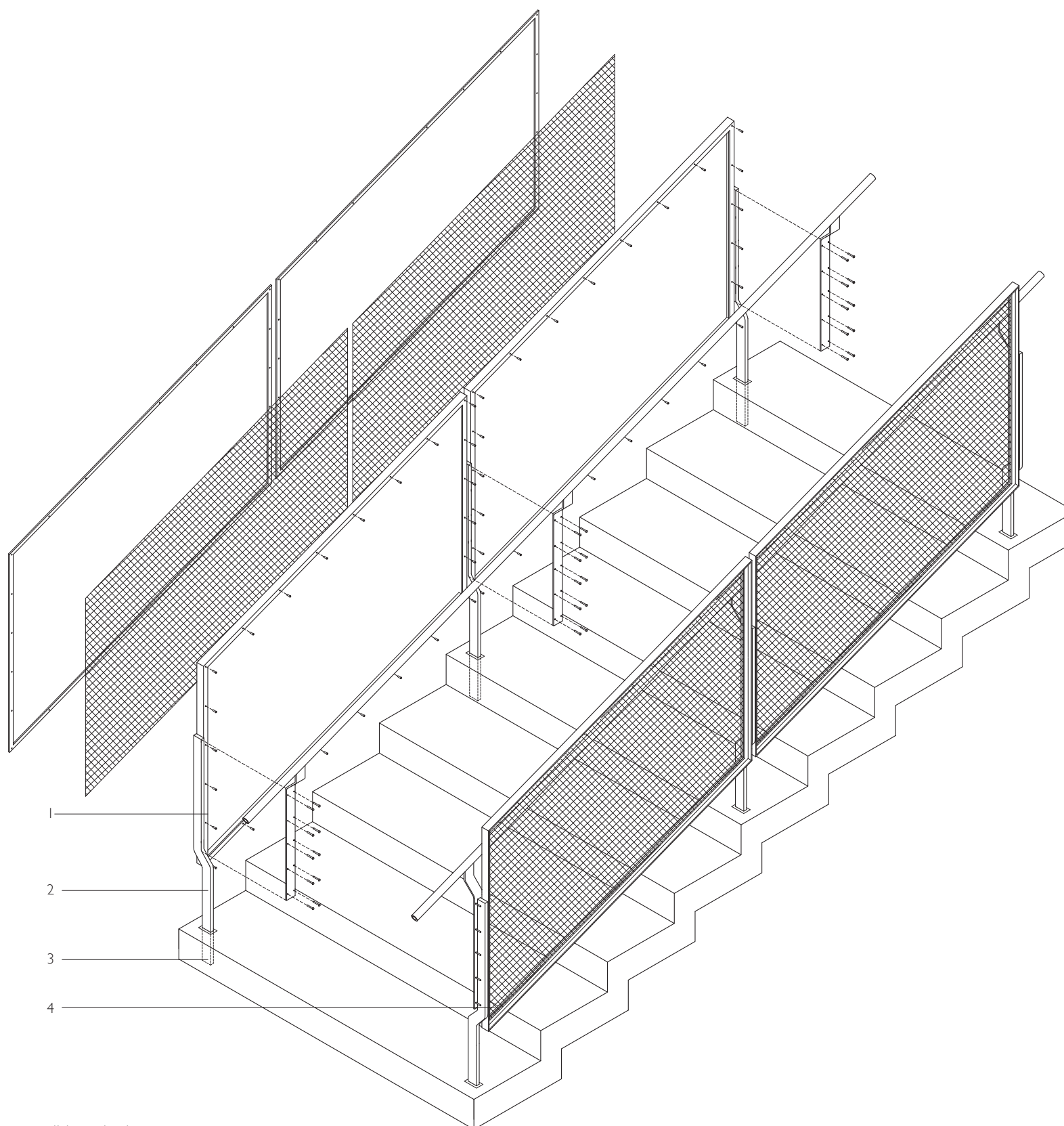


43



GLASS

- 1- 33.7mm diameter mild steel tube handrail with shaped plate bracket
- 2- Translucent acid etched glass balustrade
- 3- Mild steel shoe molding
- 4- Steel angle fixed to stair/slab structure
- 5- Stainless steel covers

