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DRAWING THE BUILDING & BUILDING THE DRAWING

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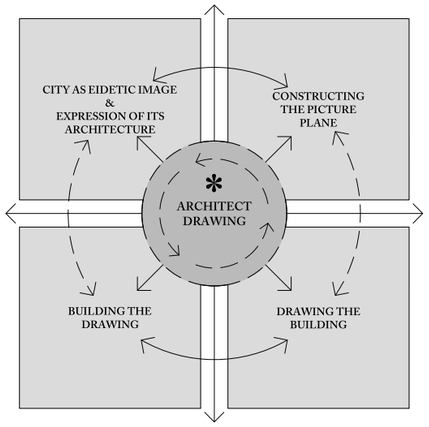
ABSTRACT

The way we build is inherently bound to methods implemented when representing any proposed intervention. Superficially, it would seem that the techniques used for representing architecture have rapidly progressed, especially with regard to the influence technology has on the depiction of architectural form in a graphically accessible manner. However, when critically examining the consequential products that arise from either method, it becomes evident that very little has been gained through employing these new methods of creation and depiction.

Through accepting, wholeheartedly, drawing conventions adapted from generation to generation- combined with the digitisation of methods used for depicting architectural intent and/or instruction, a schism emerged. There exists a divide between the act of drawing, and the primal meaning represented through the product.

To escape the doldrums created by the aforementioned condition, this dissertation presents a fourfold investigation on 'architectural drawing' as entity. The four individual chapters should be understood as reflections on the methodological approaches employed in the formation of the resulting intervention. The summarised topics are as follows:



A.1 Schematic Diagram

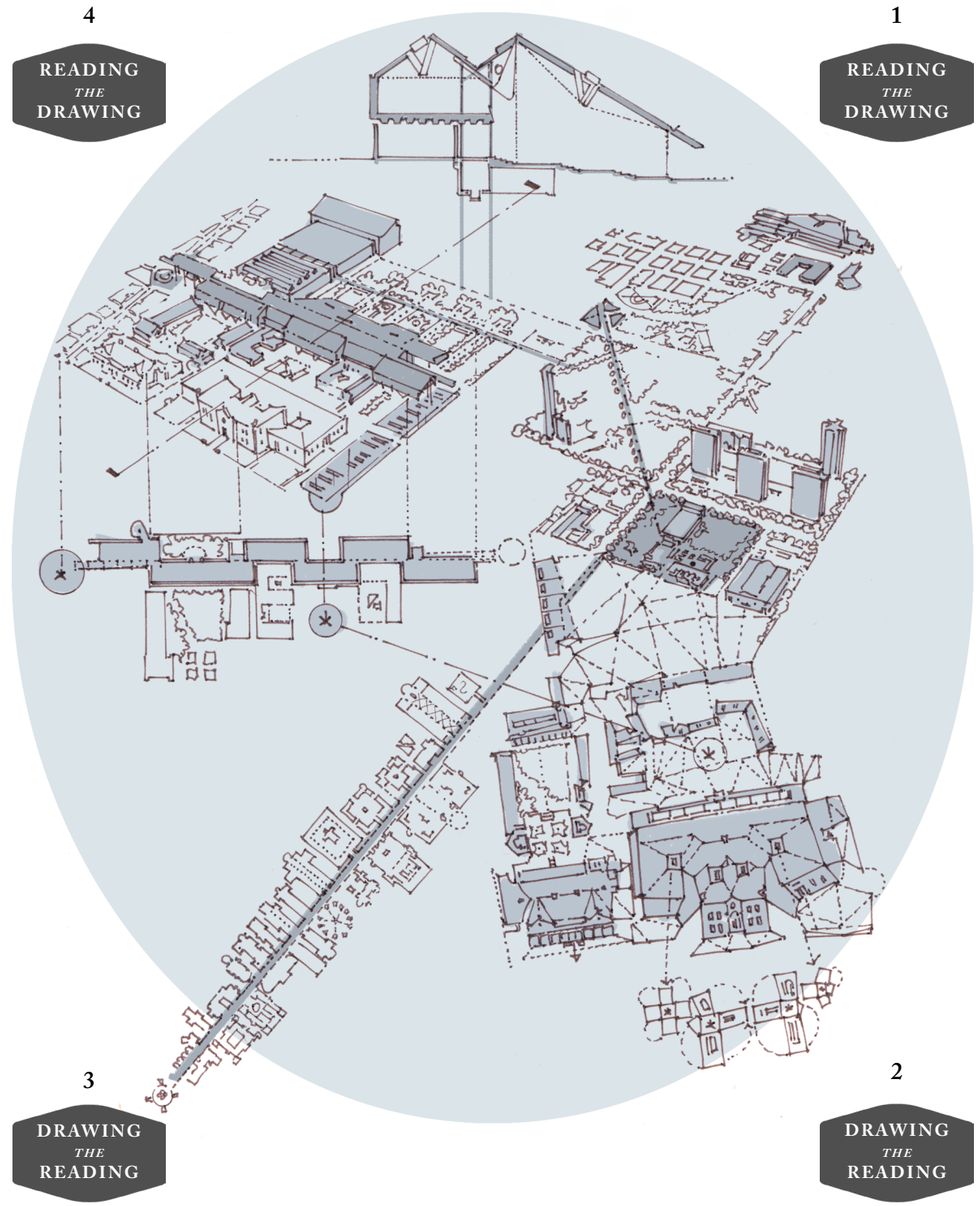
It is important to note that all the drawings presented in this document were done by hand, and drawn with considerable love and precision. As such, The drawings are intended to be carefully studied and contemplated - with specific regard to the preceding text - in order to create a holistic view of the project.

The resulting intervention is informed by, and thus a direct product of, investigative sketches that act as research- and mapping devices. This process enables the communication of internalised ideas, both to oneself and to others. Since communication is fully dependent on the clear translation of ideas, drawings become the embodiment of the formulated approach, instead of a representation of internalised ideas.

The programme housed by the resulting architecture aims to further strengthen the proposed theoretical premise through emphasising the impact that drawing has on spatial hierarchy. The act of drawing possesses the power to define or alter perceptions of hierarchal value contained within artefacts. through manipulating the emphasis placed on an object within a drawing it becomes possible to manipulate it's perceived importance.

PREFACE:

Architecture is explored through the *medium of drawing*. The drawings explore and present an **Archive Facility** for the storage and display of **Apartheid-era artefacts**, and is in the context of the **Paul Kruger Museum Precinct**, Northwest of former Church Street.



A.2 Abstract diagram

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SAMEVATTING

Konstruksiemetodes is onskybaar van die tegnieke aangewend in die voorstellings en dokumentasie van bou. Alhoewel tekentegnieke progressief verander het, met betrekking tot tegnologiese ontwikkeling van die grafiese voorstelling van argitektuur, het dit nie ‘n noemenswaardige impak op die vormgewing van argitektuur gehad nie.

Daar het ‘n merkwaardige skyding gevorm tussen die aksie van teken en die betekenis van die aksie. Hierdie dissertasie stel ‘n viervoudige studie van die tekening as medium om argitektuur te ondersoek en uit te beeld. Alle tekeninge in hierdie dokument, indien anders genoteer, is met die hand geteken en verlang studie en kontemplas

Die eindproduk stam uitsluitlik uit die aanvanklike sketsprosesse, en is daarop gemik om interne idees te kommunikeer en te bevorder, beide vir die skepper van die gebou as ook aan die leser.

Die program en estetiese meriete van die gebou ondersteun die deurlopende teoretiese ondersoek en lê klem op die uitwerking wat die tekening het op ruimtelike hiërargie as geheel.

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THICK AS STONE, THIN AS PAPER

A brief account on the origin and significance of the architectural drawing. Much of our present understanding on design drawing is based on the principles set by the Renaissance and for a great part of history remains unchanged, despite the advances in drawing technique and medium. Therefore it is necessary to look back and account for the manner in which the drawing primarily relates to building. The text is supplemented by explanatory diagrams drawn by the author and includes the plotting of seminal architectural drawings on a timeline diagram. To follow Evans' argument it is necessary to understand 'how architectural spaces arose out of the deployment of depthless designs, and how architectural space was drawn into depthless designs (Evans, p108).'

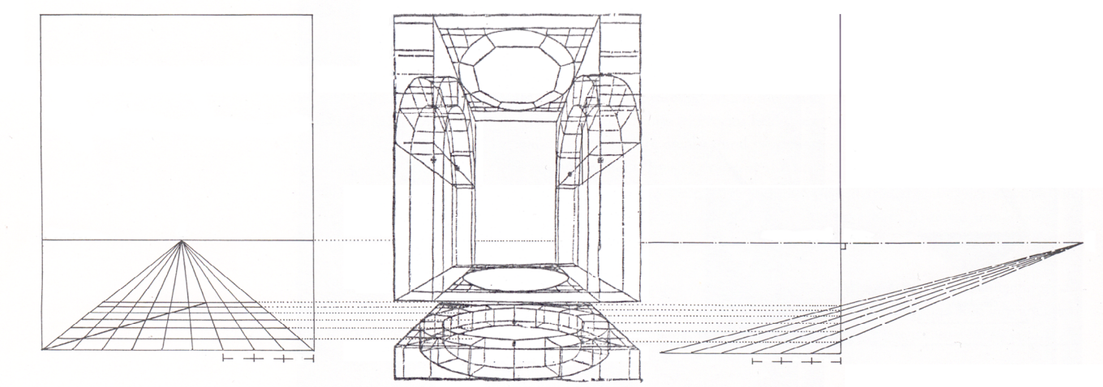
The act of drawing is synonymous with the practice of architecture. Jonathan Hill refrains that the modern day architect is not the maker of buildings but rather the author of drawings, describing and instructing the creation of buildings (Hill, 2006:55). Indeed architectural design is rooted in the Italian '*disegno*', meaning that first an idea is conceived and drawn before it is built. 'To design is to draw forth an idea' as Hill claims (*Ibid*:33). The architect as the maker of drawings is proven to be historically only a recent cultural and technical acquisition.

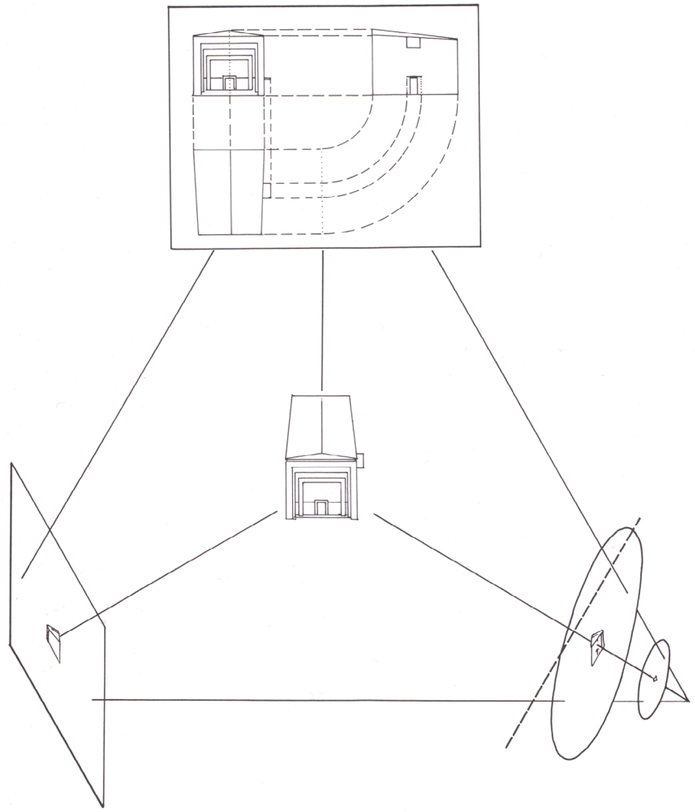
Preceding the architectural drawing's elevated status of the sixteenth century Italian Renaissance, architecture was formerly associated with the manual arts. Kristeller recites architecture as one of the three visual arts in the Middle Ages, with the painter closely associated with alchemy, the sculptor with goldsmiths and the architect with the masons and carpenters (Kristeller, 1990:176). Architectural drawings at the time were rare, the architect as master mason did not conceive of a whole building and the notion of scale was unknown (Pérez-Gómez, 2000:8). For example Gothic architecture was understood as a constructive practice, operating through well established traditions and applied geometric rules on site, the elevations subjected to continuous discussions until construction concluded (*Ibid*:8). Architectural historian Mario Carpo accounts that Brunelleschi's main notational tool for the dome construction of the cathedral of Florence was big turnips, which Brunelleschi presented as carved models to the builders and then presumably ate (Carpo, 2014:128).

Tom Porter suggests pre-Renaissance buildings were conceived from 'architectural forms contained within the library of the existing built environment, using other buildings, as full-size models or specimens which could be studied and then modified or refined' (Porter, 1997:10). Architecture before the Renaissance was therefore conceived without any architectural notations in the modern sense of the term and often without any drawing. It is also worth noting that the graphic projections of a building's, or city's, geometric physiognomy was formerly considered a prophetic act in the Middle Ages, subject to conjuring and divining, and subsequently not suited to architectural drawings as '…neutral artefacts that might be transcribed unambiguously into building' (Pérez-Gómez, 2000:9).

But by the fifteenth century, architecture came to be understood as a liberal art, with the architectural drawing receiving intellectual status as the product of its author's personal will (*Ibid*:9). Leon Battista Alberti is often cited as the first to claim that architecture is an intellectual endeavour: '(first) conceived in the mind of its author, notated in drawings, then built by manual workers who must comply with the instructions they receive… and follow them without change' (Carpo, 2014:128). Notably Alberti also stated that 'It is quite possible to project whole forms in the mind without recourse to the material' (Alberti, 1991:7). The Albertian, 'authorial' model, rooted in disegno, proved to be immensely successful and was aided by his method for perspective construction in his publication, *On Painting* (cc 1435).

Alberti's method of setting out perspective was highly influential for two reasons. Firstly Robin Evans highlights that the method was easy to copy by others and allowed architectural drawings to be described as projections: '…which means that organised arrays of imaginary straight lines pass through the drawing to corresponding parts of the thing represented by the drawing' (Evans, 1995:19). This suggests that the drawing could now be considered a truthful depiction of a three-dimensional world, a proverbial window, which places the viewer outside and importantly in command of the view created. Secondly Alberti refers to the Prince of Rays as the governing force, and not perspective, that '… orchestrates the rectangular constituents of the picture as frontal, bilaterally symmetrical, and axial' (Evans, 1995:110). The Prince of Rays is here readily to be understood as a representation of light paths and, with its introduction to the drawing surface, Evans proclaims: 'So too in





DF.1 An Overview on the History of Perspective

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architectural drawing, light showed up late. And what it showed up when it arrived was space' (*Ibid*:109). A significant moment in architectural drawing.

The practice of architecture as a liberal art in the Renaissance became distanced from construction and the building site; workshop instruction was replaced with atelier education in drawing and consequently offered new sites for architectural investigation beyond the building site. Hill writes that with the advancement of printing developments in the mid-fifteenth century, architects acquired new means to practice: '*To affirm their status as exponents of intellectual and artistic labour, architects theorised architecture in drawing and books…*' (Hill, 2006:37). This may suggest that when Renaissance (and future) architects studied a building, they did not only come to see building matter, but more so line and proportion. This is also implied in Carpo's writing:

> *'Medieval master masons imitated buildings that they had only heard about. In order to see his model with his eyes, the medieval master mason necessarily had to visit the original site. For the Renaissance architect, it was often to visit the bookseller on the corner of the street… For many Renaissance architects, the Pantheon and the Colosseum were not places in Rome. They were places in books.*' (Carpo, 2001:41-46)

Following with Alberti's treatise on architecture, Wolfgang Lotz concludes in his study 'The Rendering of the Interior in Architectural Drawings' that the Italian painter-architect Raphael was instrumental in the decisive change of practice in the early sixteenth century (Lotz, 1977:1-65). According to Evans most notable Italian architects were trained as painters and prone to perspective drawing, which presented an intractable problem: perspective projection, aside from providing only partial interior views in a building, were subject to distorted proportions and therefore unsuited to convey scaled dimensions (Evans, 1995:107). Numerous sources refer to the significance of architect-painter Raphael's famous letter of 1519 to Pope Leo X (Jacquemond, 2013:5-10). On the subject of the ancient monuments of Rome, Raphael presented drawings in a new measurable light: firstly the use of parallel projection (as opposed to distorted, pictorial perspective) and secondly the combinatorial use of three types of drawing ('plan', 'external elevation' and 'internal elevation') held together by parallel lines. Evan writes 'Few things have had greater historical significance for architecture than the introduction of consistent, coherent parallel projection into architecture, and few things have been more transparent to critical attention than its effects' (Evans, 1995:108). Parallel projection afforded the architect with the necessary toolset to convey drawing information without any discrepancy, to be in command of conceiving whole buildings and allowed for drawings to be measured and quantified in scale. The significance of relating the *triumvirate* of projective plan with elevation (the pictorial face of the building as Vitruvius labelled it) and section (internal elevation viewed through a profiled cut) had a far reaching implication for the future of architectural drawing. Evans summarises the importance of the triumvirate drawing here:

> *'… if we take a representative sample of architectural drawings from the sixteenth to the nineteenth centuries a strong pattern quickly emerges: one of each type (i.e. projected views) does maximum service… a section are taken vertically through the crown of a vault or the apex of a truss, because only then is the full extent of one side of the interior exposed to view… (then) if the building is symmetrical about the sectional plane - you see it all through one cut. So vertical, bilateral symmetry is economical within the confines of the technique… A plan may tend to be rectangular for a host of reasons, but the internal logic of parallel projection will push it that way… It is easiest to deal with the three types of drawing if they are perpendicular to each other… in consequence, a building will be a box in a box of pictures. So planar, rectangular form is economical too.. A center line projected through a cavity (section) easily converts into a processional axis. Then the axial route will show up on the principle elevation as a principle entrance, thereby converting the simple, binary equality of left and right sides (a-a) into a tripartite, therefore hierarchical, centralised symmetry (a-b-a)… The three drawings are not just plan, elevation, and section, but ground plan, front elevation and axial section. That is why in most classical architecture, design and building are in perfect accord. Maximum descriptive power is obtained at minimum price…*' (*Ibid*:118-119)

The orthographic projection, described by Evans and employed by the Renaissance architects, focus on the architectural potential of the techniques of drawing. The application and the inherent restrictions of such a method imposed, by what Evans refers to as 'easy architect's drawing', promote desired properties such as symmetry and orthogonal or ientation and 'fulfil the need for a certain, definite, recognisable order' (*Ibid*:177). Palladio's facade studies recall Alberti's bodily elements of 'lines and angles which comprise and form the face of the building (Alberti, 1991: book i, chapter i). Evans observes a close alignment between Palladio's drawing and building when studying the implied depth of the building facade: 'It is to attempt to make virtual space and real space at one and the same time and in the same place…an architecture made through drawing and made of the species of illusion as is to be found in drawing' (Evans, 1997:170-171). Reflecting on Evans' observation, one might come to suggest that the manner in which the architect draws translates into the manner in which the building is conceived and built. Evidently as such, the development of drawing technique runs parallel with construction methodology. A prime example is the seventeenth-century French invention of drawing stereotomy. The drawing technique is based on the orthographic projections introduced in the Renaissance and presented as advanced layout drawings for the precise cutting of masonry blocks for complex architectural forms, in particular vaulting (Evans, 1995:179).

We recognise the evolution of the architectural drawing, firstly, as the means to translate the known world as truthful representations onto two-dimensional, '*flatland*' paper space (Tufte, 1990:12) and secondly, subscribing to those very same translative drawing techniques, to generate '*incorporeal ideas into corporeal expressions*' (Evans, 1997:181).

Architecture is brought primarily into existence through drawing. Evans notably points out '*The subject-matter (the building or space) will exist after the drawing, not before it' and refers to the phenomenon as 'reversed directionality in drawing*' (Evans, 1997:165). The ocular nature of the architectural drawing is not only in service of the architect drawing forth an idea and the subsequent reading as a mode of instruction to building, a means to an end, but also promotes contemplation and study as an end in itself. Pallasmaa enforces this notion:

> *'During the Renaissance the five senses were understood to a hierarchical system from the highest sense of vision down to touch… The invention of perspectival representation made the eye the centre of the perceptual world as well as of the concept of the self*' (Pallaasma, 1996:6-7).

Hill reminds that the habitual and tactile experience of built matter sits uneasily with the concept that ideas are superior to matter, in the Platonic sense, and therefore limits the building as a contemplative 'art object' (Hill, 2006:51) However he suggests that architectural histories often discuss 'building as an object of artistic contemplation' and imply that this is the familiar experience of the building, '…the reader is encouraged to view the drawing as the fount of creativity and to equate the experience of the drawing with the experience of the building' (*Ibid*:51). The architectural drawing may indeed draw parallel with the transformation of art: from collective craft production, with artwork viewed as a religious cult object (the *sacral* in the Middle Ages), to representational drawing, as individual production (introduced as *courtly art* in Renaissance), to the individual production of drawing contemplated by another and in service of the '*portrayal of bourgeois self-understanding*' (*bourgeois* from eighteenth century to present) (Bürger, 1974:48-49).

The implication is evident in the emergence of visionary drawings, those unrelated to any specific or contingent building endeavour, representing or even notating buildings which never existed or may ever exist. Such drawings play a critical role in the history of architecture, as some have been regarded more influential than many realised, built examples. Carpo cites early examples such as the Renaissance rule of the five orders, a system of standalone buildings parts outlined in Serlio's and Vignola's seminal illustrations (Carpo, 2014:129). In particular Piranesi, as proclaimed '*paper architect*', produced a series of fictitious prison etchings that anticipates Escher and Kafka and had a great influence on the Romanticists and Surrealists (Spiller, 2007:11-13). The admission of visionary drawings in history books often challenges the notion of architecture as purely material practice, and as such becomes an important visual recording of a society's understanding and attitude towards built space. In more recent times, alongside this long-established vein of visionary drawing, late-Modernist and Postmodernist architects have also developed a more critical understanding of drawing, employed as 'a tool of investigation of some aspects of the very same architectural discipline from which they derive and to which they belong' (Carpo, 2014:129).

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DRAWING THE BUILDING / BUILDING THE DRAWING

"DISEGNO" – DESIGN DRAWING AS BOTH THE *PLOTTING* OF LINES ON PAPER & *DRAWING FORTH* OF AN IDEA

TRANSLATION VS. TRANSCRIPTION

1550 — *translation vs. transcription*

1563 — **Giorgio Vasari** establishes the ***Accademia del Disegno***
(A model for later institutions in Italy and elsewhere, it enabled painters, sculptors and architects to converse independently of the craft guilds. As the academy replaced *workshop instruction* with *education in drawing*, and *the architect nearly always first experiences a noted building as a representation*)

1600 — *from natural perspective to artificial construction*

from footprints and faces to architectural representation as a set of coordinated projections

1650

1700

1750 — 1750 **PRISON SERIES BY PIRANESSI**

1785 — 1800 **INTERIOR OF A LIBRARY, ETIENNE BOULLEE**

1850

DRAWING REPRESENTING POWER RELATIONS

distorted appearance as a denial of perspective depth

axonometry as collage: Le Corbusier's Poème de l'angle droit

1900 — 1914 **ANTONIO SANT'ELLA'S *LA CITTE NUOVA***

1914 - 1915 ***DOM-INO HOUSE*, LE CORBUSIER**

1924 **LE CORBUSIER'S DESIGNS FOR *LA VILLE RADIUSE***

1933 **IAKOV CHERNIKOV'S *ARCHITECTURAL FANTASIES***

1950 — MANFREDO TAFURI'S *'Architecture has no future in a Capitalist World'*

circa 1960's

1964 — ***PLUG-IN CITY* BY PETER COOK (ARCHIGRAM)**

1970-1975 — ITALIAN NEO-RATIONALIST *TENDENZA*: **ALDO ROSSI'S *THE ARCHITECTURE OF THE CITY* & *MODENA CEMETRY***

1980 — **BERNARD TSCHUMI'S *MANHATTAN TRANSCRIPTS***

1985 — **ZAHA HADID'S *THE PEAK***

1980's

MASIMO SCOLARI'S *OBLIQUE DRAWINGS*

One point perspective suggests that the space in architecture is read and not the architecture represented in a visionary space of perspective

2000 — 2000's

DESIGN THROUGH MAKING.... SHELTER 55/02

"The analogous drawing embodies a changed condition of representation: it exists as the record of its own history. Thus, Rossi's drawings of the city, giving form to their own history, become part of the city, not just a representation of it. They have an authenticity, a reality which is, precisely, that of illusion. This reality may then, in turn, be represented in actual buildings... The architectural drawing, formerly thought of exclusively as a form of representation, now becomes the locus of another reality."

***LOCI* & COLLECTIVE MEMORY**

2050

TRAJECTORY TO TRACE THE RELATIONSHIP BETWEEN DRAWING & BUILDING

DRAWING AS *MANUAL INSTRUCTION*

DRAWING AS *REPRESENTATION* OF BUILDING

DRAWING AS *VISION* OF BUILDING

DRAWING IN ARCHITECTURE AS *CRITICAL COMMENTARY*

DRAWING AS *ANALOGUE TO BUILDING*

DF.2 Time-line of seminal drawings

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RD.1 _The Paul Kruger House Precinct
An artist's impression of the present day precinct is drawn in its context; carefully reconstructed from satellite imagery and site photos to represent the underlaying themes for **Reading the Drawing**: the *City as Eidetic Image* and an *Expression of Its Architecture*.

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THE CITY AS EIDETIC IMAGE AND *AN EXPRESSION OF ITS ARCHITECTURE.*

Design drawing derives from the impulse to give expression in accordance to prior imaging. Imaging exercises agency through actively unfolding, generating and actualising emergent realities. While theorists and historians focus on the object or the idea, the designer focusses on the actual activities of creativity with the efficacy of imaging consulted in turning, forming and enabling ideas. A clear distinction between *imaging* and *picturing* needs to be made:

> *'the difference between a constructed, concrete object (frame, support, materials, pigments, factor) and the virtual, phenomenal appearance that it provides for the beholder; the difference between a deliberate act of representation (to picture of depict) and a less voluntary, perhaps even passive or automatic act ('to image or imagine;); the difference between a specific kind of visual representation ('the pictorial image) and the whole realm of iconicity (verbal, acoustic, mental images)'* (Mitchell, 1994:4-5).

Landscape architect James Corner suggests that the landscape and its image are inseparable, 'without images there is no such thing as landscape, only unmediated environment' (Corner,1999:153). The reciprocal relationship between landscape and its image suggests imaging is central to forging landscape: the ability to construe and construct designed landscapes through various forms and activities of imaging. The term eidetic image is actively used by Corner and refers to a mental conception that extends beyond the visual and formal qualities of imaging (*Ibid*:155). As a point in case Corner recounts the historical traces of landscape and distinguishes between the Old English *landskip* and Old German *landschaft*: the former views the landscape through contrivance and primarily visual means ('…*which at first referred not to land but to a picture of it*'), whereas the latter conjures landscape as an occupied milieu (a working environment), 'the effects and significance of which accrue through tactility, use and engagement over time' (*Ibid*:153-158). Both terms connote images, but the latter comprises a more synaesthetic and subsequently less picturable range than the former (*Ibid*:159). The emphasis here shifts from object appearances (representational) to processes of formation (notational).

Eideticimagingisintroducedasthebaselineoperationforallthedrawingspresented in the book and as such are fundamental stimuli to creativity and invention; they do not represent the reality of an idea but rather inaugurate its possibility. As Corner suggests '*a key to understanding eidetic imaging in design is found in a kind of thinking that in neither instrumental nor representational but simultaneously both*' (Ibid, p.164).

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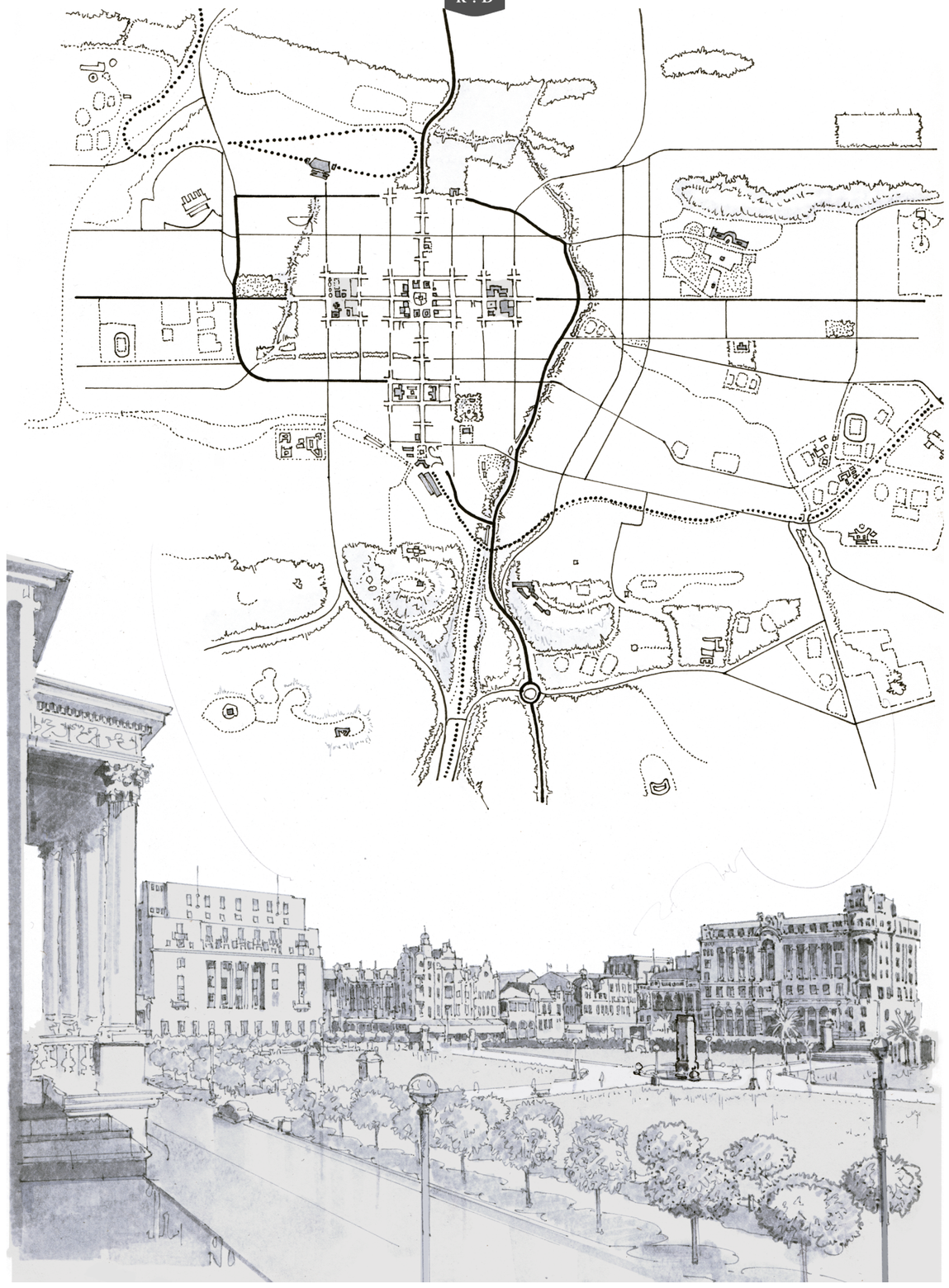
R . D



RD.2 _The Core Spatial Diagram of Pretoria
The Illustration unveils the dominant urban themes: the historic *Cardo-Decumanus* urban planning, the *city grid with Church Square at its core*, the *four outer quadrants*, and the *natural topography* and *river systems containing the core*.

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RD.3 _The City as Urban Carpet
A woven tapestry of ink lines and marker to represent the city in plan view. Intentionally left unlabelled, the detailed illustration describes the city in flux. Minute moments in this tactile drawing may be read and appreciated, a recognisable building here, a civic space there, but the illustration transcends representation and becomes an analogue to the spatial growth of the city. As such the eidetic pattern emerges and reveals the weak present-day urban link between its core and the northwest quadrant to Marabastad (*top left*).

