

urban cemetery

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Prologue:

During the July holidays the Swart family undertook a two-week safari trip through Botswana, which included travelling through the Okavango Delta up north into Savuti and beyond. An experience during an early morning game drive in the Savuti echoed my initial visions concerning the essence of the following dissertation:

The sandy road that snakes through the monotonous, lifeless Mopanie bush hides the horizon, alternating greens, reds and browns trapped in nothing but a vastness of un-choreographed repetition. The road continuously curves left and right; lost in a labyrinth the road seems to lead to the depths of nowhere, but suddenly a sort of unexpected place appears that is secret and evocative of the past.

a sacred gathering of the wise.

This is the essence of the dissertation: *to envisage a hiding place, a place of rejuvenation, a place where the city dweller can listen to those who speak in silent memories.*



Figure 001: Baobabs in Savuti National Game Reserve



Figure 002: Landscape photo of the Baobabs in its context

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Abstract

The following document considers contemporary deconstructivist theory as perceived by the American philosopher Mark C. Taylor and explores the formal translation of it in terms of an architectural intervention. The concept of death is considered as that which has been refused or negated by means of Modernism's death-defying ambitions and the return of the refused emphasizes the "between" condition which eternally defers the possibility of conceiving that which is self-existent without relation to other things.

The "between" is most evident at the edge where the polar opposites of existence converge and Derrida's "différance" appears by disappearing through the cracks, tears and fissures which prevent the possibility of figuring this un-figurable absolute which has been yearned for throughout the history of philosophy.

The proposed design of the urban cemetery celebrates this concept of the "edge" in which these cracks are widened by means of a sort of "inappropriate" use (cemetery), placement (urban) and architectural intervention. An architecture of the refused is devised.

introduction

Theoretical Premise

"Architecture and art are the means by which contemporary man has attempted to transcend the normal and the everyday. The artist or architect does not seek to stabilize the existing reality, but rather to put it at risk, to reach for its limits and so to enter the direct presence of the sacred and the absolute."(Goosen 2001, p.23)

While the researcher is searching for an appropriate theme upon which to base his dissertation, different possibilities come to mind: From a cultural centre at the Voortrekker monument to an Aids awareness centre, from a multifunctional building to a tourist information centre, and so forth. Yet pondering the condition of the city, the writer wonders whether the design of just another building on an empty stand would really contribute to the improvement of the city as a whole. Would its impact not be restricted, marginal? Shouldn't an issue more generic in nature be addressed? Why the urban sprawl: is it only crime, or the stigma surrounding crime, which prevents some social groups from wanting to visit the city? Is it not the result of the left-over spaces, back alleys and areas filled with refuse between the urban elements which harbour criminal activity? Is it not these residual spaces which disrupt and prevent the city from being continuous, connected, unbroken? This is possibly a better point of departure. Perhaps working with these residual spaces, transforming them through multiple interventions, connecting them, overlaying another layer in the city, which functions on a grid of that which was neglected, will re-establish continuity. These initial utopian visions of the city functioning as an unbroken whole will undergo a process of transformation in the following theoretical investigation. The possibility of continuation will be questioned and its impossibility suggested, after which an appropriate programme, site and architectural intervention will follow, architecture of the refused.

Mark C Taylor's theosophical analysis of Modernism and Modernist Postmodernism figures a contrasting strategy of disfiguring in terms of which the presence of the sacred and absolute is supposed to be entered. Modernism, through the process of negation, disfigures by means of removing figures, while Modernist Postmodernism "disfigures Modern dis-figuring by defacing abstract forms and pure structures with superficial figures". (Taylor 1992, 230) Modernism and Modernist Postmodernism share however at their base an archaeoteological process which is supposed to culminate in and completely define absolute reality. Therefore a unifying theory of the universe emerges, defined by a common denominator: in the

case of Modernism, abstraction and Modernist Postmodernism, this is figuration. Taylor (1992) suggests the impossibility of such a unifying theory which culminates in perfect wholeness or completeness by utilizing the Hegelian abrogation in which the other, that which has no use or value, is simply discarded and ignored during the process of negation. He, rather, proposes a third reading of Postmodernism which neither absolutizes nor erases figures, but "enacts what Freud describes as the process of denegation through which the repressed or refused returns." (Taylor 1992, 230) Suppose, taking modernism as an example, that through the process of purification all which is other (and inferior) has been negated and that a perfect whole is constructed, the latter can therefore exist only by virtue of its difference from the non-whole. Without that which is "between" the whole cannot exist. The "between", being the precondition of the existence of the whole, is therefore also the reason for the impossibility of the whole ever existing, the ever present other which is always extraneous (Goosen 2001, p.104).

Arriving at this insight, my utopian visions of establishing a faultless city seem to be in accordance with the Modernist ideal, except for an important difference: The acknowledgement of the existence of these other spaces dislocates the Modernist ideal from within. The Modernist utopia during the process of purification abrogates the existence of these spaces by hiding them, cutting them off. The isolation of the refuse-filled and refused spaces which are not cut off by some physical means tends to create hiding spaces for criminals who mug, rape or murder. The deconstructivist theorists, architects and artists do not attempt to cancel or abrogate this other (spaces in terms of architecture) which possess no or little utilitarian value (refuse), but, rather, try to celebrate them. This does not mean that criminal activity is celebrated, but rather prevented, by means of integrating these refused spaces as an important aspect of the urban experience and reality. Figure 1 offers an example of the celebration of that which has been refused by modernism's search for purity. Miss Lucy Pink is the crushed and compressed metal sheets of an actual automobile chassis caught momentarily at a point in the cycle between its original function and the junkyard (Fleming 1995, p.647). The "between" state of the object signifies change, potentiality and a certain dynamic quality defining its existence. The object is a fragment of time captured in an indefinable form.



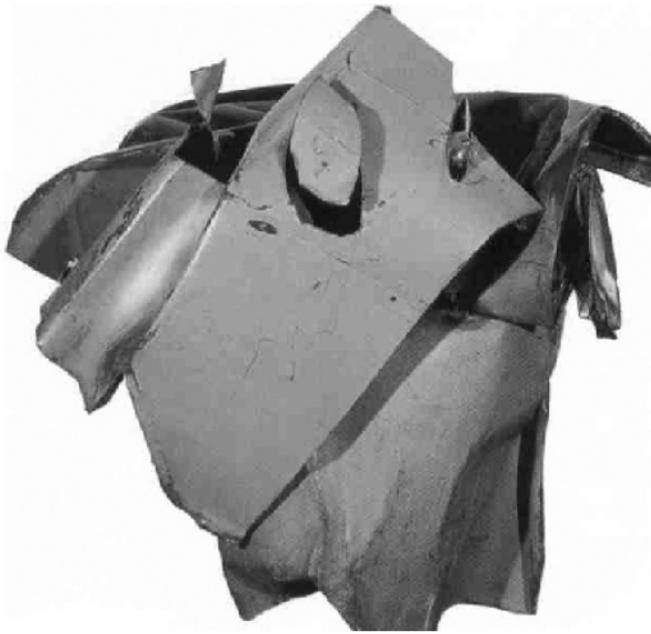


Figure 003: Miss Lucy Pink.

An appropriate theme and site in relation to the theoretical argument would surely then deconstruct the conventional practice in terms of which an open site is purchased and developed. By the selection of the theme and site, that which has been negated at the second phase of the Hegelian abrogation is not negated again in the third and final negation, which would result in a moment of completeness, absolute-presence and wholeness; but through the process of de-negation the final negation does not occur. Instead, the negated is affirmed. Refuse or this extraneous third returns and disrupts this moment of completeness (Goosen 2001, p.96).

The theme: an urban cemetery.
 The site: A left-over segment

The theme and site selection will be justified both theoretically and practically in the following sections.



Figure 004: Site position

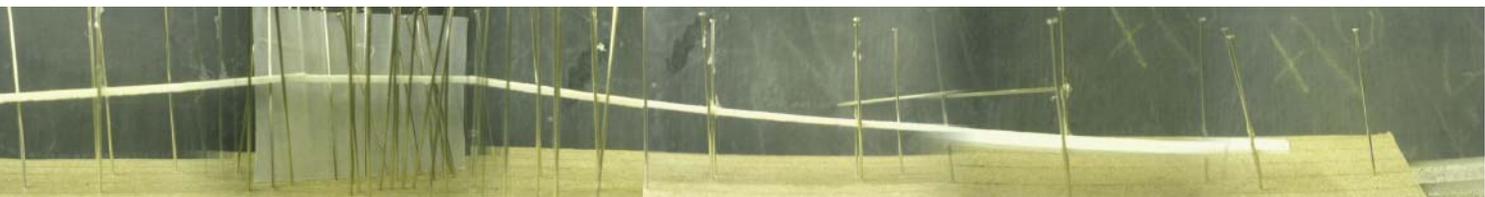


Figure 5: Conceptual Model February 2006



Figure 006: Digital Collage indicating position of site and surrounding infrastructure



If, as Derrida suggests, the act of deconstruction includes questioning the presuppositions on which traditional architecture is built, such as functionalism, it opens up the possibility of conceiving architecture in terms of the excessive, irrational and metaphysical. (Giovanni, 2004) Tschumi states that the level of complexity has become so great that a unifying theory of the universe is not possible anymore. Hence, his interest in the notion of the discontinuous structure is that things do not quite return to that common denominator (Ibid).

The return of the *refused* lies at the heart of this dissertation and influences design responses that is not only concerned with the rational and pragmatic, but responses which incorporate the idea of folly, the excessive, and experience, as part of that which was *refused*.



Figure 007: Photograph of the 15 storey Drie Lelies South Block



Figure 008: Landscape photograph looking west at the Drie Lelies buildings and site

Abstract

The theoretical argument not only informs the architectural language, but also the selection of an appropriate programme. The following section considers the relationship between the theoretical position of the contemporary philosopher Mark C. Taylor and the selection of an appropriate programme.

problem statement

Death Denial

Modernus, the Latin for the word modern which means "just now", is, as suggested by Malevich the negation of the past so as to affirm the present (Taylor 1992, 50). Abstraction, purification, negation of every figure, signifier, and above all the past contributes to Modernism's affirmation of the present, the new and the original, yet the ceaseless quest for originality implies an inherent primitive desire. Nietzsche calls this negation of the past "creative forgetting", but "Modernity remains inseparably bound to the very past against which it struggles to define itself". (ibid) The denial of the past disassociates the present being from that which has shaped and defined it, whether the individual or society (Wass 1979, p.41). The impact, of those who have died, on those living in the present is therefore undeniable. The isolation of the dead from the living is perhaps the result of a deeper issue rooted in a philosophical paradigm.

The dominant scientism and agnosticism of our times leads to a more difficult experience of death (Wass 1979, p.40). The search for absolute truth by means of rational reasoning and science, being a preoccupation of Modernism, leads to myth being replaced by fact and religion by technology. According to Wass (1979), we find ourselves living in a society that increasingly finds itself without a credal or mythic framework in which to understand life and interpret death. In the case of Modernism, if through purification and abstraction this absolute were to be attained, all uncertainty and unpredictability would vanish under its light. Yet, death and the afterlife is a mystery which rationality could never unfold, but which can only be explained by myth and religion. The presence of the unpredictable is real and undeniable

Mark Taylor's critique of the archaeoteological process of both Modernism and Modernist Postmodernism, which were supposed to culminate in the reconciliation with the "Real", suggests that neither calls into question the assumptions and conclusions of theoesthetics. (term used by Taylor throughout *Disfiguring* which refers to the process of defining absolute beauty) Taylor suggests that the third guise of disfiguring "neither erases nor absolutizes the figure but enacts what Freud describes as the process of 'denegation' through which the repressed or refused (death) returns" (Taylor 1992, p.230).

The re-introduction of burial space within the confines of the city therefore not only considers a practical and spatial problem, but extends into the theoretical domain of contemporary philosophy. Death is part of that which was refused and by the establishment of the urban cemetery, that which was deliberately forgotten returns

Refuse

The following section deals with the concept of refuse and its application by means of the selection of an appropriate programme and site.

Programme

"Architecture will define the places where reality meets fantasy, reason meets madness, life meets death". (Taylor, 242)

The *Oxford Dictionary* (1976) defines refuse as: "What is rejected as worthless or left-over after use."

The process of negation through purification negates the excessive, figurative, myth, irrational, erotic etc., so as to enter the direct presence of the sacred and the absolute. Mark Rothko applied the process of abstraction, a certain sacrificial act which disposes of all that is excessive or superfluous, in his paintings. Yet, his suicide in February 1970 perhaps suggests that all hope was lost when his expectations of discovering the "absolute" by means of purification was shattered. Perhaps he found that nothing was indeed no-thing.