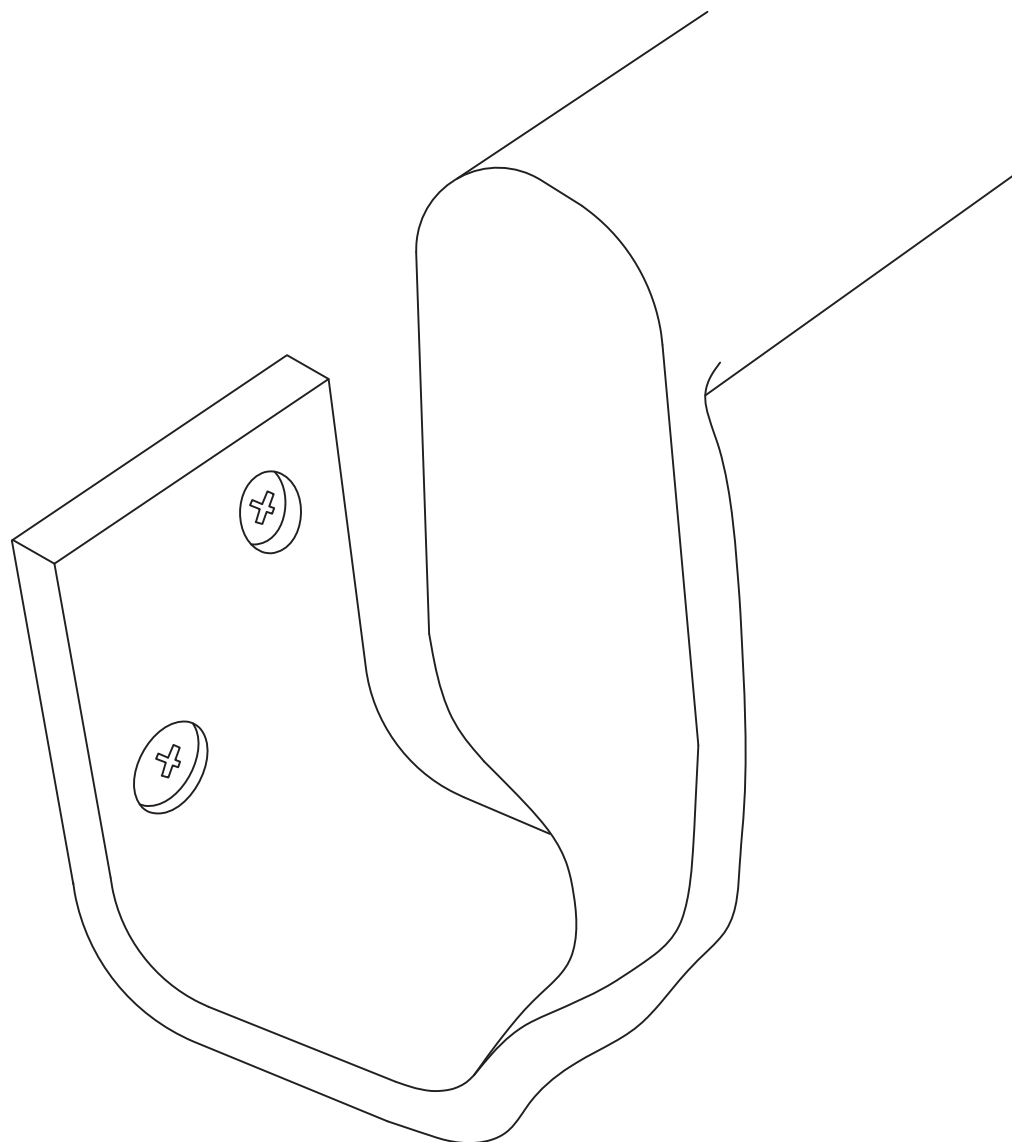


STEEL

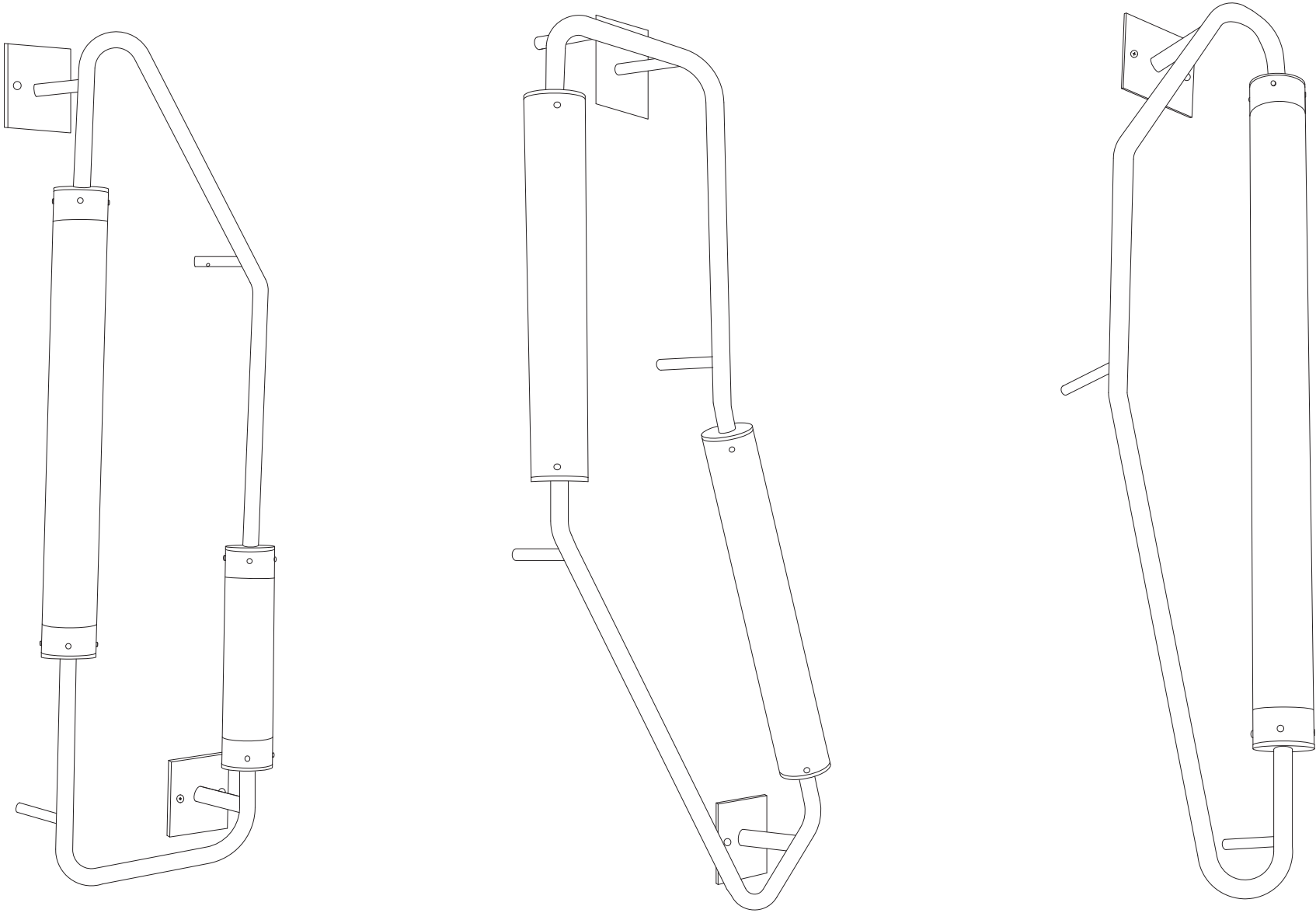
- 1- 33.7mm diameter mild steel tube handrail with shaped plate bracket
- 2- 16mm mild steel stanchion
- 3- Cast in steel tube welded to re bar to house stanchion
- 4- Flat bar frame with wire mesh Infill fixed with oval head countersunk screws



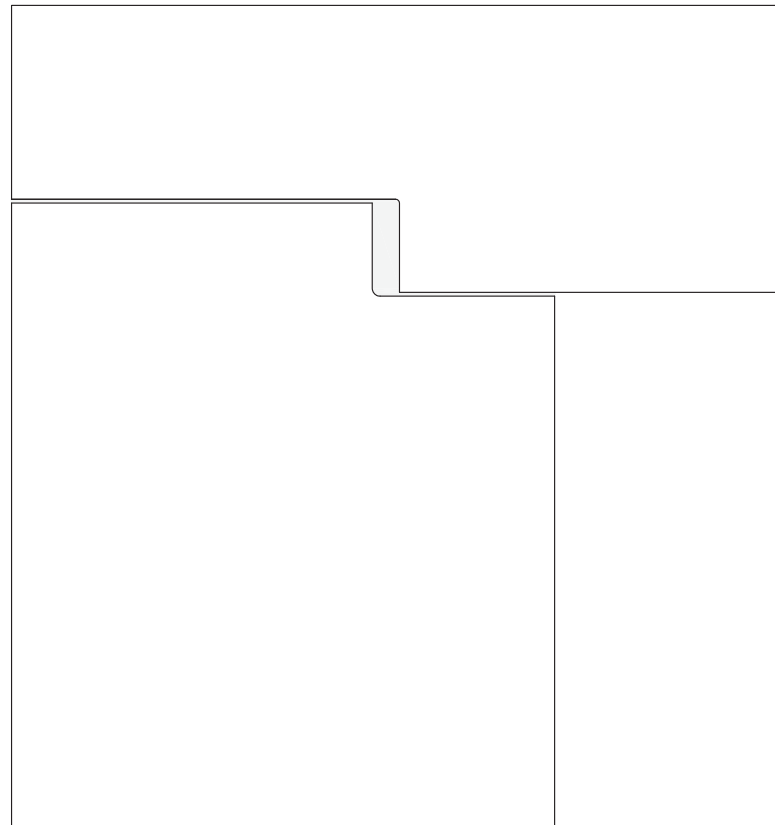
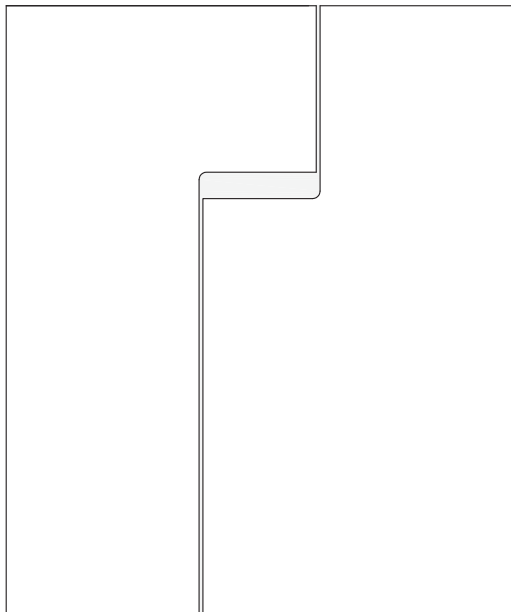
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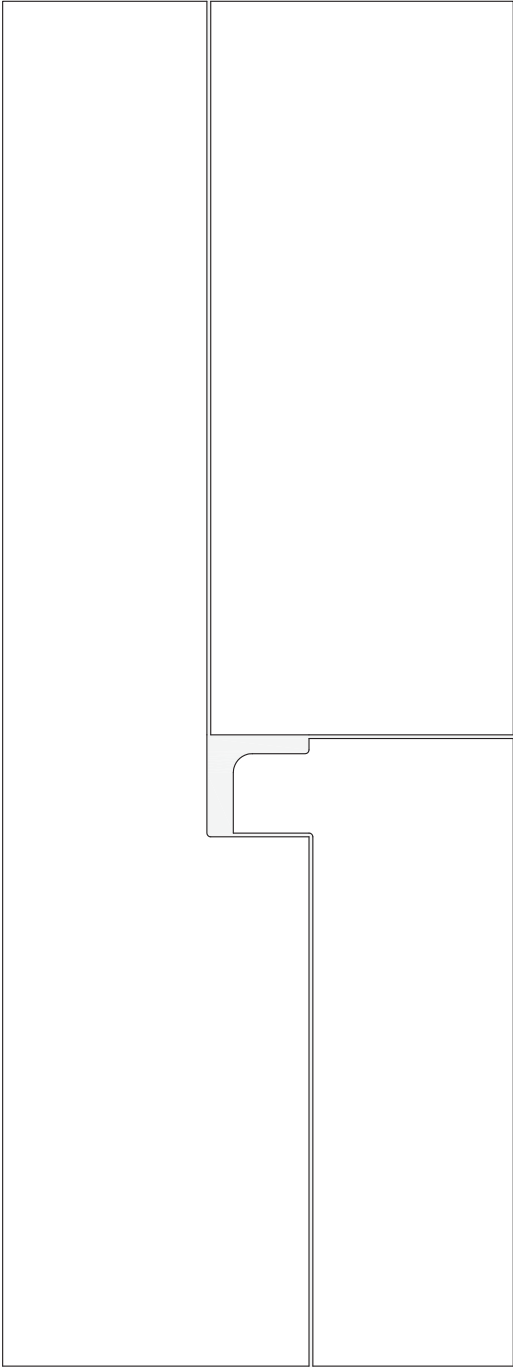
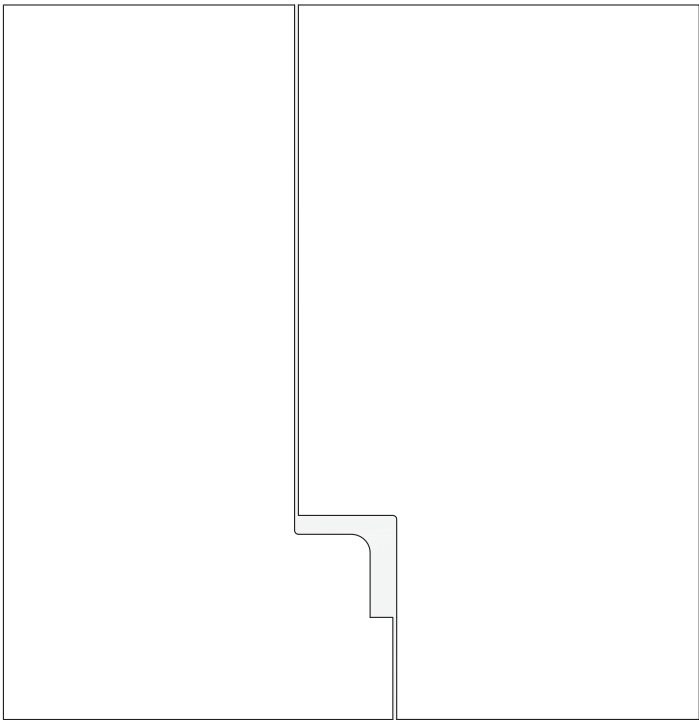
TWIST