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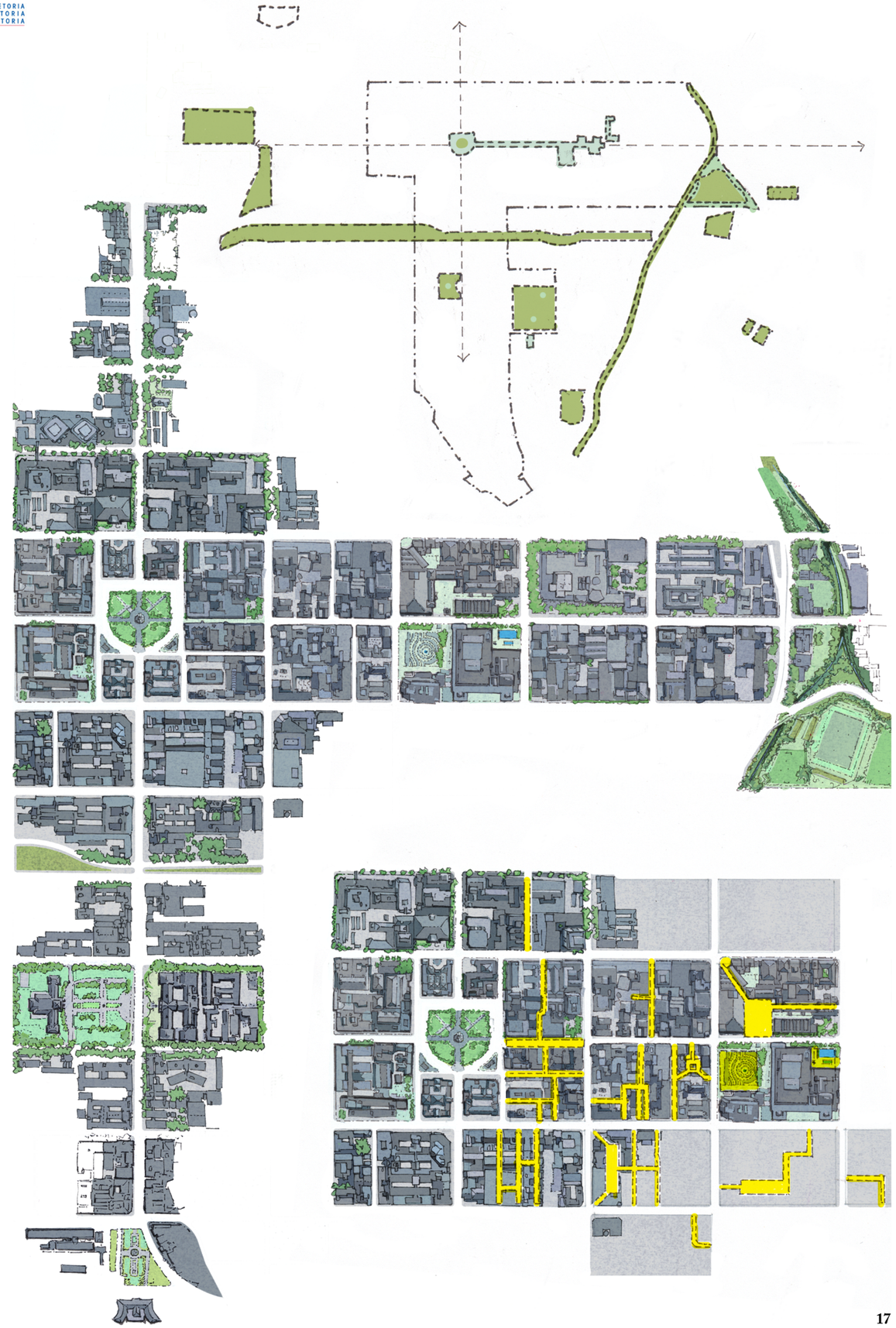
RD.4 _Windscreen Mapping of Heritage Zones

Generally speaking, history and development have a reciprocal interest. History serves development by providing spatial quality. Development in its turn serves history by providing it with a base of existence. *In Order from Clockwise bottom left*: *Heritage Structures* individually notated to inform *Heritage Precincts*, *Existing Public Open Spaces and Amenities Map*, *Innercity Arcade Network* operates on a finer grain across the city grid.



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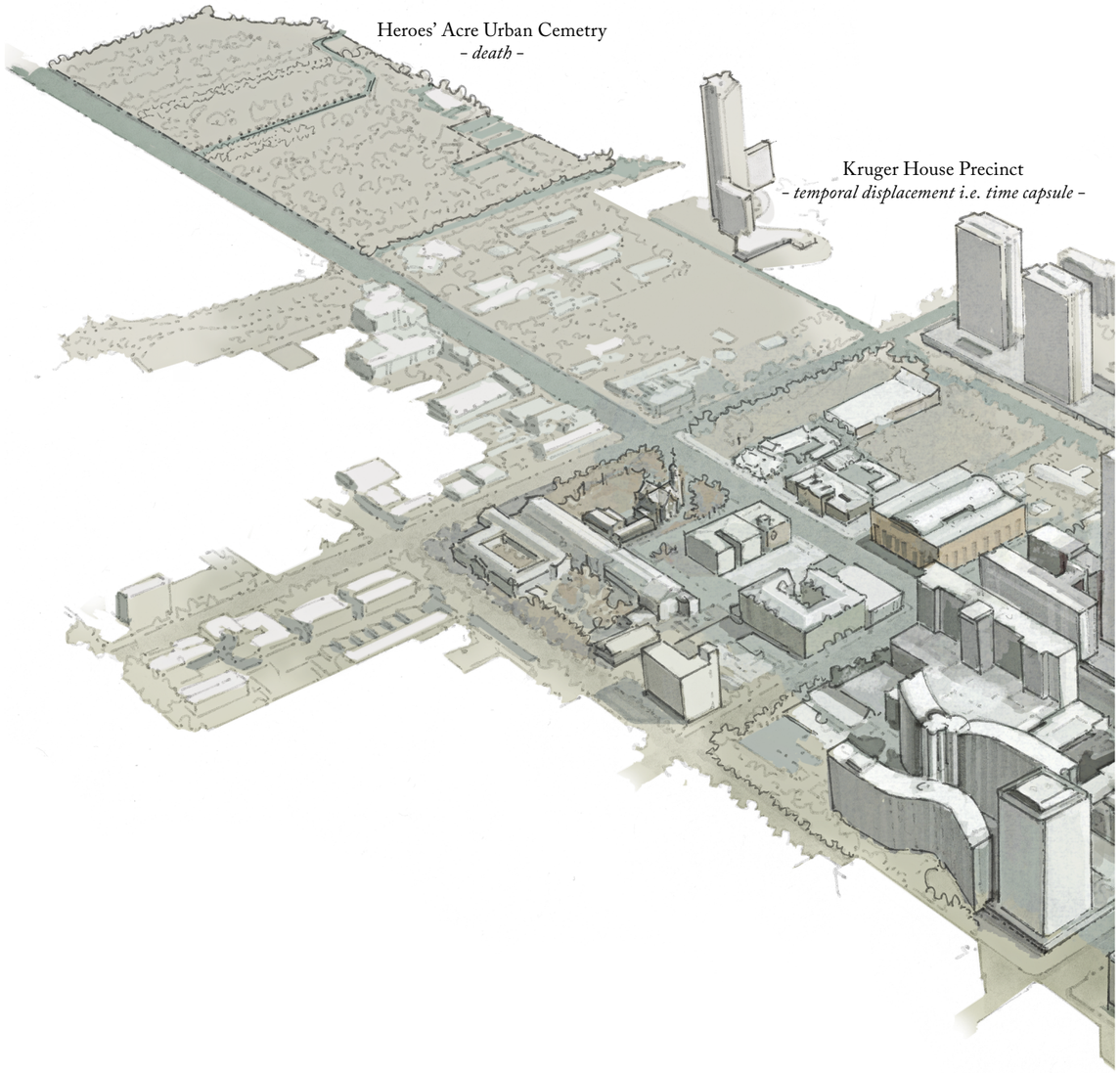
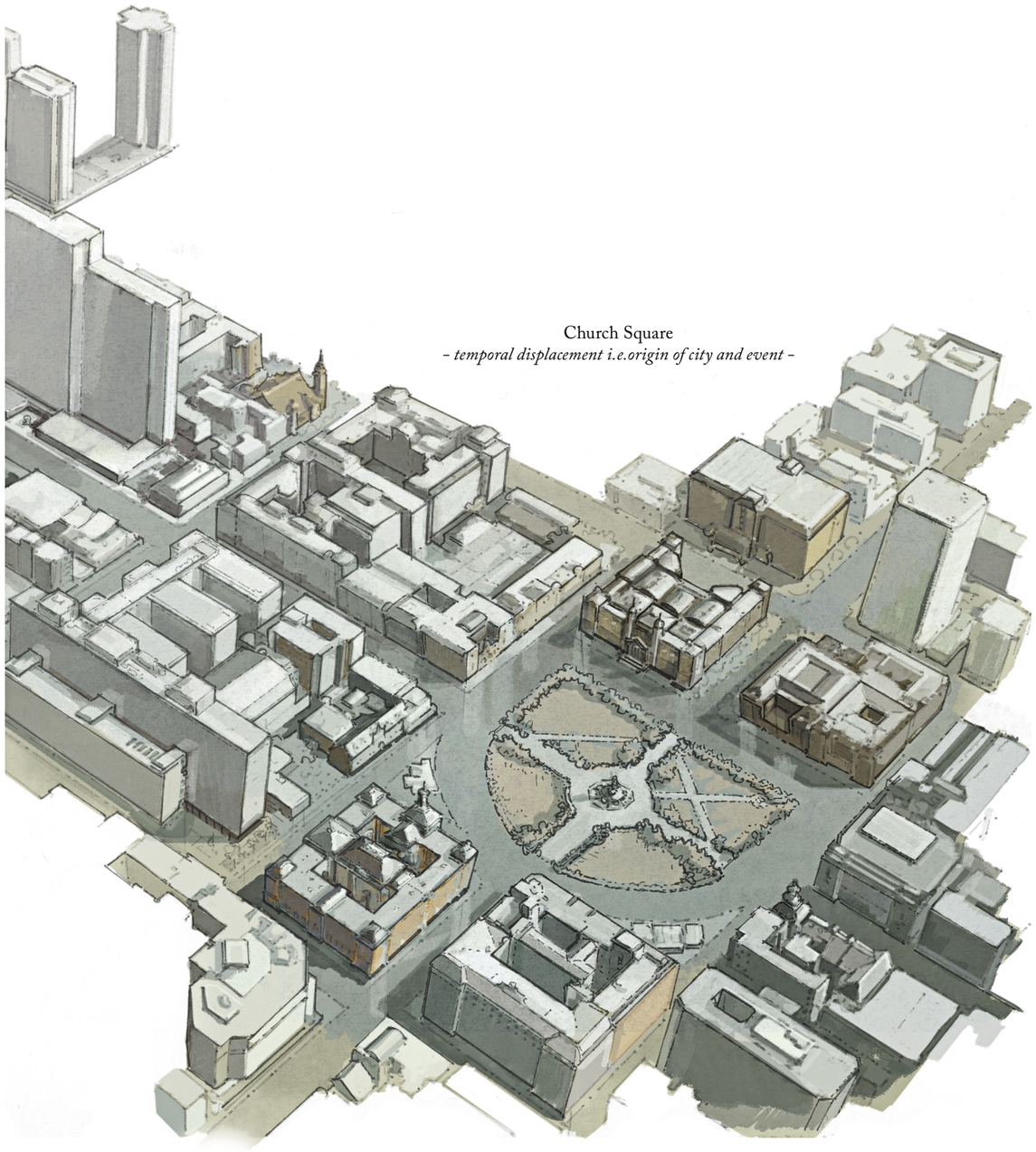
R . D



R.D.5 _The Heterotopian Spine of Western Church Street

The reconstructed perspectival view accounts here the origin of the city at Church Square and its relationship with the Western *Decumanus* spine. Thematically the heterotopias present here link the Kruger House, former Native Pass and Dutch Reformed Church (*all middle centre*), with that of the Heroes' Acre Cemetry Ground (*top left*) and Church Square (*bottom right*). By drawing the city, an intimate relationsip is promoted between the author and the city as the subject. Such a methodology of study the urban context extends scientific analysis and aids in formulating an eidetic impression of site: here the potential of introducing a *mnemonic device* that ties in with the historic and present-day *Heterotopias*.

R . D



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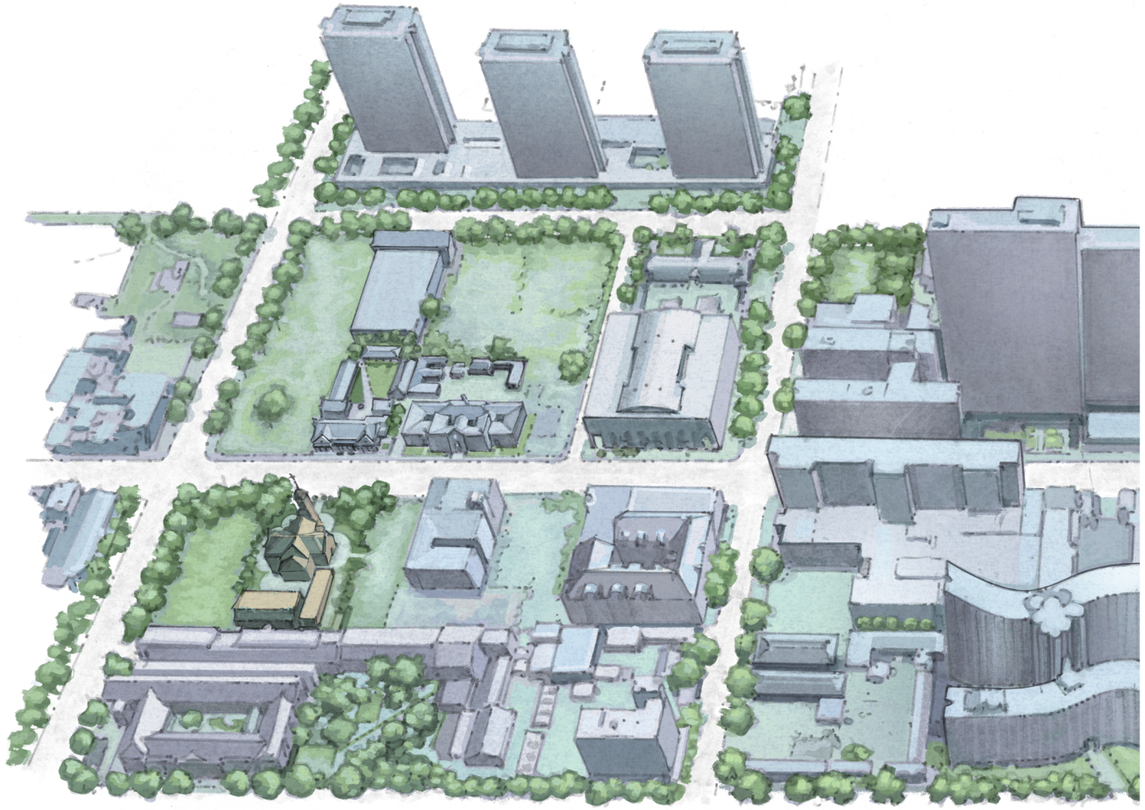

RD.6 _Elevation Study of Kruger House Precinct
The reconstructed perspectival view relates the Kruger House Precinct in elevation and its density with that of the inner city. The study promotes two attitudes of urban planning, later adopted in the framework: to densify the city block of Kruger House in an attempt to reconcile with the scale and urban density to the right and give it urban sustenance (*east*), or to lay the grounds clear to its essential components and intentionally develop the site as open, green space to recount the spatial core framework of the city.

R . D



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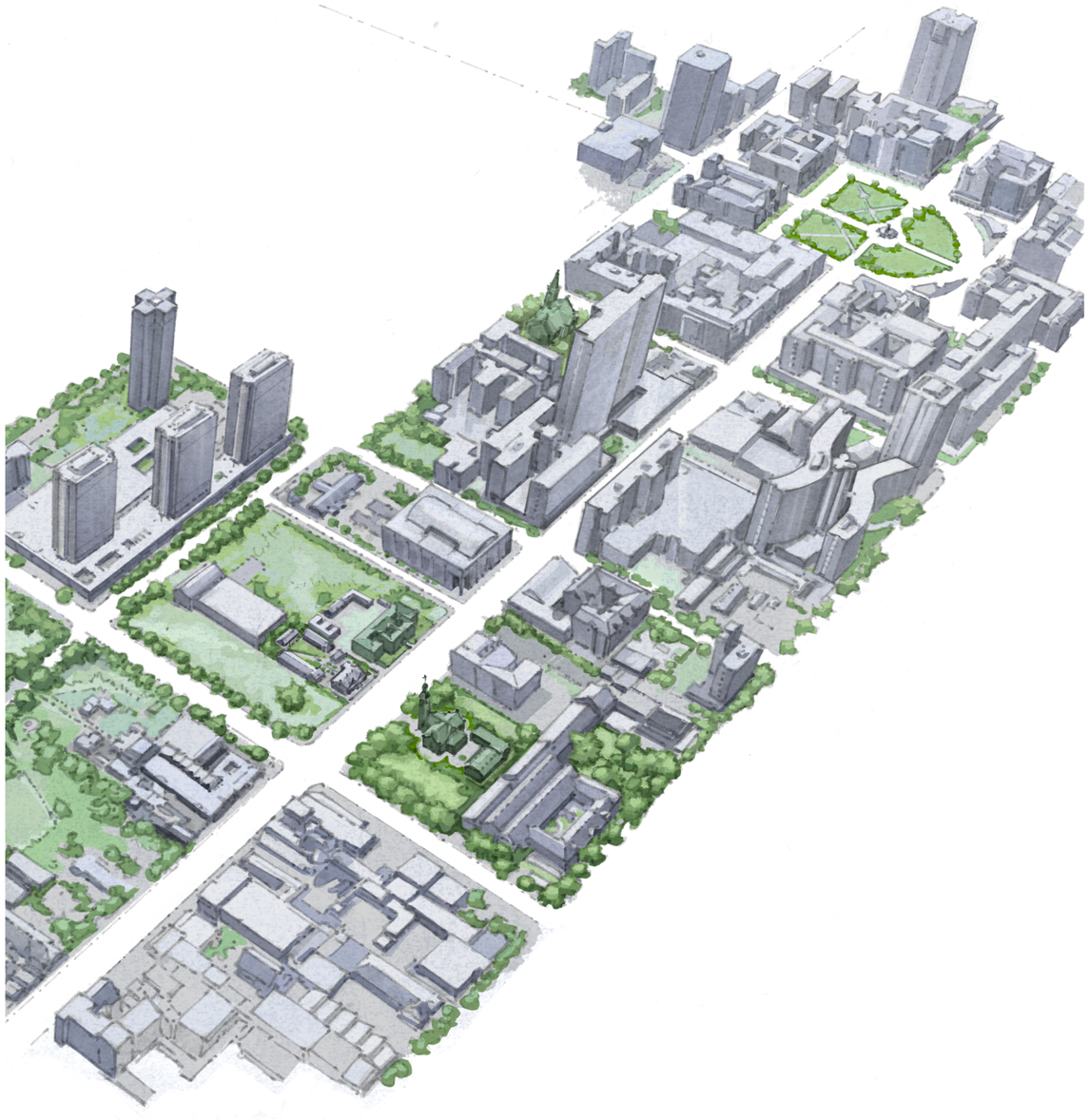
R . D



R.D.7 _The North West Quadrant

The carefully reconstructed illustration relates present day Marabastad with the city core, Church Square and Western Church Street, and is an important document in adressing the challenging periphery in-between the two precincts. The historic role of political power in urban planning is evident here: the disintegration of the grid and urban character. Also the modernist-inpsired residential blocks dot the middle ground and lay testimony to former failed urban schemes.

R . D



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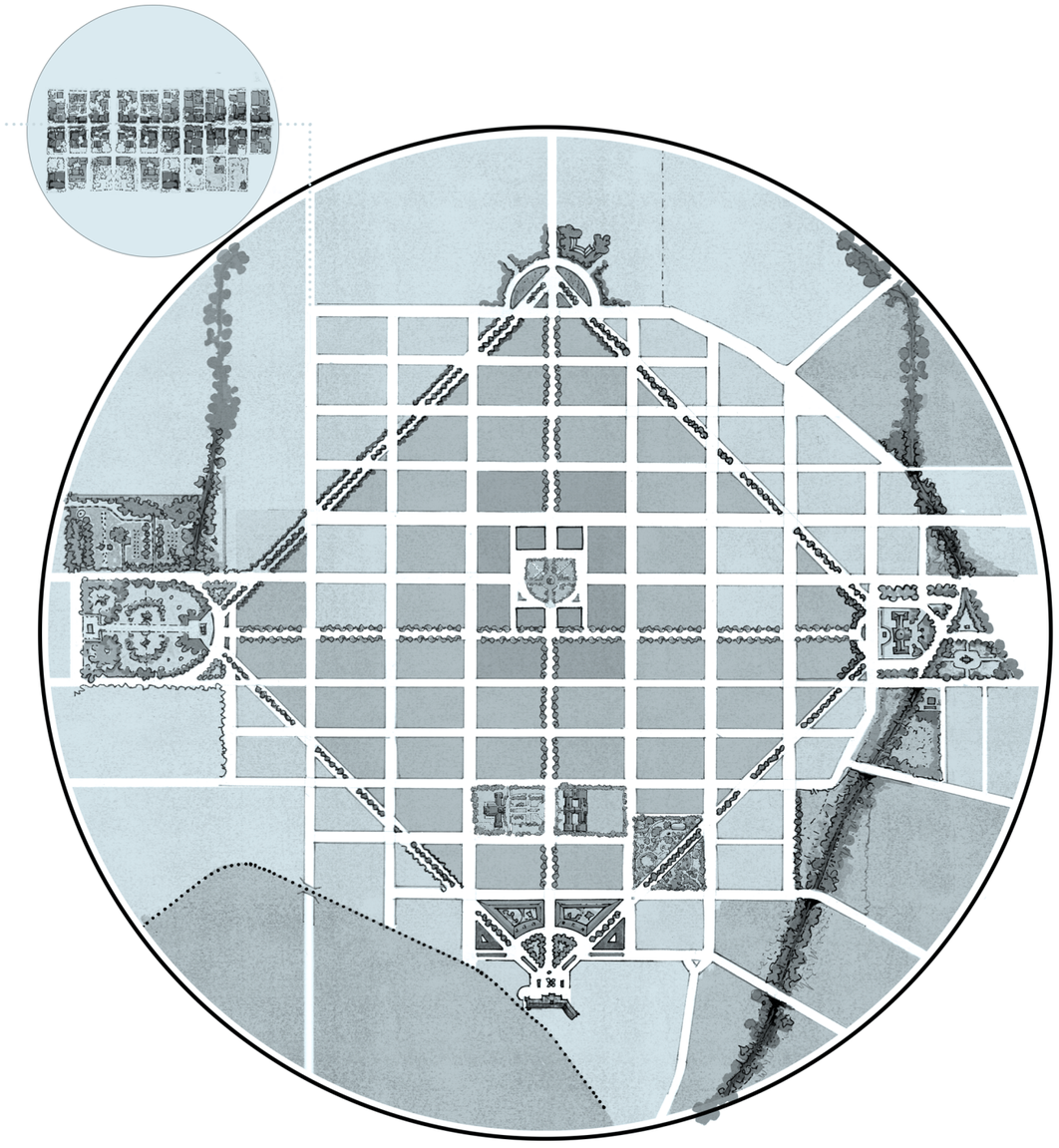
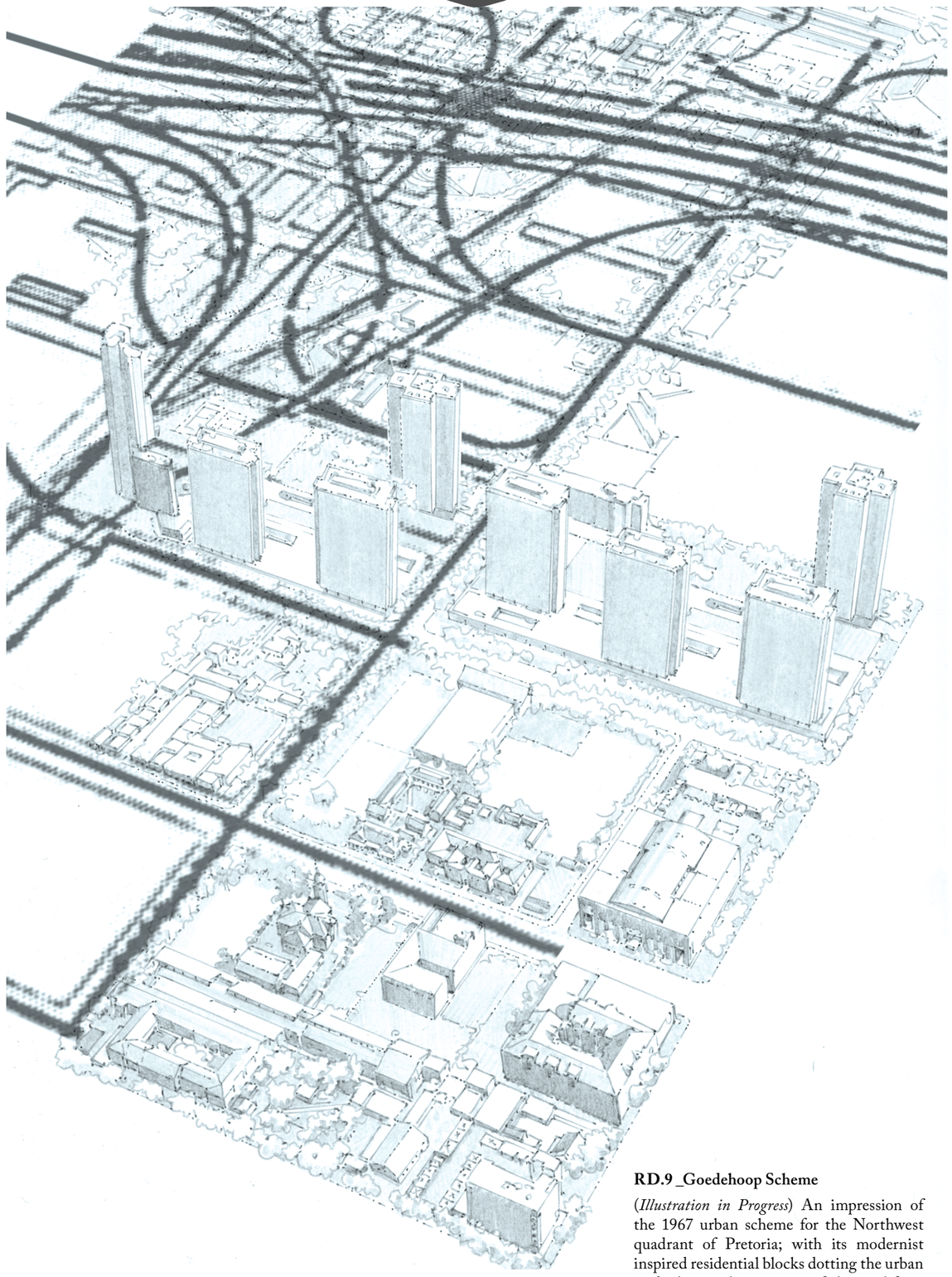


RD.8 _Moerdijk's proposal for the *Beautification of Pretoria*

The proposal (cc 1930) attempts to preserve the inner core of the city. The diagonal avenues impose a diamond grid over the rectilinear city and, as the case with Haussmann's urban upgrade for Paris, a so-called militarised strategy is induced in an attempt to fortify the core (*note the enhanced exclusion of Marabstad with such a gesture*).



RD.9 _Goedehoop Scheme

(*Illustration in Progress*) An impression of the 1967 urban scheme for the Northwest quadrant of Pretoria; with its modernist inspired residential blocks dotting the urban grid, the spaghetti weave of thoroughfares obliterates Marabastad.

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RD.10 _The Goedehoop Scheme and Paul Kruger Museum

The visionary drawing is of the former Goedehoop Scheme planned for the northwest quadrant of Pretoria. Little of the documentation remains in circulation today, and the illustration is based on a small black-and-white photo of a model previously presented (*the source of the photo is unknown, presumably a news paper clipping*; *consult* Swart, 2010:38). The vision is a counterpoint to the preconceived idea of the former Nationalist Party as *conservative* and *nostalgic*: it is clear here that Nationalist ideologies are supported by grandiose modernist gestures. Arguably Modernist ideals were previously consulted as a means to give a physical expression of Afrikaner Nationalist ideology.

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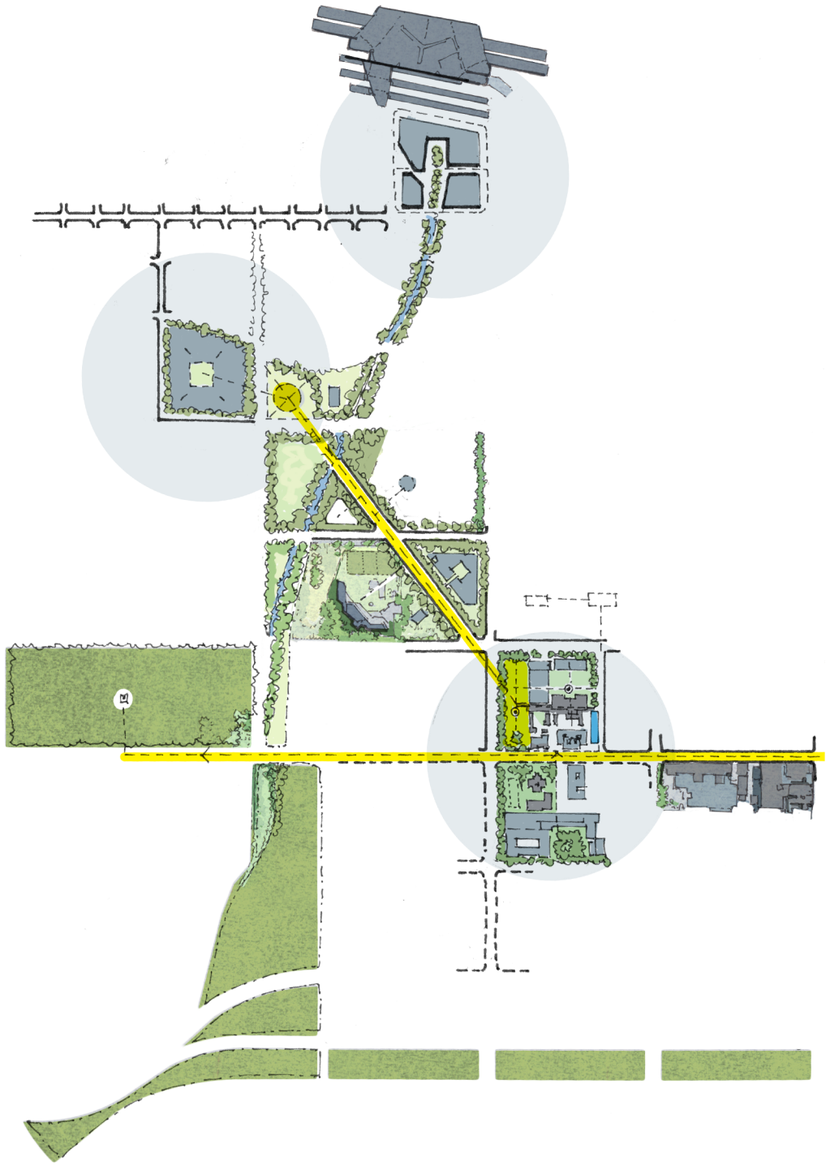
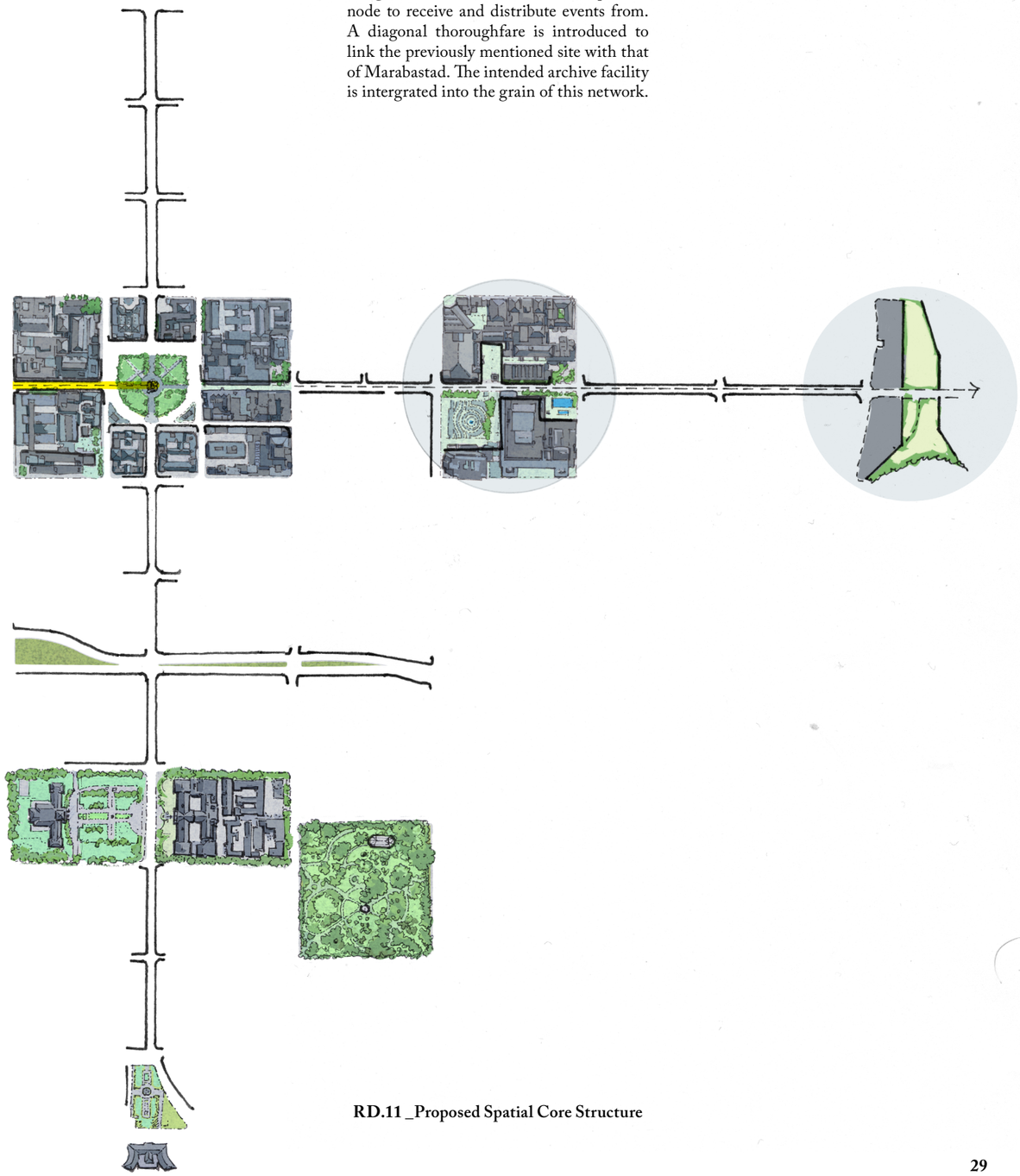
The proposed spatial core diagram honours the memory of the city's urban layout. It however rejects the former schemes' attempt to preserve the core and: here the important nodes are hightlighted but the nodal interchanges are given emphasis. The Kruger Museum is viewed as an important node to receive and distribute events from. A diagonal thoroughfare is introduced to link the previously mentioned site with that of Marabastad. The intended archive facility is intergrated into the grain of this network.