The lesson perhaps best learnt through a study of Modernism and Modernist Postmodernism is that they "share nostalgia for the perfect moment in which all distinctions and oppositions coincide fully and completely. In addition both rely on Hegelian abrogation and the idea of the double negation." Taylor (1992) suggests that this perfect moment is forever deferred: perfect union does not exist because of the existence of an elusive, extraneous third, the "between". Derrida's "différance", "chora", the space between polar oppositions, "is not only the necessary condition for their existence, but also breaks down the pretensions to completeness of the respective poles of all oppositions" (Goosen 2001, p.109).

The juxtaposing of the abrogated and preferred expresses the imperfect world through which presence appears as it disappears through the "cracks, faults and fissures" between that which is juxtaposed; presence is forever deferred in the "between". The return of the abrogated or refused makes apparent these cracks and fissures, necessary for the existence of both the negated and preferred.

The uncomfortable juxtaposition of life and its polar opposite, death, brings forth and illuminates "différance", the elusive third

which fragments any possibility of perfect unity. Through the cracks and fissures which separate life and death, our imperfect world becomes an insuperable void in which presence appears through its disappearance

A spatial problem

The custom of placing cemeteries outside of the city boundaries, mostly owing to health reasons, originated as early as 1804 when Napoleon required every city to establish a cemetery at a distance of at least 35 to 40 metres from the city boundaries (Harries 1998, p.295). The isolation of the dead from the living will be discussed under the heading 'Death Denial'.

The practice of placing cemeteries outside of the city boundaries resulted in the escalation of a spatial problem. Their distance, which necessitates much travelling, in our contemporary society that revolves around convenience, increases its isolation. The lack of people visiting the space isolates it even further. The space where the dead are buried itself dies.

As the city grows, the cemetery, using the Hero's Acre as an example, is often left within the confines of the fabric. The time it took for the city to surround the cemetery, longer than a generation in this instance, resulted in the simultaneous depletion of burial space. The result is that the cemetery is located on valuable land better suited for other, perhaps commercial, purposes. Figures 009 and 010 illustrate the development around the Hero's Acre cemetery.

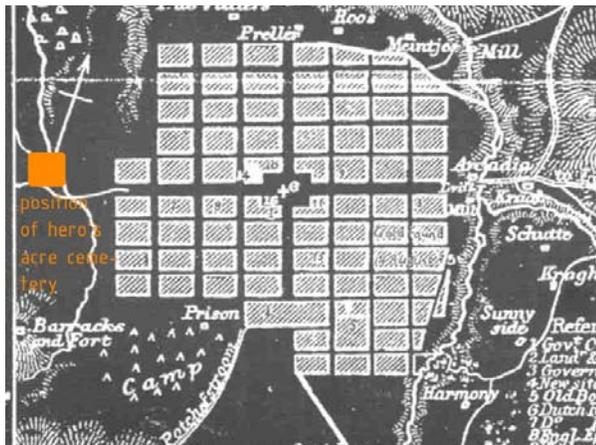


Figure 009: Plan of Pretoria 1887



Figure 010: Recent Aerial photograph of Pretoria.

The need to address the spatial issues surrounding cemeteries is clear and the development of a new typology more sensitive to these issues is crucial. The economic and environmental benefits of cremation as compared to burial, including statistical evidence indicating a growing demand for cremation among some religious groups in South Africa, support the feasibility of providing such a facility. (Statistics)

Site (Theoretical)

"Residual space is sometimes awkward. Like structural poché, it is seldom economic. It is always leftover, inflected toward something more important beyond itself." (Taylor 1992, p.230)

The places where natural features meet built forms are, as Taylor suggests, sometimes awkward. The free organic form of the Apies River that snakes through the rigid city grid and the buildings which respond to this grid create these awkward spaces between the river and buildings. Figure 011 illustrates this concept.

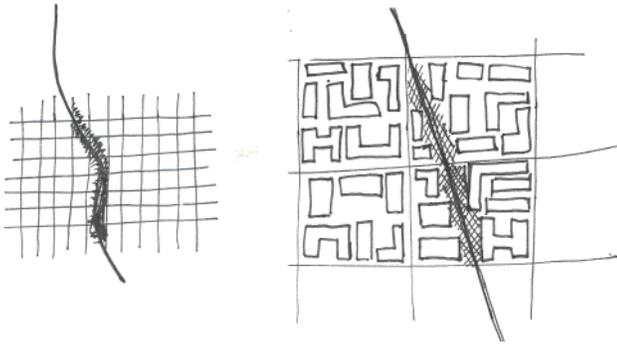


Figure 011: Visual diary sketch of residual segments as a result of natural features meeting a rigid city grid.

The site comprises a segment left over between the Apies River and the boundary wall of the Drie Lelies buildings: it is a residual space, a space which gathers waste and criminal activity. The inescapable waste, the excrement upon which modernism turns its face, constitutes a prominent quality of the site which defines its condition.

The site's awkward dimensions and linearity render the segment unusable in terms of economic development. Through the eyes of the utilitarian observer the site is useless, like waste left over after the completion of the production process. The leftover segment is the wound through which the modernist body drains its idealistic blood. The celebration of this wound by making an architectural intervention brings forth the juxtaposition through which the cracks, tears and fissures of our complex, imperfect world become apparent

Furthermore, the theoretical concept of the site's existence as an edge or border justifies its feasibility for the purpose of establishing a burial facility. The significance of the site as edge is discussed in further detail throughout the context and site analysis

Site (Practical)

The site's locality, between the high-density residential areas of Berea and Sunnyside, furnishes the necessary large population to sustain an urban cemetery. Furthermore, census data reveals that the majority of the population belongs to the Christian Faith, which according to Elion (2001) makes use of both cremation and

conventional burial as a means of burying the deceased.

Sufficient pedestrian activity through the site is important to ensure utilization of the facility by means of reducing its total isolation from the public realm. Activity centres such as the Oost-Eind Primary School and the proposed Nelson Mandela Development Corridor contribute to the intensity of pedestrian movement through and around the site. Pedestrian and vehicular movement is discussed in further detail below, in the context analysis, meso-scale section.

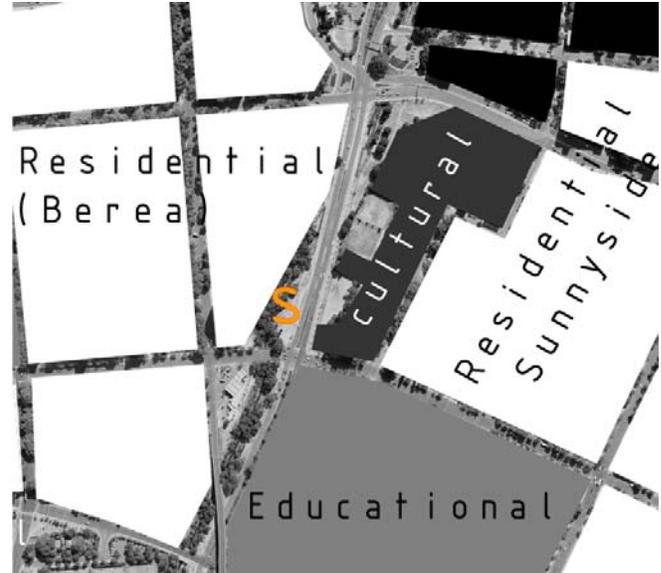
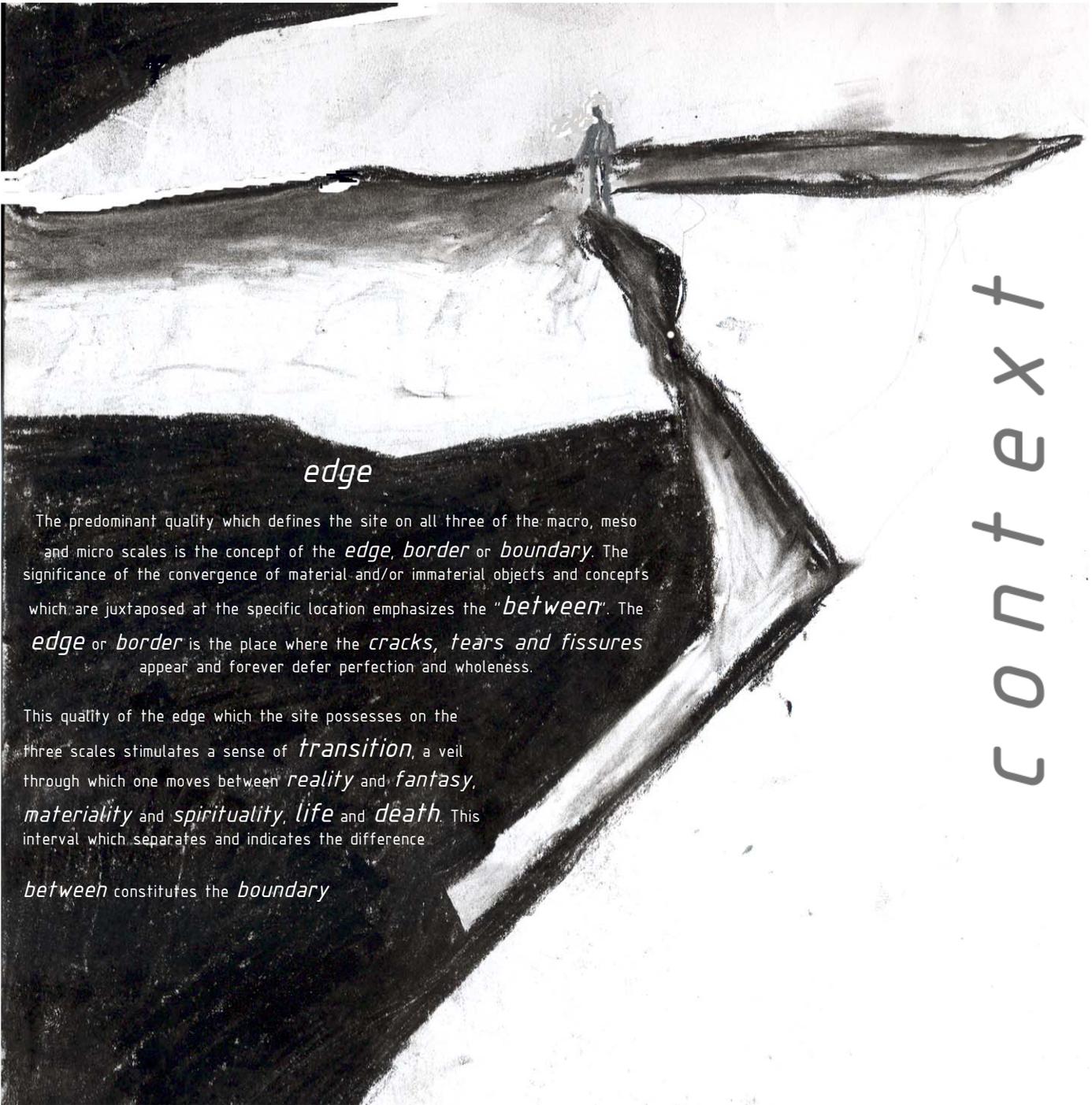


Figure 012: Land uses surrounding site

The project, being an urban cemetery and memorial, therefore incorporates use and experience as a convergence and juxtaposition of life's dualisms, while simultaneously juxtaposing the dualism of death and life itself.

With the appropriateness of the programme and site justified, the following step in the project is to understand the site in terms of the physical and theoretical contexts. The connection between them will inform the design responses relevant to both of them. The context will be considered on the macro, meso and micro scale in the following sections.



edge

The predominant quality which defines the site on all three of the macro, meso and micro scales is the concept of the *edge, border* or *boundary*. The significance of the convergence of material and/or immaterial objects and concepts which are juxtaposed at the specific location emphasizes the "*between*". The *edge* or *border* is the place where the *cracks, tears and fissures* appear and forever defer perfection and wholeness.

This quality of the edge which the site possesses on the three scales stimulates a sense of *transition*, a veil through which one moves between *reality* and *fantasy, materiality* and *spirituality, life* and *death*. This interval which separates and indicates the difference

between constitutes the *boundary*

context

Macro scale:

Figure 013 indicates the relationship between existing activity centres and movement on a regional scale. The void between the well-established CBD to the West and Sunnyside to the East is illogical. The knots (areas where movement routes intersect and constitute activity centres) result from either movement patterns causing activity, or activity causing movement. The absence of knots developing at intersections along Nelson Mandela Drive indicates a spatial fragmentation which prevents the formation of activity plateaus.

Border Crossing

The site is located on the eastern edge of the long-established residential area of Berea to the west and the ill-defined Nelson Mandela Corridor to the east. The site is, therefore, the border of a border on the macro scale.