ILLUMINATION



TIMBER
Cabinet Pulls











REFLECTION

Three Bottles of Light in a Glass Box

Brendan Woods

“Rather than words comes the thought of high windows: The sun-comprehending glass, And beyond it, the deep blue air, that shows nothing, and is nowhere and is endless”

Phillip Larkin, High Windows, 12th February 1967 ¹

I have not made a study of the work of Steven Holl. Like a lot of architects I was intrigued by his New York Storefront: that early work that demonstrated ingenuity and playfulness that marked it out from the work of his contemporaries. Then I happened upon Kiasma after a few days in Finland and after visiting Aalto’s Culture Centre and his delightful studio house. Then, there was his building floating on its site. Again, I was intrigued and while engaged by the Neo-Baroque spatial qualities of the interior, I wasn’t sure that it really knew what it was doing. It didn’t have that quiet urgency that Aalto had in his response to the site and certainly compared to Siza’s bank in Vila do Conde it had a certain vagueness in its geometric ‘partis.’ I wasn’t sure that I was in the presence of a master, but perhaps in the presence of someone with palpable ambitions to join that pantheon, of someone who perhaps wanted to be taken seriously.

And then, there I was walking up Renfrew Street towards the Reid Building... still unfinished, with barriers preventing one from approaching the new raised (sic) street surface as a continuous forecourt to the episodically composed pale green clad monolith. It was difficult to discern exactly what was proposed. There was obviously some attempt to engage with novel techniques, with the glass rain screen panels. The milky green opaque ‘skin’ presented a strange otherness to its considerable bulk opposite Charles Rennie Mackintosh’s iconic entrance facade. Its size is quite skilfully disguised by this material, the lightness of the colour rhyming with the cloudless blue sky and through its likeness to weathered copper sheet, appearing as more roof like than as an opposing facade to the Mackintosh Building.

It has a billowing presence in the street, almost a mirage in relation to the tactility of the stone of the neighbouring buildings. This strange de-materiality is confusing: the relationship between structure and skin where a giant leg that holds up the end of the building seemed puzzling, not inhabited, not structure, but skin?

As I further explored the outside I wondered quite how the new entrance had been considered in relation to Mackintosh’s heroic sweeping central staircase. This is obviously one of the major issues to be addressed in building on this site and the response of positioning the visitors centre, ‘Window on Mackintosh’ in the middle allows it to be off centre, using the retained corner stone building as punctuation in making the new entrance. This is subsequently understood as essential to the strategic sense of the long staircase flights constituting a ‘processional’ route through the building. It also allows the Bourdon Building’s entrance to be drawn into the composition forming a triumvirate of entrances, from the heroic to the almost inconsequential. In this I have a growing regard for the new building as also being a bridge building, and therefore developing the conversation with Mackintosh’s neighbours.

There is also a relaxed feeling to the elevation to Renfrew Street where the module of the glass panel seems ad-hoc. The pattern of joints is pragmatic and the glazing to the Charles Rennie Mackintosh Study Centre is matter of fact in contrast to the composed facade opposite.

“Structure is the giver of light” – Louis Khan ²

While the proposition of ‘light funnels’ and a long rambling staircase is the main idea of the interior organisation, there are cross-walls that intersect with light funnels – or ‘driven voids’, as Holl describes them. These conjunctions or intersections would not seem to be acknowledged as significant by the architect. The sense of a repeating structure is not stressed, rather it is the episodic nature of the staircase that is considered of prime importance. The rooms, or departments,



occupy the space that is between the stair and the perimeter. The sense of structured space is given over to the stair – the route – and the light funnels, not to the occupied and used space.

The tragedy of the funnels, however, is that they don't reach the basement where the workshops are located. The competition winning section established an intention that was, alas, not possible to achieve. As a result the funnels end abruptly, at ground floor slab level. They are separated from the lower ground resulting at the bottom in odd spaces. At the point where building regulations contradict architectural intentions a more studied alternative was surely necessary.

The way in which the funnels are opened up to allow views out of and into the studio spaces calls to mind the art practice of Gordon Matta Clark.³ However, when I think of GMC's assault on buildings, such as the Paris intervention of 1976, I realise that these were essentially destructive acts where the structural stability of the building is threatened, where GMC goes to within an inch of its life (and his probably) and it is that sense of danger or pushing things to the limit that is missing from these openings. The cuts are decorative and oddly repetitive. Perhaps this tells us something about Holl and his success. There is a pretence of art practice ideas – or might Holl call them concepts – where 'not quite art' meets 'not quite architecture' but results in seductive looking buildings that aren't too bothered by trying to resolve difficult architectural dilemmas.

The manner in which the processional route, the long stair, engages and negotiates its way into and through the building, and into, past, and occasionally through the funnels is largely episodic, sometimes resulting in felicitous conjunctions, sometimes not so convincing. If there is a sense of hierarchy i.e. that the processional route is the way in which we will discover the true sense of the building, as there

would be in a building by Le Corbusier or Rem Koolhaas, then I was confused by the decision to drive the stair through the first funnel it encounters. The propositions of the voids and the stair could have been developed as an exploration, as a game, where the relationship between the two might reveal an aspect of architectural investigation, or development where we would be introduced to the rules. Here though, the stair takes off from the entrance lobby, and without any foreplay, so to speak, makes its way through the funnel thereby, excluding any idea of hierarchy, or hierarchy of understanding, of discovery. But having gotten that out of the way, Holl can then play games with the way in which the route brushes past, slightly interrupts, or ignores the funnels on the way up to the top floor, where another form of resolution possibly awaits us.

Here, at the West end of the building, a view of Park Circus is our reward. Pausing on the ramp to the upper level of the Jewellery Studio, there is a large window giving a grand view of the towers and the city to the West. Not too much celebration. From this ramp we can then climb further, as the route takes us to a gallery, where we get a view of the roof-scape and cladding to the tops of the funnels.

Looking down we can appreciate how the funnels have been punctuated by a series of similar shaped cuts giving views in the studios. We also appreciate the way sections of the route push into the voids.

I value Louis Kahn's statement that "space is architectural when evidence of how it is made is seen and comprehended"⁴ and this has come to mean more to me as construction has become more and more sophisticated and the actual structure of the building – 'What holds it all up' – is concealed by insulation, fire proofing and rain screens.

Hartoonian in his book the "Ontology of Construction"⁵ writes of the use of



montage when the underlying facts of construction can be intimated.

We can also think of Terragni in the ‘Casa del Fascio’, where a small section of raw concrete frame is revealed, almost as an artwork in the main salon. An ironic comment which, in his case, leaves us thinking about the nature of the programme for the building

There are the necessary ingredients for a powerful statement about construction in the Reid building, but the use of white paint has obliterated that and results in the feeling that it is like a conversion; that the building has been adapted. We have concrete, we have exposed services, such as sprinklers and heating pipes; we have simple floor finishes; a fairly matter of fact glazing system, so why don’t we have the feeling of an authentic structure? Perhaps because post Kahn, the Americans have largely neglected this aspect of modernism, the role of tectonics.