RD.11 _Proposed Spatial Core Structure

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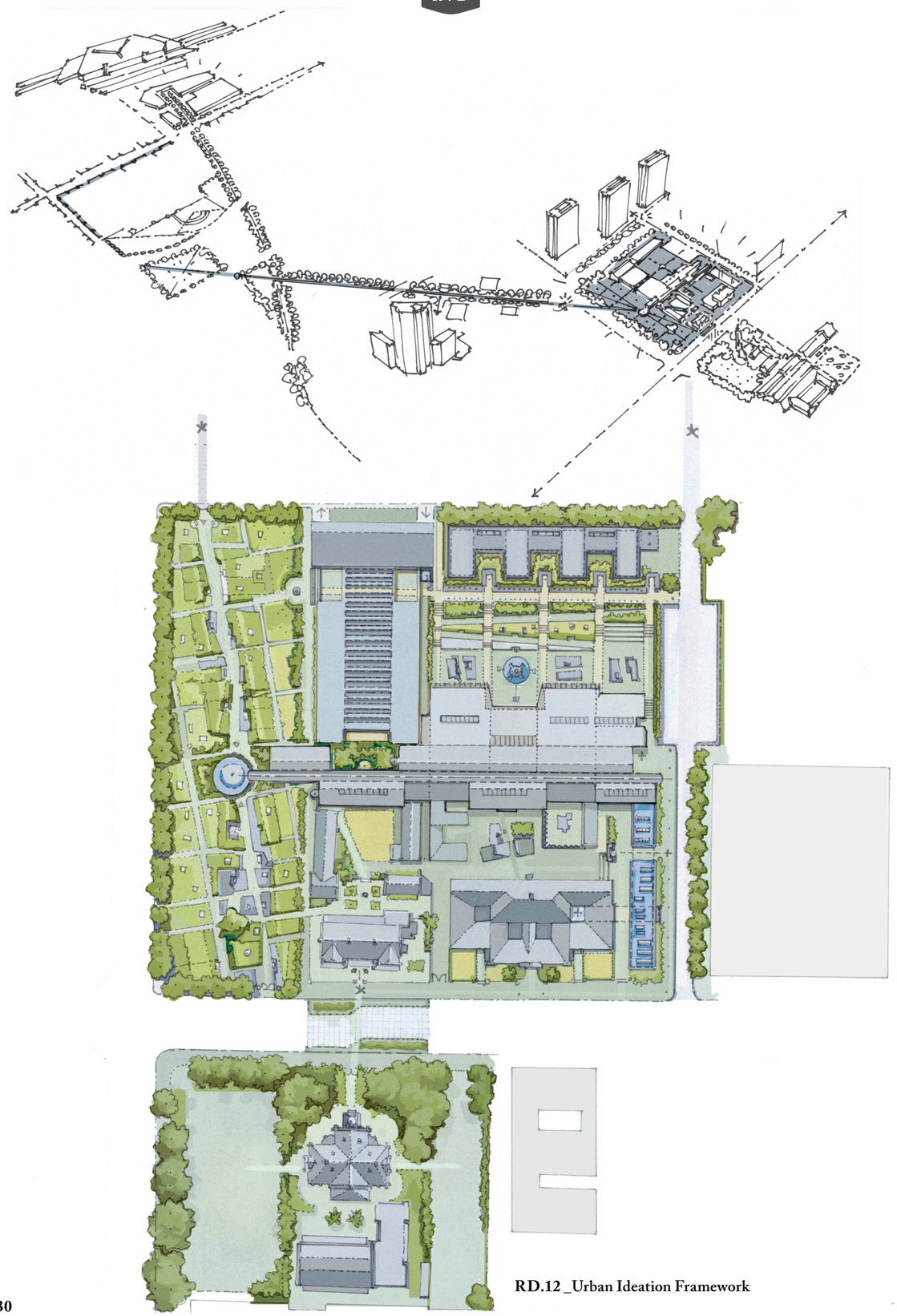
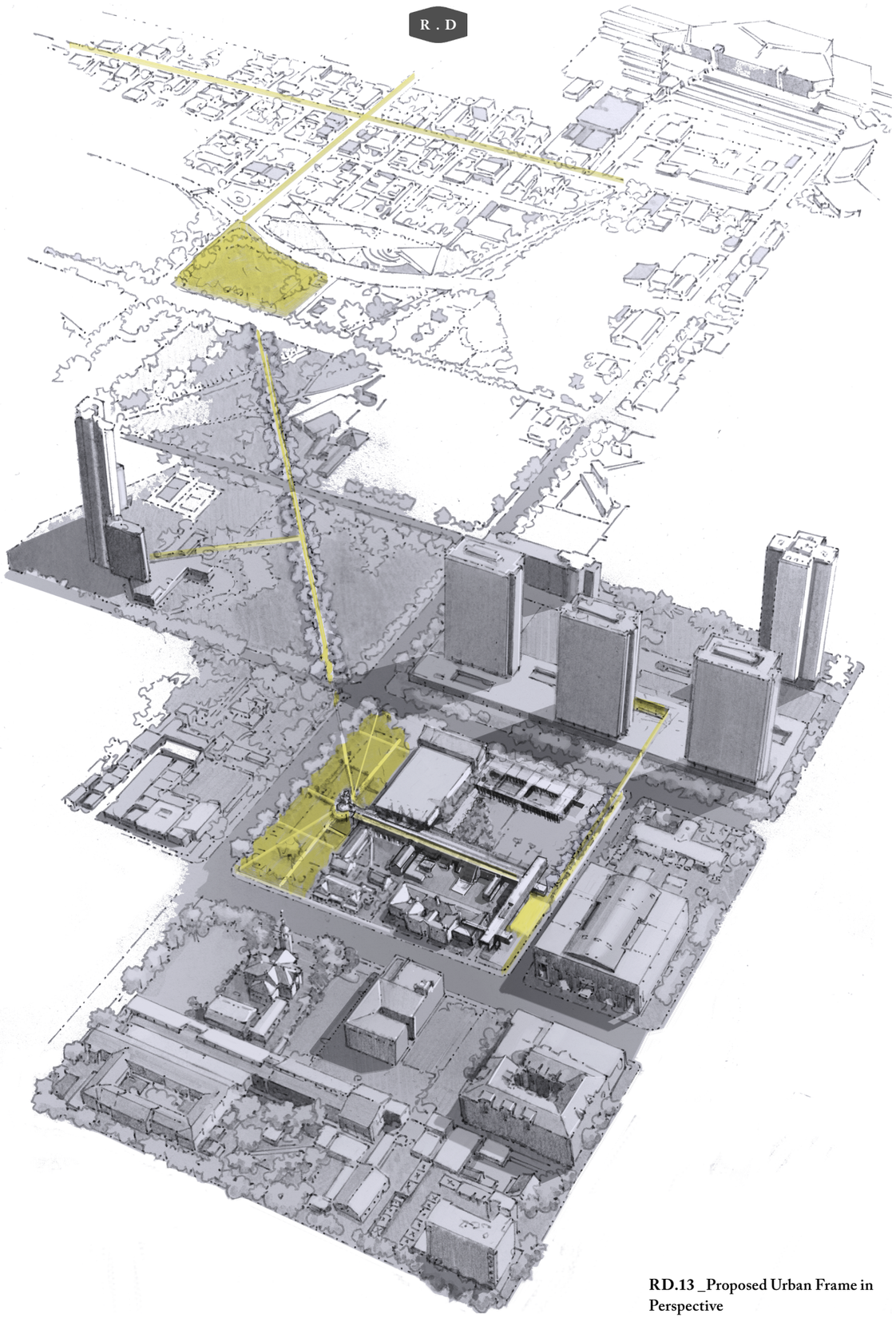


RD.12 _Urban Ideation Framework



RD.13 _Proposed Urban Frame in Perspective

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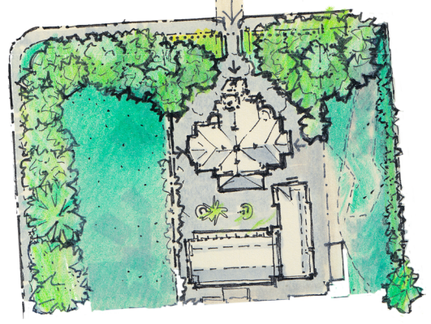

The Kruger Museum is redrawn from a 1947 aerial photograph and highlights the semi-rural condition of the past: low rise residential buildings in the fashion of the Kruger House's scale and layout occupy the block, with commercial buildings (blue) enforcing the street corners. Of note are the paths cut across the site, the enclosed English-inspired garden and the native pass jail courtyard.

RD.14 _A Comparison Drawn between the Present-day Precinct and the Latter-day Version of 1947

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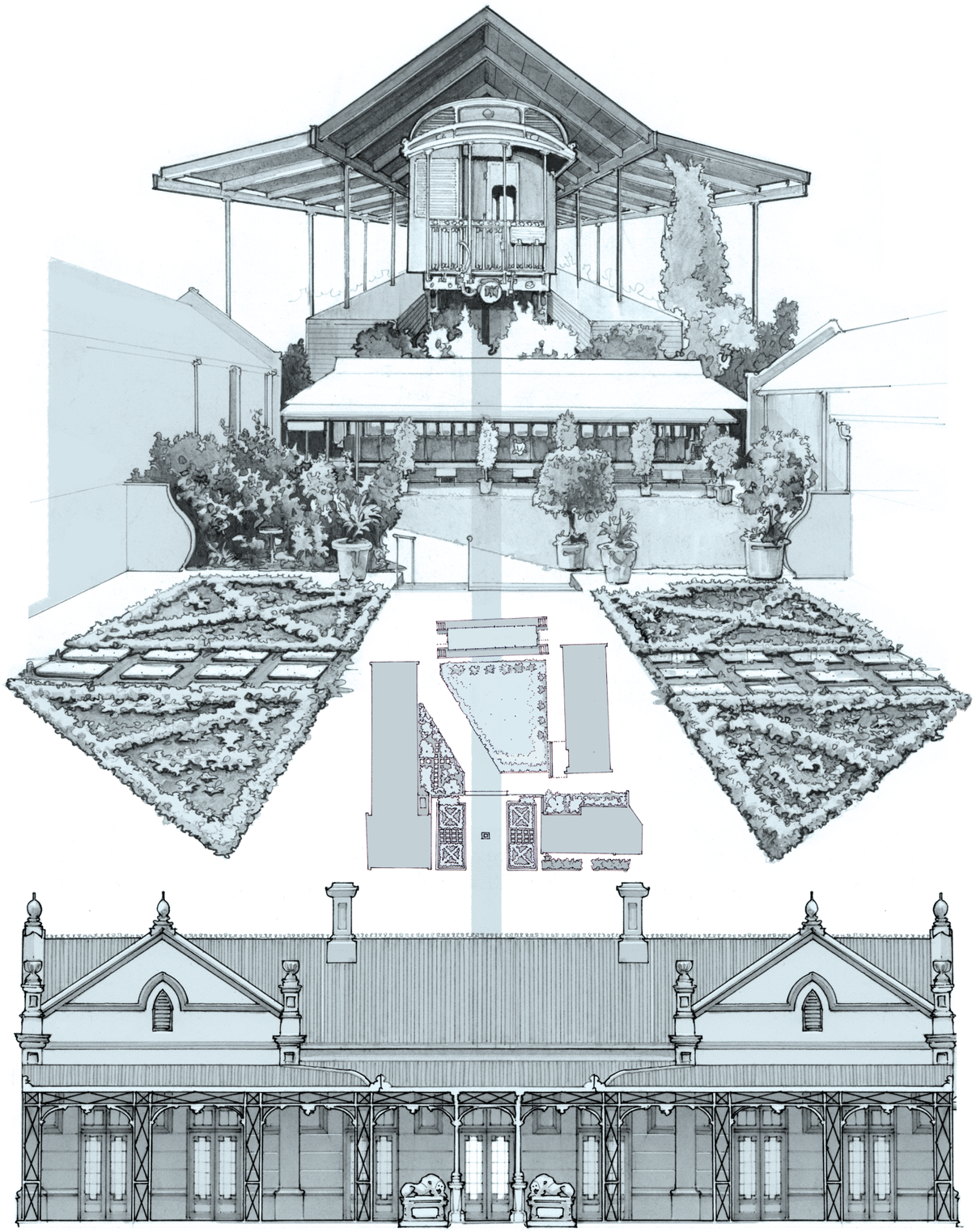
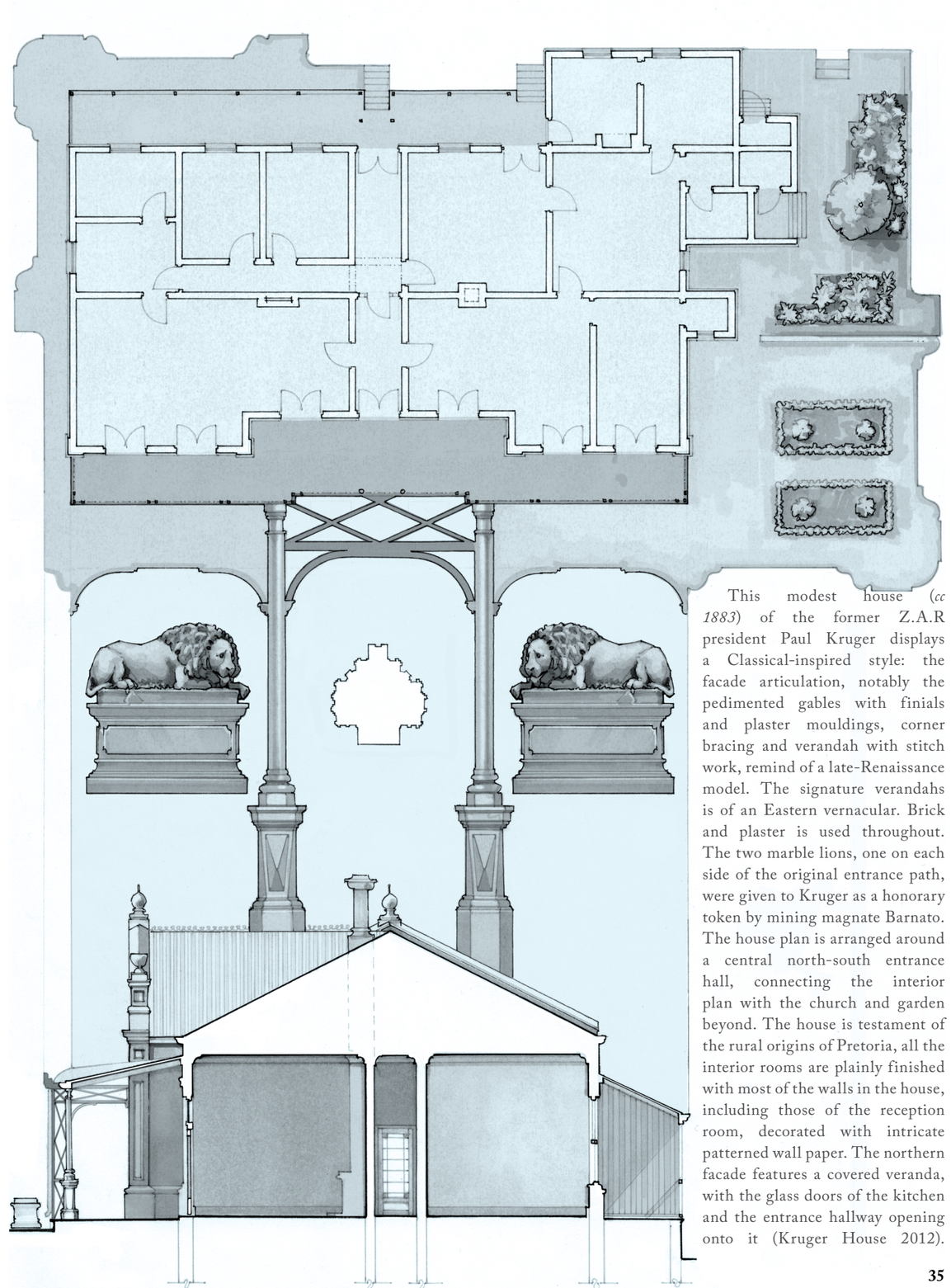


RD.15 _Analytique-Composite Drawing of the Paul Kruger House



This modest house (*cc 1883*) of the former Z.A.R president Paul Kruger displays a Classical-inspired style: the facade articulation, notably the pedimented gables with finials and plaster mouldings, corner bracing and verandah with stitch work, remind of a late-Renaissance model. The signature verandahs is of an Eastern vernacular. Brick and plaster is used throughout. The two marble lions, one on each side of the original entrance path, were given to Kruger as a honorary token by mining magnate Barnato. The house plan is arranged around a central north-south entrance hall, connecting the interior plan with the church and garden beyond. The house is testament of the rural origins of Pretoria, all the interior rooms are plainly finished with most of the walls in the house, including those of the reception room, decorated with intricate patterned wall paper. The northern facade features a covered veranda, with the glass doors of the kitchen and the entrance hallway opening onto it (Kruger House 2012).

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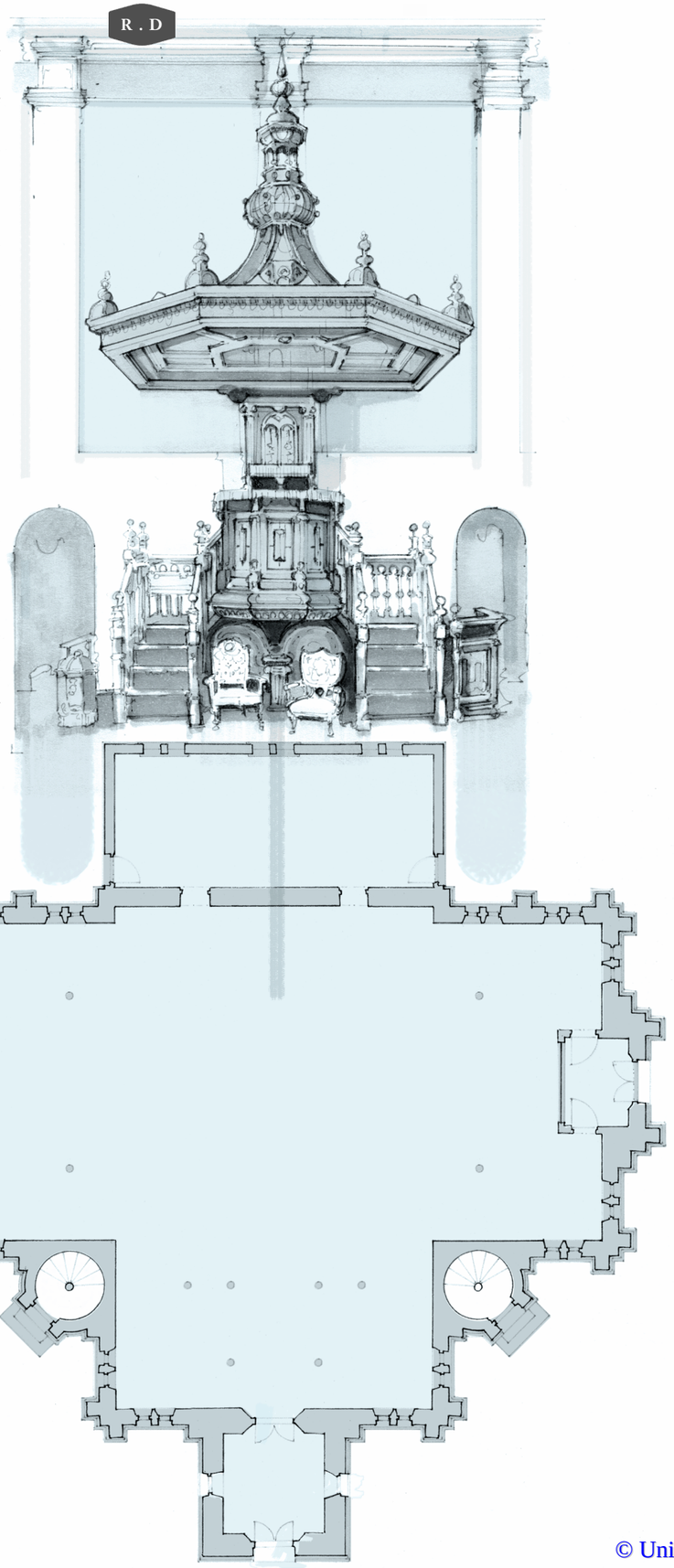
The Dutch Reformed Church building owes its mixed character to the strong influences of the Dutch and Belgian Neo-Renaissance, the Flemish Renaissance, as well as influences of Art Nouveau and late Victorian styles. These mixed stylistic influences are particularly visible in the tower peak, rectangular, round arched windows, pediment like gables, broken roof line, and towers. Pretension to Gothic verticality and Neo-Classicist formality are also present in the building's design.

The church building consists of face brick walls and a stone plinth as well as horizontal strips, inlays and quoining of sandstone. The church building has a square central tower which crowns a classical octagonal dome made up of Renaissance elements such as substructure, balustrade, a clock tower, lantern and a weather-cock. A pitched roof is located towards the north of a central church space, around which all other surrounding spaces were planed.

Round stairwells with flat roofs project out of the north-eastern and north-western corners of the church. The building also features crowned gables with bosses, articulated face-brick walls, corrugated iron roof, Roman bow windows and rectangular recessed timber window frames with stained glass panels. The interior of the church is distinctive because of its white plastered walls and dark timber ceiling, furniture and organ. There is also a vestry and a nursing room located to the south as well as halls to the east and west of the central church space. The pulpit is of particular importance, with the two chairs formerly used by Paul Kruger and his wife (Paul Kruger House 2012).



RD.16 _Analytique Composite Drawing of the Dutch Reformed Church



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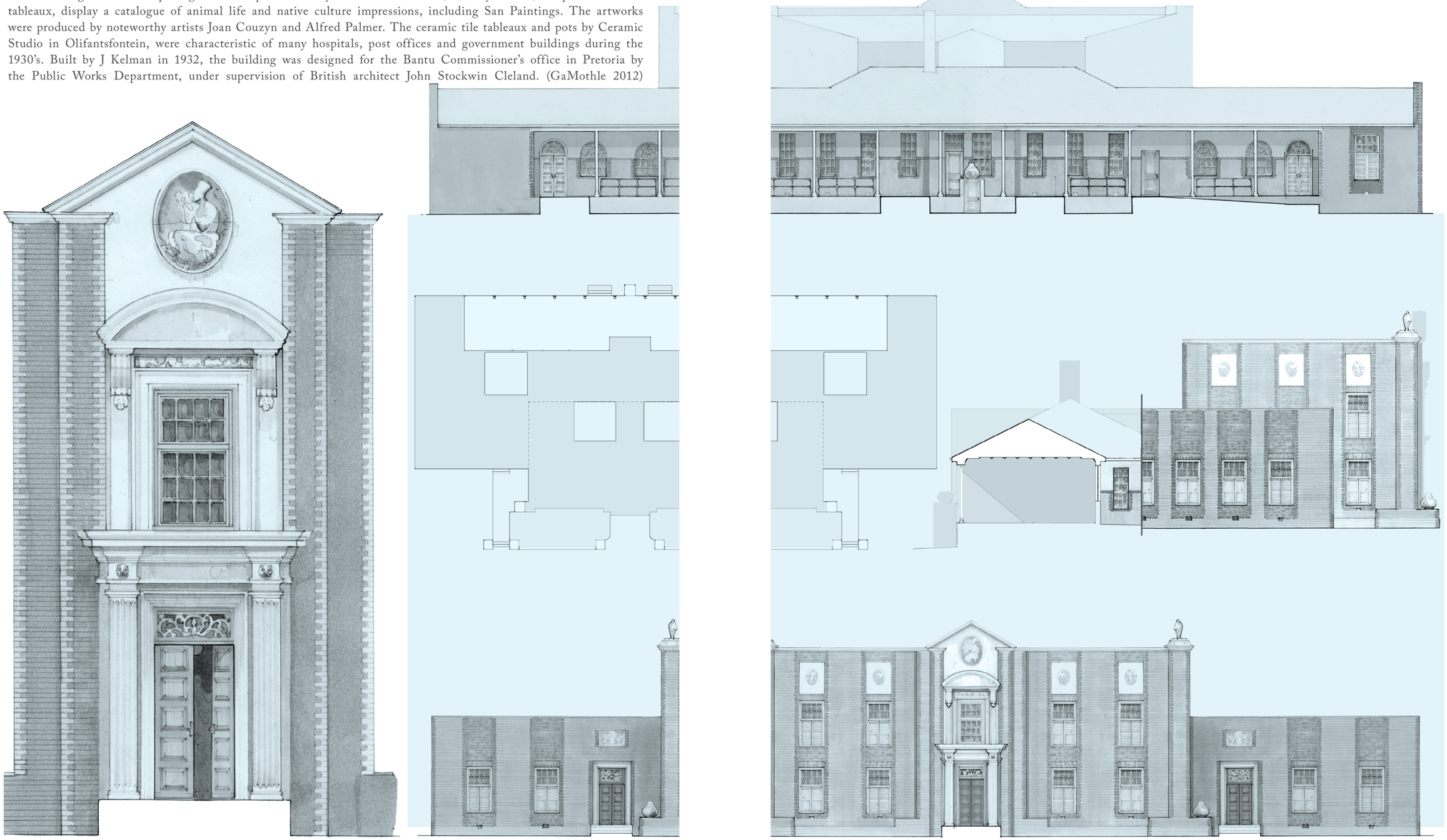
The restrained, classically-proportioned Neo-Georgian building with red and black brick, white plaster, wooden door lights and central pediment, is decorated with strong references to indigenous native cultures, the first of its kind in Pretoria. A strong symmetrical façade faces Church Street with a central double storey and set-back single storey wings east and west. The central double storey is divided into five bays, all plastered and painted. Painted medallions appear above the wooden windows with two raptors on the top corners. The interior is plainly adorned with double-glazed doors opening onto two private courtyards.The decorations, notably friezes, sculptures and tile tableaux, display a catalogue of animal life and native culture impressions, including San Paintings. The artworks were produced by noteworthy artists Joan Couzyn and Alfred Palmer. The ceramic tile tableaux and pots by Ceramic Studio in Olifantsfontein, were characteristic of many hospitals, post offices and government buildings during the 1930's. Built by J Kelman in 1932, the building was designed for the Bantu Commissioner's office in Pretoria by the Public Works Department, under supervision of British architect John Stockwin Cleland. (GaMothle 2012)



RD.17 _Analytique Composite Drawing of the GaMothle Building (*former Native Pass*)

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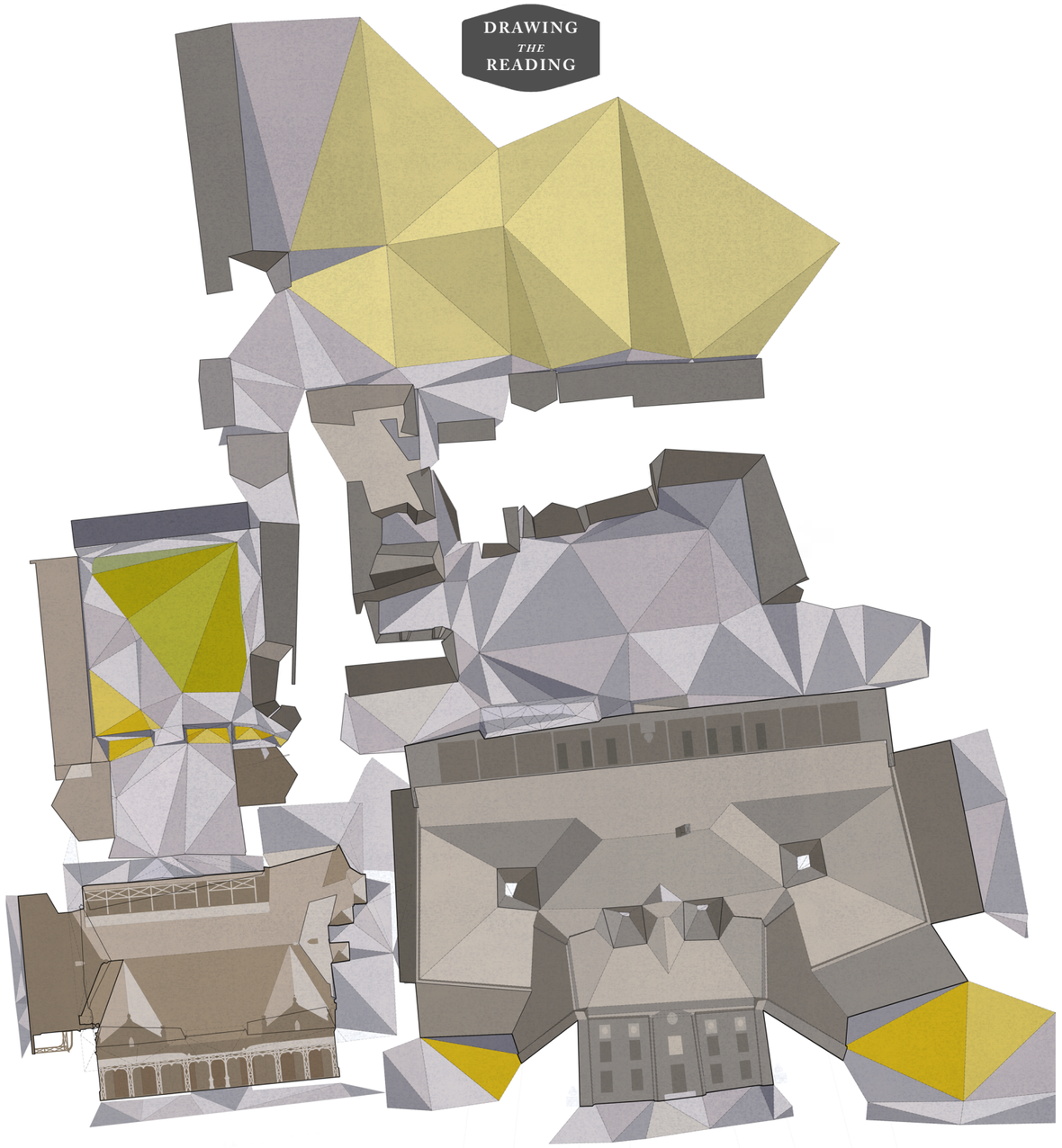


DR.1 _Unfolding Analysis of Site

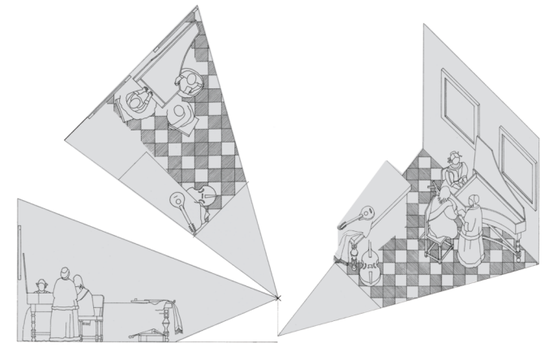
The methodology employed in measuring and documenting buildings and site allows for numerous ways of representing captured data and subsequent readings. The digital illustration is of the unfolding site and its structures onto a flat surface; all faces including roof, facade and roof plan can be simultaneously read and highlights the relation between buildings, the *space-between* and the *path* of documentation.

CONSTRUCTING THE PICTURE PLANE

The reading follows a two-fold methodology. At first the tangible constructs present on site are measured, documented and represented by means of digital formatting. The re-imagined digital set allows for a curation of sorts to follow wherein valuable cues are provided for further development. Secondly the physical mapping engenders an eidetic response to site and is delivered by the author through developing ideation sketches. The techniques employed include photogrammetry (**DR.3**), camera projection (**DR.4**) and raster height mapping and are based on Hill's premise for building the drawing: (Hill, 2006:60).

Conventionally a building site is measured and represented as the plotting of two-dimensional co-ordinates, where a proverbial joining-of-the-dots exercise precedes design development. Arguably the manner in which the site is understood through surveying and documentation, informs the nature and outcome of the architectural investigation. As such considerable effort has been made to investigate new ways of re-constructing the building site. The methodologies proposed postulate a new enriching engagement with site. The three-dimensional scanning of artefacts allow for true representations of the actual; an almost forensic exposure is on display and allows the author to step into a curatorial role of editing and re-configuring the high-resolution depictions. The scanning technology not only provide accurate measurements and minute detailing, otherwise impossible to obtain, but in the process may also render the authorial role of the surveyor neutral. The scientific manner in which the methodology is conducted challenges the convention of pre-determined selection and path by the surveyor.

Photogrammetry (**DR.4**) is a scanning method based on an image capturing device, i.e. digital camera, documenting multiple views of an object sequentially (in a line or circle around or through an object). The raster images are then converted via software into a digital colour-coded point cloud model. Arguably the camera lens employed, in documenting and translating raster images to point-cloud model, suggests a composed frame and subject composition. The analogy between Philip Steadman's analytical drawing of Johannes Vermeer (**DR.2**) and the photogrammetry illustration of the Dutch Reformed Church draws a clear distinction (**DR.3**): the former scene is carefully composed from a single vantage point, the latter, also depicted through a lens, is produced through multiple views, the route and not the composed stance is highlighted here. Where photogrammetry does not permit, camera mapping is employed to three-dimensionally trace photo references and build difficult-to-reach structures, i.e. the bell tower.



DR.2 _Steadman's Analysis of *Vermeer's Painting*

The *path of documentation* is of particular importance (**DR.1**): the spaces between the buildings are highlighted and suggests potential study areas. The attached illustration depicts the unfolding faces of the documented buildings onto a flat surface; building facades merge with ground planes with all the contents read simultaneously, the proverbial carpet unfolds the routes undertaken in the process of documentation and reveals the relationship drawn between buildings.

Of interest here is the principle and not the full application thereof. As such the investigation is limited to the documentation of site and not used as design tool to engender form. The premise remains in the hand drawing as medium to explore architecture, and as such, the digital media is only employed in service of the drawing. The technology provides a new tableau for the author to draw on; the digital maquette (**DR.5**) may be cut, zoomed in on and reconfigured to aid the drawing process. Instead of relying on imaginative perspective construction or photographic referencin, the digital set may be used as underlay to trace drawings on or project from.