The visual contrast in scale, density and activity provides a sense of transition in which the incomplete and imperfect is emphasized.

Gateway

The site on the regional scale functions as a gateway into the proposed MDC and Pretoria. The Fountains Circle is the first signifier which suggests arrival, followed secondly by the UNISA buildings, and thirdly by the bridges which cross Nelson Mandela Drive. Yet, after one passes each of the above, an ill-defined scale, low-density suburban areas and prefabricated single-storey school classrooms disguise a sense of urbanness. The first encounter with urbanness occurs at the intersection of Rissik Street where the Drie Lelies buildings to the North-West and high-density residential blocks to the North-East break through the natural horizon of the Magaliesberg and define a new, artificial, skyline.

The regional connectivity of the site justifies the integration of a memorial facility with the urban cemetery since the site is an important gateway into the proposed Mandela Development Corridor (MDC) and Pretoria through the site's direct connection to the Fountains Circle via Nelson Mandela Drive



Figure 013: Activity - Movement diagram indicating the site as edge between the well established CBD to the west and ill defined Nelson

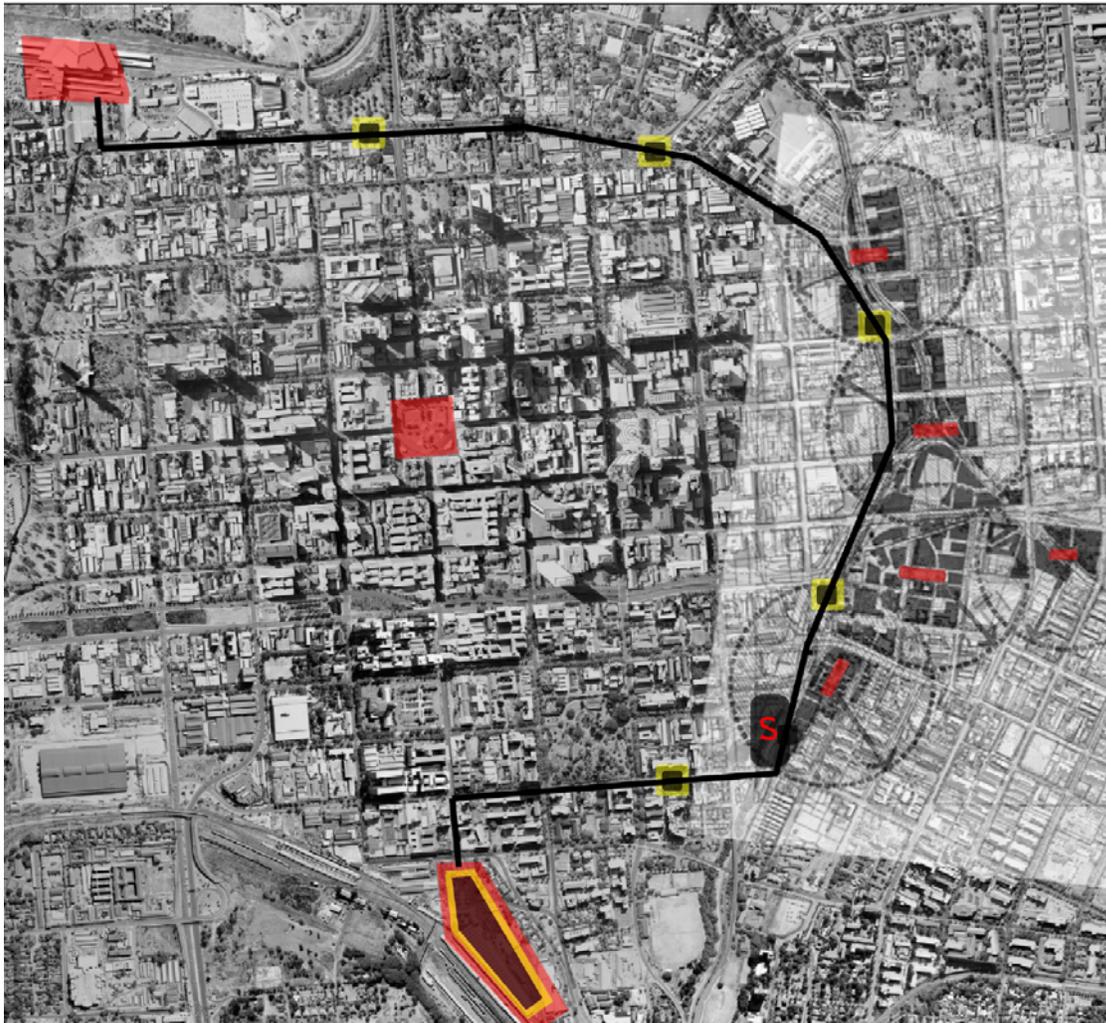


Figure 014:
Public
transport grid

Taxi-drop/Collect

Diagram 014 indicates the grid system upon which public transport functions to ensure pedestrian friendly environments. It is suggested that taxis function on a grid of four hundred meters, buses on one of eight hundred and trains on one of 1,6 kilometers. The existing taxi-drop and collection point will therefore be formalized and the provision of a bus waiting area will be integrated with this formalization. The bus waiting area will be utilized by taxis and buses that bring tourists, mourners or the general public to and from the premises..

-  Bus & Taxi Stop
-  Train, Bus & Taxi Stop
-  Activity center
-  Ringroad connecting stations

Meso scale

Comprehending the site in relation to the existing and forthcoming energies which surround it is essential, for it creates a greater understanding of the site's function within the larger urban system..

Figure 015 illustrates the relationship of the site to the surrounding activity centres by means of movement routes. The educational facilities which include Oost-eind Primary School, the Jerusalem High School and the UNISA Sunnyside Campus draw their energy from local and regional areas. The residential areas, such as Berea and Sunnyside, provide the necessary population to sustain the schools. The UNISA Sunnyside Campus, being a national institution, responds to the larger regional scale by means of Nelson Mandela Drive which is linked to the Fountain Circle.

The MDC proposal, once established, should result in an increase of regional and local energy. Currently the site is supposed to be utilized as a park, yet it seems to exist in the form of a thoroughfare only. (MDC, 2005)

The site is located approximately 1,2 km from the Pretoria Station and borders the southern edge of the MDC, which increases the possibility of pedestrian traffic moving through the site, to and from the station to the MDC, schools or the UNISA Sunnyside Campus.

The location of the site creates the opportunity to slow down pedestrian traffic, drawing it into and through the site, after which the traffic speeds up again, offering a change in motion, a place of revival, a place of refuge.

Heterotopic space

Michel Foucault [1] defines heterotopic space as comprising constructed utopias within real world frameworks, or those singular spaces to be found in some given social spaces whose functions are different from, even opposite to, others. The park, which does not function for its intended purpose, now defined as worthless, opens the opportunity for it to be transformed into a heterotopia. The site's current condition in combination with the surrounding activity provides the social space in which the intervention exists as a sort of unexpected place.

The common thread which connects Derrida's "*différance*" and the heterotopic space is the concept of the other, the refuse which has been abrogated or rejected by society as being abnormal or impure.

Through the process of denegation the negated returns to

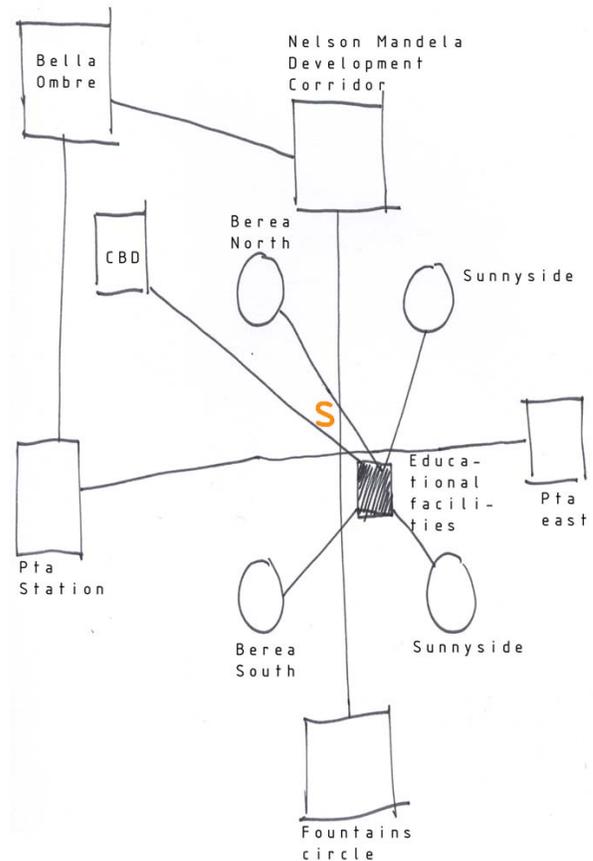


Figure 015: Site and surrounding links on the meso-scale

disrupt utopian dreams, stable systems and completeness.

On the meso-scale of analysis the inappropriate selection of the site (in terms of the isolated placement of cemeteries by conventional planning practice) is somehow appropriated through its return, the return of mortality, that which was negated by Modernism, as mentioned in the justification for the project.

[1] http://triptychresearch.typepad.com/thinking_about_things/2005/03/localive_media.html



Figure 016: Site and surrounding land uses at the meso-scale

MDC Impact.

The MDC development proposal suggests a landmark structure which should define a gateway into the Nelson Mandela Corridor. As proposed this landmark structure would occur to the north-east of the intersection. The Apies River culvert is allocated to the residents as a public recreational area. (MDC 2004, 15)

The most significant impact the MDC poses to this dissertation is the increase in activity, which results in the increase of pedestrian and vehicular movement through and around the site. The development of the urban cemetery as experiential space and urban folly or sculpture, will ironically give life to this left-over segment.



Figure 017: MDC proposal in relation to site



Figure 019:
Sketch of
Drie Lelies
south building

s i t e a n a l y s i s

Micro Scale: Introduction

The site manifests the concept of the edge physically and this symbolism is metaphysically the strongest on the micro-scale of analysis. The dominant juxtaposition within the contrasting forms, textures, colours and scales which are constantly thrown at the observer has at its root the opposition of the natural and artificial. By means of the juxtaposition and convergence of these physical dualisms the space which separates these dualisms appears. Completeness is forever deferred in this implied "différance", like the chemical reaction which forces a bar of soap covered in water to slip from our grip of reality: the veil, the between, the transition, the force repelling every possibility of unity.

If the function of funerary architecture has since the very beginning been to help mark the boundary separating the realm of the living and the dead (Harries 1998, p.293), does the presence of the qualities which the site embodies not qualify the site as sufficiently ethereal in terms of the intervention suggested?