Why all this white paint? I understand it was generally agreed during the construction phase that the concrete of the ‘driven voids’ was forceful. I cannot think what would drive anyone to paint the interior of the Lewerentz Flower Shop in Malmo, even if, as the winter sets in and the days get shorter that light is in great demand. It is an issue of ethics, of searching for fundamental truths. When Mies talked of the idea of structure he said, “In Europe... by structure we have a philosophical idea. The structure is the whole, from top to bottom, to the last detail – with the same ideas ‘that is what we call structure.’”⁶ While Mies became a very sophisticated architect he never lost that driving force. His architecture was very different from that of Lewerentz, but it belonged to the same philosophical world. What we have with Holl is a work that avoids engaging with the idea of structure, where the junction of the cross-walls (and their role in the structure) and the ‘driven voids’ is treated as plastic incident,

picturesque encounters, rather than an understanding of how we make buildings as a ‘society of rooms’ where how we hold the building together is analogous to how we hold society together and how we reflect on the objective nature of inhabitation and on our hopes for the future.

When we look back at Holl’s earlier work we see someone of great facility, and a talent for mixing in ‘artistic’ reference. However, we will not find an architect driven by the search for a compelling architectural partis nor for an expression of this via authentic and honest construction. I think that that is what we continue to search for in a world where the reality of relationships between people and between people and things – natural and manufactured - is obscured by over-sophisticated political and constructional systems that seem to mask the reality of making architectural space, and the role of the building as a metaphor for our search for a better society. And that’s where Mackintosh will always stand, where the artistic flourishes are subservient to the true nature of the building.

Holl has achieved a sophisticated response on one of the most challenging sites in Northern Europe. A building, which is disarmingly relaxed, to my mind clever in the way it disguises its presence on the site and in the way it exploits the scenographic character of its rambling processional route accessing generous well lit studio spaces. But ultimately, it is its sophistication that worries me as well as the way in which it takes refuge in picturesque effect.

That is where the lines from Larkin’s poem remind us that each generation might seek to renew its core values and seek a new way to confront the realities of our time.





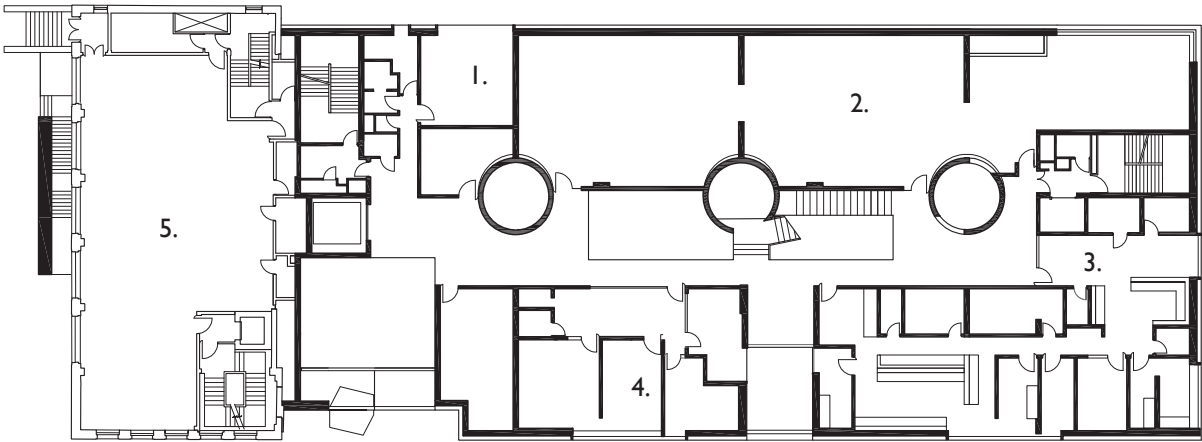




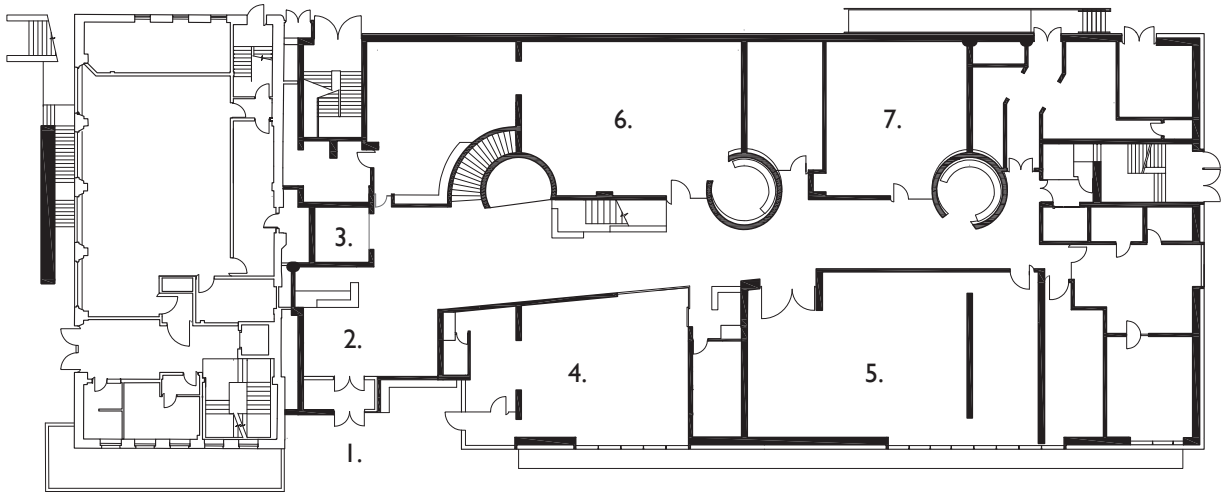
APPENDIX



- FIRST FLOOR
- 1. General Seminar Room
 - 2. Communication Design Studios
 - 3. School of Design Offices
 - 4. Directorate
 - 5. Student Union

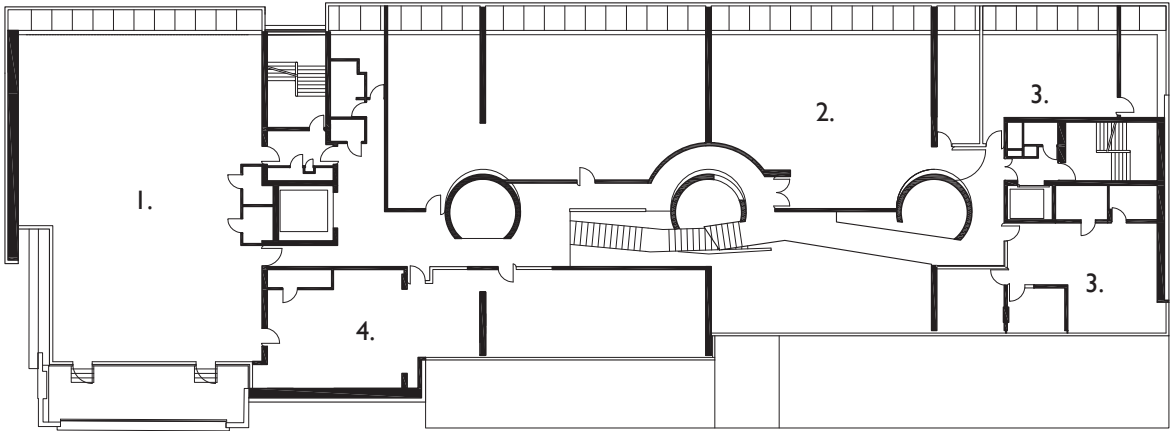


- GROUND FLOOR
- 1. Entrance
 - 2. Reception
 - 3. Lift
 - 4. Window on Mackintosh
 - 5. Exhibition Gallery
 - 6. Digital Media Workshops
 - 7. Seminar Room