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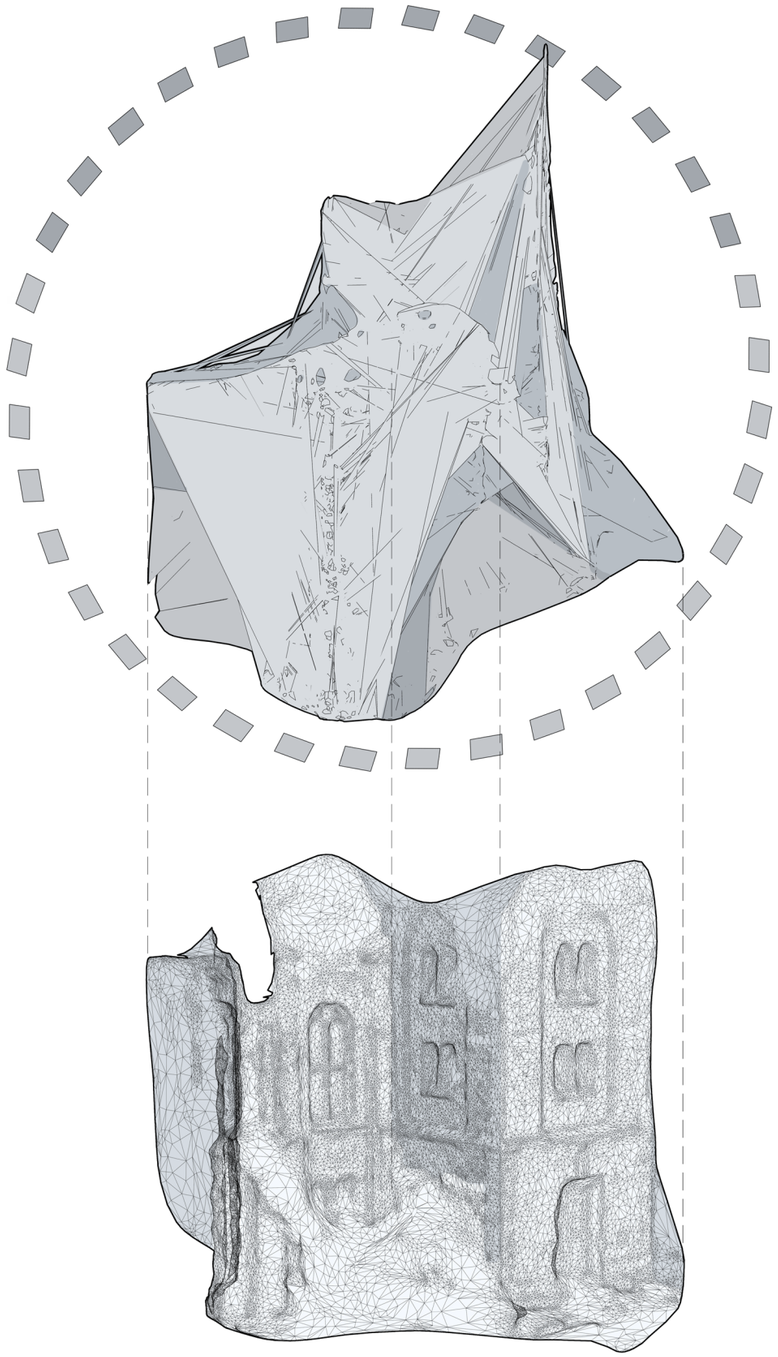
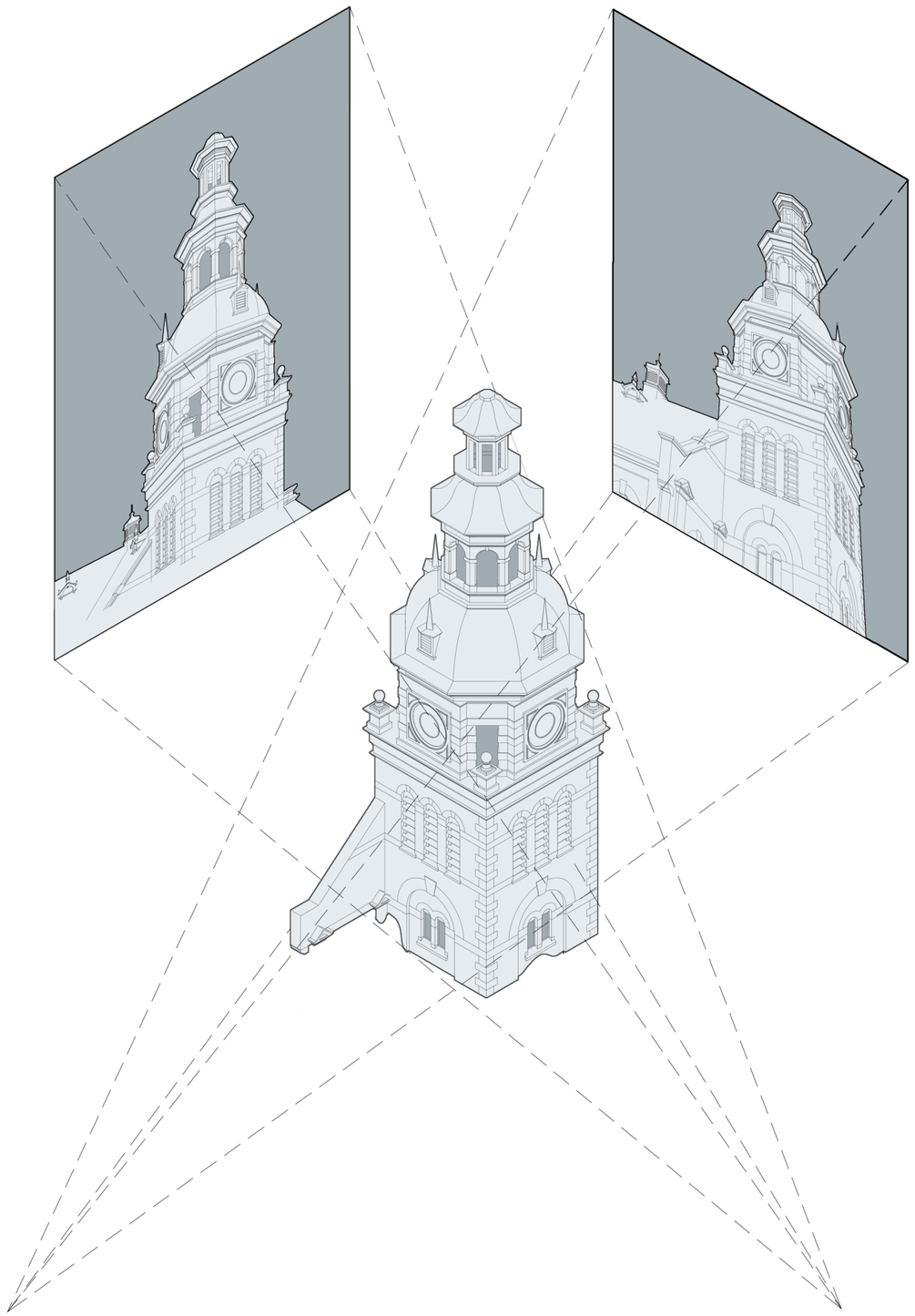
MAPPING THE TANGIBLE
METHODOLOGY 1



DR.3 _The Principle of *Photogrammetry*
Illustrated

MAPPING THE TANGIBLE
METHODOLOGY 2



DR.4 _The Principle of *Camera Projection Mapping*
Illustrated

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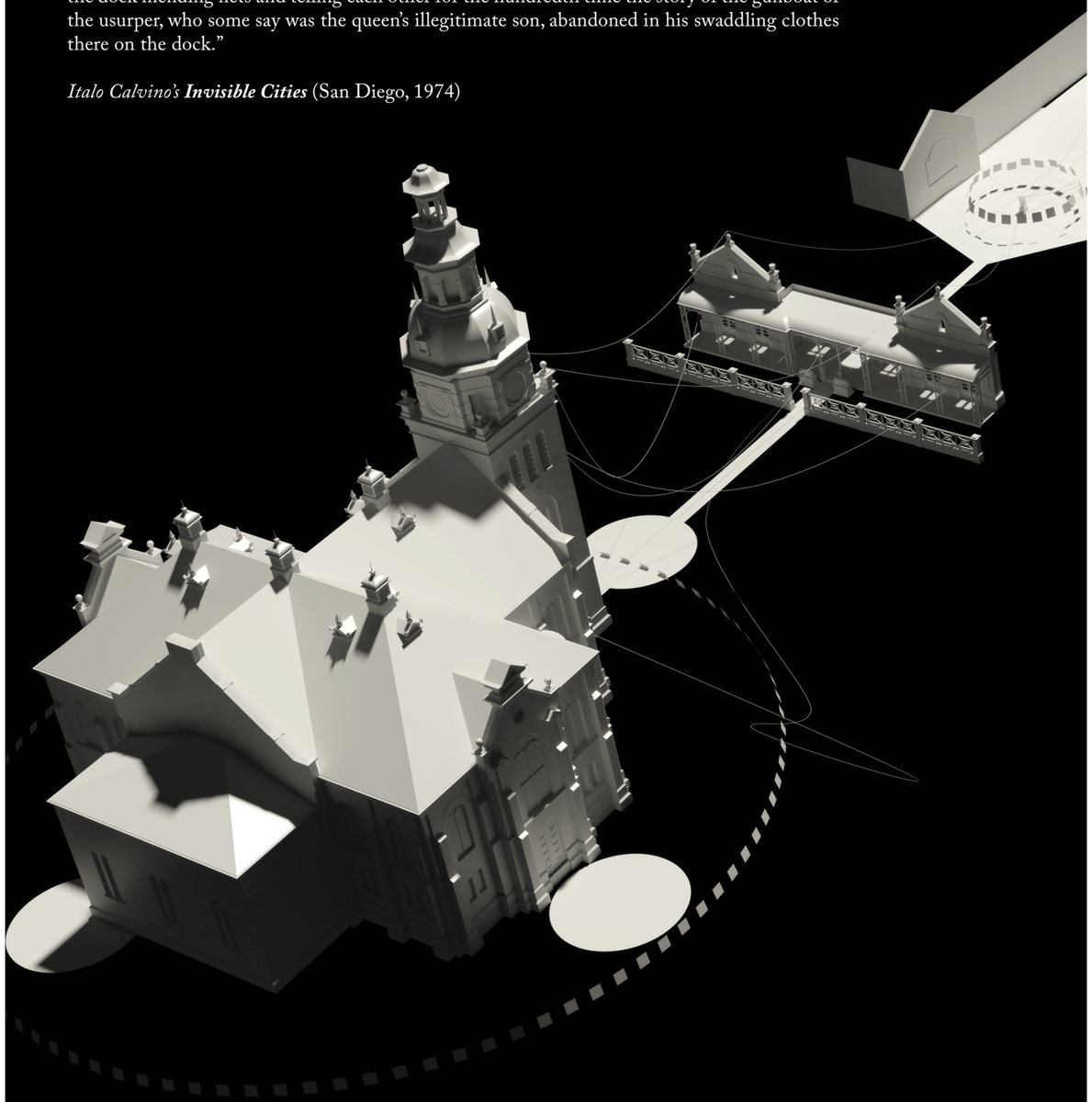
Cities are “relationships between the measurements of its space and the events of its past: the height of a lamp-post and the distance from the ground of a hanged usurper’s swaying feet; the line strung from the lamppost to the railing opposite and the festoons that decorate the course of the queen’s nuptial procession; the height of that railing and the leap of the adulterer who climbed over it at dawn; the tilt of a guttering cat’s progress along it as he slips into the same window; the firing range ofa gunboat which has suddenly appeared beyond the cape and the bomb that destroys the guttering; the rips in the fish net and the three old men seated on the dock mending nets and telling each other for the hundredth time the story of the gunboat of the usurper, who some say was the queen’s illegitimate son, abandoned in his swaddling clothes there on the dock.”

Italo Calvino’s ***Invisible Cities*** (San Diego, 1974)

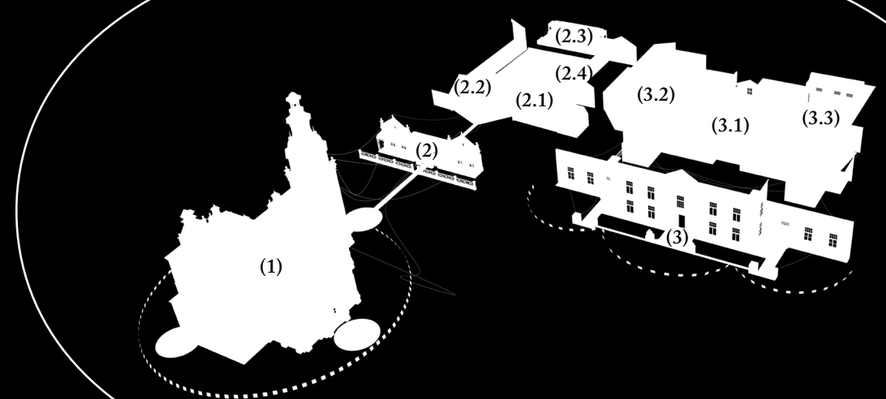


DR.5 _ The *Kruger Museum Precinct*
Point Cloud Model

(1) Paul Kruger Dutch Reformed Church, *circa 1897*
(2) Paul Kruger House, *circa 1884*
(2.1) Garden
(2.2) Paul Kruger ZAR Hall
(2.3) Paul Kruger Railway Coach
(2.4) Paul Kruger Exile Hall
(3) Ga-Mothle Building, *former Native Pass Department*, *circa 1932*
(3.1) Courtyard
(3.2) Ga-Mothle Amenity Block
(3.3) *former Native Pass* Prison Block



READING THE DRAWING
WITH PHOTOGRAMMETRY



DRAWING THE READING
THROUGH POWER RELATIONS

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THE CITY OF POWER

Historically the City of Pretoria has been shaped by politically power; former and present-day ideologies have build and torn down buildings.

The Ga-Mothle building (former Native Pass) is of particular interest. Introduced by the British as part of the English colonial model, the Native Pass formerly dealt with the native relations in Pretoria, i.e. legislation of land use and marriage registrations. The model was then adopted by the Apartheid regime and appropriated in service of the influx control system. As involuntary participants in the Apartheid system, a targeted demographic was required to carry signed passbooks on permitted visits to the Inner City. As such the Native Pass served as a proverbial gateway to the city. A clear social segregation was at play here: the privileged non-coloured members of society enjoyed the restrained Georgian stylings of the official-looking facade on Church Street, with the coloured members required to use the proverbial back entrance. It is in this austere and enclosed courtyard where applicants stood queue and illegal immigrants jailed. Both activities took visually place in the same courtyard and a clear message was herein conveyed: breaking the rules carried severe consequences.

With such a controversial history and important struggle site, one does expect the Ga-Mothle building (newly adopted name meaning 'beautiful place') in post-apartheid to be anything other than neutrally appropriated, as it is presently. Certainly no attempt is made to present the site as an contested reminder of Apartheid, which it historically clearly testifies to be. Do the decorations of native images and insignia attest to its post-apartheid acceptance and subsequent ideological neutrality? The notorious prison cell block lost its imposing court wall and presently remains hidden behind a parking structure, used as storage space for office equipment...

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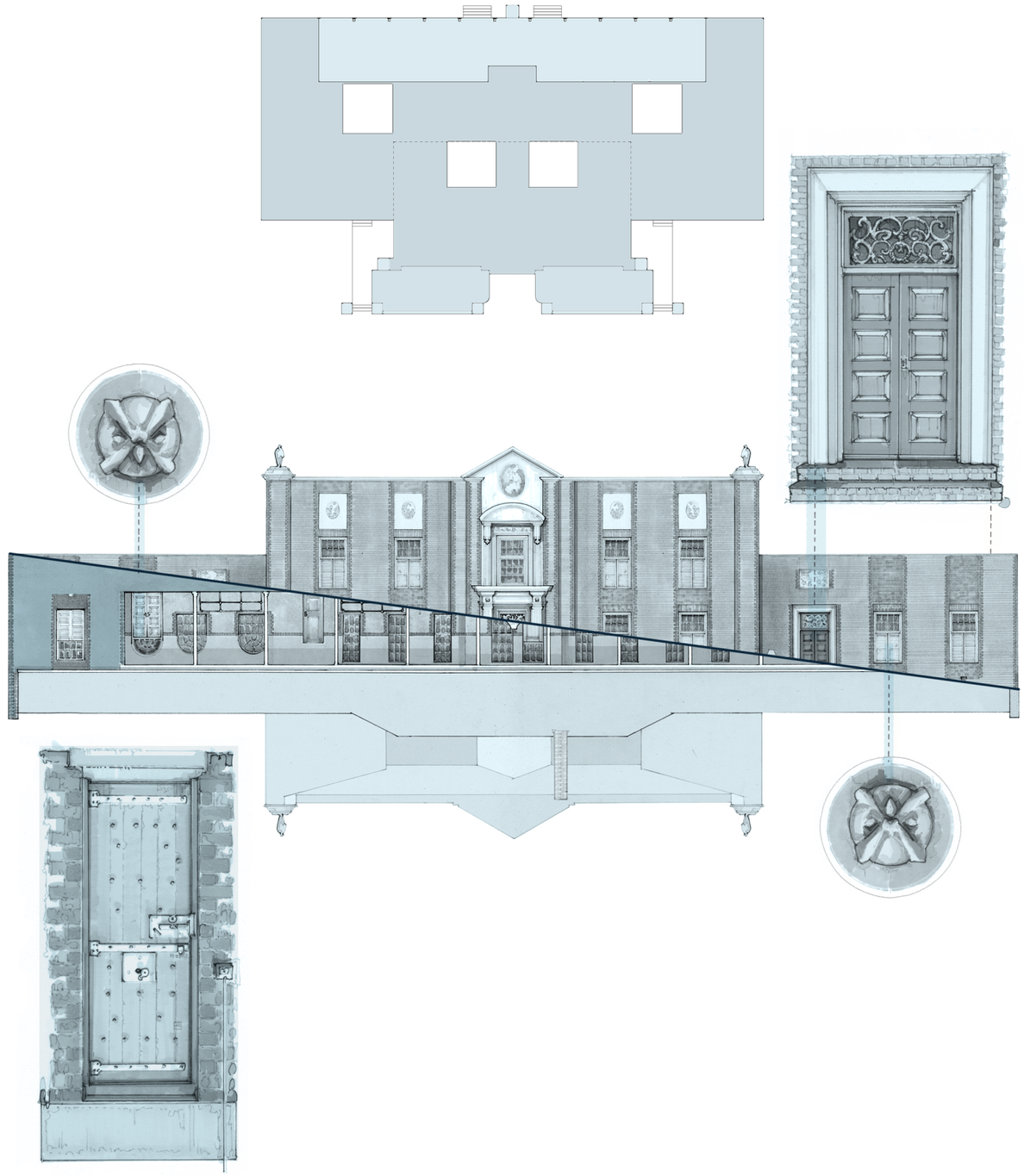
D . R



DR.6 _The Power Display of the
Former Native Pass Building

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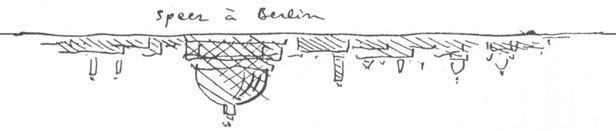


THE *SPEAR* IN ALBERT SPEER'S MONUMENT

The Nuremberg Documentation Centre (cc 1935, updated 2001) is drawn here as the cornerstone precedent building and follows three lines of inquiry:

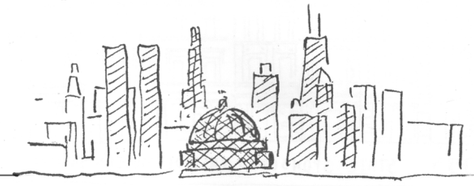
The spectacle of architecture as medium to extol ideological power, as seen at the hand of Albert Speer.

Curtis recounts the totalitarian regimes (notably in Italy, Russia and Germany) that came to power in the twentieth century 'each devoted considerable attention to the ways in which buildings and urban plans might be used to legitimise their position at home and abroad, and to convey their beliefs through symbolism and association' (Curtis, 1996:351). Modernism, as an emerging global paradigm of the time, was considered unsuitable for the purpose of state propaganda: as an architectural system it promoted the blurring of building types (unsuited for the 'symbolic hierarchy of power'), as an ideology it was portrayed as 'an internationalist novelty of a fringe avant-garde working independently of dominant values', and as an architectural physiognomy 'lacked rhetorical devices capable of conveying simple messages to the majority' (*Ibid*:351-355). As such these regimes characteristically looked for inspiration in history and found the national architectural traditions of the past appealing.

> *'Hitler liked to say that the purpose of his building was to transmit his time and its spirit to posterity. Ultimately all that remained to remind men of the great epochs of history was their monumental architecture, he would philosophise. What had remained of the emperors of Rome? What would still bear witness to them today, if their buildings had not survived? Periods of weakness are bound to occur in the history of nations, he argued, but at their lowest ebb, their architecture will speak to them of former power* (Speer, 1970:96).'

Adolf Hitler believed that the new bonds of German unity could find expression in great communal projects. Hitler's main architectural adviser and Minister of Armaments Albert Speer, who Curtis labels stage designer for Nazi pageantry, provided the Third Reich with 'instant monumentality for quick effect and mainly rhetorical emphasis' (Curtis, 1996:354). Curtis observes: 'He (Speer) drew on whatever (historical) sources seemed most suitable for evoking an overwhelming scale… and pared down inherited forms into a vocabulary of stripped surfaces, stone veneers and regimental repetition' (*Ibid*: 355). Author Gordillo notes that Speer, under Hitler's tutelage, was less interested in architecture as apparatuses of kinetic captured, referring to built spaces as 'material assemblages that control and channel the movement of bodies in space', and instead invested in architecture as apparatuses of affective capture, of those 'spatial environments that exert pre-discursive, not-fully conscious pressures on the body' (Gordillo:2014). The former was assigned to lesser regarded functions, i.e. death camps, with the latter applied to monumental civic architecture in an attempt to '*inculcate affective intensities on the bodies contemplating it, capturing their gaze and attention*' (*Ibid*). Speer explains that '*the idea*' behind his architecture was straightforward: that people '*would be overwhelmed, or rather stunned, by the urban scene and thus the power of the Reich*' (Speer, 1970:134-135). The intention was to inculcate the people with negative affects: '*affects that decrease the body's capacity for action by overwhelming it, stunning it, numbing it, making it malleable and, in short, politically passive*' (Gordillo: 2014). In an added attempt to reach transcendence through monumentality, Speer already imagined his buildings as ruins, even before they were built. The ruins of the Roman empire, which Hitler admired, became the inspiration of what Speer called the '*Theory of Ruin Value*' (Speer, 1970:96-98). As such new civic buildings were to be made of stone and brick, rather than modern steel and concrete, so that '*in a thousand years*' their ruins would remain imposing, like those of Rome (Murphy:2009).

The Nuremberg 'City of the Party Rallies' for one million loyal supporters of 1934, is a good example of this species of monumentality (Curtis, 1996:355). The Congress Hall (*cc 1935*) is part of Speer's master plan and was designed as a monumental U-shaped edifice with its façade reminiscent of the ancient Roman colosseum (The Nazi Party Rally Grounds, n.d.). A vast roof, with no underpinning, was to stretch over the interior court for the assembly of fifty-thvousand spectators, but was never completed and remains the largest Nazi monument in Germany (*Ibid*). Following the 'Nuremberg Racial Laws' in 1935, the war crime



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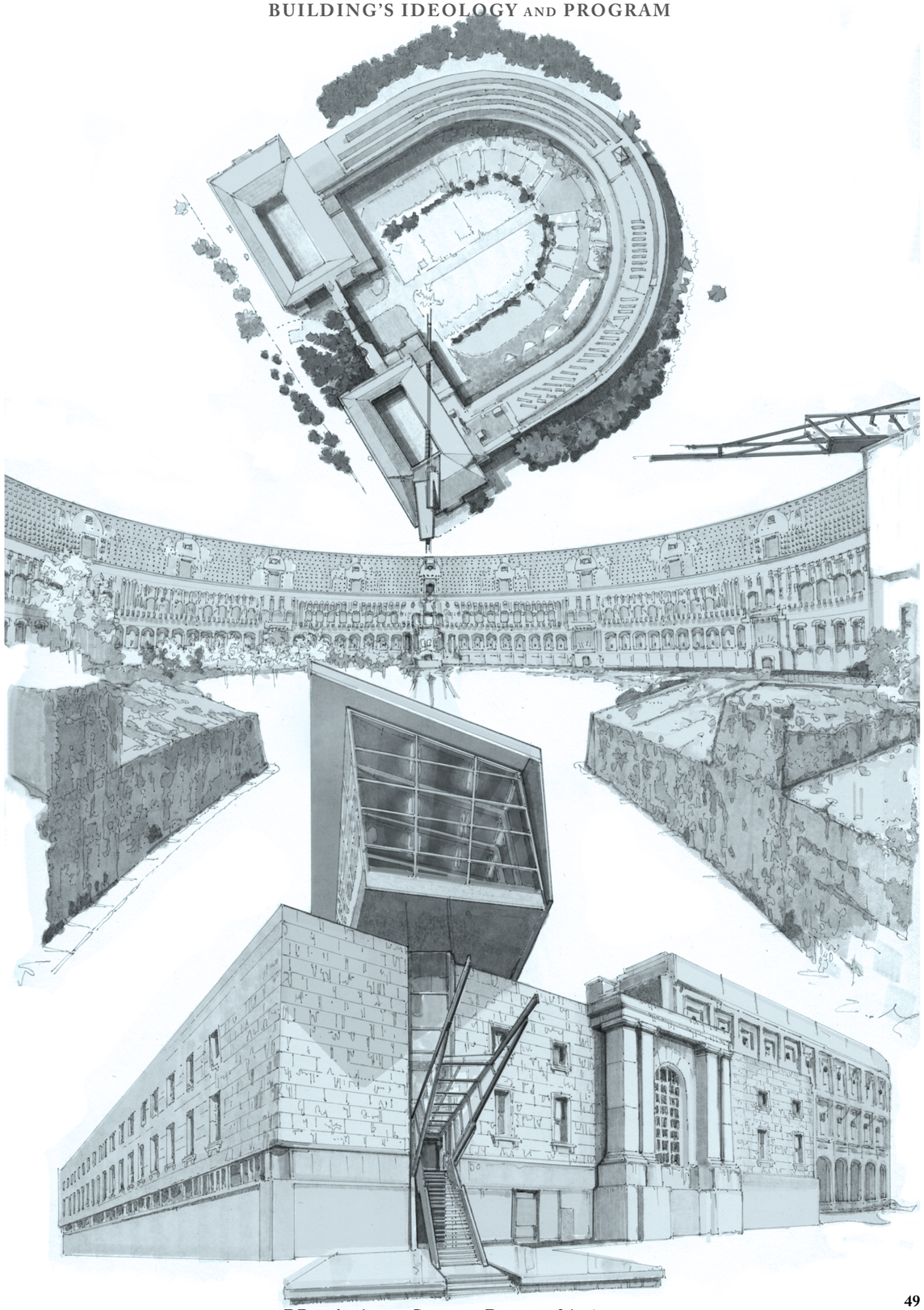
D . B

DRAWING FROM ANOTHER BUILDING'S IDEOLOGY AND PROGRAM



DB.1 _Analytique Composite Drawing of the *Spear in Albert Speer's Monument*

'Nuremberg Trials' of 1945/46 and the controversy in dealing with National Socialists' architectural heritage after 1945, the City of Nuremberg decided in 1994 to convert the north wing of the listed ruin into a Documentation Centre (Information about the Former Nazi Party Rally Grounds, n.d.). The permanent exhibition is based on the themes of *Terror and Fascination*; in lesser degree violent and sensationalist, the exhibit matter-of-factly deals with the causes and consequences of the criminal misuse of power of the National Socialist state (1933–1945) buildings (Erlanger, Nuremberg Journal:2001).

The Nuremberg Documentation Centre's subversive insertion at the drawing hand of Günther Domenig. Austrian born architect Günther Domenig's winning proposal of 1998 (completed 2001) undermines Speer's architecture of 'axiality, material and dimension', which Domenig labels 'built demonstration of power demand', by diagonally inserting a 'spear' of glass and steel through the thick brick walls (Domenig, n.d.). The highly-articulated diagonal feature is simultaneously employed as symbol to intentionally 'hurt' the existing fabric (*Ibid*), and spatial device, which slopes upwards from grade and cuts through the existing halls, offering new spatial insights and experiences in the monumental ruin (follow a journalist's account on the experience of the museum in The New York Times article: Erlanger, Nuremberg Journal, 2001). Domenig reflects on the project as '*a structure to fit my nature*', thereby accounting for the personal sense of atonement reached in the process: his father was a radical Nazi supporter and consequently Domenig himself suffered from lifelong guilt because of the association (*Ibid*). The architect's troubled history is often cited by journalists in an attempt to aptly justify the violent formal expression of the Documentation Centre.

The violent gesture of Domenig's architecture is not exclusive to Nuremberg. '*A structure to fit my nature*' also alludes to Domenig's fervent relationship with drawing architecture and his wilful self-expression through the drawing medium. A decade earlier, Peter Cook already predicted the nervous intensity to be expected and celebrated at the Documentation Centre by relating to the architect's drawing mannerism (Cook: 1986). Cook relates the architect's drawing to that of the Austrian pencil mannerism of Walter Pichler: '*You can see how the drawings take the strain of the internal debate at a very intense and nervous level… when they (referring to Domenig and his Austrian contemporary) draw something which requires the cutting of a piece of stone, flesh, or the driving of a piece of wood into the ground, they actually identify and empathise. It's much more vicious and more splendid than it would be in an Anglo-Saxon context*' (*Ibid*:100). Alvin Boyarsky draws parallels between Domenig and the 1980's Austrian tradition, set in motion by Raimund Abraham, Coop Himmelblau et al, who rebelled against the conservatism of the country: '*… the official culture, the religion, their own backgrounds. They're trying to shock the sensibilities of society*' (*Ibid*:100). As such it became characteristic of Domenig to operate from his own vantage point and for his architecture to be fuelled by his intense and intriguing pencil drawings (Cook, 2008:59-60). Although few hand drawings relating to the Documentation Centre are published, the built form certainly echoes the underlaying themes prevalent in other schemes previously drawn by the architect. Domenig's seminal work for the Stonehouse (cc 1985-2004) was preceded and developed over time by a rich repository of intense drawings, described in essence by Boyarsky: '*…there is the metaphor of rolling rocks splitting apart and releasing a bolt of energy. A long, thin, bird-like form is moving through the earthwork in some mysterious way*' (Cook, 1986:100). If the Stonehouse is the architecture expressed through the latent energy of the rolling rocks settling into place, the Documentation Centre becomes the bolt of energy splitting open the massive stone ruin of Speer.

Is it possible to look at Albert Speer's architecture in a detached manner, despite its political association? Can Nazi architecture ever be deemed 'well designed'? The violence exercised by Domenig against Nazi architecture certainly appears to be just and in keeping with the prevailing attitude held towards Speer's work. It conveys the message that if one somehow approves of Speer's achievements made for the Third Reich, it would be taken as an approval of the Third Reich. Leon Krier offers a counterpoint to this notion in his seminal publication on Albert Speer. Krier argues that when reviewing Speer's architecture in a detached manner, Speer is considered a good architect and his architectural oeuvre does indeed carry formal merit. When the book was first published (Les Archives d'architecture Moderne, Bruxelles, 1985) it provoked widespread condemnation because it contradicted the method used by modernist architects and historians that consists in comparing a selection of classical buildings realised under the most oppressive régimes of the past with a selection of modernist buildings realised under the most tolerant régimes of the present (Younés: 2014). Krier showed that justifying one preferred architecture by associating it with a preferred political régime, and condemning another architecture by associating it with a reviled political régime, contained several flaws, the most important of which was that the evaluators selectively deployed criteria when it was advantageous to their arguments and selectively withheld these same criteria also to further their own arguments (Ibid). Krier's reaction to critic James S. Russell's rejection of his premise is a case in point:

> *'Mr. Russell writes in his review, ". . . all I can find is architecture unique only in its gigantism (of Speer's architecture which Krier calls 'grandiose')." Yet, as is demonstrated in the attached parallel, when set against the gigantism of foundational modernist urban visions, Speer's North South Axis (unrealised master plan for Berlin) turns out to be an almost delicate affair. Clearly, even the cruelest modern dictators dared not impose urban incubi such as Le Corbusier's Plans for Paris, for Soviet Moscow, for Fascist Addis Ahaba, on their subjects. I don't promote scale excess but I believe that a democratic society could make an infinitely better use of the Berlin of Albert Speer than of that of a Ludwig Hilberseimer' (Krier:2014).*

Peter Eisenman assumes a directly opposing stance to that of Krier. He argues that all architecture is subject to political polarization, implying that it is not possible to separate the merit of structure from the ideology that it was birthed from. It is interesting to note that Eisenman formerly modelled his style extensively on that of Terragni, but disclaimed any cultural significance in this choice of prototype or in the resultant analogies between his work and Italian Rationalism of the 1930's. Instead he argued that such buildings as '*House II*' (1969) were explorations of basic formal syntax and the logical structure of space (Curtis, 1996:565).

The modernist embrace of Futurism is a case in point. On the one hand Modernism absorbed most of Futurism's artistic beliefs such as the vehement break with tradition; the rejection of the continuity of space and time in representation in favor of immediacy and dynamism; the radical belief in the redemption of science and technology; and the cult-like apotheosis of modernity.

Yet, modernist architects and historians sought to separate the architecture of Futurists from their exaltation of violence and their enthusiastic associations with the rise of Fascism in Italy, by scarcely mentioning these extremes or simply remaining silent about them. To associate or dissociate political or artistic content depending on the most advantageous circumstances gravely compromises intellectual integrity and the soundness of architectural judgment. Krier had the courage to oppose the dominant modernist narrative on its own grounds.