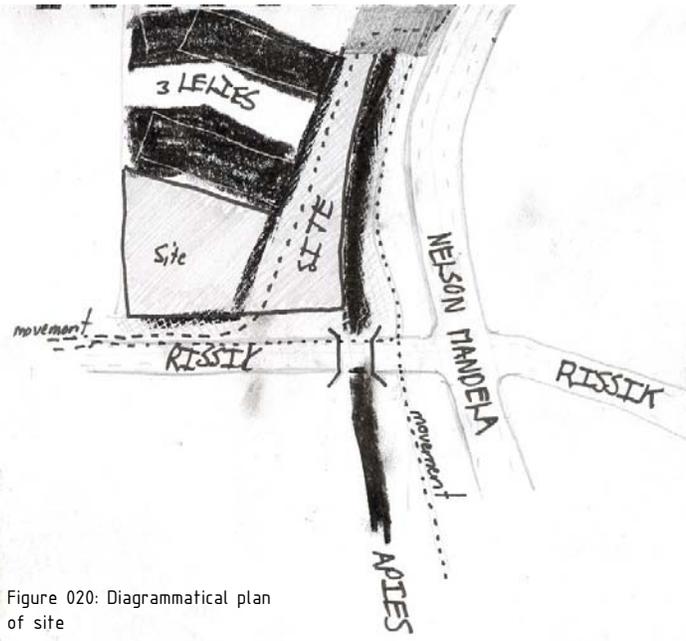


Figure 020: Diagrammatical plan of site

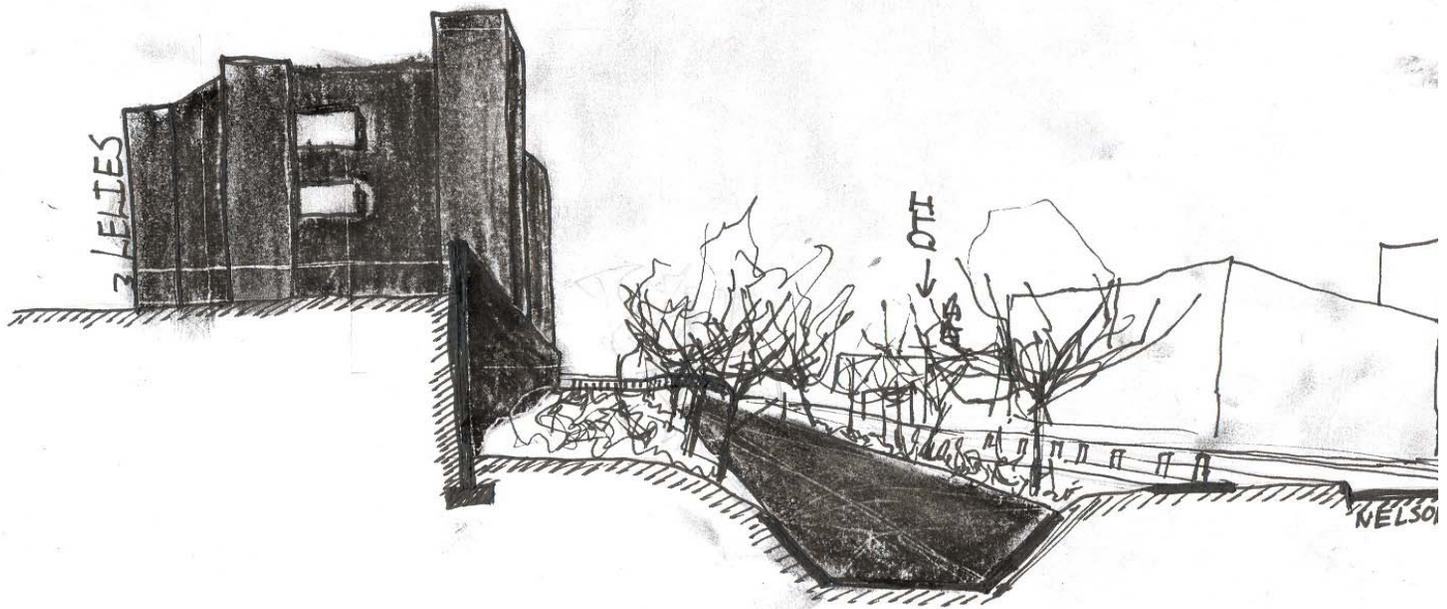




Figure 022: Juxtaposition and fragmentation, where the natural landscape and urban forms collide

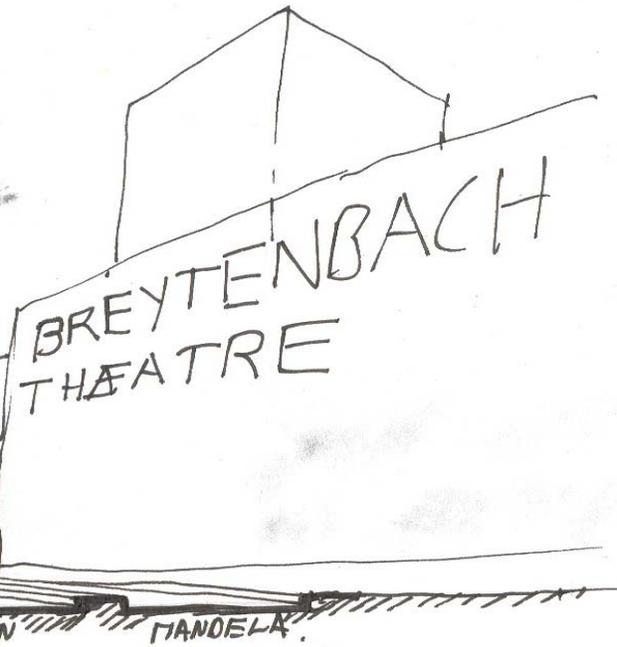
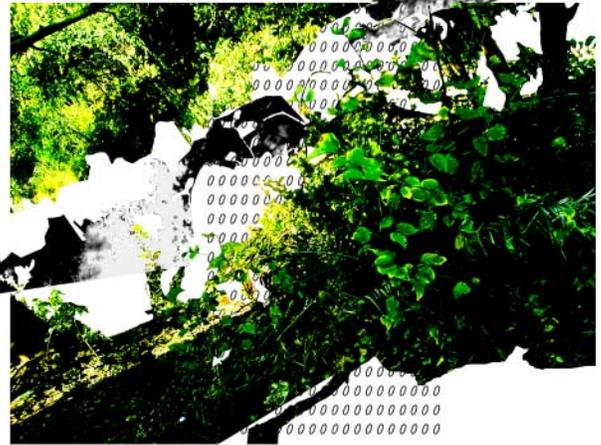


Figure 021: Diagrammatical East-West section of site



(04) - 4

Site Elements

River:

The mighty Apies River, as defined by Winston Churchill [2], has been forced into a concrete culvert: manipulated, controlled, tamed. Why, one may ask? Is the purpose the prevention of erosion, is it to allow for human settlement, is it only because of functional constraints? Should what has been negated through the decision-making process not be returned to its original state? Is its artificiality not perhaps an opportunity more relevant to the researcher's theoretical argument, in that another fragmented juxtaposition occurs between the water and concrete? Should the negation not be affirmed?

The juxtaposition is amplified by the silence created where the flow of the water is rhythmically interrupted by the regular spacing of the expansion joints. The rhythmic interruption is suggestive of the collapse of traditional time where the heterotopia functions at its full capacity. The river acts therefore as the interval or veil which simultaneously separates and connects the realms of the living and the dead.

Drie Lelies Peripheral wall:

The seamless concrete retaining wall of the Drie Lelies buildings defines the western boundary of the site. Its monotonous texture is smooth, almost shimmering between the moving shadows in the morning sunlight, a motionless stage on which the shadows of leaves and branches gaily dance during the early day. Yet as the day matures time seems to transform its innocence.

The increase in height, owing to the soil which the wall retains, creates a sense of expectation as one moves towards it; yet the sense of expectation and excitement is replaced by a feeling of fear

Movement through site



13



14



15

[2] <http://www.wanttotravel.co.za/southafrica/gauteng/illyria/illyria.htm>



16

Figure 023: Progressional photographs through the site, in a clock-wise direction around the river.

and of being trapped in a catch pin as the space between the river and the wall narrows. The dense foliage and dark shadows isolate one: one has passed the point of no return; left to one's fate the psychological distance increases although physically its distance from Nelson Mandela Drive decreases. One can only move forward, move faster, move away.

A strange dynamic exists here, the result of the relationship between the changing spatial quality as the day progresses and the criminal activity which occurs as a result of this dynamic spatial transformation. The edge where the wall meets the soil is blurred by weeds which have been left to grow as they please, raising the question of where the artificial ends and the natural begins. This blurred boundary opens the gap between the imagination and reality, and the cracks and fissures appear through this sense of uncertainty.

Drie Lelies High density Residential Buildings

The brutal monumentality of the Drie Lelies buildings is a significant quality which contributes to the definition of the *genius loci*. From a distance the stark, motionless objects vertically connect the earth and sky, while horizontally they bond west and east together through their response (on the plan) to the convergence of the city grids, which are orientated at different angles. Their presence enhances a sense of transition similar to that of a stranded shipwreck which is half - exposed during low tide, with a section in the water and the remainder on land. This bridging quality enhances the notion of the edge which defines the site on the different scales of analysis.

When one walks on the Western bank of the Apies through the site in a Northerly direction the change in perspective creates a change in experience. The realization of its scale, owing to the close distance from which it is perceived, is uncomfortably humbling, almost surreal. The clouds drifting by in the background sky create an illusion of the building falling; an unsettling feeling of vertigo dominates the senses.

In conclusion, each of the elements discussed above, although considered separately, contributes significantly to the *genius loci* which exists as a result of the phenomenological relationship between the elements. This spirit of place could, if at all possible, in terms of the metaphysical site analysis best be described as "edge". It is the meeting place in which the "between" appears by disappearing through the tears, cracks and fissures of that which seems to unite, but remains eternally fragmented.



Figure 024: Vertical landscape photograph of the Drie Lelies buildings and peripheral wall, South Western segment of site.



Figure 025: Movement analysis diagram, indicating vehicular and pedestrian traffic. Route A indicates pedestrians moving towards and from the pretoria station to the Nelson Mandela Corridor. Route B has a low pedestrian intensity to the South of the site along Nelson Mandela Drive.

A.

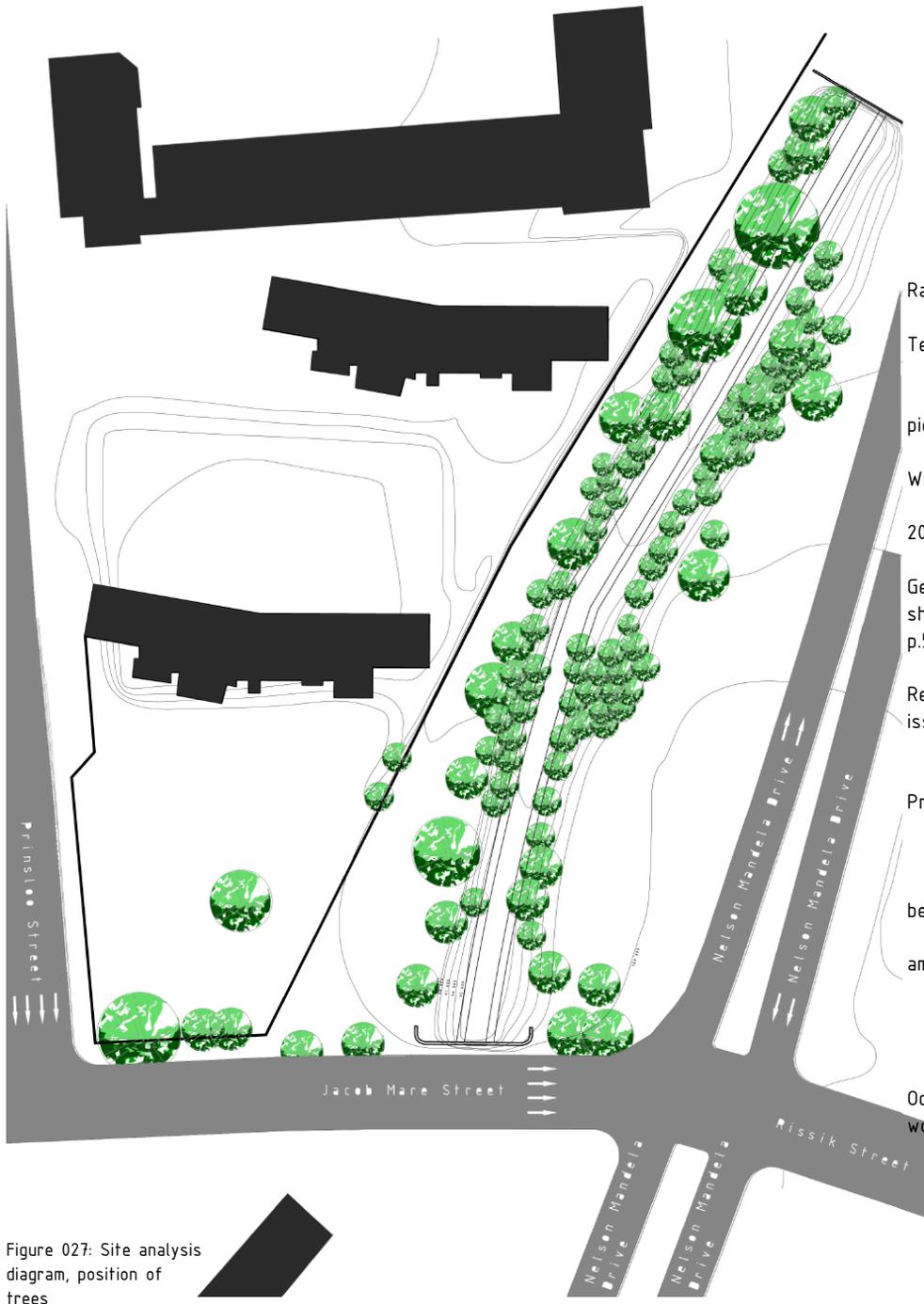
The shortest route, as indicated, channels the pedestrian between the river and the peripheral concrete wall of the Drie Lelies buildings. The density of the foliage to the east and the impermeable concrete peripheral wall to the west create a visual barrier which physically isolates the pedestrian from surrounding activity. According to an interview with a police officer at the site, the area is renowned for its criminal activity since criminals utilize the density of the foliage in combination with the cover the bridge provides to hide from both their victims and the police.

B.