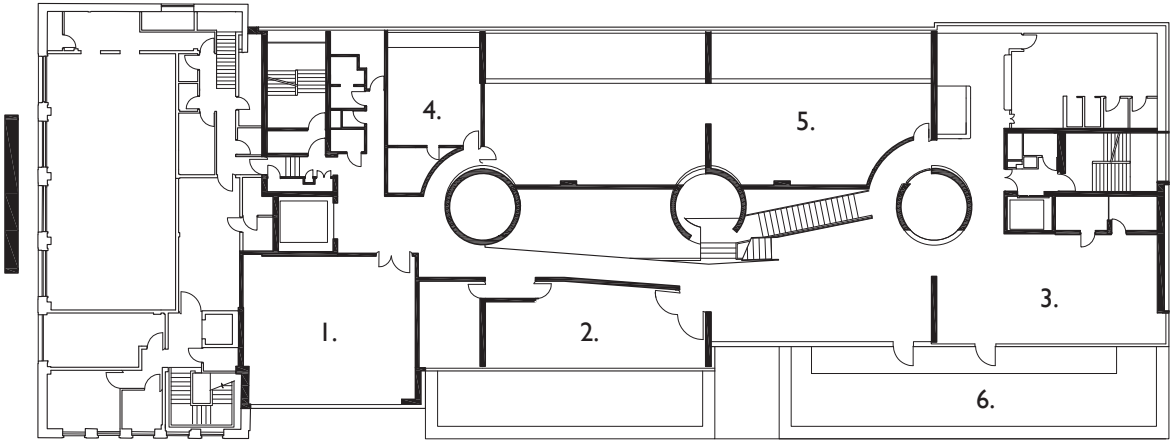




- THIRD FLOOR
- 1. Fashion and Textile studio
 - 2. Workshops
 - 3. Staff Room
 - 4. Sewing and Knitting Workshop



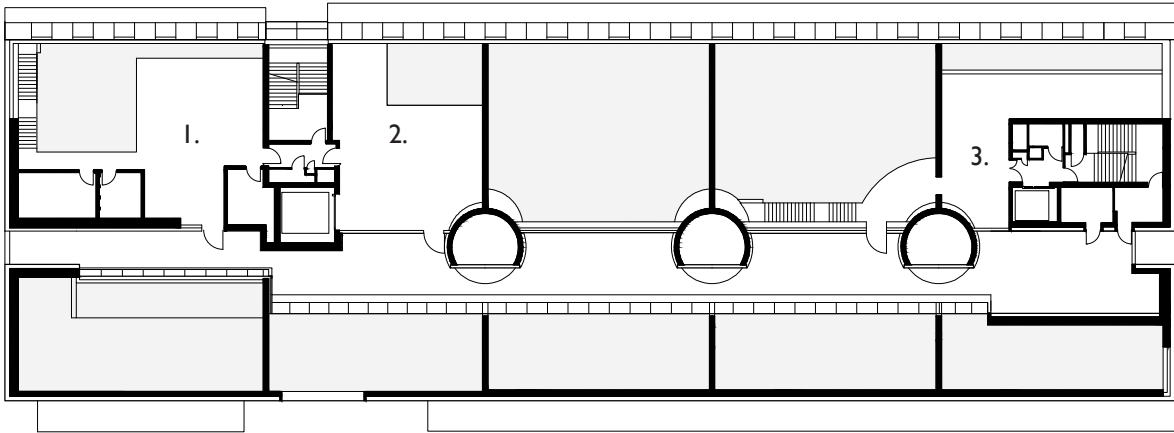
- SECOND FLOOR
- 1. Case Room
 - 2. Staff Refectory
 - 3. Student Refectory
 - 4. Digital Print Room
 - 5. Communication Design Studios
 - 6. Terrace





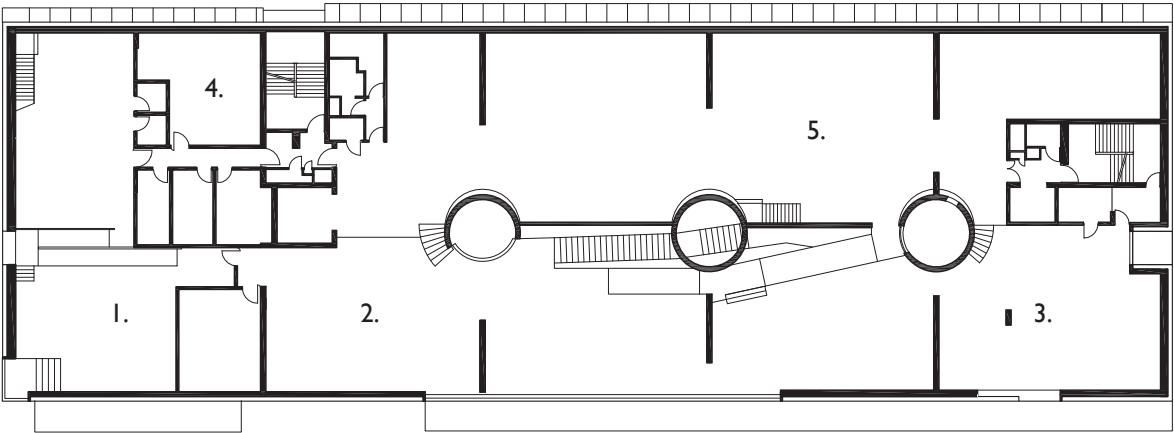
FOURTH FLOOR MEZZANINE

- 1. Jewellery Studio
- 2. Product Design Studio
- 3. Interior Design



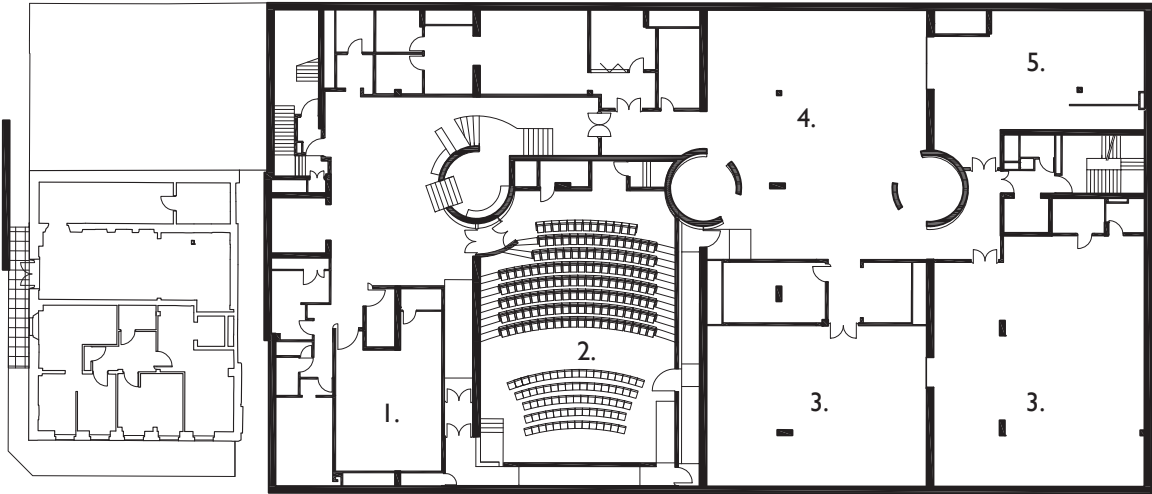
FOURTH FLOOR

- 1. Jewellery Studio
- 2. Product Design Studio
- 3. Product Design Engineering Studio
- 4. Jewellery Workshop
- 5. Interior Design Studio

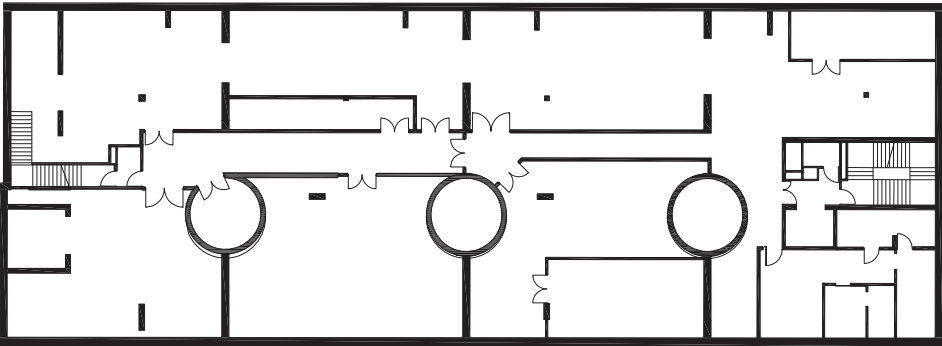




BASEMENT
1. Photo Studio
2. Lecture Theatre
3. Wood Workshop
4. Fabrication Workshop
5. Metal Workshop