Disregarding dogmatic architectural principles does not promote ignorance concerning historical context, but rather aims to retain the importance of architecture beyond its social constructs.

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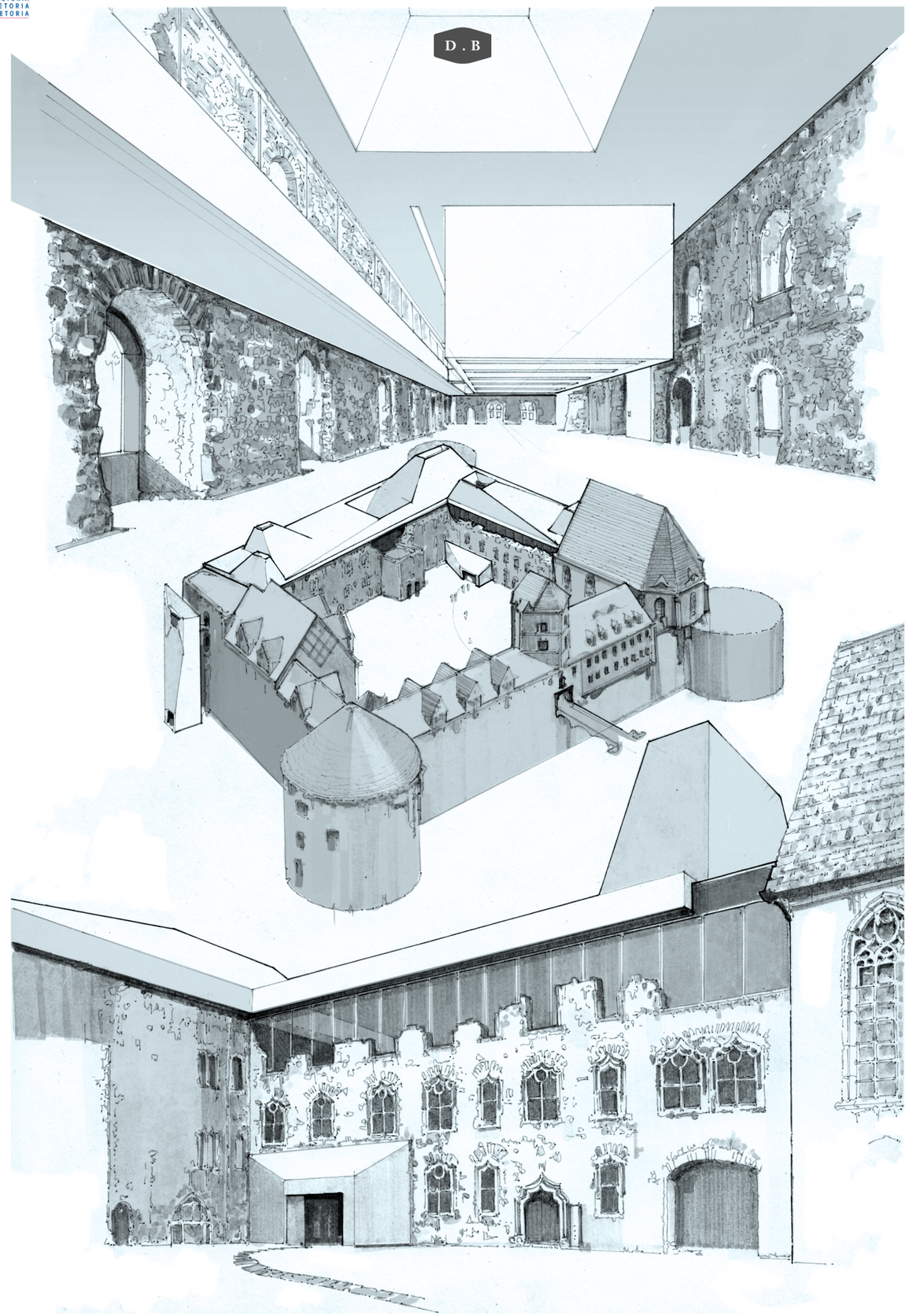
THE INHABITABLE ROOF FOR THE MORITZBURG MUSEUM EXTENSION (CC 2004)

BY NIETO SOBEJANO ARCHITECTS

The ancient castle of Moritzburg in the city of Halle is a prolific example of Gothic military architecture, typical of Germany at the end of the fifteenth century. Its turbulent history has inevitably been reflected in the many alterations undergone over the years. But despite these, the building still retains the original structure of its main architectural features: the fortified surrounding wall, three of the four round towers at the corners, and the central courtyard.

The partial destruction of the north and west wings in the seventeenth century during the Thirty Year War left the castle with the image of a romantic ruin, which it has retained over time. The contemporary extension for the modern art collection, notably of German Expressionism, is housed within an inhabitable roof. The new inserted roof is conceived as a large folded platform, which rises and breaks to allow natural light to enter, with the new exhibition galleries hung from its structure and free from the existing walls and floors. The result is an attempt to completely free the floor of the ancient ruin, offering a dynamic space for a range of exhibition possibilities. The design is complemented with the building of two new vertical circulation cores: the first internally connects the different levels of the ruin with the museum, and the second is a contemporary tall tower in memory of the demolished round tower (El Croquis,2007:128).

The angular geometry of the new scenery of roofs and metal tower contrasts with the castles's existing irregular shape and high roof. In spirit with the uneasy and expressive forms painted by Lyonel Feininger, on display in the museum, the new fragments continue the process of changes that feature in the history of the Moritzburg Castle over time.



DB.2 _Analytique Composite Drawing for the Inhabitable Roof

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THE SPACE BETWEEN THE OLD AND NEW
IN THE *LES FRESNOY ART CENTER* (CC 1991-1997).

BY BERNARD TSCHUMI ARCHITECTS

The roof is employed here as the weave that connects all existing structures under its cover. Bernard Tschumi labels the space between the new steel roof and the old tile roofs as the '***in-between***'. Large horisontal windows, covered with transparent sheets of glass in a semi-elliptical cut-out, create an underside of the roof flooded with light; a cut through by a transversal corresponding to the project's north-south axis. Tschumi recounts:

> *'If the new roof acts as the project's common denominator (a large screen-umbrella), we also sought to accelerate the probability of chance-events by combining diverse elements (umbrella and sewing machine meet on the dissecting table), juxtaposing great roof, school/research laboratory and the old Fresnoy, place of spectacle'…'Such multifunctional spaces destined to 'cover' events (conventions, concerts, sports, exhibitions and their thousands of visitors) will be the urban spaces of the twenty-first century, here reviving a building from the beginning of the twentieth century. At Fresnoy, we can speak of an "architecture-event" rather than an "architecture-object". The interstitial space between the new and old roofs becomes a place of fantasies and experiments (filming and other exploratory works on space and time)'* (Tschumi, 1997).

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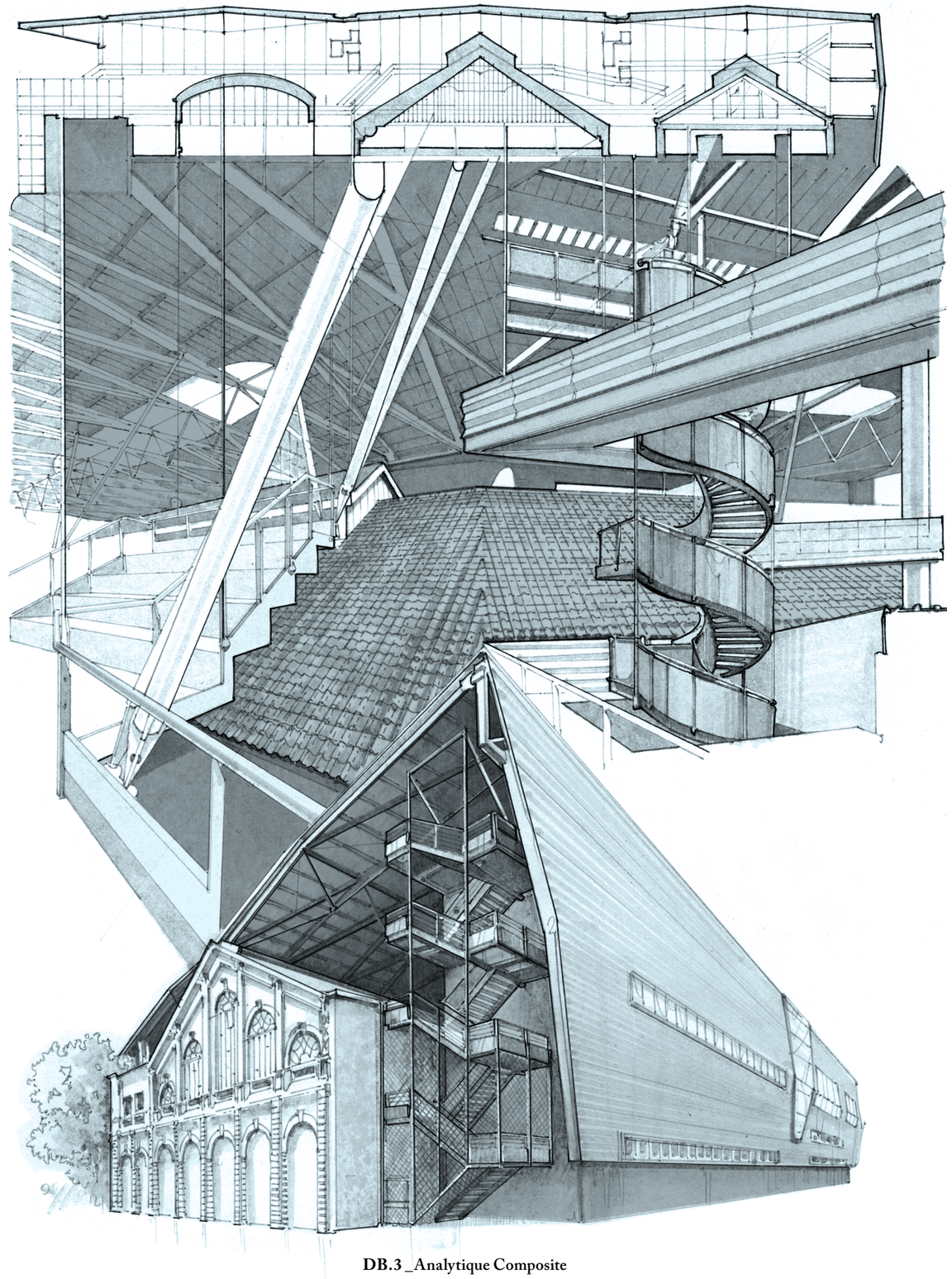

DB.3 _Analytique Composite Drawing of the Space Between

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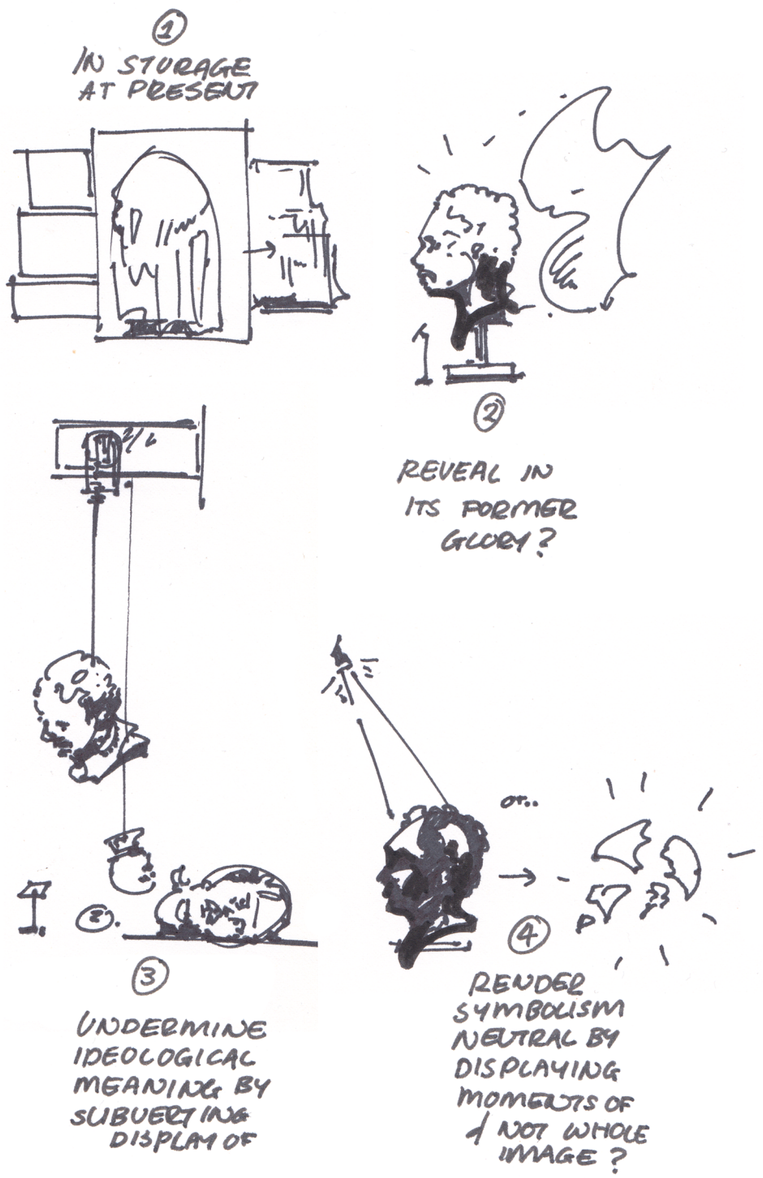
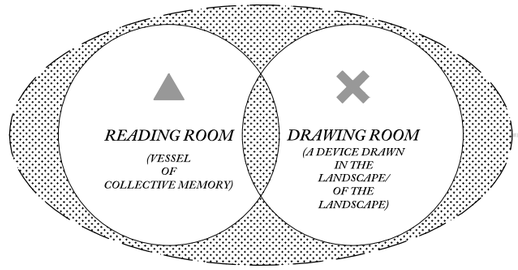
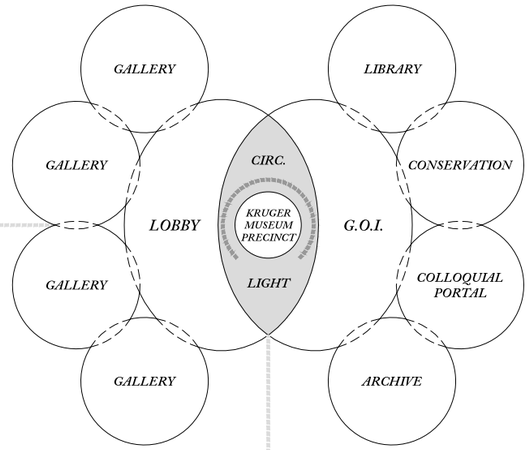
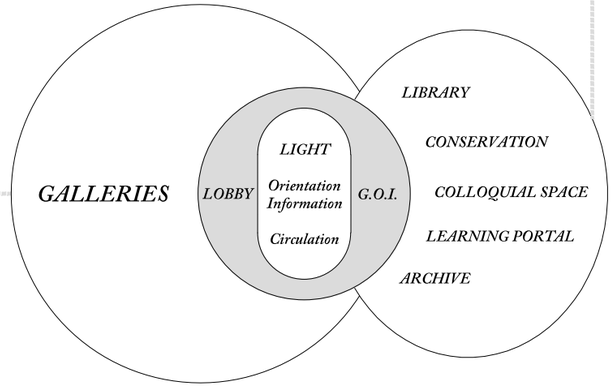
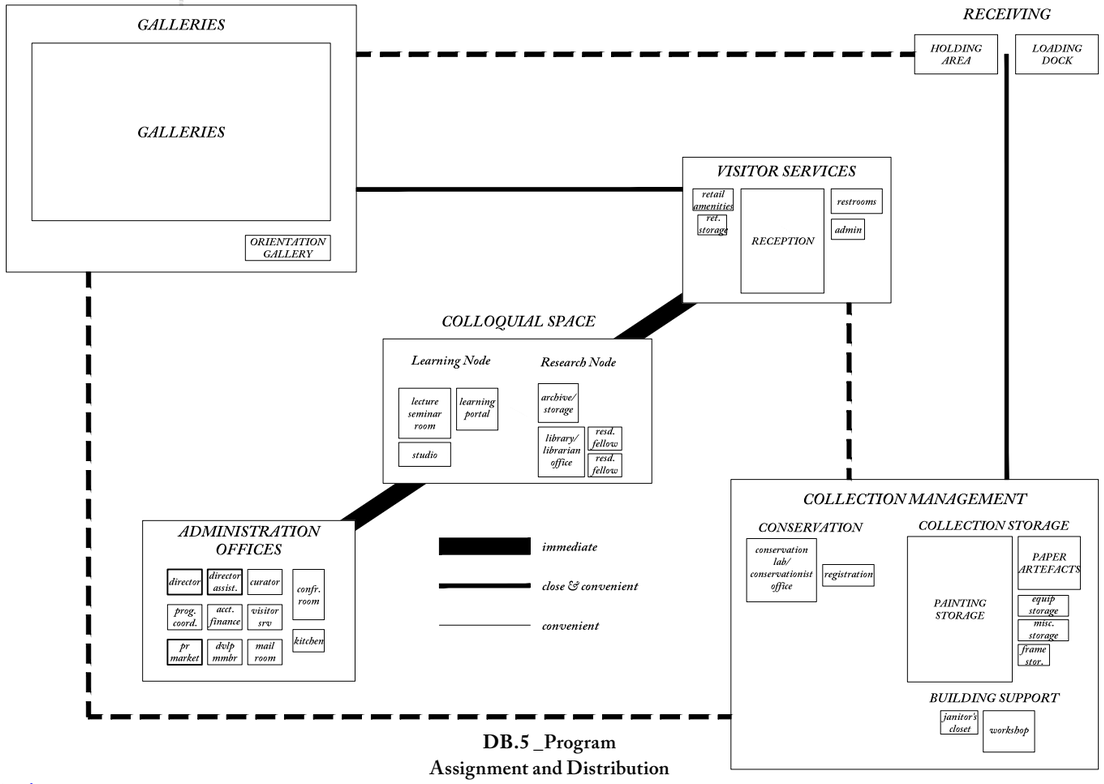


DB.4 _Modes of Displaying Artefacts









DB.5 _Program Assignment and Distribution

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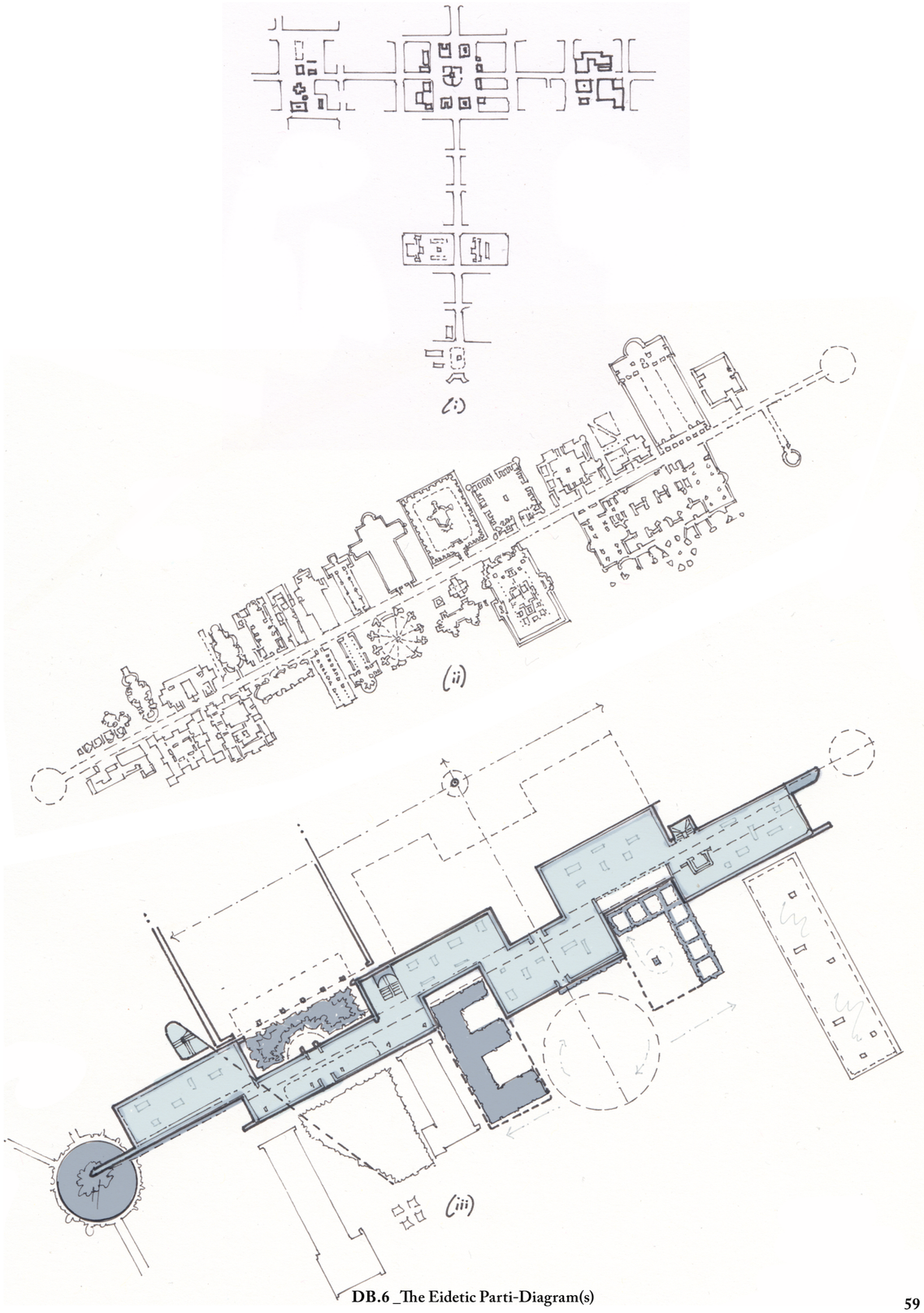
DRAWING THE EIDETIC PARTI-DIAGRAM(s)

'In the center of `Fedora, that gray stone metropolis, stands a metal building with a crystal globe in every room. Looking into each globe, you see a blue city, the model of a different Fedora. These are the forms the city could have taken if, for one reason or another, it had not become what we see today. In every age someone, looking at Fedora as it was, imagined a way of making it the ideal city, but while he constructed his miniature model, Fedora was no longer the same as before, and what had been until yesterday a possible future became only a toy in a glass globe. The building with the globes is now Fedora's museum: every inhabitant visits it, chooses the city that corresponds to his desires, contemplates it, imaging his reflection in the medusa pond that would have collected the waters of the canal (if it had not been dried up), the view from the high canopied box along the th e avenue reserved for elephants (now banished from the city), the fun of sliding down the spiral, twisting minaret (which never found a pedestal from which to rise). On the map of your empire, O Great Khan, there must be room both for the big, stone Fedora and the little Fedoras in glass globes. Not because they are all equally real, but because all are only assumptions. The one contains what is accepted as necessary when it is not yet so; the others, what is imagined as possible and, a moment later, is possible no longer.' (Calvino, 1974:28)

The ***parti-diagrams*** on display (*in order from top to bottom*) present the premise for the desired archive. The memory of the city's spatial core (*top*) is recounted here: the archive is to store and display artefacts from the former Pretoria, thus becoming a miniature city witin in the real city. The artefacts are conceptually bound in a east-west processional route and the exhibits remind of the memories of the artefacts' former localities (*middle*), a proverbial *mnemonic device* as such. The parti-diagram at the bottom reflects the stepped plan of the archive, with the artefacts of little Pretorias on display within and outside its walls. The new intervention is employed as a weaving device: weaving the existing artefacts on the site (*the prison block and Paul Kruger exhibits*) with its new curation spaces and landscape.



DB.6 _The Eidetic Parti-Diagram(s)

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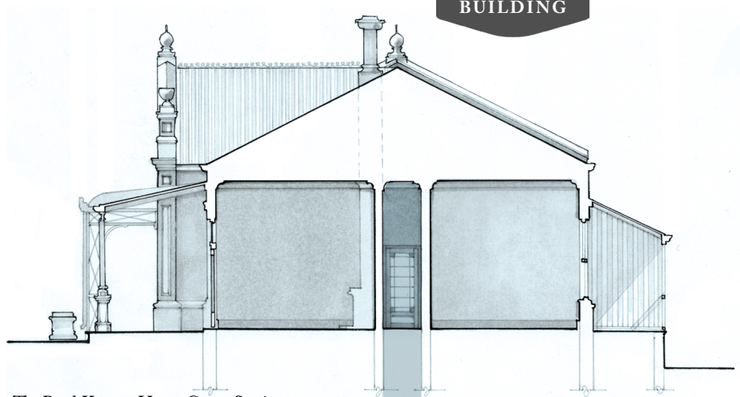
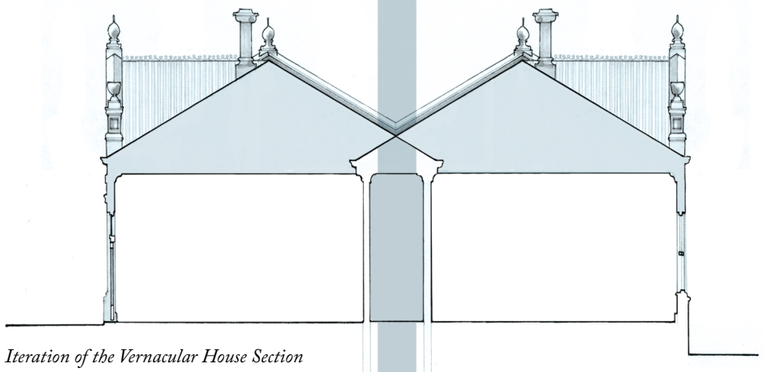
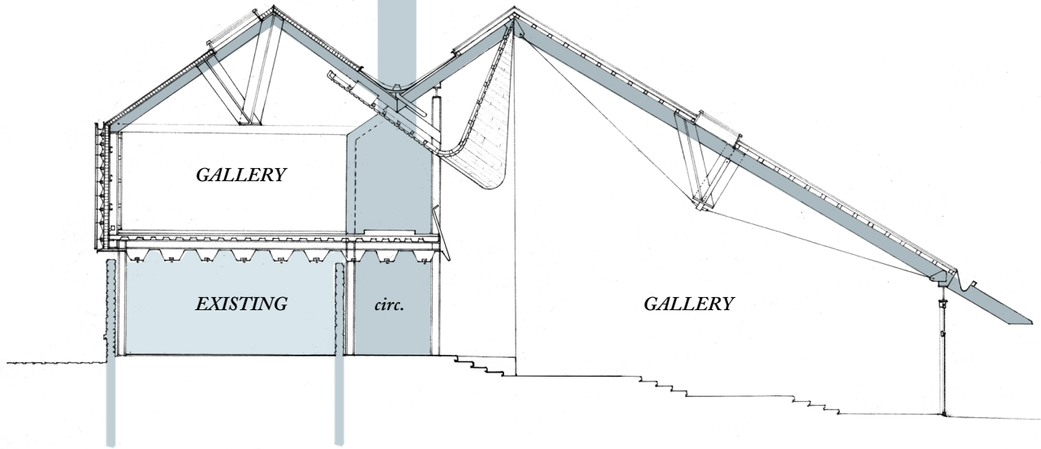


The Paul Kruger House Cross-Section



Iteration of the Vernacular House Section

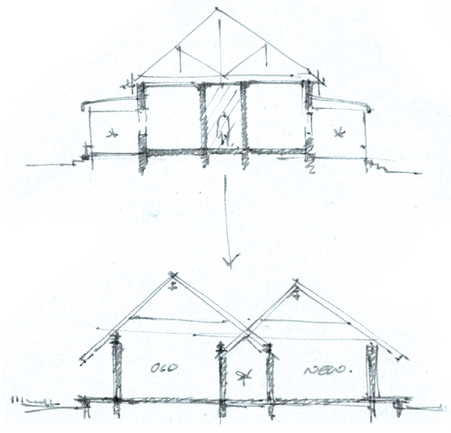


The Archive Cross Section by Author

DB.7 The Eidetic Section Diagram

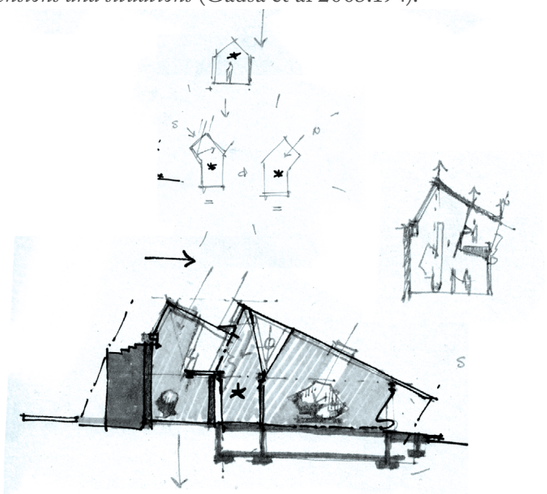
Archaeology

Archaeology is a science that identifies or hides unexpectedly, but that also recomposes, resuscitates or localizes again what once was. Its labour is realized through fragments of history, of those agreed upon after having imagined them in a place of discovery, separating them from real space, from what was already formulated. Discontinuous archaeology, abandoning those discoveries that had already become homogeneous, starts anew as heterogeneous. (Gausa, Guallart, Muller, Soriano, Porras and Morales 2003:52).



Enjambements

Enjambements are meldings, couplings, supports or overlappings of one thing over another, produced among elements of similar potency. If commensalism or parasitism implies difference or disproportion, enjambement implies similarly and simultaneously of sizes, forces, tensions and situations (Gausa et al 2003:194).