The intensity of pedestrian use along this route is currently low, possibly because of the lack of activity nodes along it. However, the MDC intervention will dramatically change the current situation and the site will have to be considered within the framework of the MDC.



Figure 026: Site analysis diagram restrictions and opportunities



Site data:

Rainfall: 700 - 750ml annually

Temperature:

Minimum - 12.5 degrees celcius

Maximum - 22.5 degrees celcius (Napier, 2000 p. 8-9)

Wind: Summer: North-Easterly

Winter: North-Westerly (Napier 2000, p. 8-9)

Geology: Ferrugenous shale and quartzite, shale and quartzite (Holm Jordaan 2005, p.50)

Restrictions as per the zoning certificate issued by the city council of Tshwane:

Details: Portion 7 of erf 2378 Pretoria, Pretoria town planning scheme, 1974

1-Use Zone: General Residential
2-Purposes for which buildings may be erected with the consent of the city council: Places of Public Worship amongst others.

3-Density restriction: None

4-Height: 25m

5-Coverage: 40%

Occupancy Class: A4 (places of public worship) (SABS 0400)

Figure 027: Site analysis diagram, position of trees

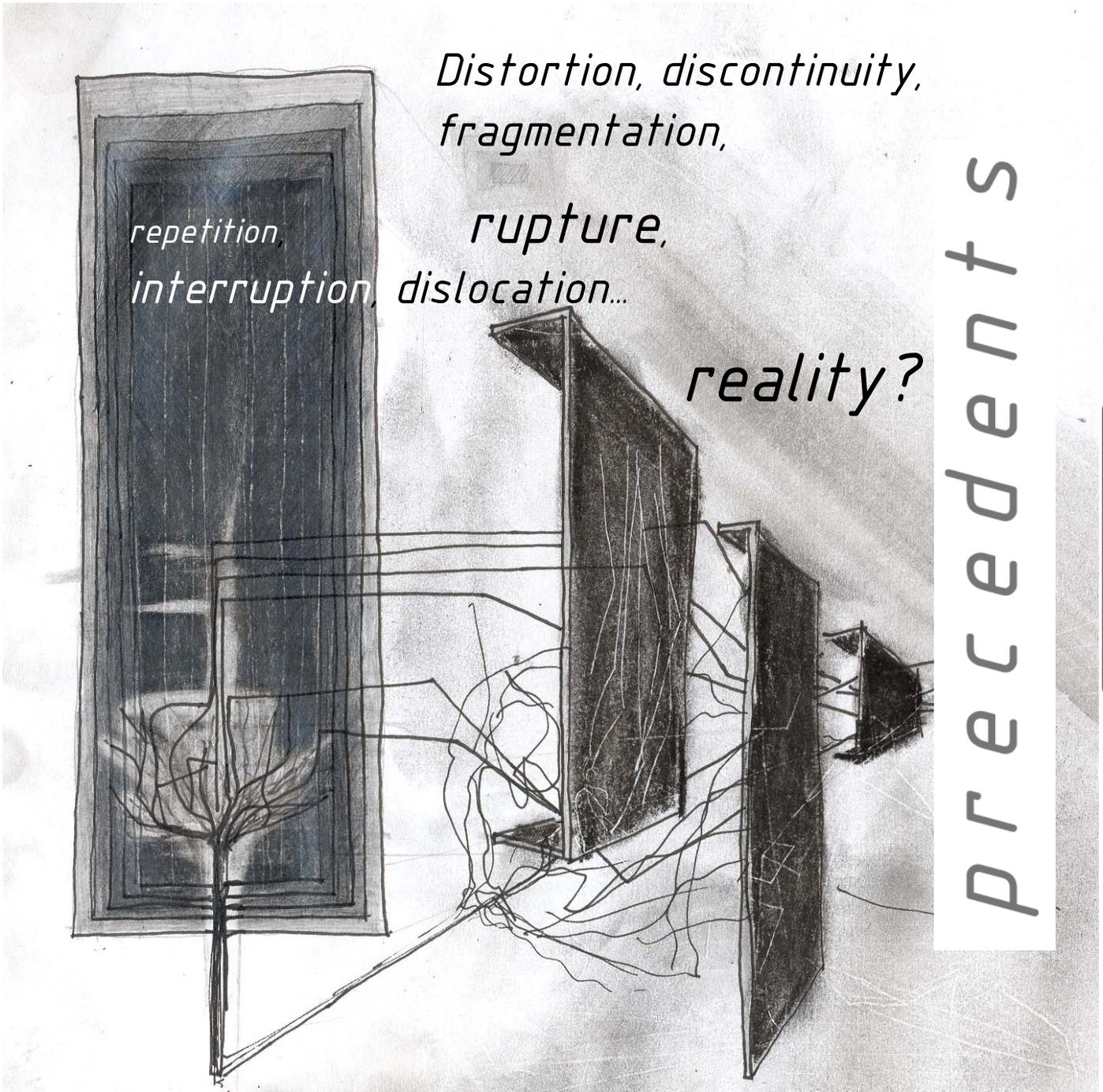


Figure 028: Concept Sketch, implying the notion of discontinuity

Theoretical Precedent Studies

Theoretical precedents introduction

The following discussion focuses on precedents which translate deconstructivist theory into architectural form. These precedents will act as a guiding tool throughout the design process, informing decisions at different scales of development. The production of meaning or lack thereof is considered so as to determine an appropriate design response to the theoretical context. The precedents will include the Wexner Centre for the Visual Arts by the American architect Peter Eisenman and Parc de la Villette by the Swiss architect Bernard Tschumi. The respective methodologies they have employed will be briefly considered and compared so as to determine their position in relation to the production of meaning.

Wexner Centre-Peter Eisenman

The influence of the French philosopher Jacques Derrida on the work of American architect Peter Eisenman is probably most evident in his design of the Wexner Center for the Visual Arts. In Eisenman's more contemporary designs the notion of the inassimilable other finds its concrete expression.

According to Taylor (1992), Eisenman begins by disfiguring. The centre occurs between two buildings, the Mershon Auditorium and Weigel Hall. By means of cutting the link between these buildings Eisenman opens the time-space of the "between" in which the Wexner centre is suspended (Taylor 1992, p.262). This is, as Venturi (1977) describes, a residual space. The river which metaphorically separates the realms of the living and the dead seems to gain a new relevance to which the present design should respond. The river as a boundary that opens the time-space of the "between" can now be viewed as the crack or fissure through which the "between" appears by means of its disappearance.

Eisenman's utilization of architectural elements to communicate his theoretical stance is most evident in his design of the towers and grid. These elements will be briefly analyzed so as to determine what they refer to.

The tower:

Eisenman uses structure and figure against themselves so as to dislocate Modern and Modernist Postmodern architecture as if from within (Taylor 1992, p.263). The tower, viewed from a specific angle, seems to be perfect, yet as one moves around it and the point of vision changes it appears broken and fragmented. The split stable structure embodies an interesting irony. Eisenman cleverly constructed a symbol which refers directly to the authoritarian, hierarchical structures of Modernism, yet the symbol (or the negated 'other' in the case of modernism) fragments these structures, dislocating them from within. In this instance the figure fragments the abstract, while the reverse seems to occur in the use of the grid.



Figure 029: The Wexner Centre towers (Ghirardo 2004, p. 80)

The grid:

The grid, which conventionally serves the purpose of a functional element indicating direction for the purpose of orientation, especially in urban planning, is used decoratively in the Wexner Centre. The method employed, in which Eisenman's grids double and redouble, disorientates and confuses the observer and disallows the possibility of determining any orienting axes. Furthermore the load-bearing ability of the grid in modernist buildings is also used decoratively in Eisenman's building, where the grid bears nothing but itself.

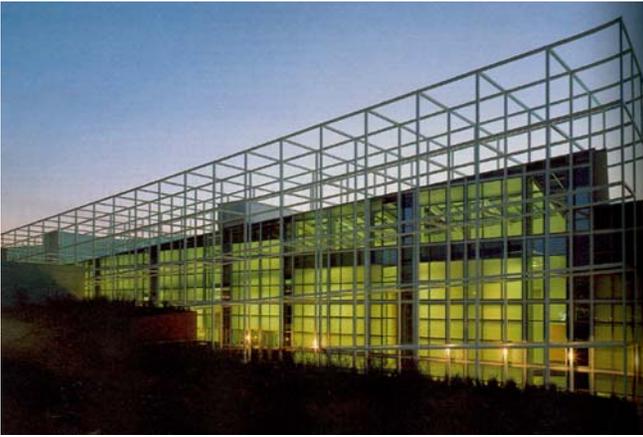


Figure 030: The Wexner Centre grid exterior view (Ghirardo 2004, p. 80)



Figure 031: Interior view of the Wexner Centre (Ghirardo 2004, p. 85)

It is therefore evident in the Wexner Centre that Eisenman uses the elements of both Modernism and Modernist Postmodernism in such a way that they seem to disentangle and fragment each other, as if from within. Eisenman intelligently communicates the "between" which appears through the cracks, tears and fissures of his juxtapositions.

The thread which connects surrealism and deconstruction is found in the exploitation of the rejected other through the process of denegation in which the "repressed returns to disrupt and disorder systems and structures of control" (Taylor 1992, p.248). Surrealism is defined as the "pure psychic automatism by means of which one sets out to express, verbally, in writing, or in any

other manner the real functioning of thought without any control by reason or any aesthetic or moral preoccupation" (Fleming 1995, p.607). In the design of Parc de La Villette Bernard Tschumi's association with the surrealist artists becomes apparent.

Tschumi's standpoint on the production of meaning as suggested by Mark Taylor is "to stimulate rather than to repress multiple meanings; Tschumi attempts to erase the preprogrammed program by shifting the locus of the production of meaning from the masterful architect to a plurality of readers" (Taylor 1992, p. 251). Meaning must therefore be produced rather than discovered. Tschumi's disjunctive strategy superimposes three distinct layers which include point, line and surface with no orderly relationship existing between them. Control, hierarchy and order, the foundation of the production of modern architects, is inverted by the utilization of the disjunctive strategy. Tschumi removes the roots which ground Modern architecture and plants the tree upside-down.

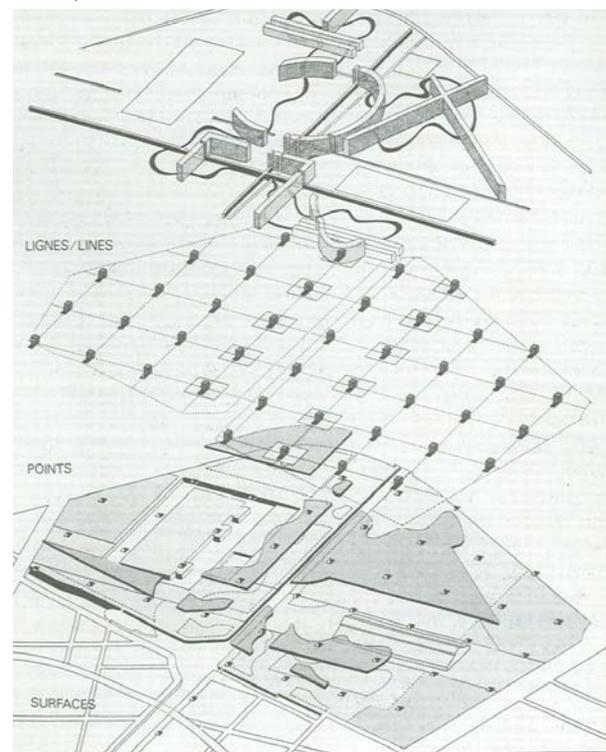


Figure 032: Tschumi's disjunctive strategy of superimposition (Taylor 1992, p.249)

Tschumi's follies which occur at the intersections of the 120 meter point grid constitute different variations, deformations or deconstructions of a 10 x 10 x 10 meter cube. According to Garcias (1989) the follies represent a contemporary reflection on alienation and the unbalanced mind. By the creation of these follies the negated (dreams, irrationality, excess, refuse etc.) is not negated in the final act resulting in completion, but affirmed. "This un-negation allows the return of the refused" (Taylor 1992, p.236). This act of denegation results in an architectural intervention that separates itself from function and focuses on the dynamic and 'coincidental or chance' relationship of movement and architecture (Giovannini, 2004).



Figure 033: One of the 34 follies at La Villette.