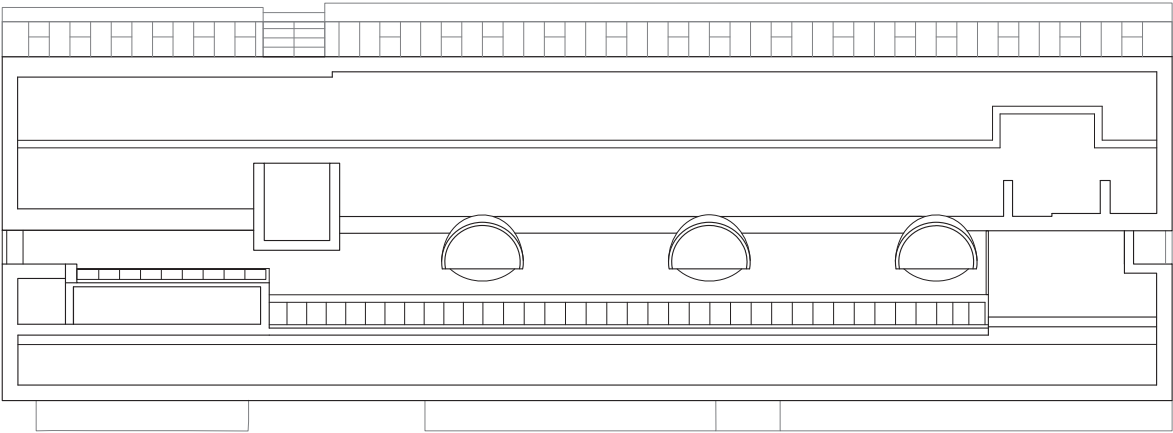


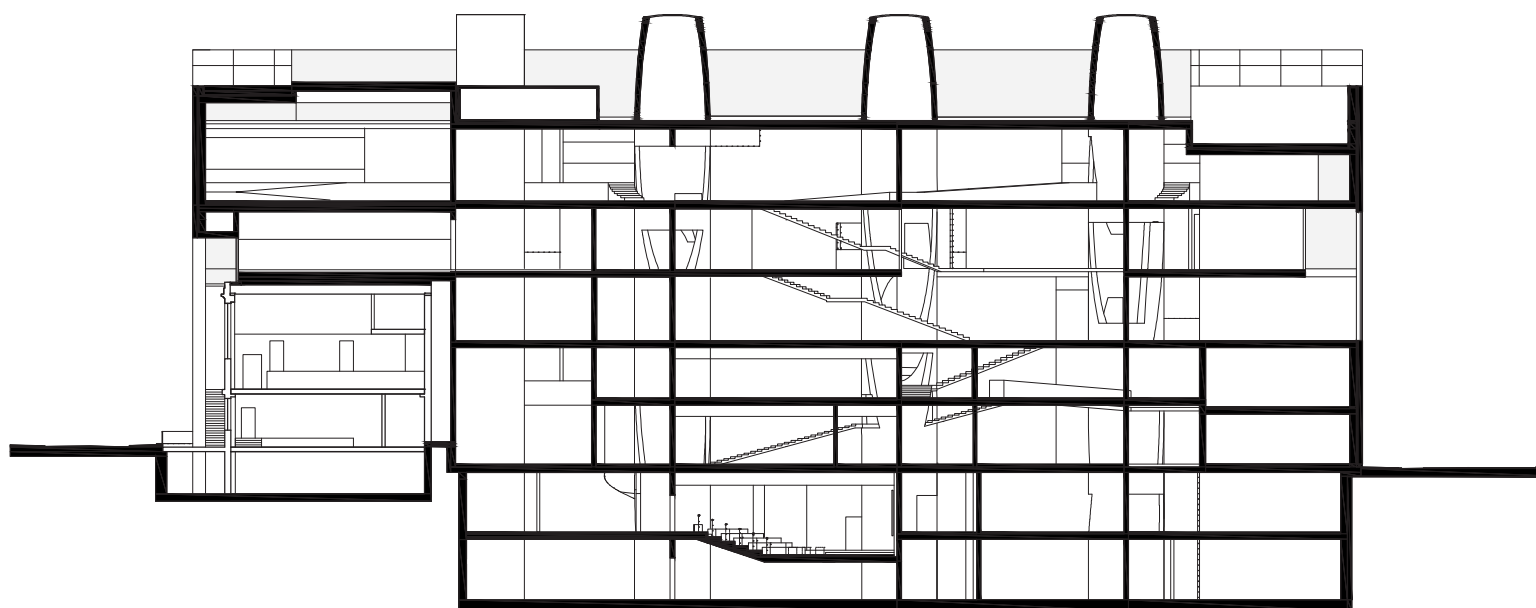
BASEMENT LEVEL 2
Storage and Plant



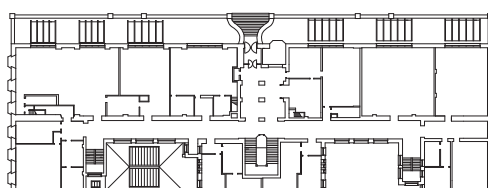
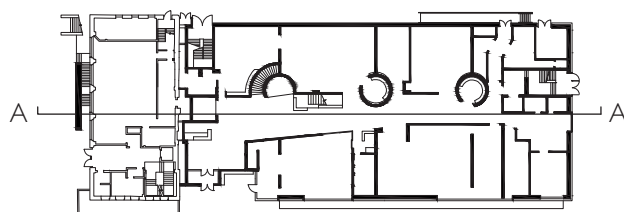