DB.8 _*Archeology* and *Enjambement*

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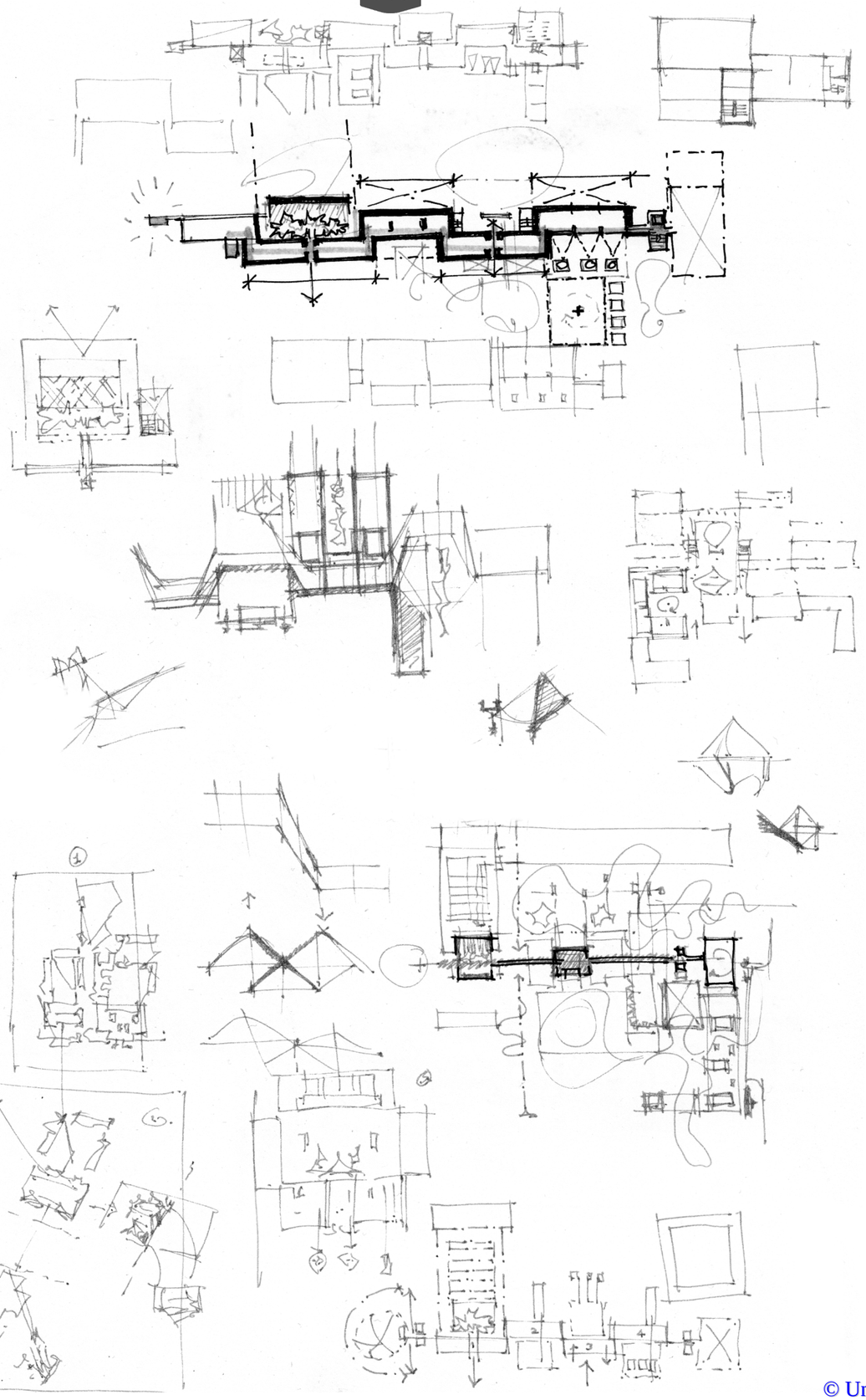

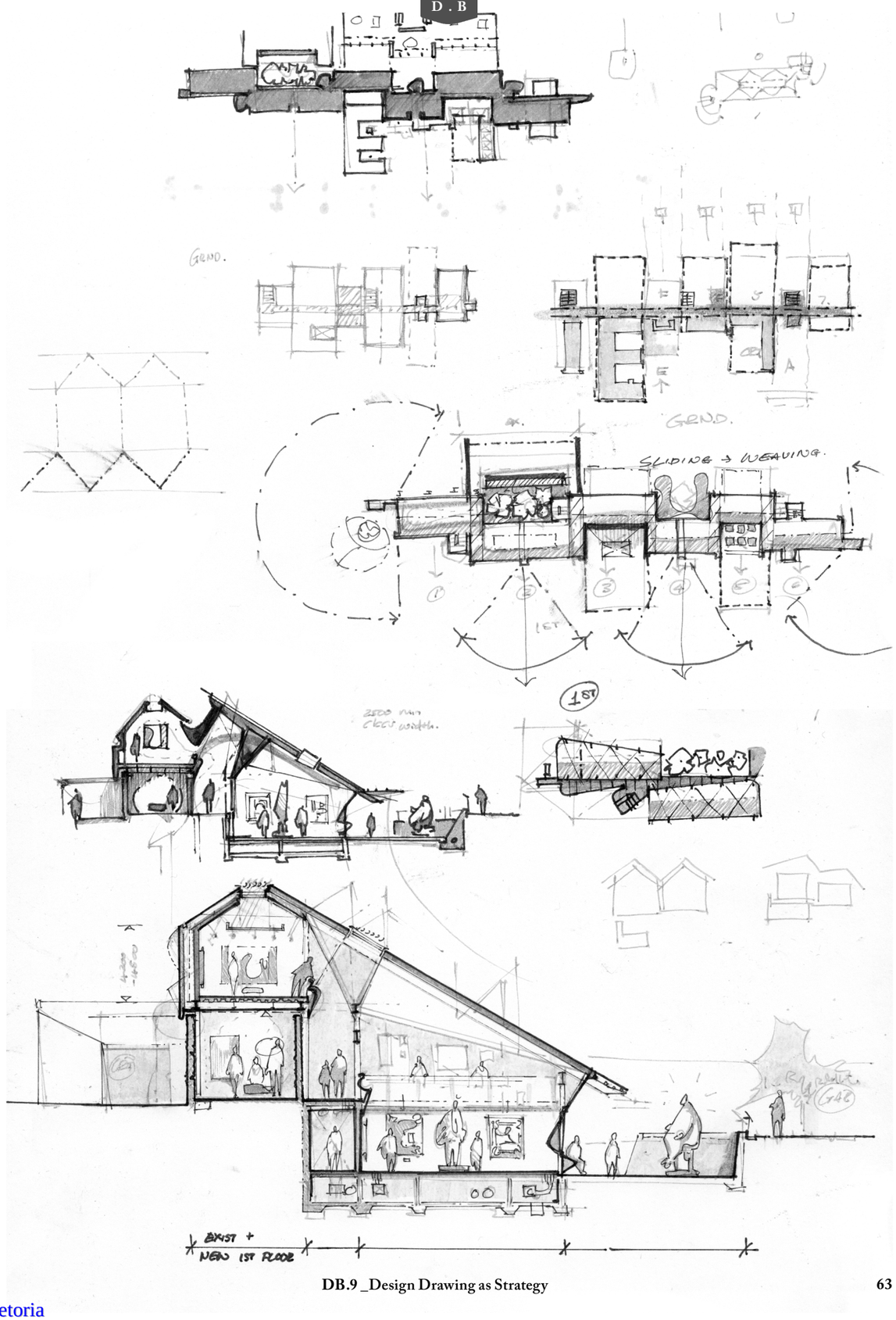

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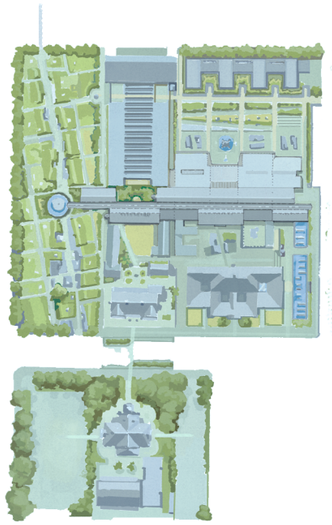
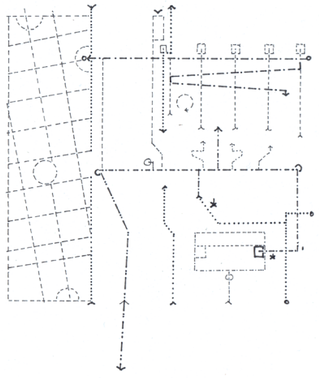
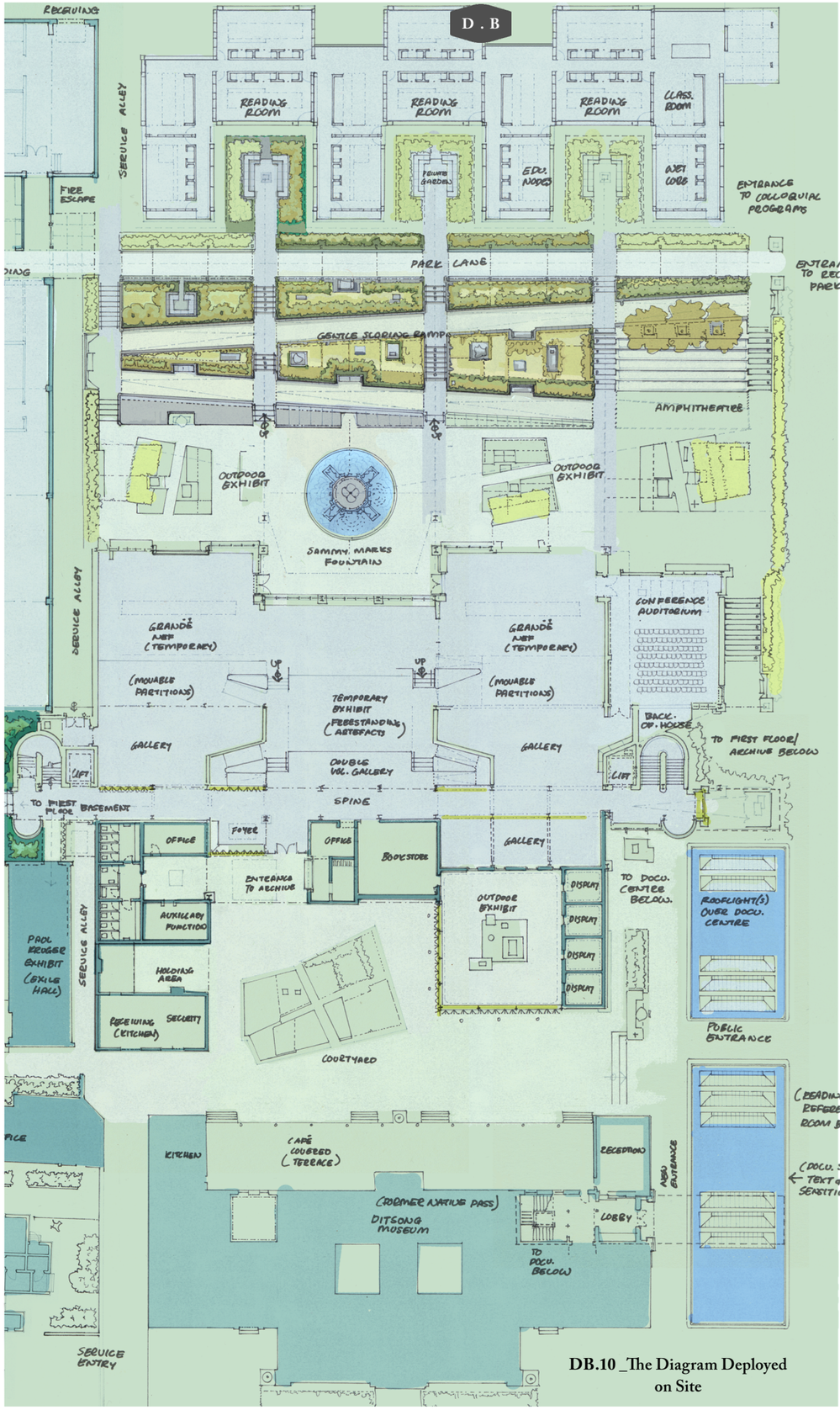


SITE PLAN ILLUSTRATING KRUGER MUSEUM PRECINCT, WITH DUTCH REFORMED CHURCH AT BOTTOM AND AND CONNECTION TO THE HOUSING SCHEMES NORTH OF PRECINCT INDICATED.



CIRCULATION DIAGRAM DEPLOYED





DB.10 _The Diagram Deployed on Site

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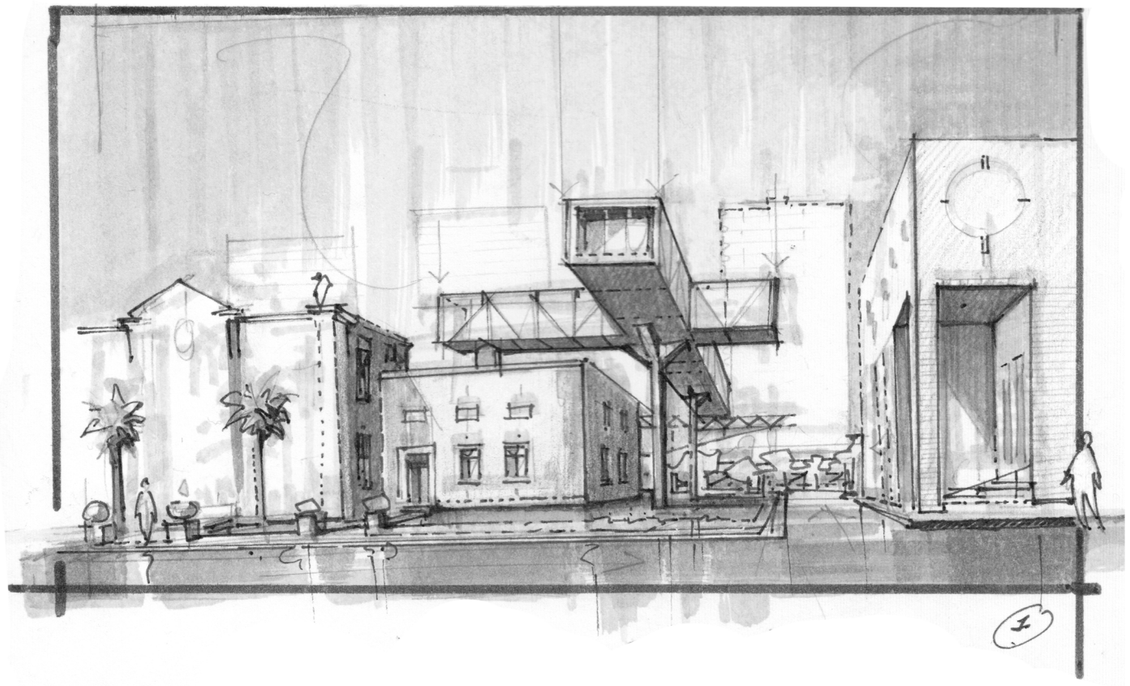

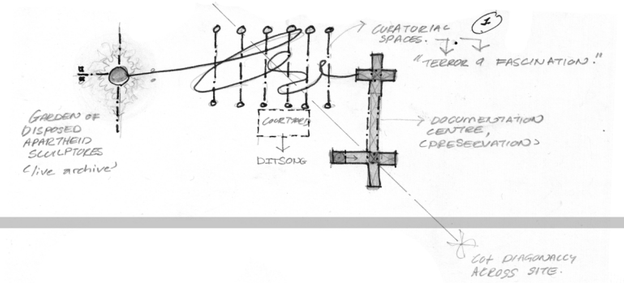

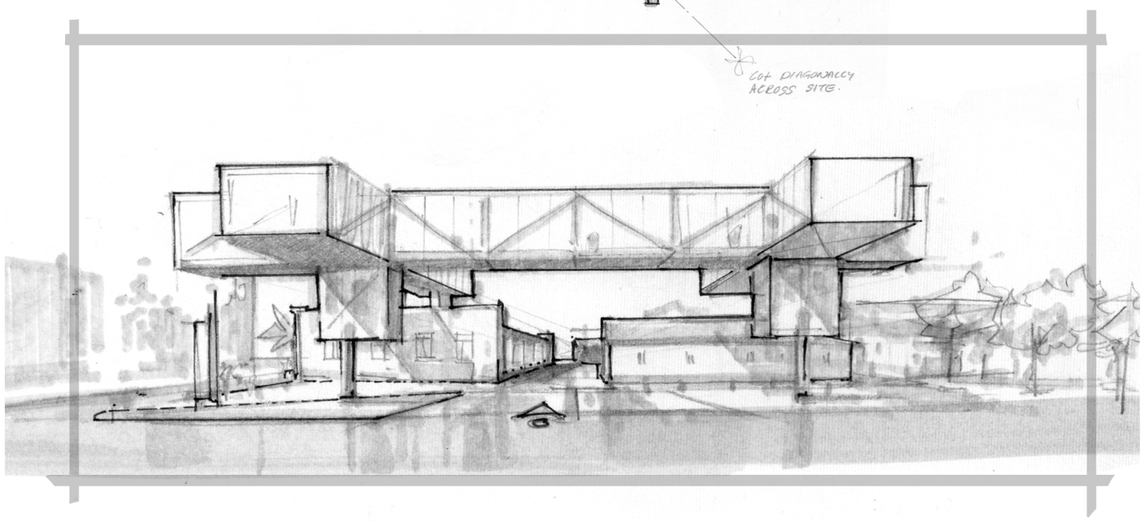

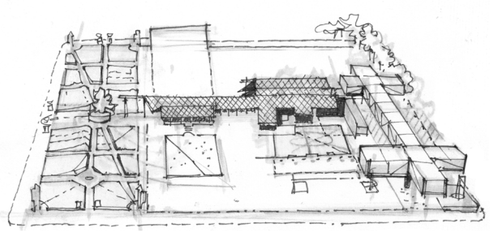

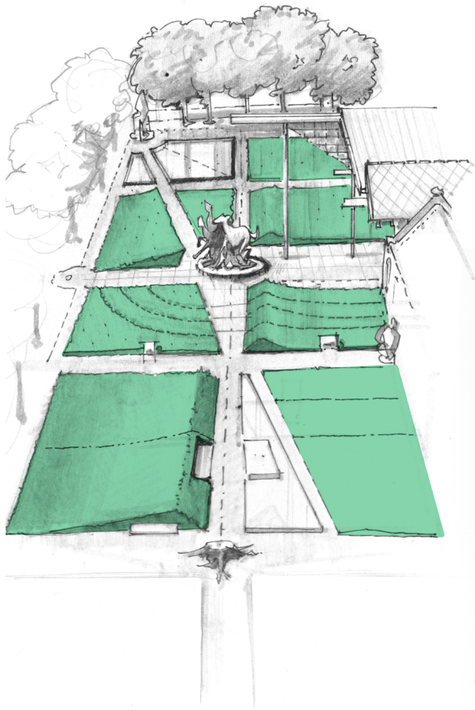



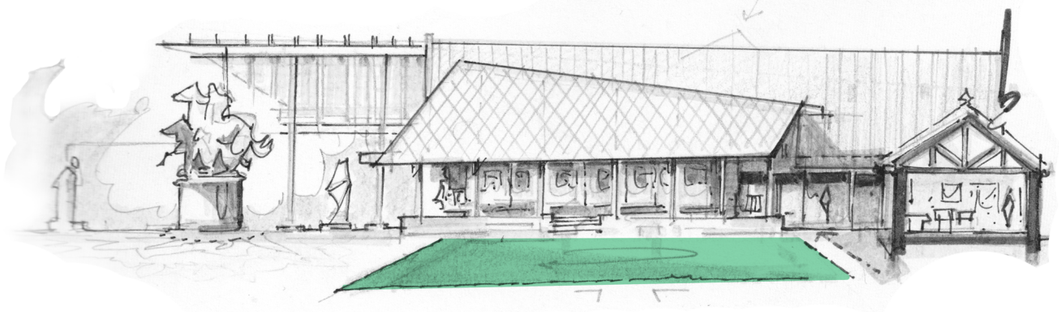

DB.11 _First Impression Imaging

DB.12 _Concept Ideation
Rooted in *Gestalt*

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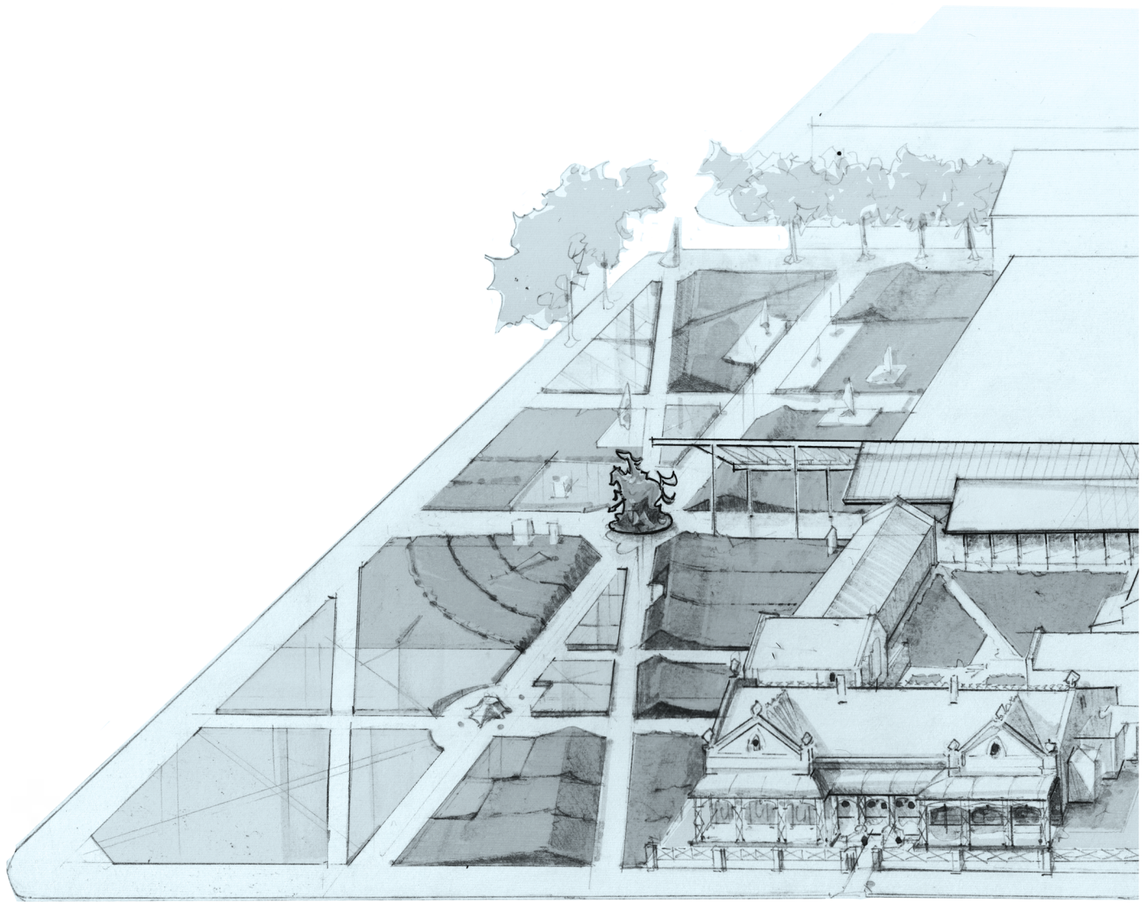

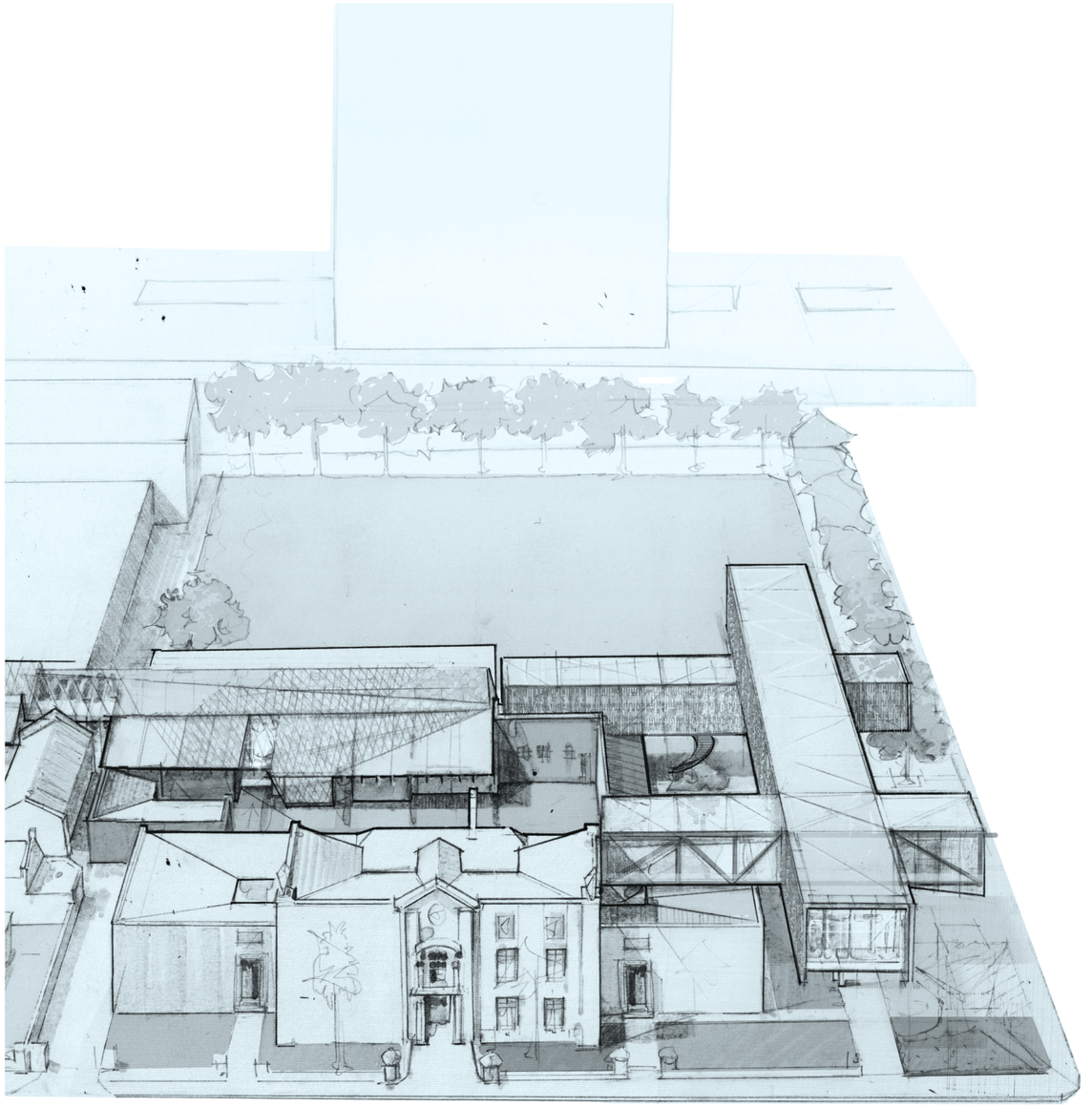

DB.13 _Concept Iteration Looking North

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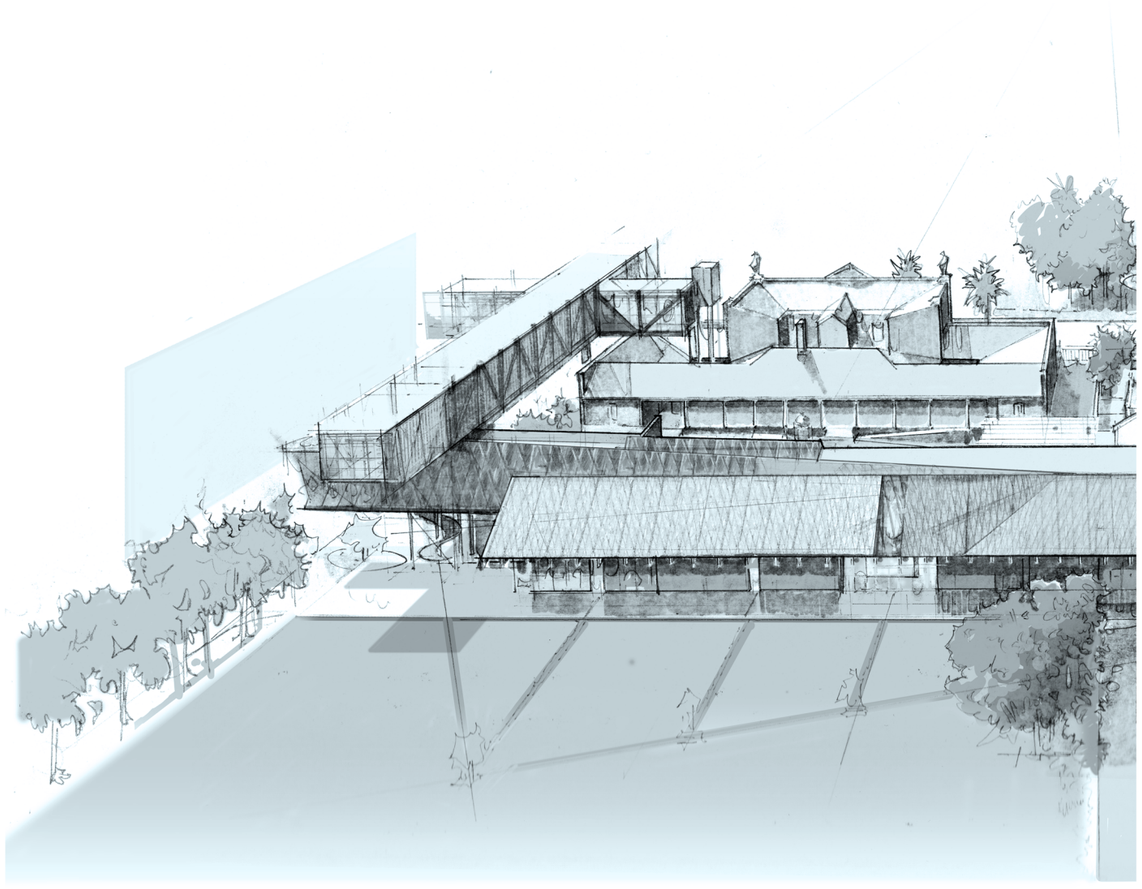

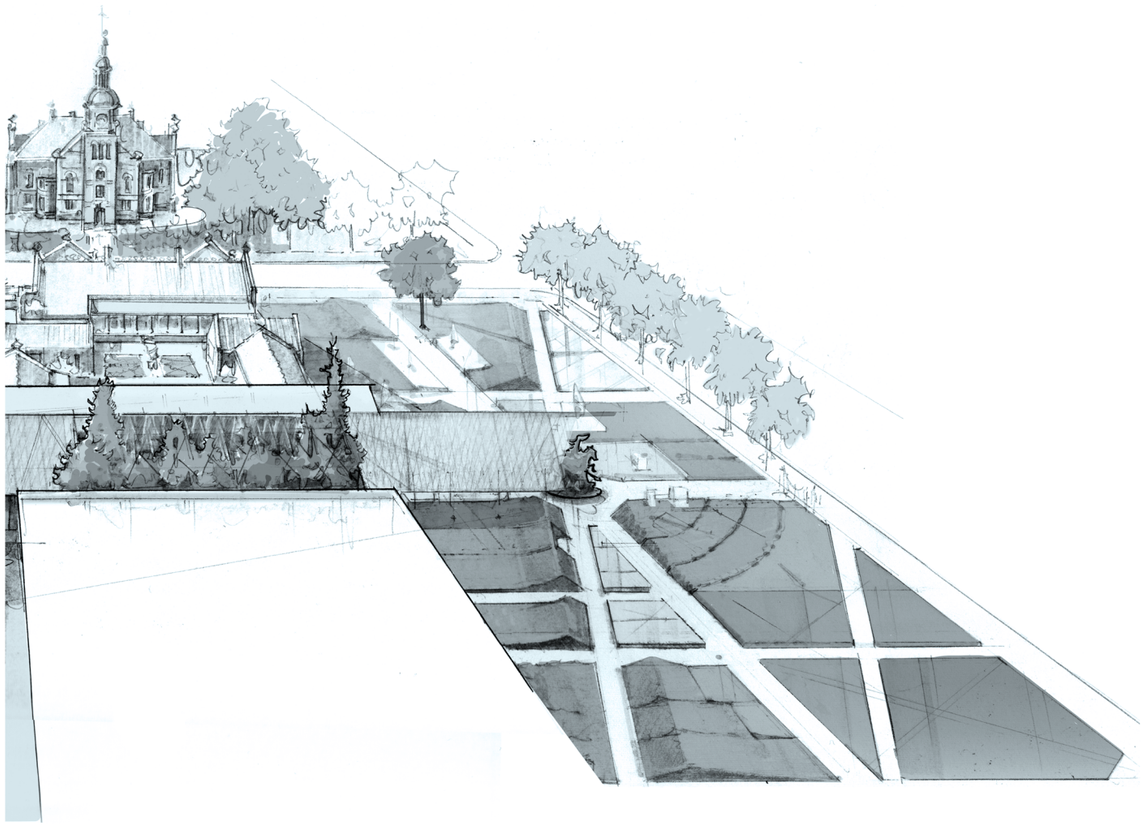

DB.14 _Concept Iteration Looking South

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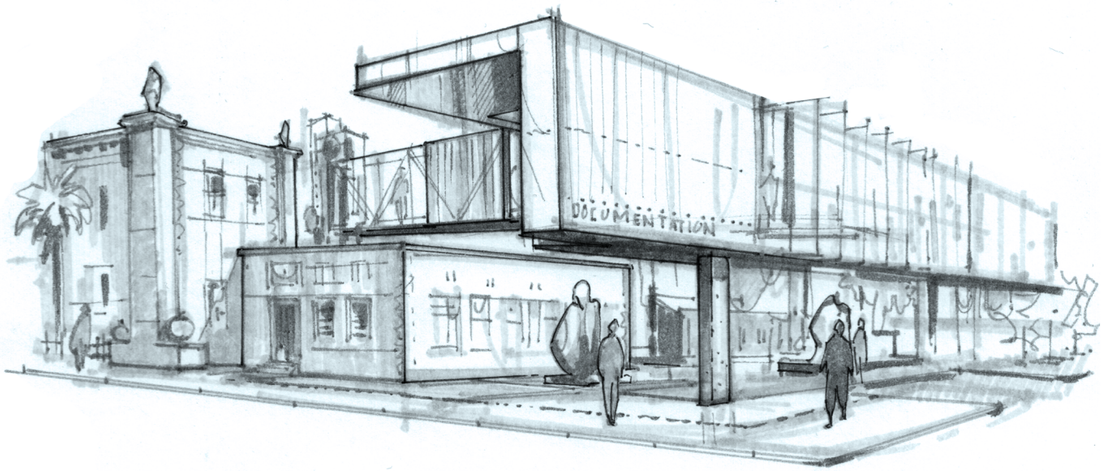
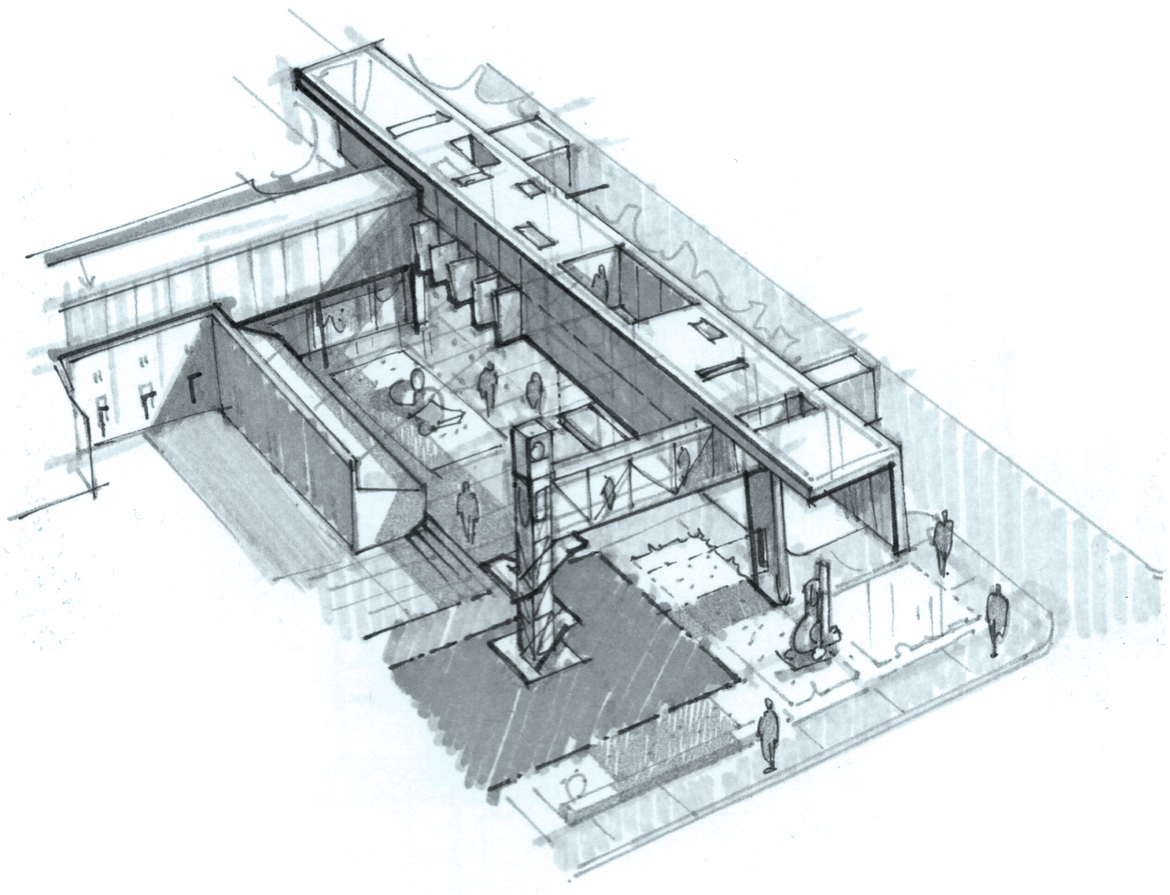
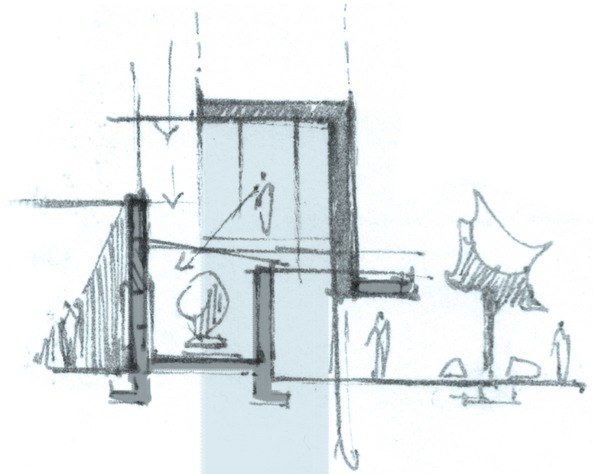
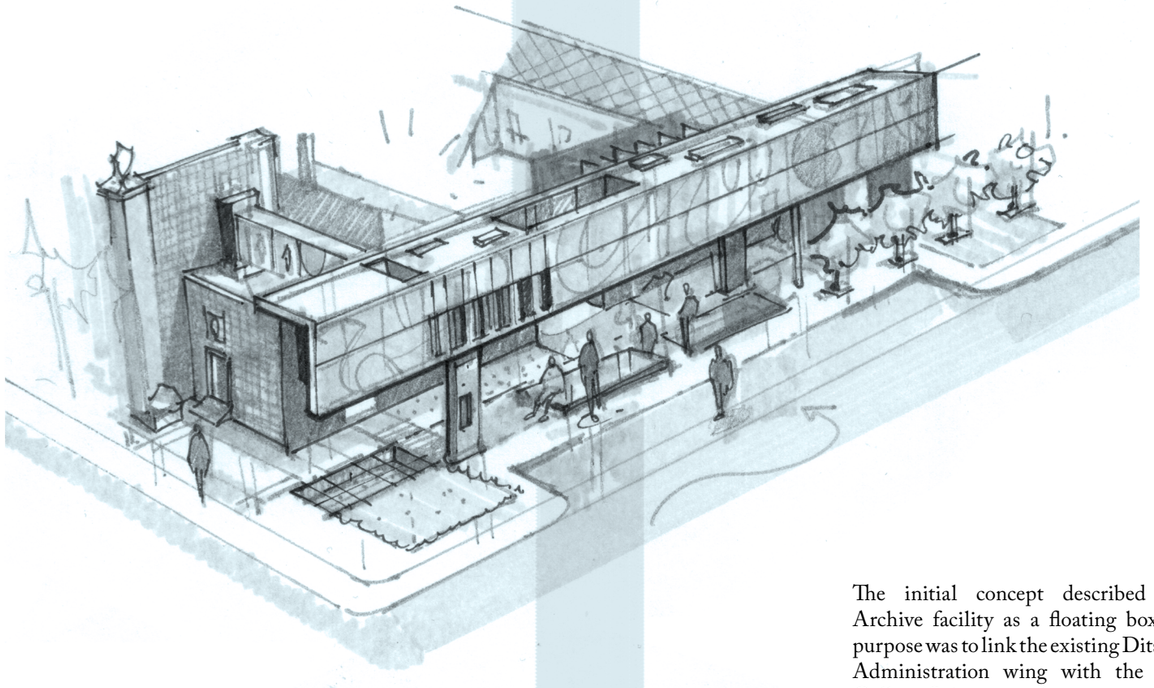
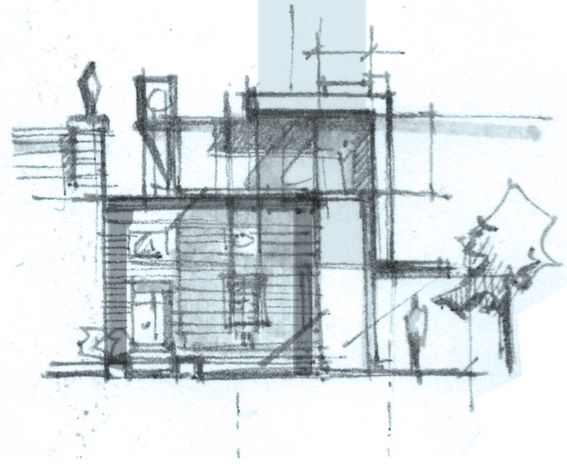