The difference between Eisenman and Tschumi's translation lies perhaps at their respective scales of theoretical translation. Tschumi's disjunctive strategy starts as a design principle; it is less physical and apparent than Eisenman's method of disfiguring. Eisenman in his Wexner Centre seems to prefer the utilization of architectural elements which are the manifestation of a certain era, so as to communicate his theoretical position. The method in which Eisenman utilizes abstract and figurative elements against themselves dislocates them as if from within. In the Parc de la Villette Tschumi utilizes the disjunctive strategy as a direct

reaction to the principles and premises upon which conventional architecture is based, such as composition, order and hierarchy (Van der Merwe 1996, p.16) Meaning is therefore something which is produced rather than discovered by the Parc de la Villette user. Eisenman purposefully generates his architectural elements to mean something which should be discovered through experience.

Eisenman's architectural intention is made clear in an interview in which he states that people relate to their environment as being a source of security, but he suggests that the environment can only provide physical security, for example shelter and comfort, and it should never provide psychological comfort. Hence, if his buildings were to create a sense of anxiety within their users, they would be forced to look inward to find psychological comfort (Giovannini, 2004). The success of Eisenman's projects depends therefore on the level of confusion and psychological discomfort which they generate within their users. Yet, his claim to advocate an alienating architecture has failed because Ghirardo (1990) defines the building as "profoundly ingratiating" and adds that it "has been warmly accepted by those deceived by contemporary consumer culture" (Ghirardo 1990, p.86).

Eisenman's design methodology and crystallization, driven according to the architectural critic Heinrich Klotz by intellectual impulses, appear ordered, controlled and intentional. (Giovannini, 2004) Yet, there seems to be something missing, intentional or not, a certain poetic quality which enriches the experience of the excessive, the erotic abrogated "other", emotion.

Diane Ghirardo (1990) criticizes Eisenman's work in an article titled, "The grid and the grain" in which she compares the work of Aldo Rossi and Terragni to the Wexner Centre. She explains: "the difference between the Wexner and works by Terragni and Rossi lies in the absolute controlled, if apparently arbitrary, surprises that the Wexner offers, which skirt dangerously close to one-liners." When compared to that of Rossi, Eisenman's work seems two-dimensional in terms of the richness of experience. Terragni, rather like Eisenman, struggled with grids, cubes, and transformations, but those manipulations neither remain concealed nor are overwhelmingly present in the built work; they are discovered by rather than forced upon the viewer.

Theoretical precedents conclusion

If Eisenman's production of meaning is almost obvious and Tschumi's is non-existent, then Rossi's seems to lurk between. By his use of repetition and the grid he is able to create architectural meaning, discovered in subtle, rich and poetic spatial interventions. Barthes describes obtuse meaning in terms of "the filmic", as constituting that in the film which cannot be described, the representation which cannot be represented. The filmic begins only where language and meta-language end (Taylor 1992, p.251). Rossi's clever interplay of architectural form and natural light which generates conditions of multiple light qualities creates this sense of obtuse meaning: meaning which surpasses the rational and obvious, extraneous meaning which seems to appear, but disappears before its intention can be defined.



Figure 037:
Exterior
View of the
communal
columbarium
building



Figure 035: Addition to
cemetery of San Cataldo
in Modena by Aldo Rossi



Figure 036: Interior View
of the columbarium building
and concrete niches. Rossi's
concept of the house for
the dead manifests its
concrete expression

Crematoria precedents.

The following section involves the analysis of an international and local precedent so as to inform the technical requirements of the crematorium. The technical issues which will be considered include the following:

- Spatial interconnectivity (Diagrams) (Location)
- Circulation
- Sizes

The aim of diagrammatically analyzing the spatial connectivity and circulation requirements of the precedents is not to inform the design language, but merely to inform decisions with regards to the spatial functioning of crematoria.

International Precedent

The international precedent considered is the Cremation unit and Ashes Temple designed by Uribe de Bedout Arquitectos in Medellin, Antioquia Columbia.

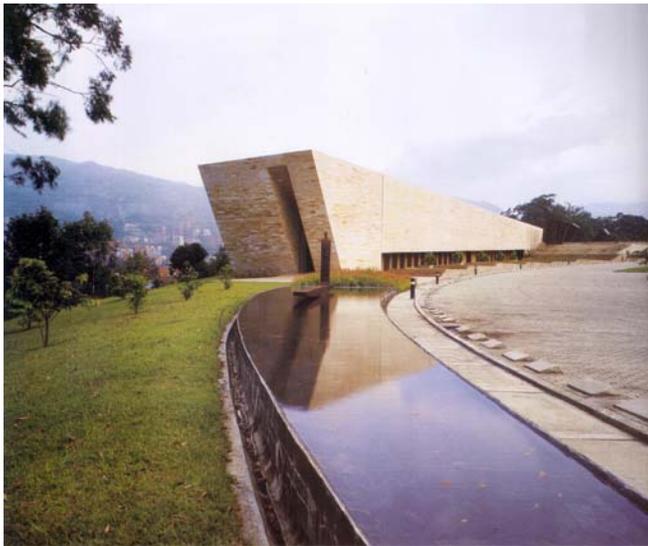


Figure 038: Crematorium unit and Ashes Temple view of the Ashes Temple

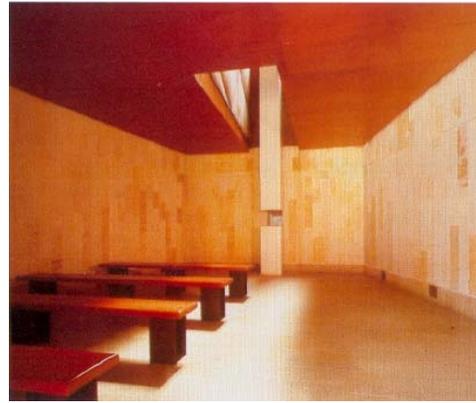


Figure 039: Interior view of Chapel

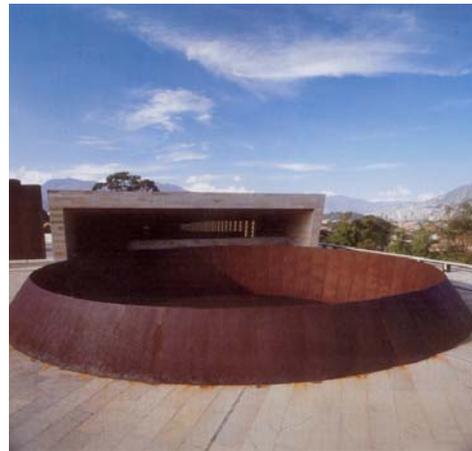


Figure 040: Open skylight to gathering space clad in cor-ten steel



Figure 041: Gathering space and skylight

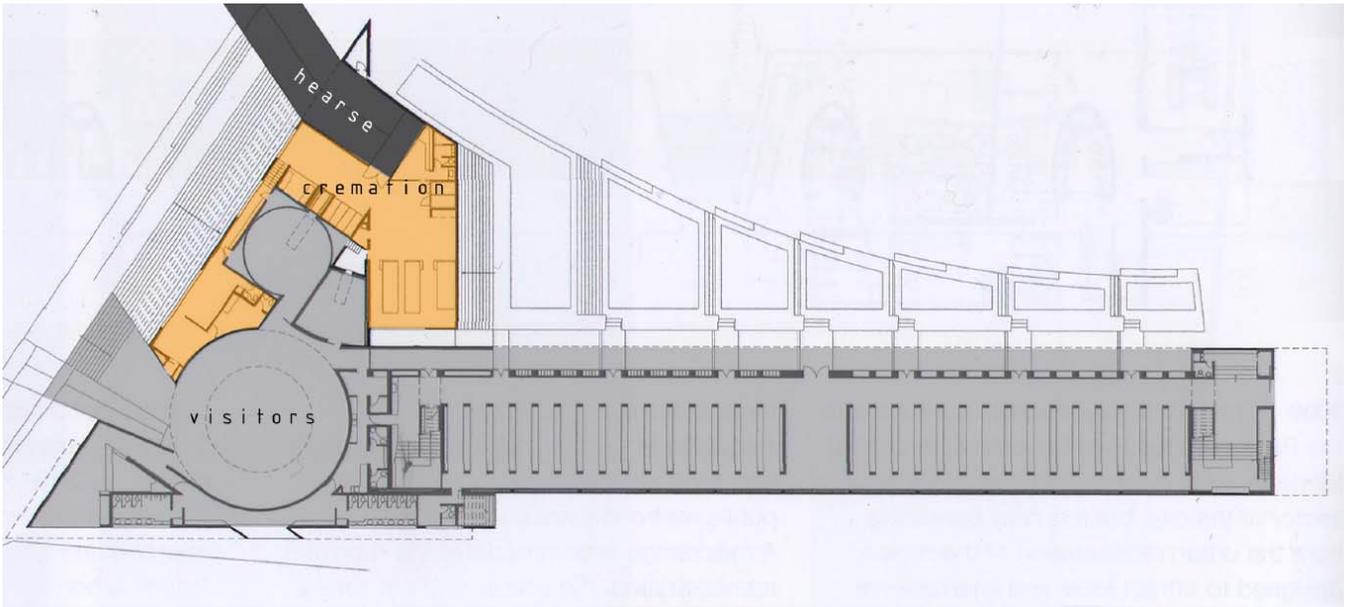


Figure 042: Cremation Unit and Ashes Temple diagrammatical analysis of the separation of the public and cremation related functions.

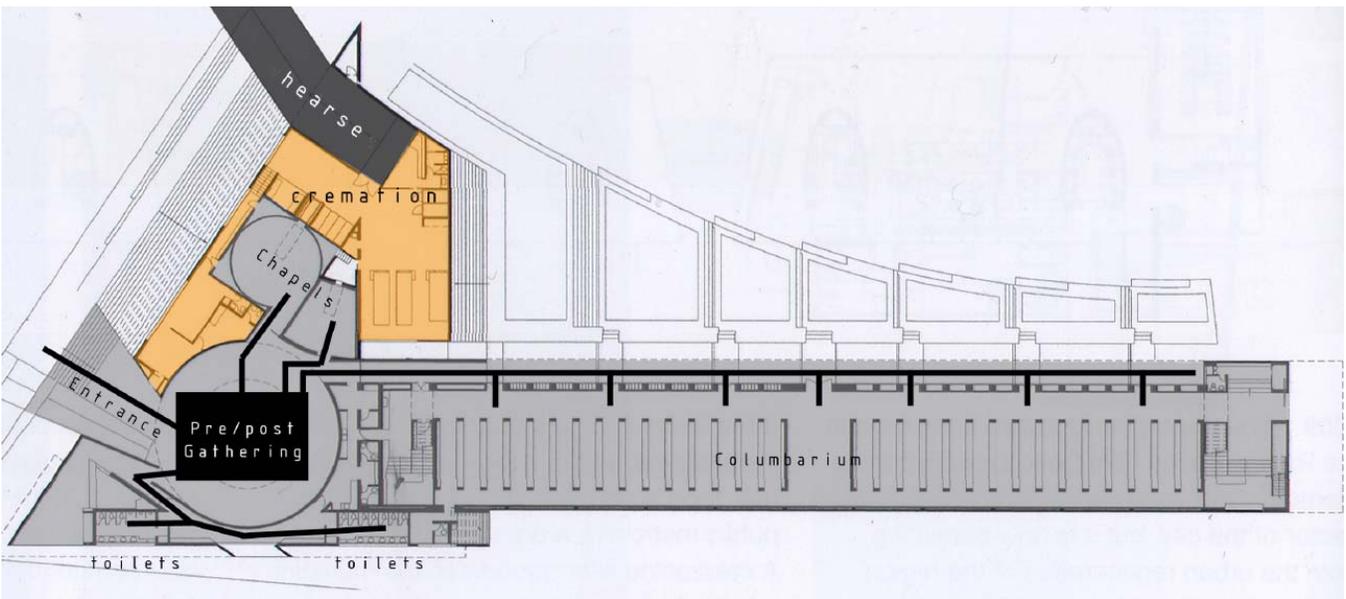


Figure 043: Cremation Unit and Ashes Temple diagrammatical analysis of the visitor circulation.