ROOF PLAN





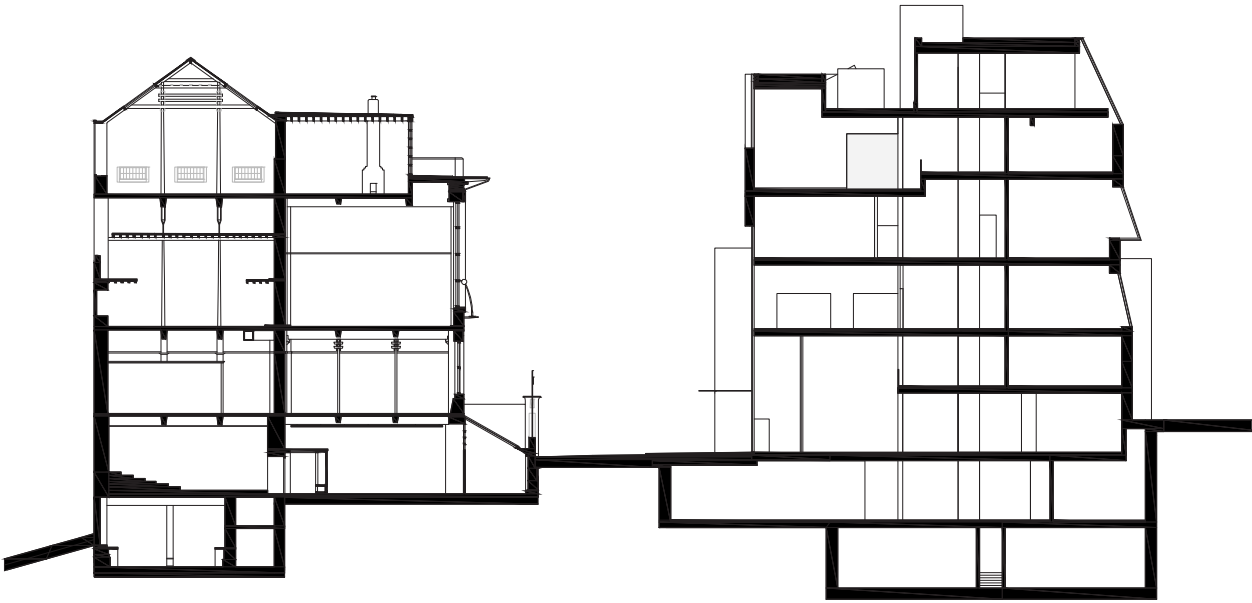
SECTION A



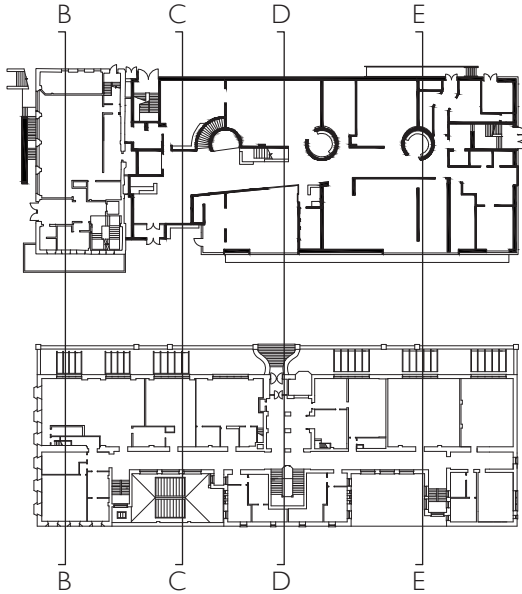
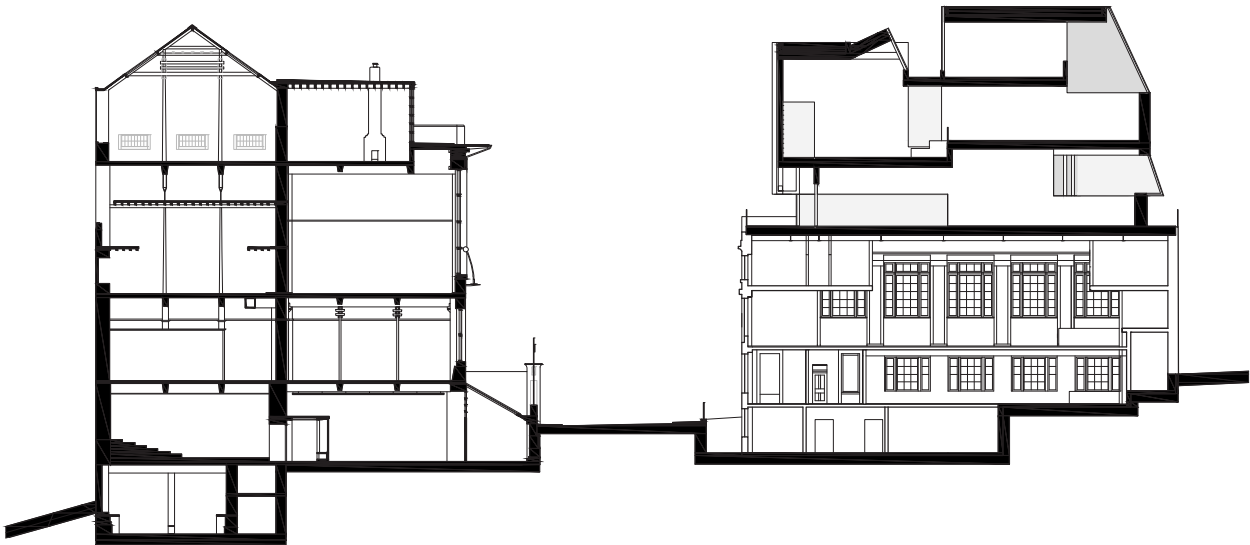
0m 25m



SECTION C

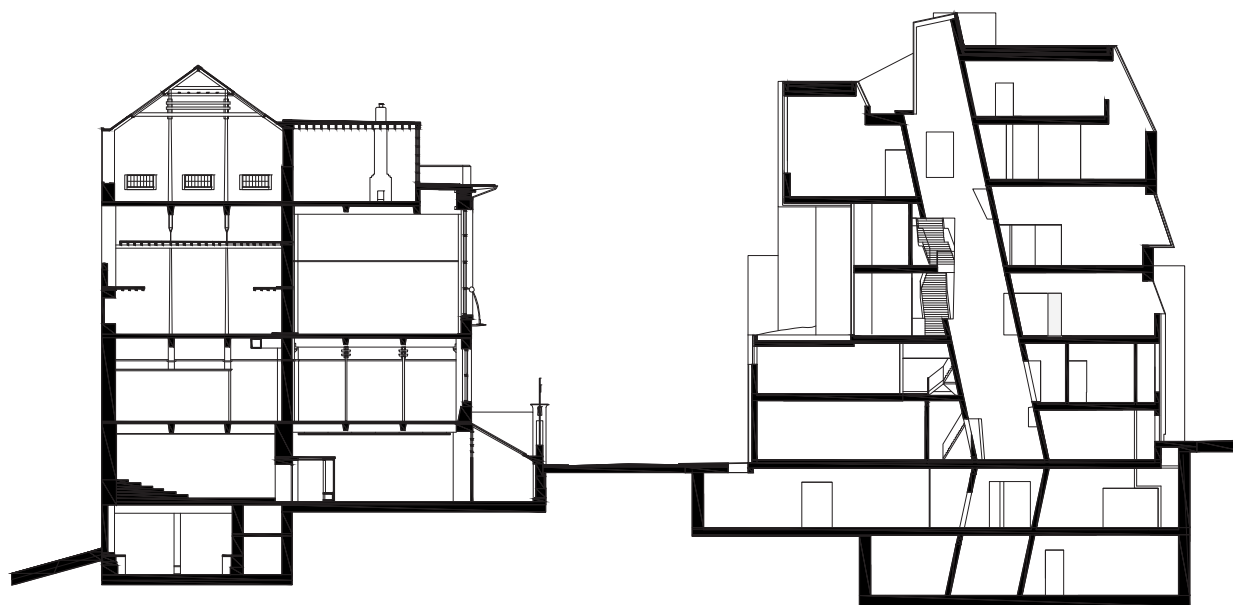


SECTION B

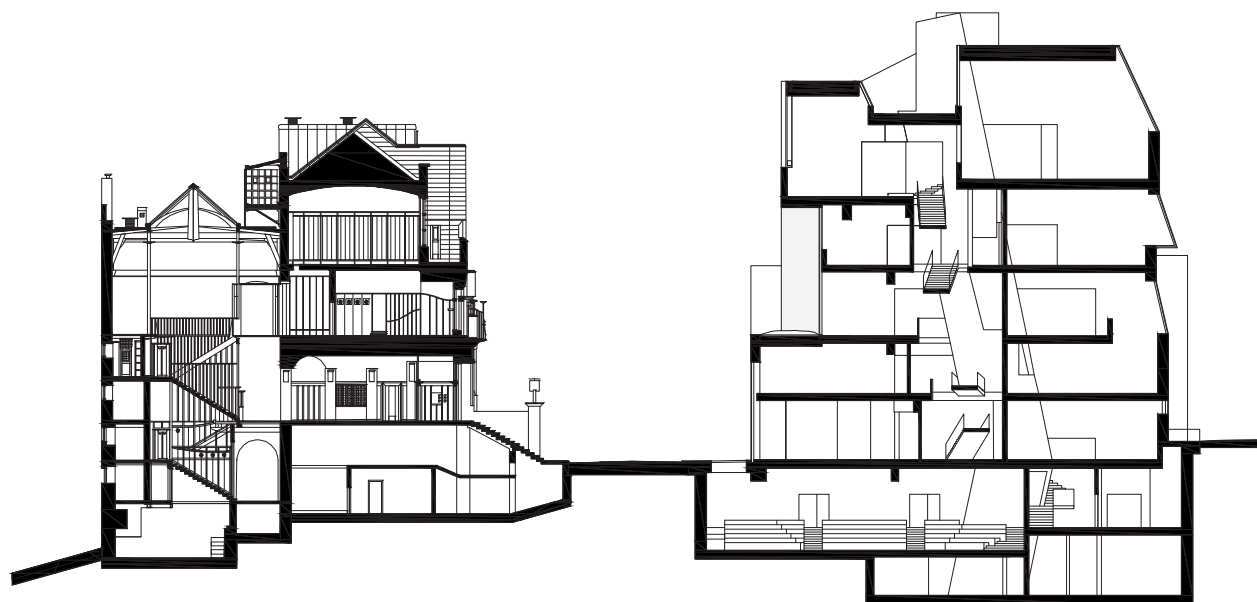




SECTION E



SECTION D



0m

25m



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SPACE, STRUCTURE, MATERIAL, LIGHT - CHRIS MCVOY

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IDEAL AND REALITY - BRIAN CARTER

1. The quote from Victor Hugo is carved into the south façade of the Nelson Atkins Museum of Art in Kansas City. Designed by architects Wight & Wight the building opened in 1933. In 1999 Steven Holl Architects was appointed to design a new addition to the Nelson Atkins Museum of Art. Chris McVoy was the project architect for the Bloch Building which opened in 2007. For more information see Bold Expansion. The Nelson-Atkins Museum of Art Bloch Building. (Scala Publishers Ltd. 2007)
2. *Uneasy Balance*, (Glasgow: MSA Publications 2013), pp 72.
3. *Stretto House*, Steven Holl Architects, (New York: The Monacelli Press, 1996), pp9.

4. For details of early drawings and notation see *Uneasy Balance*, (Glasgow: MSA Publications, 2013)
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6. Banham, Reyner, *Age of the Masters: A Personal View of Modern Architecture*, (New York: Harper and Row, 1975), pp10-12.
7. *Uneasy Balance*, Renfrew Street is noted on the architect’s drawing as ‘GSA Street SPACE’ (MSA Publications, 2013) pp.57.