DB.15 _The Floating Archive Concept







The initial concept described the Archive facility as a floating box: its purpose was to link the existing Ditsong Administration wing with the new Gallery Spine, postulate a new street edge, and step in scale as a transition to the higher density of the neighbouring site. The concept was omitted for two reasons: as a classical body intended to be read, it supported a Modernist rhetoric and was inherently therefore ideologically in keeping with the former Modernist expressions aspired to by the Nationalist Party. As such the archive could not be seen or read as ideologically neutral. Secondly, despite the drawing intended to inaugurate a possibility, it was perceived as a reality and therefore difficult to argue for.

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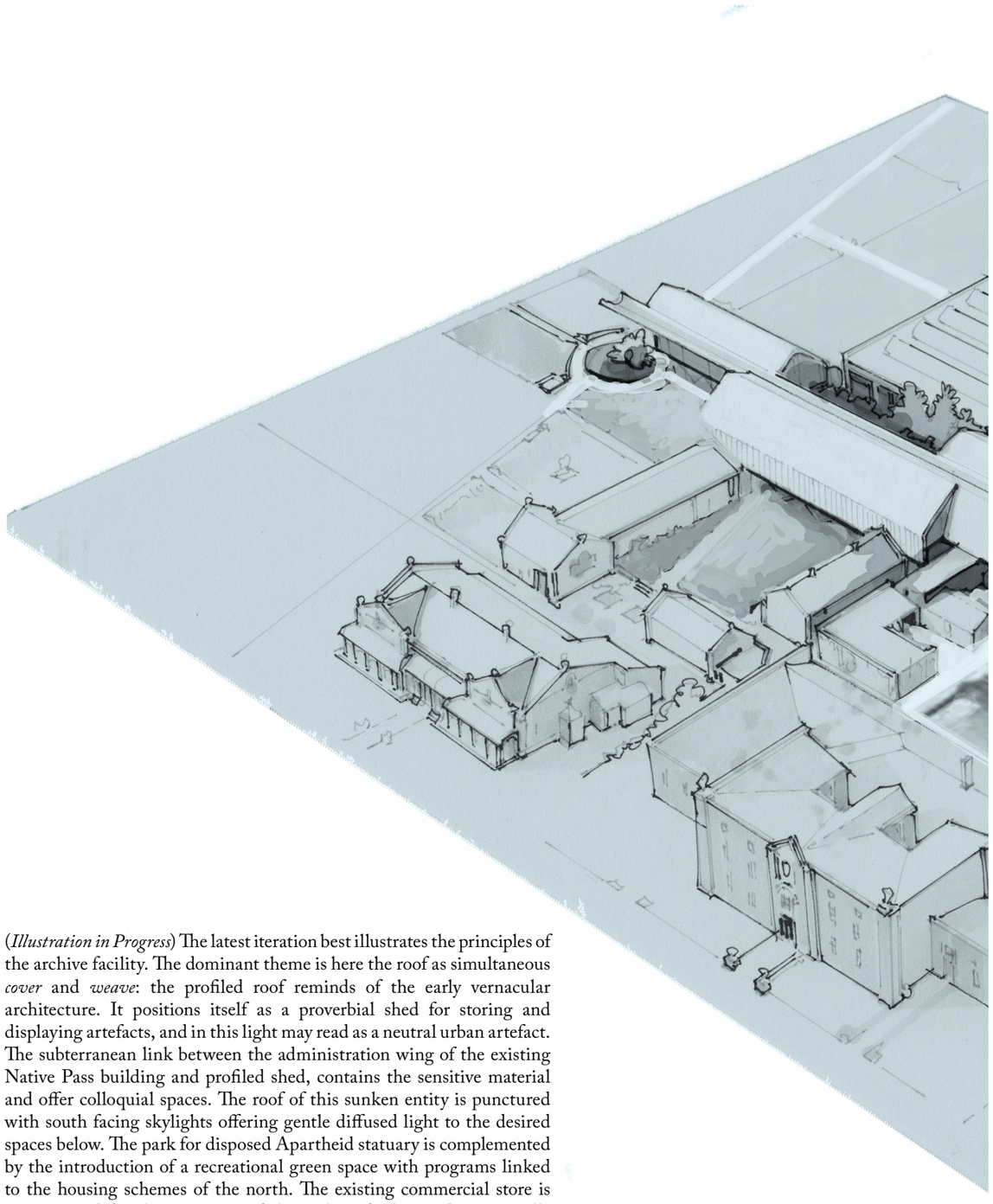
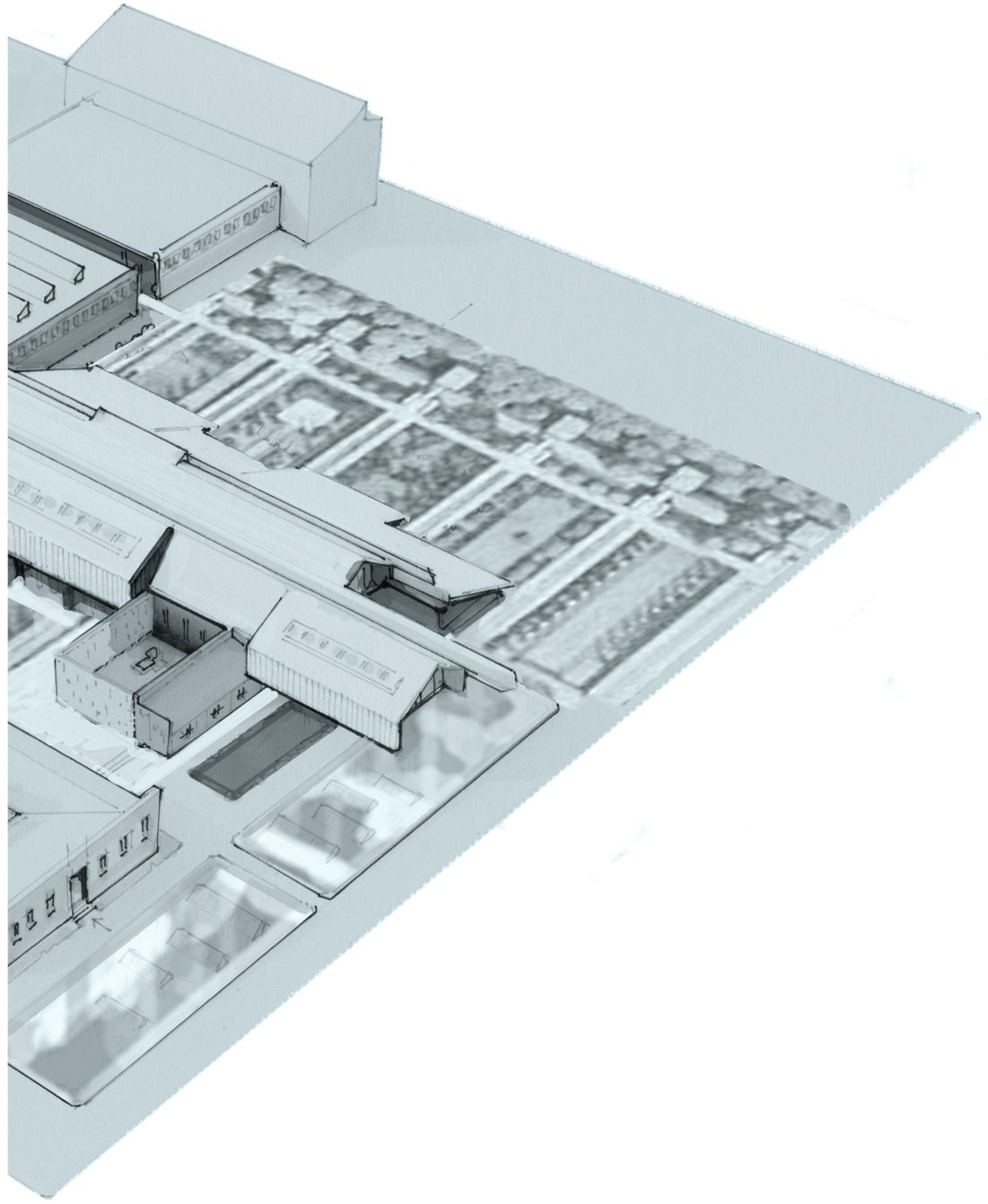


(*Illustration in Progress*) The latest iteration best illustrates the principles of the archive facility. The dominant theme is here the roof as simultaneous *cover* and *weave*: the profiled roof reminds of the early vernacular architecture. It positions itself as a proverbial shed for storing and displaying artefacts, and in this light may read as a neutral urban artefact. The subterranean link between the administration wing of the existing Native Pass building and profiled shed, contains the sensitive material and offer colloquial spaces. The roof of this sunken entity is punctured with south facing skylights offering gentle diffused light to the desired spaces below. The park for disposed Apartheid statuary is complemented by the introduction of a recreational green space with programs linked to the housing schemes of the north. The existing commercial store is appropriated for the extension of the archive facility and strategically punctured to assist in the program and flow of the landscape.



DB.16 _Design Developed Scheme in Overview

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THE PLAN IS *POLITICAL*, THE SECTION IS *POETIC*

As previously argued, the modern day architect is not the maker of buildings, but rather the author of drawings: describing, and instructing the creation of buildings (Hill, 2006:55). Thus the technical development moves from *drawing the building*, a critical vision of drawing, to the *building of drawing*, where the image becomes an analogue of building. With the existence of the building as a drawing which embodies the atmosphere, the process of constructing the drawing aims to mediate the active relation between space and structure. This implies that the emphasis shifts to the 'line' as a constructive and relational tool, taking on an active role in notation and delineation, towards the drawing as a material object in itself, affirmed by the building rather than the other way around. If, therefore the drawing stands for itself, it does not act as signifier but rather is signified through building, which as Evans points out exist after the drawing in a '*reversed directionality of drawing*' (Evans, 1997:165).

A problem with the internal logic of parallel projection, which tends towards a rectangular plan, presents itself as three drawing projections that are easiest to reconcile if they are perpendicular to each other. Here, the modern shift which freed the wall from structure, allowing spatial plan to happen unconstrained, enabled the material conception of space, but in turn alienated the plan from the intricate relationship between structure and space. Thus, in conceiving the drawing as a natural material, the building of drawing should seek to reconcile the relation between space and structure. In the broadest sense, to allow for spatial modulation through a technical investigation.

A sectional modulation is proposed, where the drawing is employed as a layered and separated technique which reveals the hidden, unveiling that which is not to be seen in order to to describe a multiplicity of issues included and incorporated into the development of a project. Here, the drawing line functions as delineator, but simultaneously affirm - as it mediates - light, structure and space, as well as the organization and hierarchy through an interplay of that which would be hidden (services etc.) .

Drawing as analogue to building can thus reveal the systems and interrelations where it functions as an occupied milieu. The working environment of the drawing in this condition takes account of the effects and significance of building, and comprises a more synesthetic image which shifts the emphasis from object appearances (representational), to processes of formation (notational). Here the drawing is not simply concerned with a representation of the constructed, concrete object, frame, support, or material, but reaches beyond in order to take account of the whole realm of iconicity.

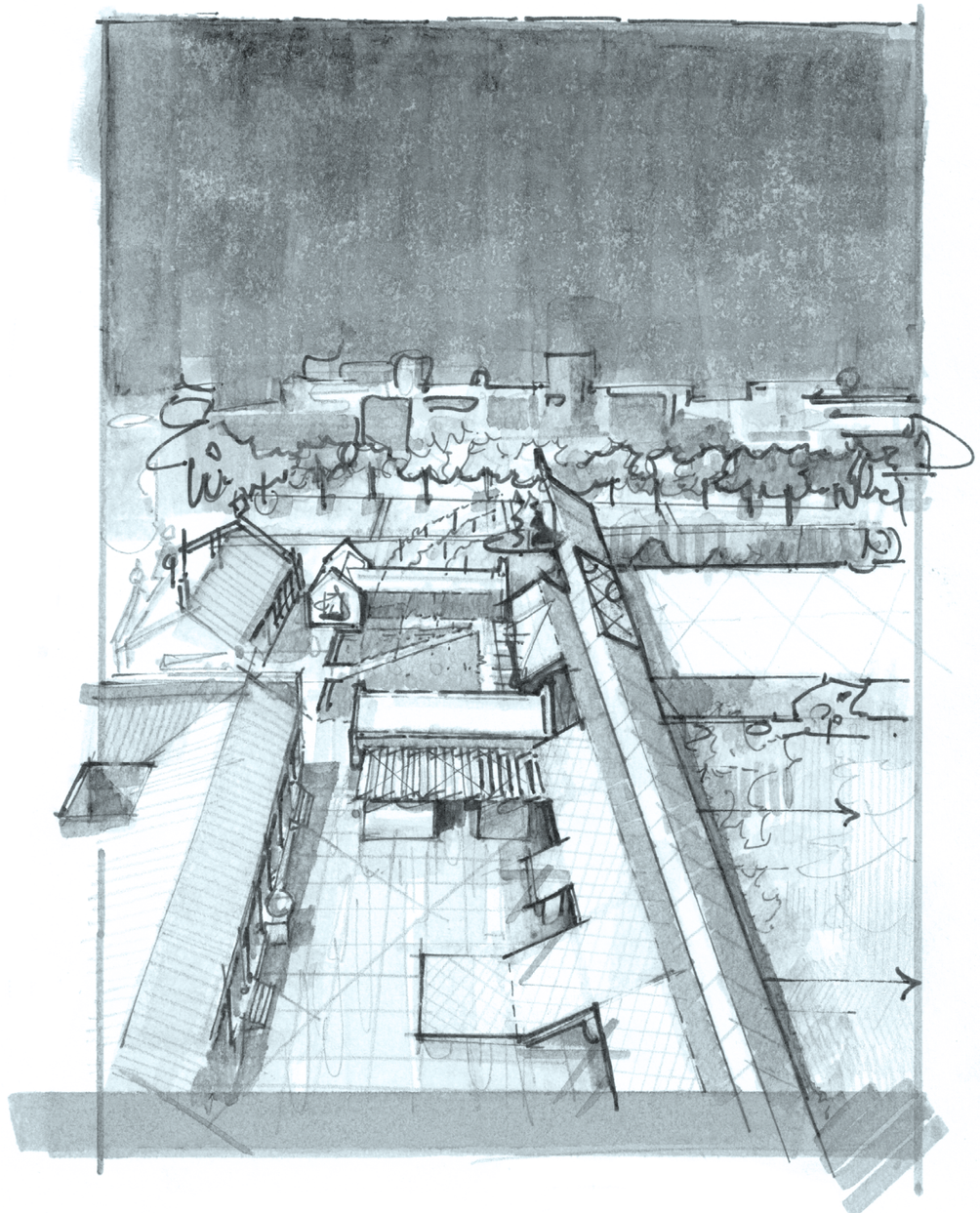
The resulting product is a composite montage of drawing aimed toward emancipation, heterogeneity, and open-ended relations among parts, rather than limitation and control through an affiliate and productive technique. The analytical and systemic operations are able to serve the creation of revelatory and rich effects. The dense sketches and notations inscribed and overlaid in the technical drawings of Carlo Scarpa, where multiple views and scales are developed as a speculative yet systematic unfolding serves as example. The drawing not only notates and instructs building but represent the space in making, the construction and meeting of joints, and the interplay between drawing and building.

The combinatorial methodology of the section in conjunction with orthographic drawings, places the observer outside, and importantly, in command of the view. This affords the architect with a necessary toolset for conveying drawing-information on all relevant scales simultaneously. The Parallel projection of the section allows the viewer to conceive the whole, measured and quantified in scale, while the orthographic drawing conceives the meeting of parts.

A plan may tend to be rectangular for a host of reasons, but the internal logic of parallel projection dissolves this notion… It is easiest to deal with the three types of drawing if they are perpendicular to each other… consequentially, a building will be a box in a box of pictures.

The claim made by the technical investigation is the act of focusing on the building of the drawing is rooted in the idea that Modernism , through liberating the wall from structure, enables spatial planning to happen regardless of structure. However, an intricate relationship still exists between structure and volume, and thus structure and space is inherently bound.

Manners in which drawing transcribe, describes building.



BD.1 _Framed Vignette of Proposed Focus Area

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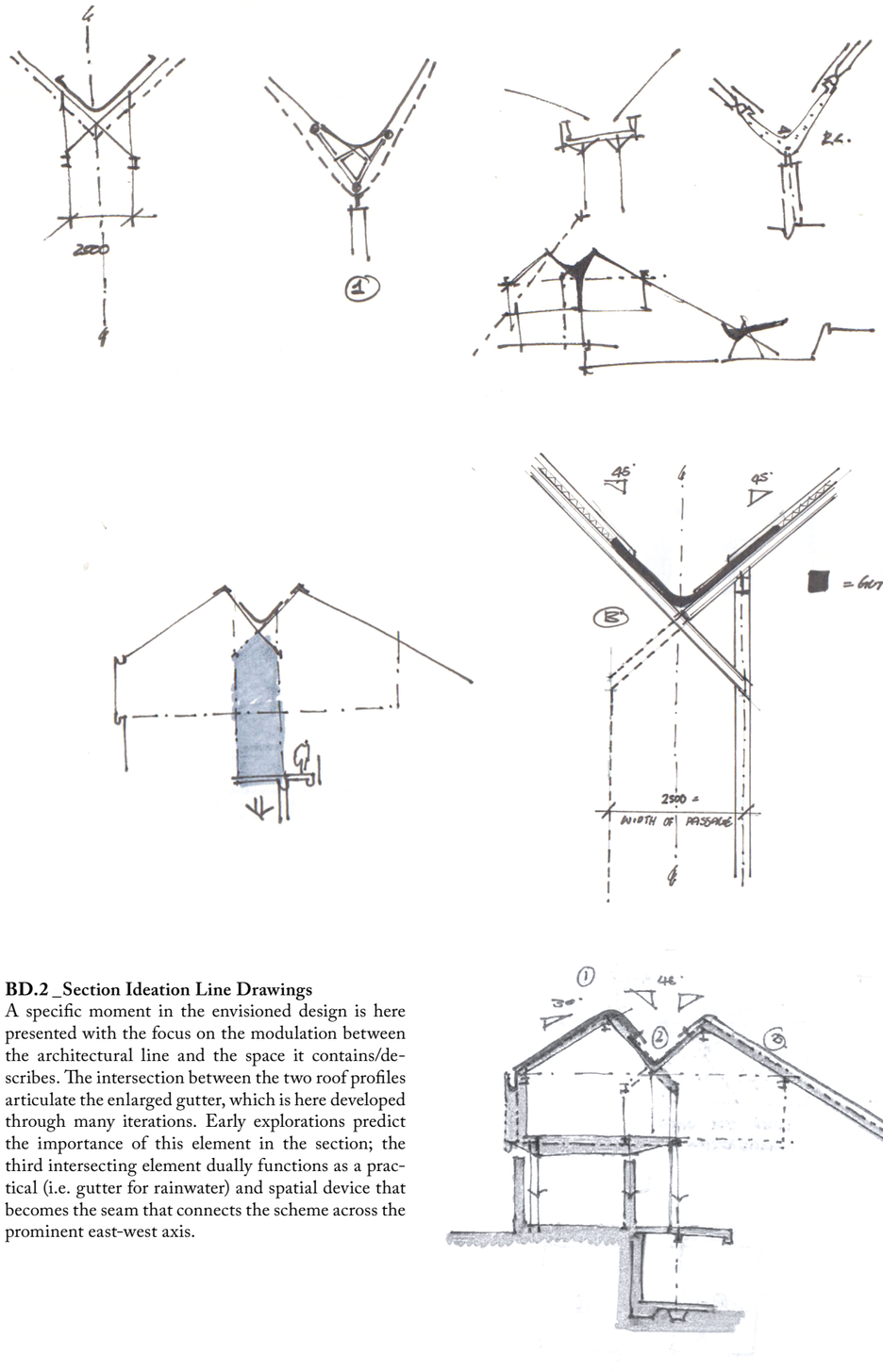
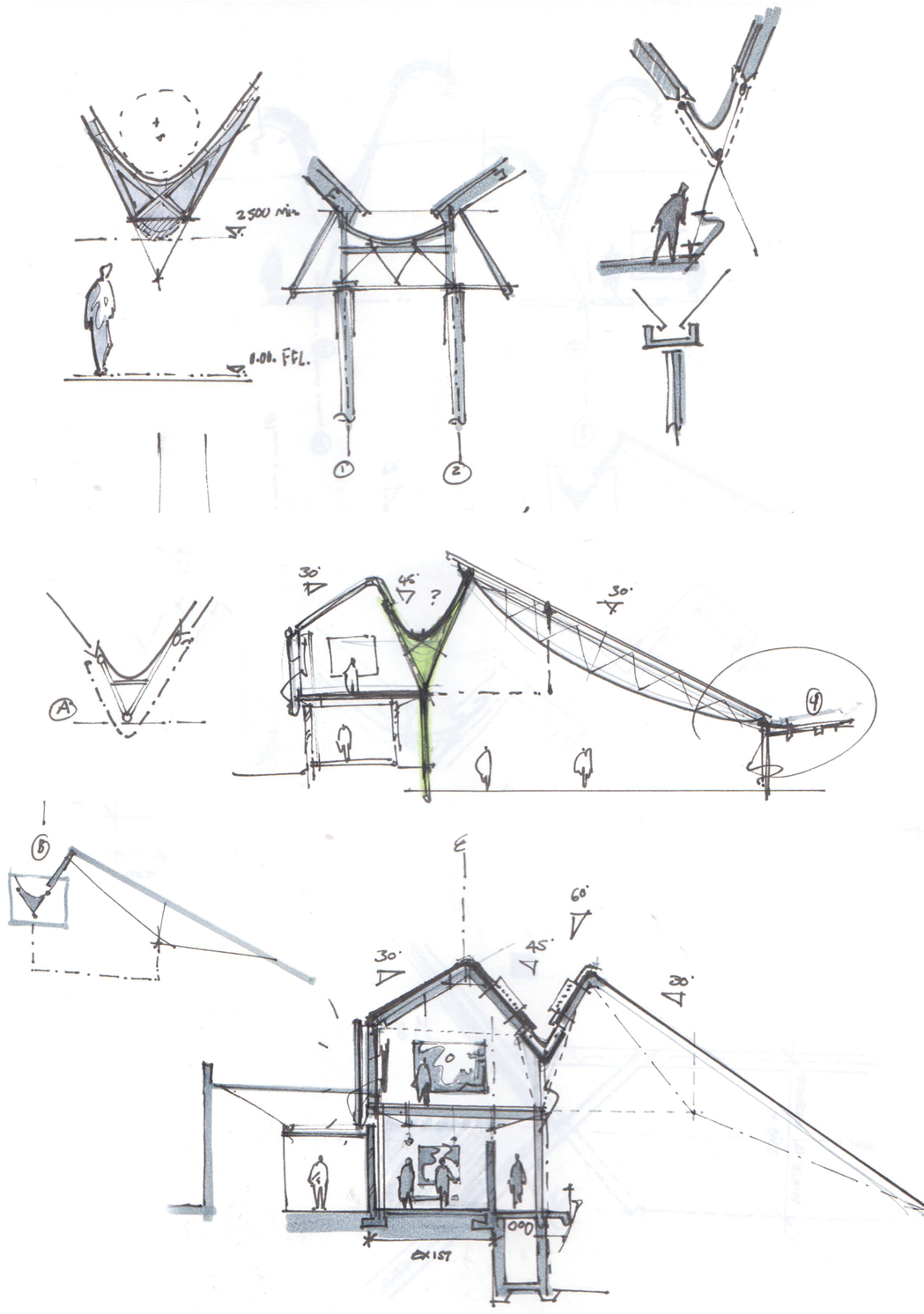


BD.2 _Section Ideation Line Drawings
A specific moment in the envisioned design is here presented with the focus on the modulation between the architectural line and the space it contains/describes. The intersection between the two roof profiles articulate the enlarged gutter, which is here developed through many iterations. Early explorations predict the importance of this element in the section; the third intersecting element dually functions as a practical (i.e. gutter for rainwater) and spatial device that becomes the seam that connects the scheme across the prominent east-west axis.



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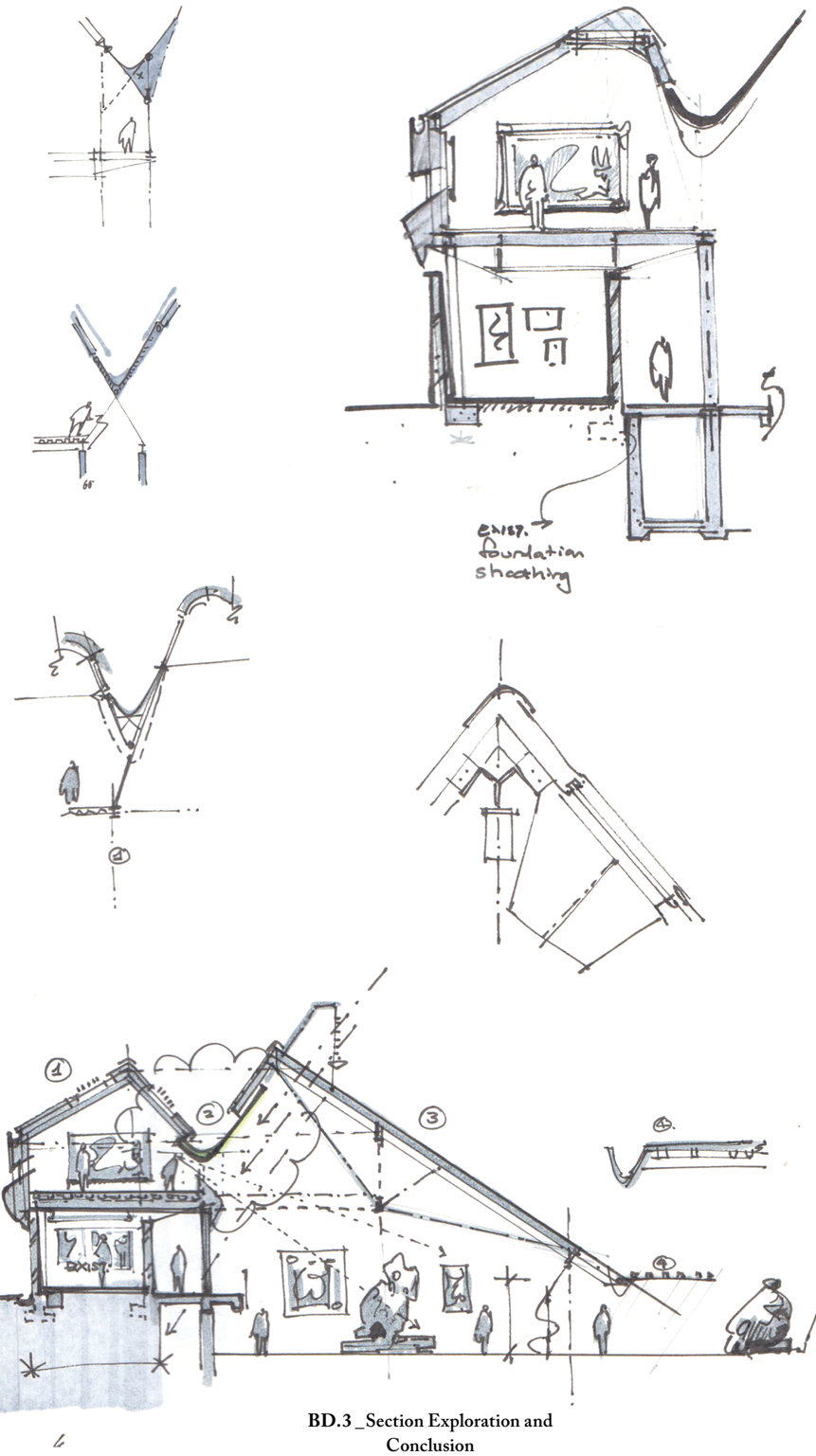
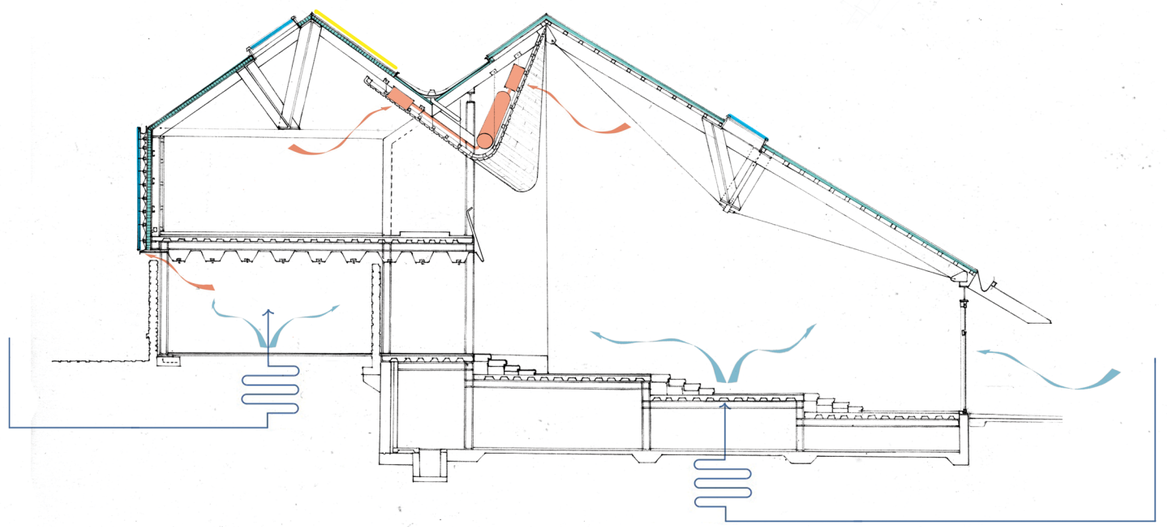