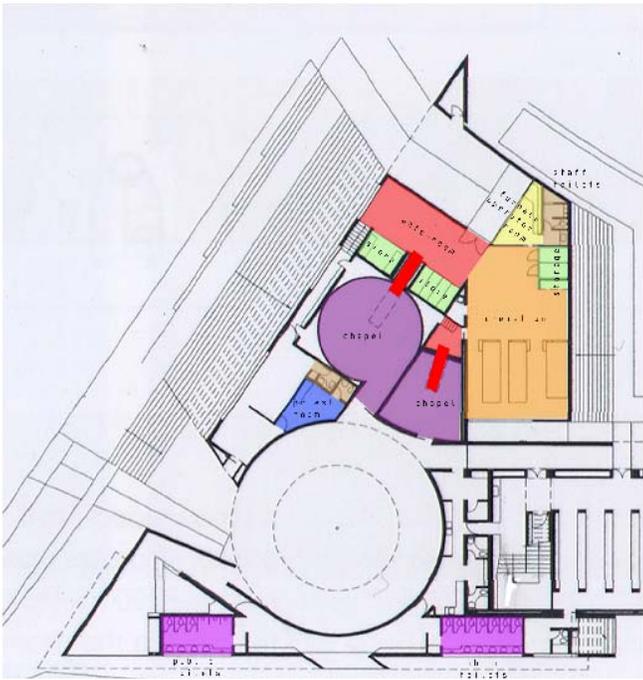


Figure 043:
Cremation Unit and
Ashes Temple and
functional spatial
breakdown

- Ante room: 50m²
- Storage: 30m²
- Office: 15m²
- Cremation Room (3 Furnaces): 140m²
- Crematorium Bathrooms: 20m²
- Catafalque: 3m²
- Priest room: 12m²
- Public Bathrooms: 50m²
- Chapels: 120m²

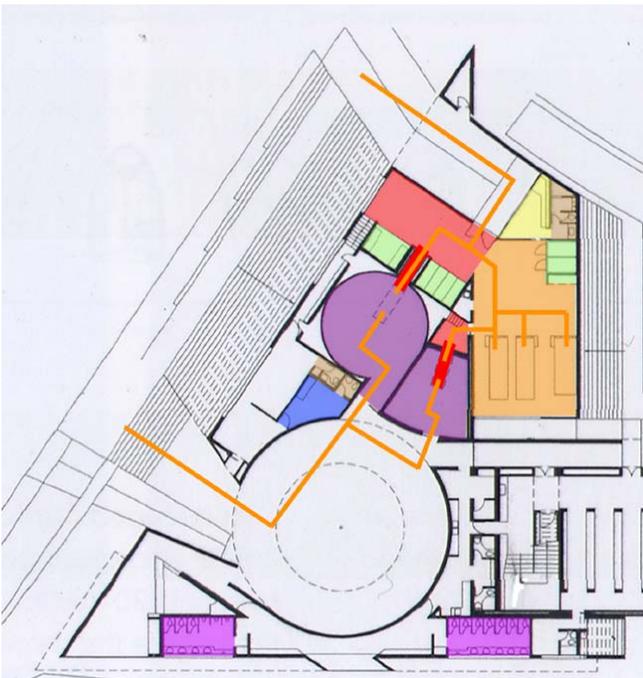


Figure 044:
Cremation Unit
and Ashes Temple
and diagrammatical
analysis of the
coffin circulation

Local precedent

Name: Pretoria Crematorium
 Location: Adjacent to Rebecca Street cemetery
 Ownersip: Local Metropolitan Council - Pretoria.

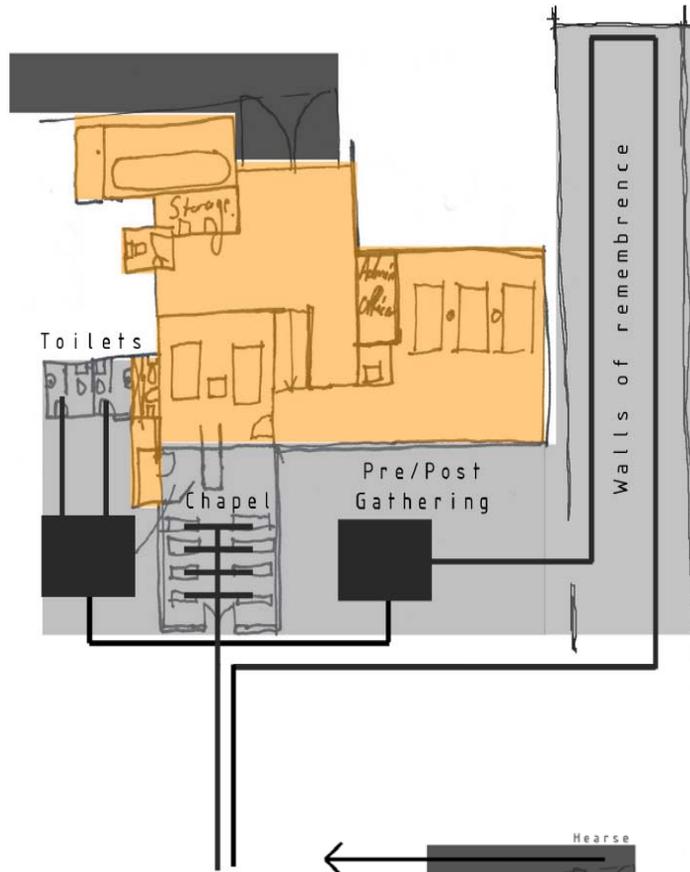


Figure 045: Pretoria Crematorium and diagrammatical analysis of the visitor circulation.



Figure 046: Photograph of entrance to Pretoria Crematorium chapel.

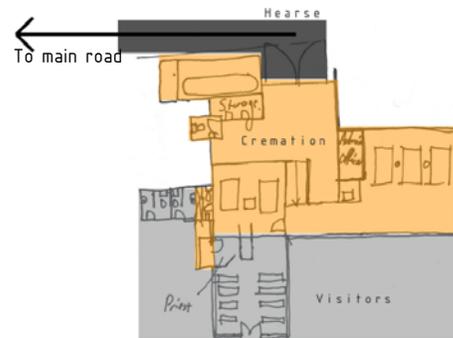
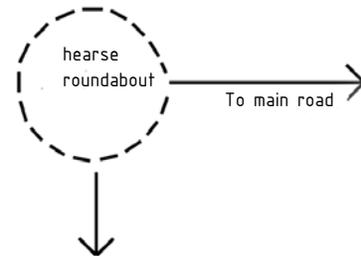
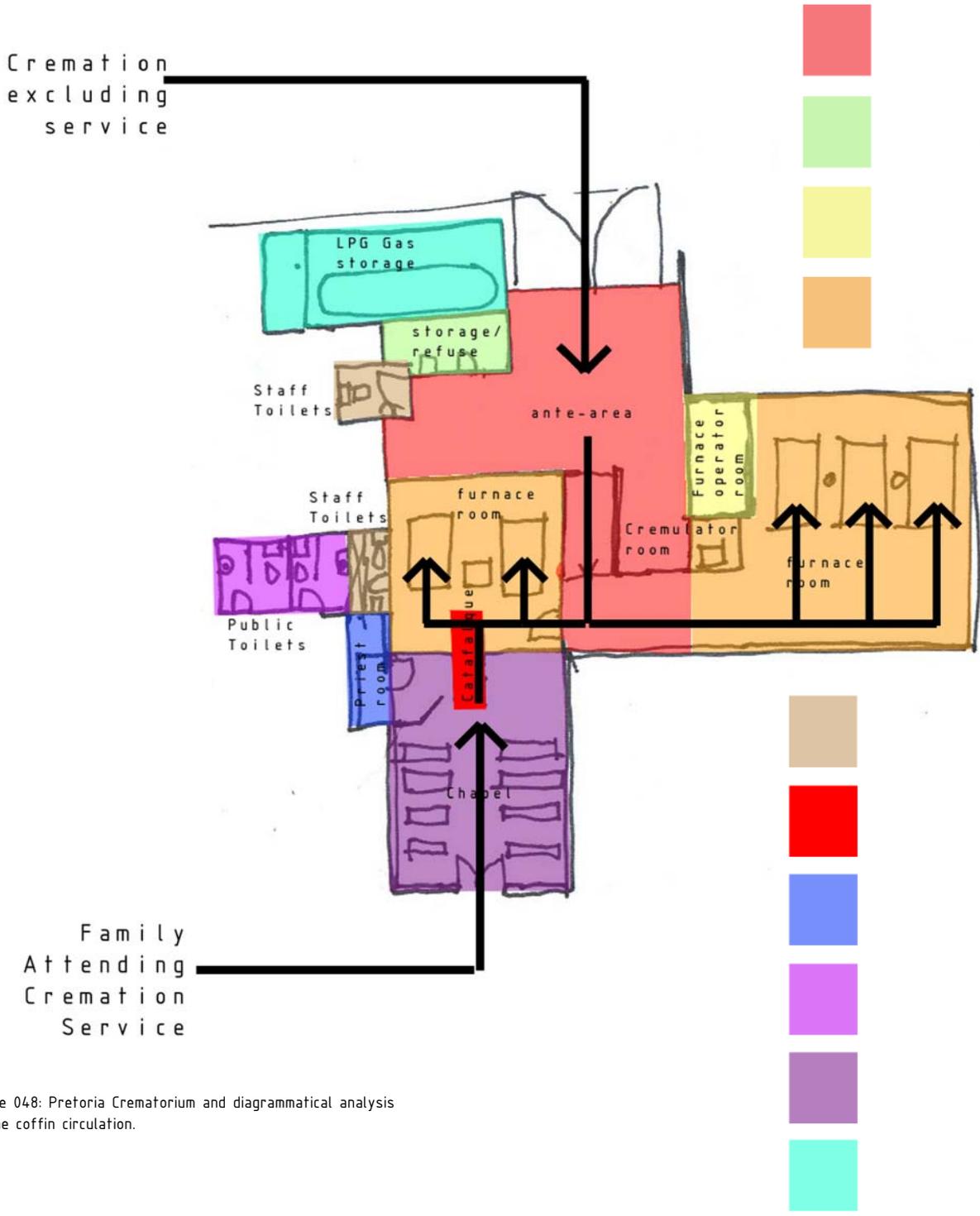


Figure 047: Pretoria Crematorium and diagrammatical analysis of the separation of the public and cremation related functions.





(05) - 10

Figure 048: Pretoria Crematorium and diagrammatical analysis of the coffin circulation.



Figure 049: Concept model August 2006

design development

Introduction

Architecture and Experience

Eisenman's attempt to generate an alienating architecture, which forces the individual to look inward and not to the environment for provision of psychological comfort, contains at its base an essence which is similar to the work of Tschumi. Their buildings are neither obviously metaphorical nor purely abstract structures generated through processes of mechanistic reasoning, but share a certain commentary upon reality which is discovered by experiencing their buildings. Architecture then becomes the stage upon which users can discover special, unknown aspects of their perception and understanding (Krog ????, p.62 - Creative risk taking article). Historical reference in their work as a reaction to Modernism and Modernist Postmodernism manifest both physical and metaphysical juxtapositions which make apparent the cracks, tears and fissures of existence.

Experience is enriched when meaning is uncovered in Tschumi's labyrinth, which entangles us in time ever more deeply and figures the empirical dimension of space that affects the senses before reason (Taylor 1992, p.246). Tschumi's method of architectural production contains this intuition which allows meaning to appear; but as soon as rationality attempts to grasp it, meaning disappears in the void which separates right- and left-brain activity.

The individual's experience of the proposed facility is intended to represent that which is extraneous, indefinable and forever outside the grasp and control of the rational.

Through the analysis of the site at the macro, meso and micro scales the most important aspect discovered is the concept of edge. Border, upon border, upon border the convergence of oppositions gives the site an ethereal almost sacred quality of a veil signifying transition. The response of the design to this quality becomes the primary generator of the architectural experience as the cracks, tears and fissures - the "between" are widened through the intervention

Conceptual Development

Rites of passage, whether birth, initiation, marriage or death brings forth a strong connection with time as these moments seem to exist as notches in the journey of the life cycle of the individual. With every passing stage the young and the old, man and woman, the community and the individual each recognizes its interdependence on the other and nature. (Elion 2001, p.29)

Architectural Translation

Theoretical ideas of the "between", time and ritual derived from the previous chapters comprise the concepts which drive the architectural intervention. The methodology applied involves a circular process that translates these theoretical concepts architecturally, after which the ideas are tested against practical considerations and resolved in such a manner that the theoretical concepts are strengthened by deepening their effect, while remaining functionally efficient.

For the sake of enhancing clarity the proposed building is divided into three sections, which include the burial structure, memorial and chapel. These elements are, however, never considered independently, but are connected by means of form, spatial overlapping, material usage and circulation in order to ensure a sense of uniformity throughout the building.