THREE BOTTLES OF LIGHT IN A GLASS BOX - BRENDAN WOODS

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2. Kahn, Louis; Johnson, Nell.E; Lee, Eric, *Light Is the Theme -Louis I. Kahn and the Kimbell Art Museum*, (Connecticut: Yale University Press, 2012)
3. Gordon Matta-Clark (born Gordon Roberto Echaurren Matta; June 22, 1943– August 27, 1978) was an American artist best known for his site-specific artworks he made in the 1970s. He is famous for his “building cuts,” a series of works in abandoned buildings in which he variously removed sections of floors, ceilings, and walls. For the Biennale de Paris in 1975, he made the piece titled Conical Intersect by cutting a large cone-shaped hole through two townhouses dating from the 17th century in the market district known as Les Halles which were to be knocked down in order to construct the then-controversial Centre Georges Pompidou.
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6. Smithson, Alison; Smithson, Peter, *Without Rhetoric*, (London: Latimer New Dimensions 1973)



ILLUSTRATIONS

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Pages: 09 - 10, 15 - 16, 59 - 66

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Drawings by Kelsy Alexander. Pages: 45 - 46



STEVEN HOLL

Steven Holl was born in Bremerton, Washington in 1947 and established Steven Holl Architects in New York in 1976. Holl is an honors graduate of the University of Washington. He studied architecture in Rome, Italy in 1970, and did postgraduate work at the Architectural Association in London in 1976.

In 2001 France awarded Steven Holl the Grande Médaille d’Or, for Best Architect of the Academy of Architecture. In 2002 the Cooper Hewitt National Design Museum, part of the Smithsonian Institute, awarded him their prestigious National Design Award in Architecture. In 2003 he was named Honorary Fellow of the Royal Institute of British Architects (RIBA). In 2006 Steven Holl received honorary degrees from Seattle University and Moholy-Nagy University in Budapest. Recently, Steven Holl received the first ever Arts Award of the BBVA Foundation Frontiers of Knowledge Awards in 2009 and the RIBA Jencks Award in 2010. In December 2011 Steven Holl was named the 2012 AIA Gold Medal winner.

Steven Holl is a tenured Professor at Columbia University’s Graduate School of Architecture and Planning. He has lectured and exhibited widely and has published numerous texts including Anchoring (1989), Intertwining (1996), Parallax (2000), Idea and Phenomena (2002), House: black swan theory (2007), and Architecture Spoken (2007). Most recently published was Urbanisms: Working with Doubt (Princeton Architectural Press, 2009), Hamsun Holl Hamarøy (Lars Müller, 2010), Horizontal Skyscraper (William Stout Publishers, 2011), Scale (Lars Müller, 2011), Color Light Time (Lars Müller, 2012)

CHRIS MCVOY

Chris McVoy has been with Steven Holl Architects since 1993 and was made partner in 2000. He is responsible for overseeing the projects in the New York office, working closely with Steven Holl and clients to finalize the program, design, and budget, and coordinating and managing the full consultant team, including associate architects.

He has been the partner-in-charge for the Nelson-Atkins Museum of Art in Kansas City, the Whitney Water Purification Facility and Park, and the Campbell Sports Center at Columbia University, and is currently partner-in-charge for the Glasgow School of Art, the Institute for Contemporary Art at VCU, and the new Visual Arts Building at the University of Iowa.

Chris McVoy received his Bachelors Degree in Architecture from the University of Virginia and his Masters of Architecture from Columbia University. He was honored with a Guggenheim Studentship in 1985; a William Kinne Travel Fellowship and an American Scandinavian Foundation Grant.

HENRY MCKEOWN

Henry McKeown studied architecture at the Mackintosh School of Architecture, graduating with a Master’s Degree in Architecture in1987. He is a Design Director at JM architects and a stage 5 design studio tutor at the Mackintosh School of Architecture. He is currently the Design Director at JM architects responsible for the Reid Building in collaboration with Steven Holl architects in New York. His award-winning work includes RIBA Awards for Housing at Graham Square, Glasgow, Phases1 & 2 and the Grand Prix Scottish Design Award for Hillhead Primary School in Glasgow.

CHRISTOPHER PLATT

Christopher Platt is Head and Professor of Architecture at the Mackintosh School of Architecture, Glasgow, and one of the founding directors of studioKAP architects. He is a registered architect in Great Britain and was previously a member of the Architektenkammer in Berlin. He is a Fellow of the Higher Education Academy and was made a Fellow of the Royal Incorporation of Architects of Scotland in 2009. He is involved in both practice-based research and research-driven practice and writes on a wide range of issues overlapping practice and academia. He was apprentice, student and design tutor at the Mackintosh School of Architecture, Glasgow, under Professors Andy MacMillan and Isi Metzstein.



BRIAN CARTER

Brian Carter is an architect who worked in practice in London prior to taking up an academic appointment as Chair of Architecture at the University of Michigan. Subsequently he was appointed Dean of the School of Architecture and Planning at the University at Buffalo, The State University of New York. The author of several books on architecture and a regular contributor to international design journals he has also curated exhibitions on the work of Peter Rice, Albert Kahn, Eero Saarinen and Charles & Ray Eames. Brian Carter is Professor of Architecture at the University at Buffalo.

MARK BAINES

Born in Birmingham, England, in 1952. Studied architecture at the Mackintosh School of Architecture 1969 -76. Worked with Gillespie, Kidd & Coia and then in private practice. He has taught Urban Studies and Urban Building courses at the Mackintosh School of Architecture since 1982 whilst working on a number of housing projects in the ensuing period, most notably at Glasgow Cross with Gholami Baines Ltd. He has curated numerous exhibitions including Architectural Drawing as well as the architecture of Alexander Thomson, Gillespie, Kidd & Coia and Steven Holl Architects' new building for the Glasgow School of Art. He has also written and lectured on these subjects. He was awarded a Lifetime Achievement Award for architectural education by the RIAS earlier this year.

BRENDAN WOODS

Brendan Woods AA Dipl RIBA was born and raised in the North of Ireland. Studied at Edinburgh University where on hearing Andy McMillan and Isi Metzstein talk at the school decided he was going to work for them in his year out. Worked on St. Peter's Seminary, Cardross. From there to the AA for 2 years, then worked with Edward Jones, in Cambridge with David Roberts on College buildings, taught at Cambridge then Edward Cullinan for 5 years in the 70's, taught at the AA, PCL, RCA, then set up his own practice with spells working in Athens, Jeddah, Kentish Town with Solon, taught at Ohio State and Kingston, 5 years with Julian Wickham and then taught at Bath, the Mac and the AA. He tutors final year dissertation students at the Bartlett still and is active in practice. His work has been published in the AJ, Architecture Today, RIBA Journal and in Italy and Japan and he has written for BD, Oris (the Croatian magazine) and Architecture Ireland. He has exhibited at the RIBA, Royal Academy and most recently in Paris at the Autumn Salon in 2013.

TOM INNS

Professor Inns was appointed Director of The Glasgow School of Art in September 2013. He was previously Dean of Duncan of Jordanstone College of Art & Design (DJCAD) and Director of Research for the College of Art Science & Engineering at the University of Dundee.

Tom studied Engineering at Bristol University and Industrial Design Engineering at the Royal College of Art. In 1990 he was a co-founder of the Design Research Centre at Brunel University, becoming Director in 1996. He completed his PhD exploring design and innovation in small businesses in 1998 and moved to DJCAD as Professor of Design in 2000 becoming Head of the School of Design in 2001, where he established new undergraduate and postgraduate programmes linking curriculum in design and fine art with computing, engineering, medicine and the humanities.

In 2004 he was appointed as Director of the UK Research Council funded, Designing for the 21st Century Research Initiative. Over a five-year period he led this £6.5 million initiative co-ordinating the work of 41 research projects, linking design to disciplines in science and engineering in universities across the UK. In 2010 he was appointed Dean of DJCAD. He has a strong interest in the future of design and how design approaches can facilitate interdisciplinary discussions. He teaches strategic design at various universities and regularly designs and facilitates knowledge sharing events and workshops with research organisations and innovation agencies across Europe.



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Postscript

For me, working on a daily basis in Renfrew Street, the Reid Building is externally brave, internally bold and right for its site. As the days unfold we are all discovering the true personality of the structure. At 09.00 on Monday 6th Jan 2014 several hundred Glasgow School of Design students entered the building for the very first time. When they looked up at the driven voids they smiled, as they walked up the staircases to find their studios their excitement was palpable. Now, several months on, they have taken up residence in the building, the white concrete provides a 3D folded canvas into which products, textiles, text, jewellery and interiors are now emerging as the student design process concludes and the annual degree show edges closer. When you take visitors around the building they smile too as they see this work and witness design in action with their own eyes. As spring appears and the Glasgow days extend even the sun is sneaking its way into new corners. Do come and visit the Reid Building for yourself and experience creativity inside creativity.

Tom Inns