BD.3 _Section Exploration and Conclusion



BD.4 _Environmental Aspects Illustrated

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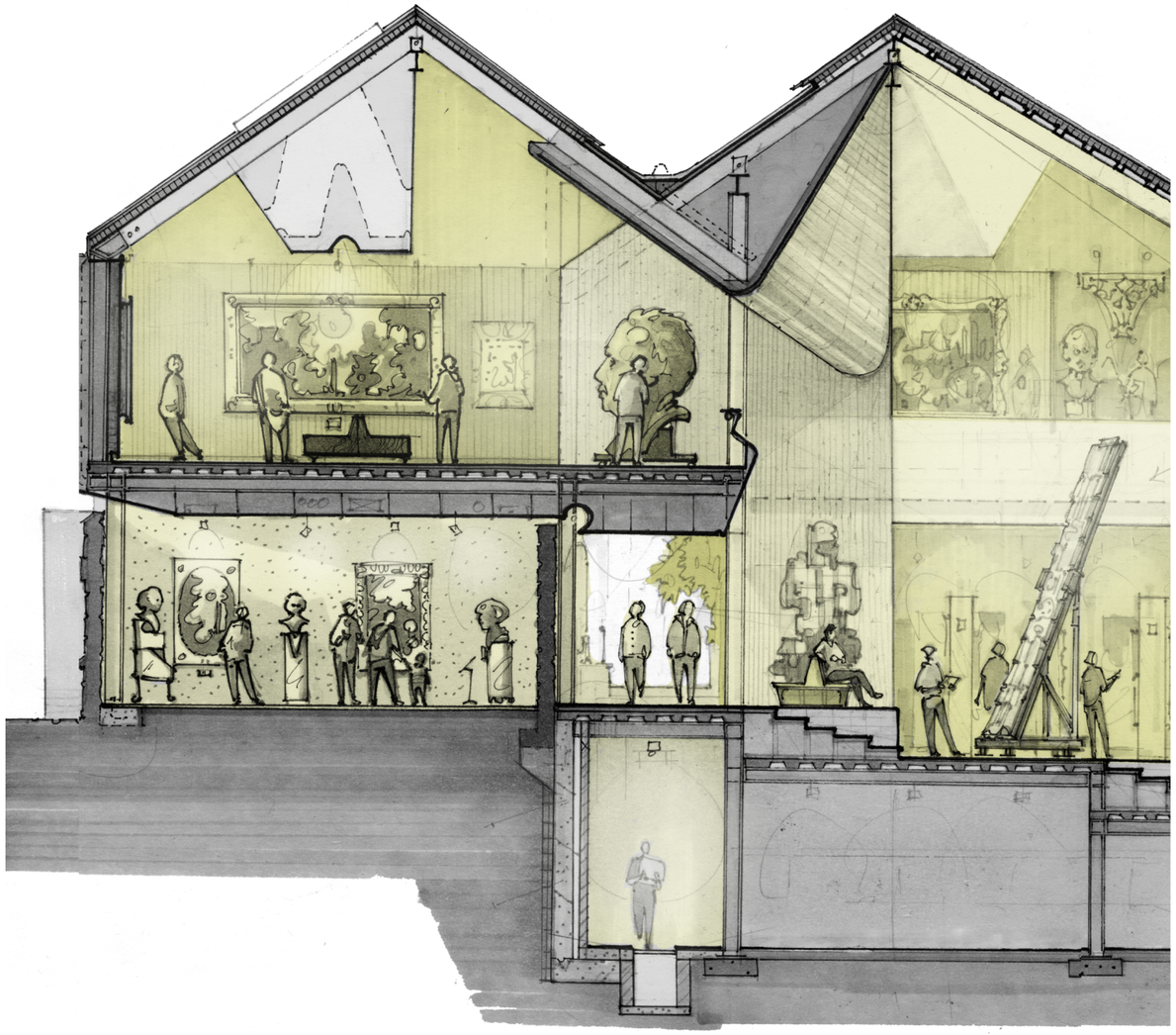

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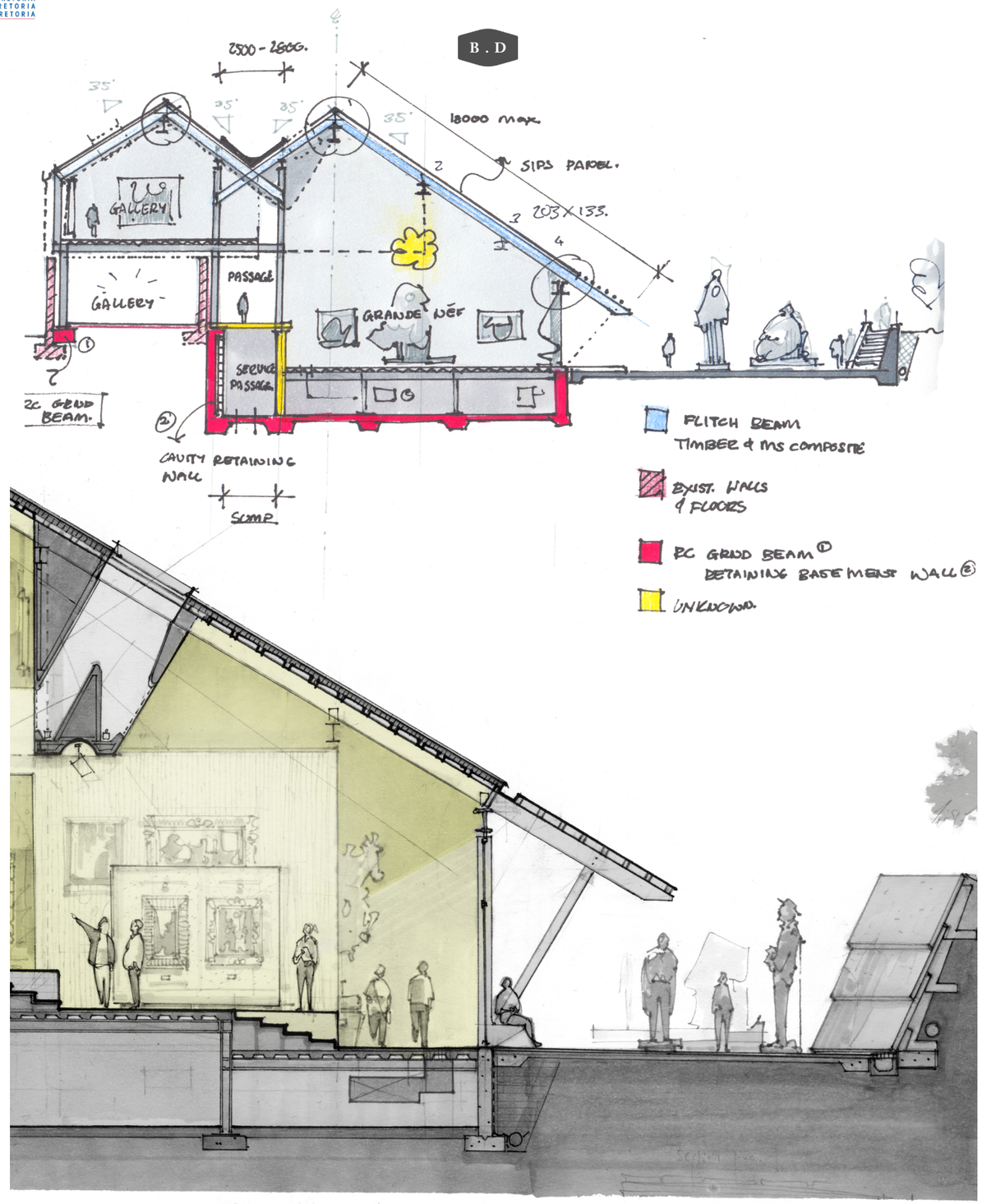

BD.5 _First Iterative Section in Detail

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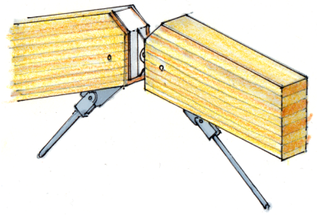

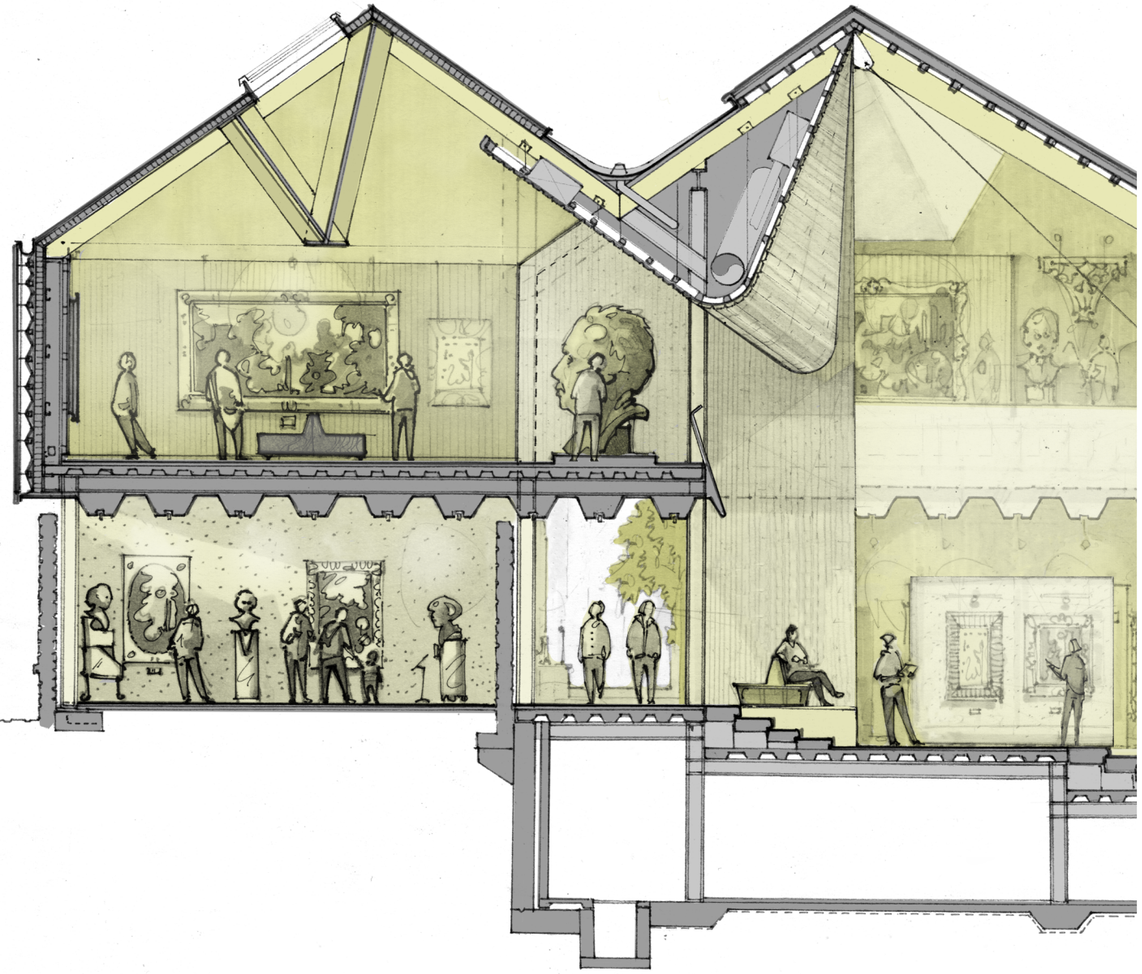

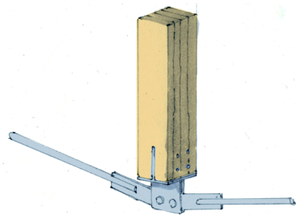

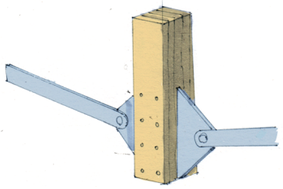

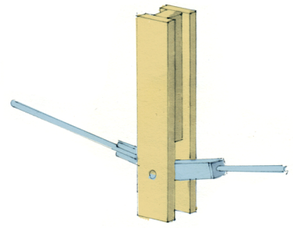

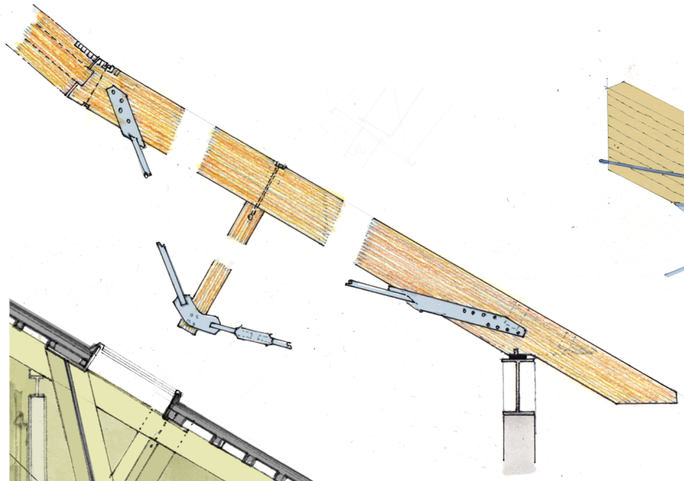

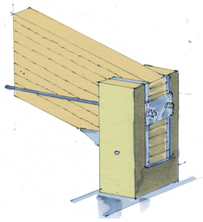

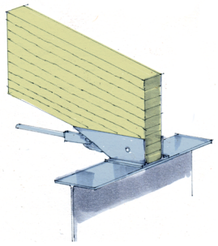

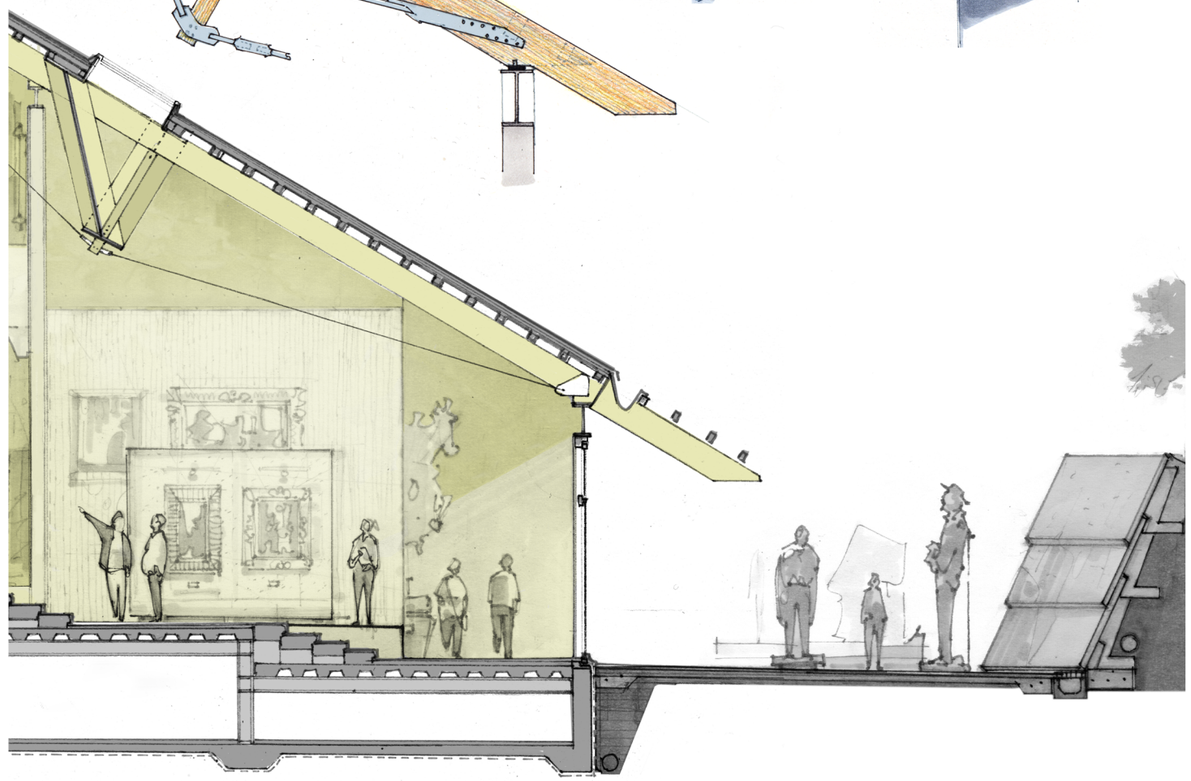

BD.6 _Second Iterative Section
in Detail

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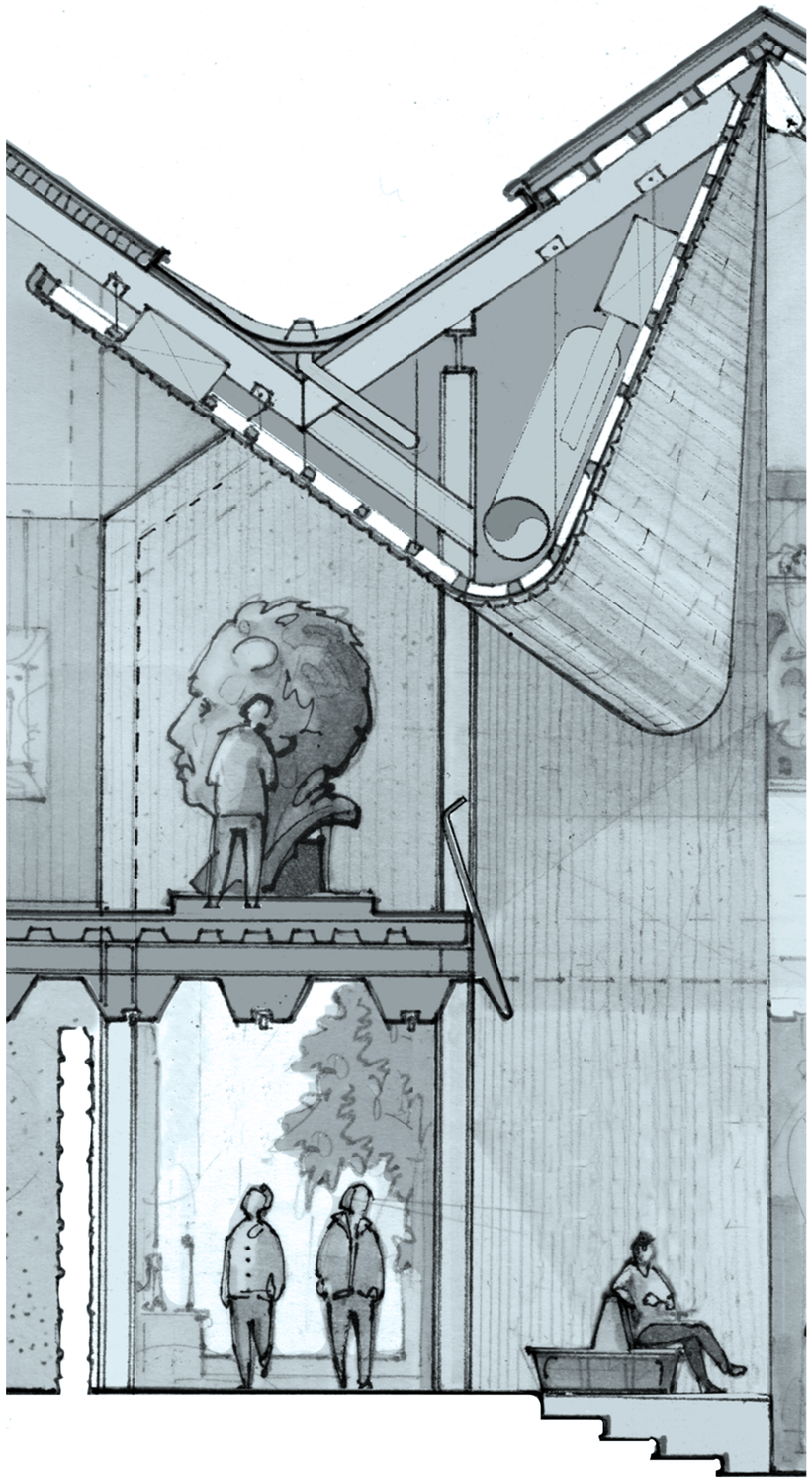
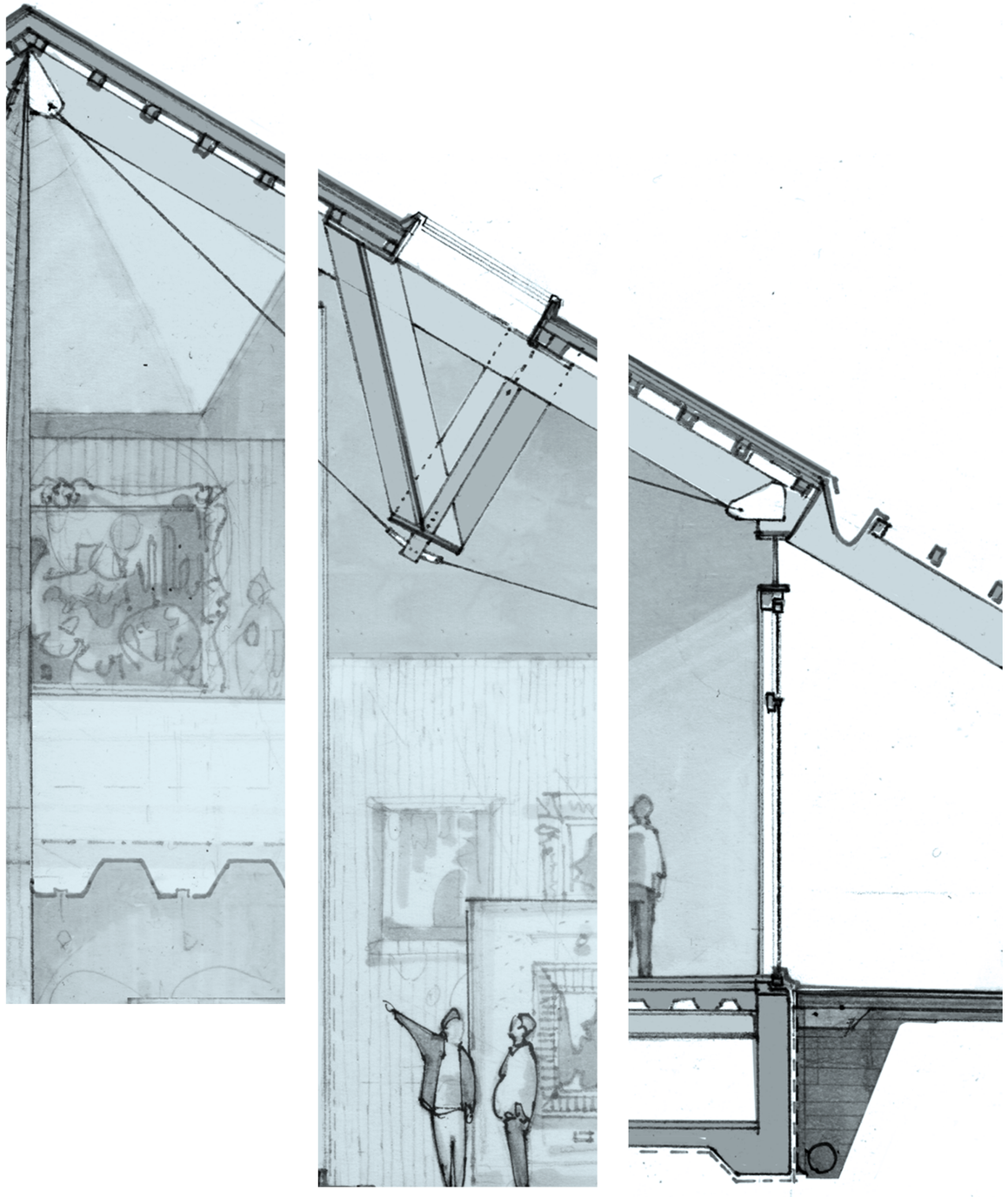


BD.7 _Gutter Detail Concealing Services



BD.8 _Roof Detail in Development

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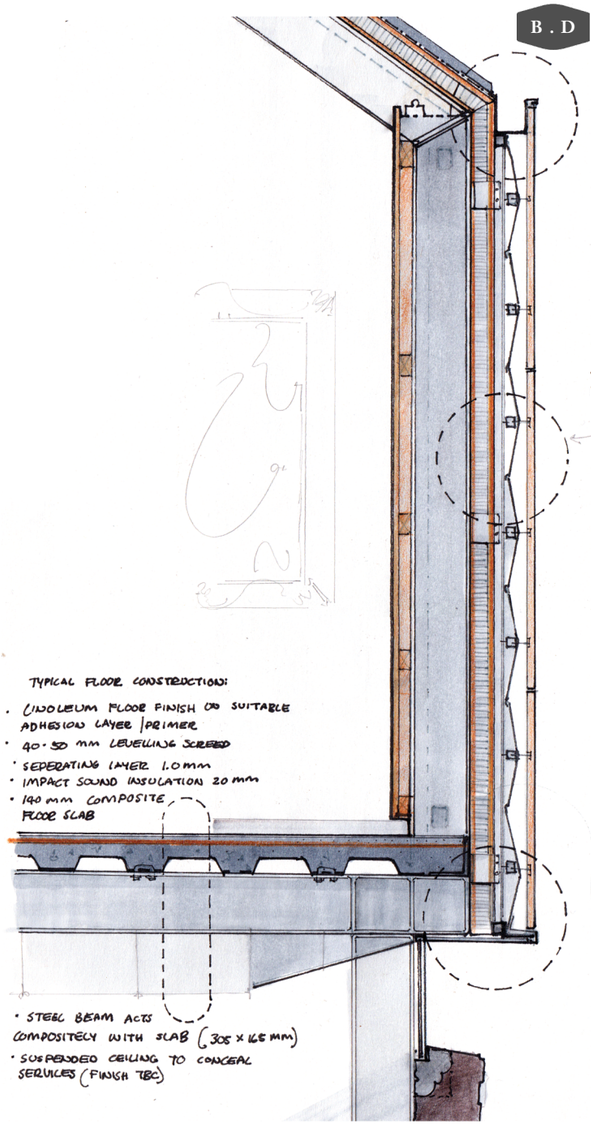
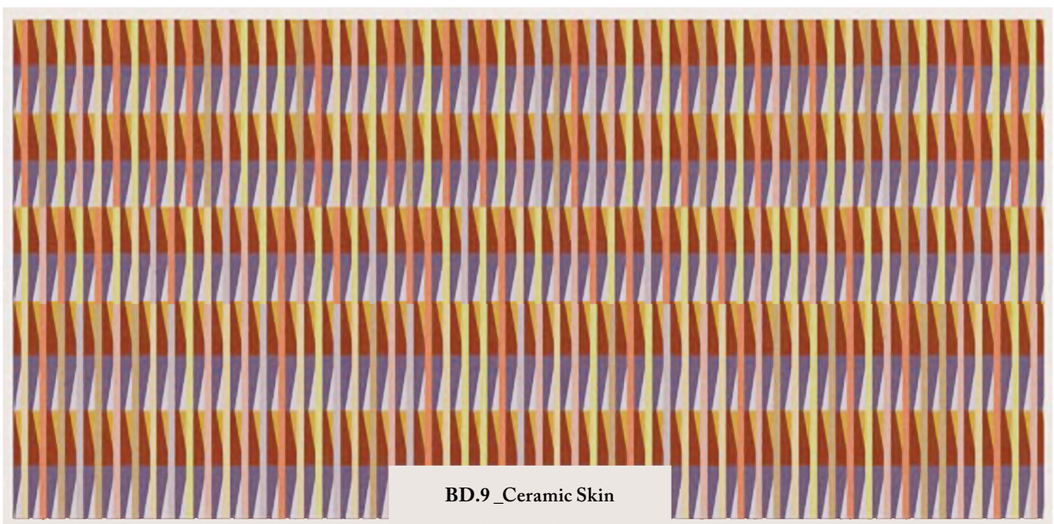
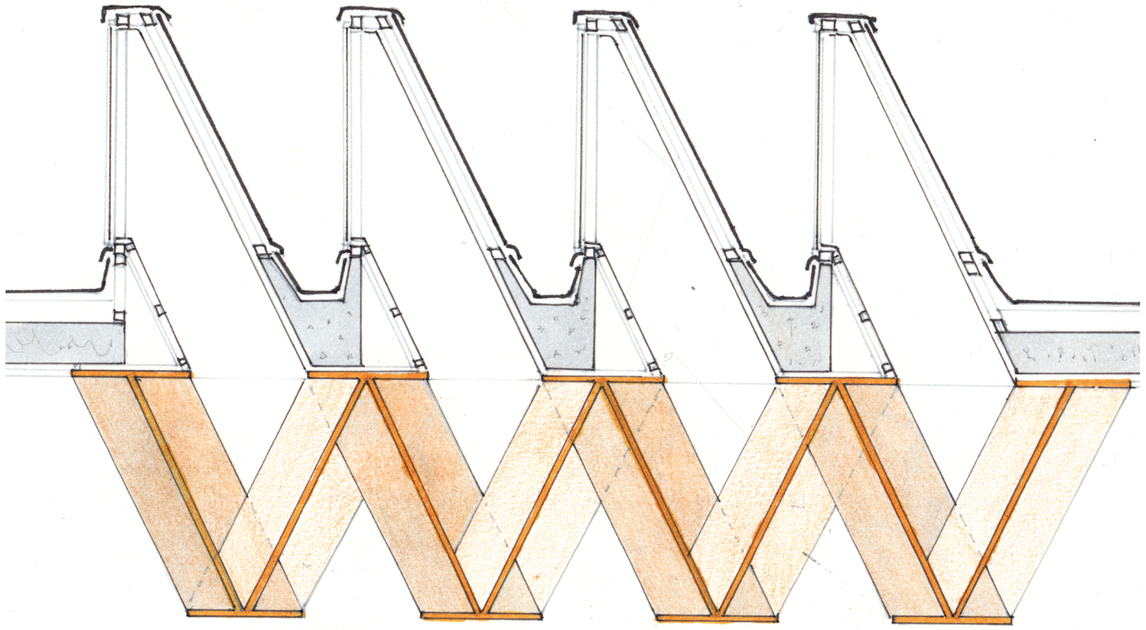
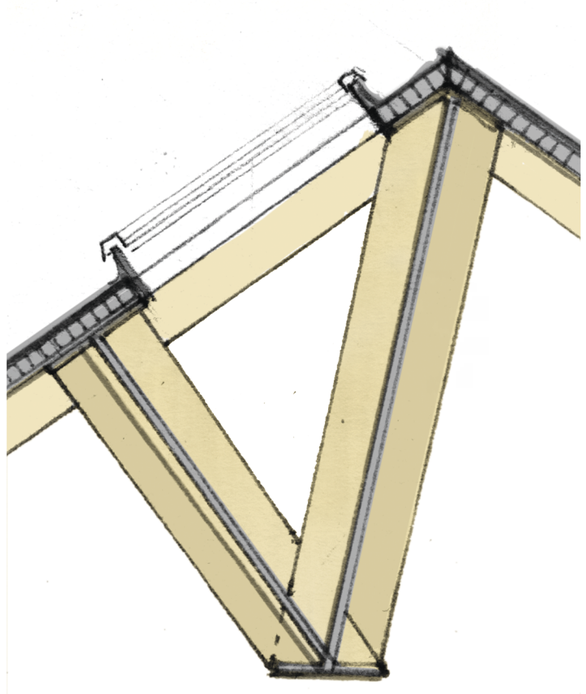




BD.9 _Ceramic Skin





BD.10 _Roof Lantern Concept

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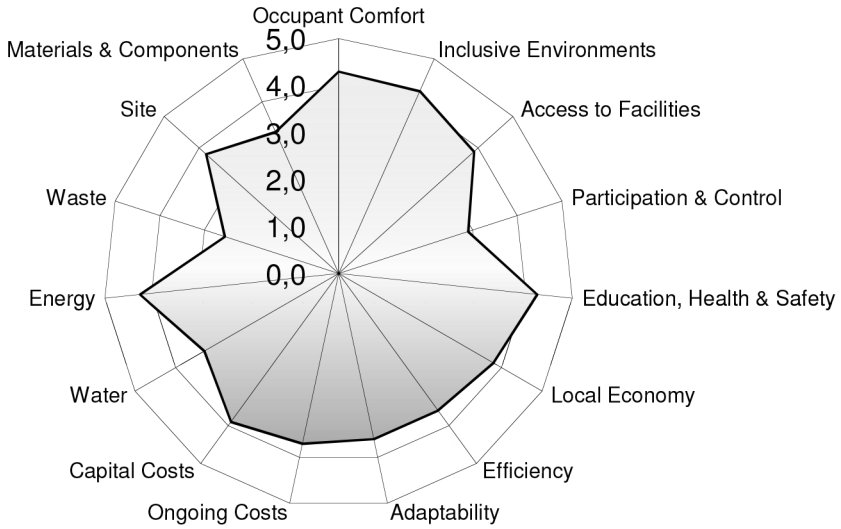
SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	Drawing the building and building the drawing	Date:	2014-10-25
Location:	North-West quadrant Pretoria	Undertaken by:	Jacques Mouton
Building type (specify):	Archives/Public gallery	Company / organisation	University of Pretoria
Internal area (3000sq.m		Telephone:	Fax:
Number of users:		Email:	
Building life cycle stage (specify):	Design/Construction/Operation		



Social	3,9	Economic	3,7	Environmental	3,4

Overall	3,7

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DECLARATION

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this thesis, which I hereby submit for the degree of Master of Architecture (Professional), at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my thesis has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Jacques P. Mouton
MArch(Prof)

October 2014

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