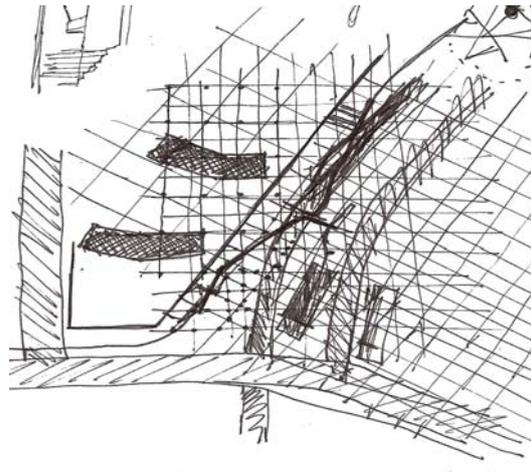


Figure 050: Concept sketch April 2006

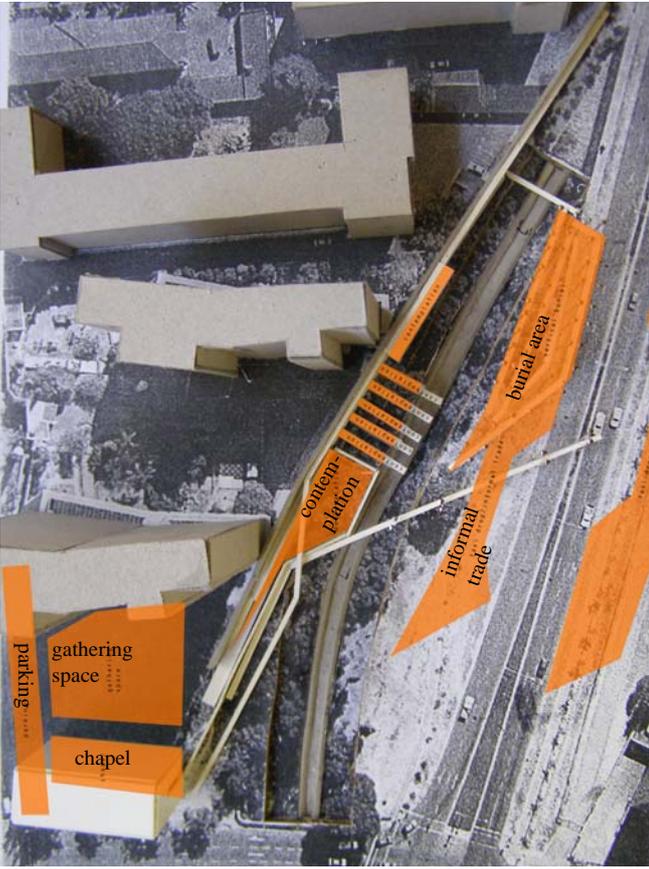


Figure 051: First concept model

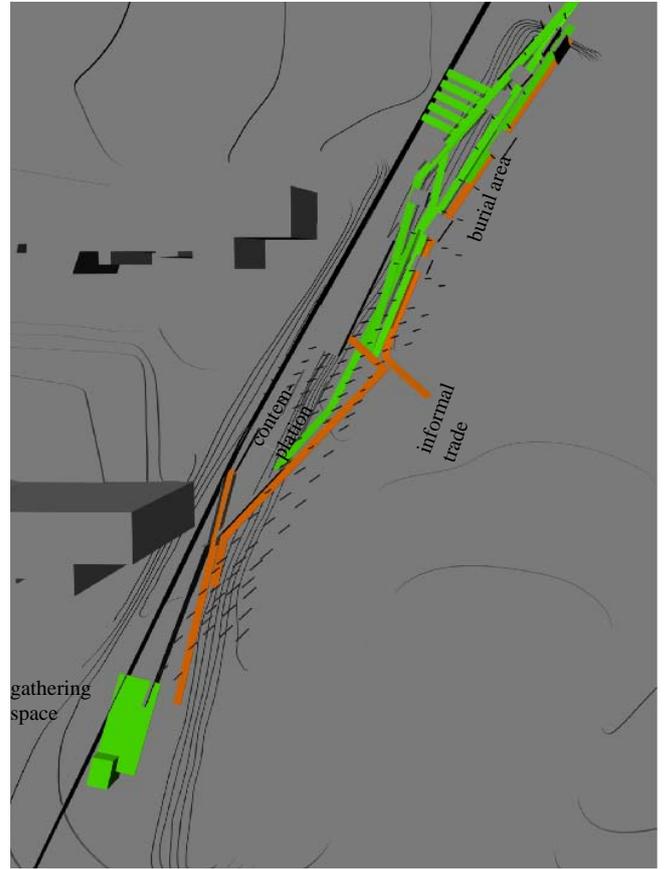


Figure 053: Three dimensional Concept June 2006

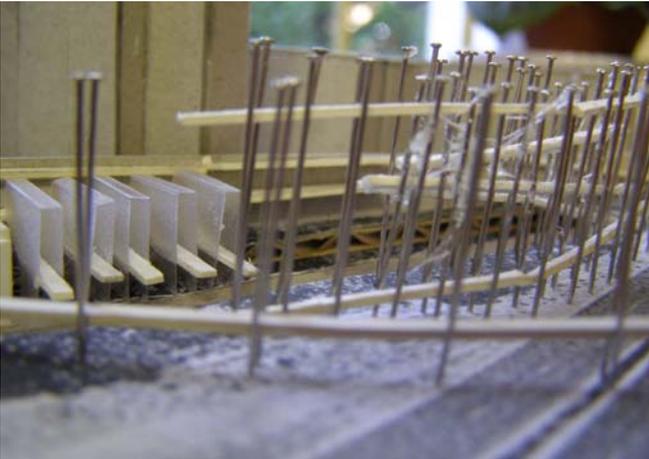


Figure 052: The idea of ramps and burial integration

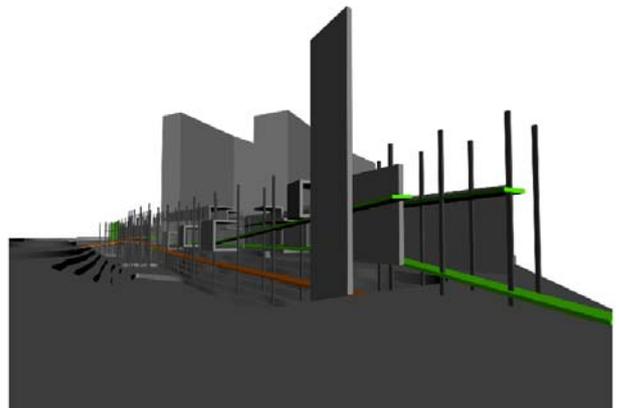


Figure 054: Three dimensional Concept June 2006

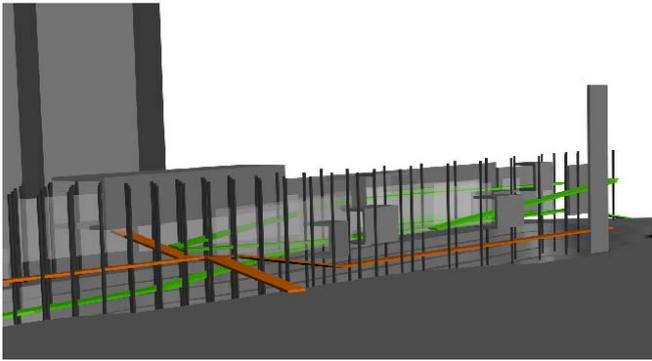


Figure 055:
Concrete fragments which float
in a forest of
columns

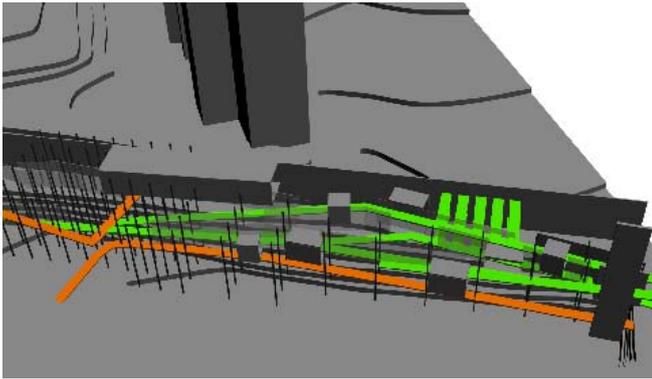


Figure 056:
A sense of
fragmentation is
achieved

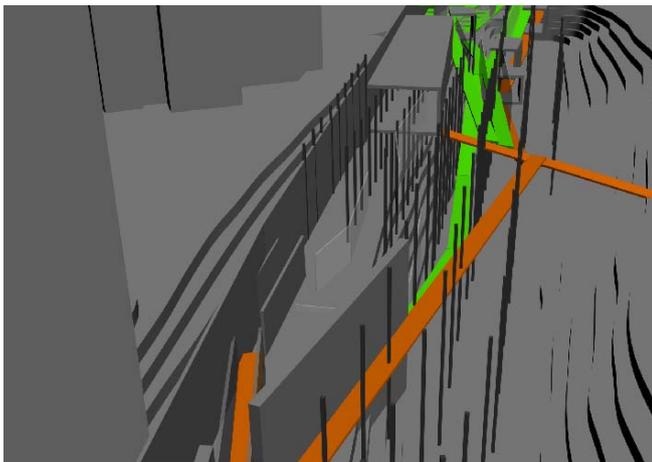


Figure 057:
Concepts of the
labyrinth become
apparent through
the conceptual
translation

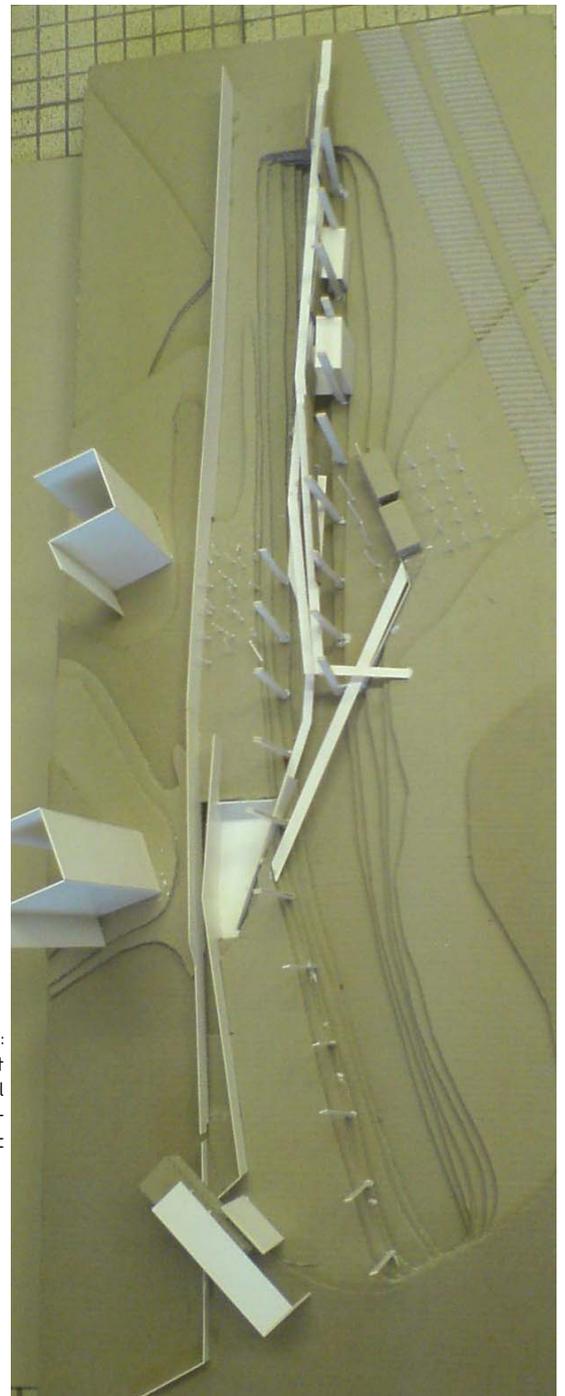


Figure 058:
Final concept
model, the formal
organization be-
comes realistic

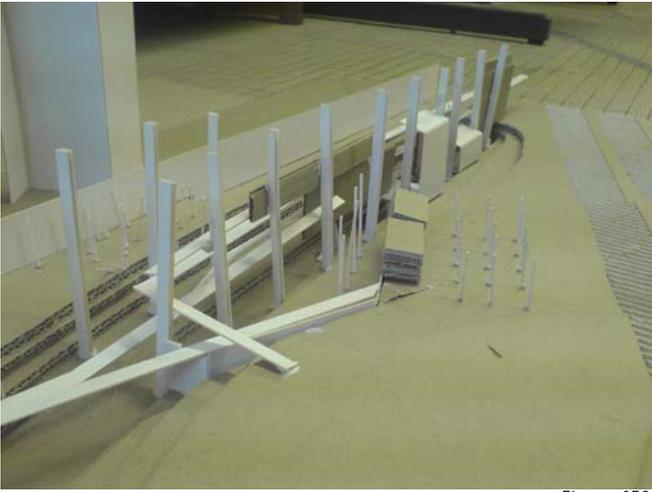


Figure 059:
Final concept
model, looking at
the burial struc-
ture and memorial

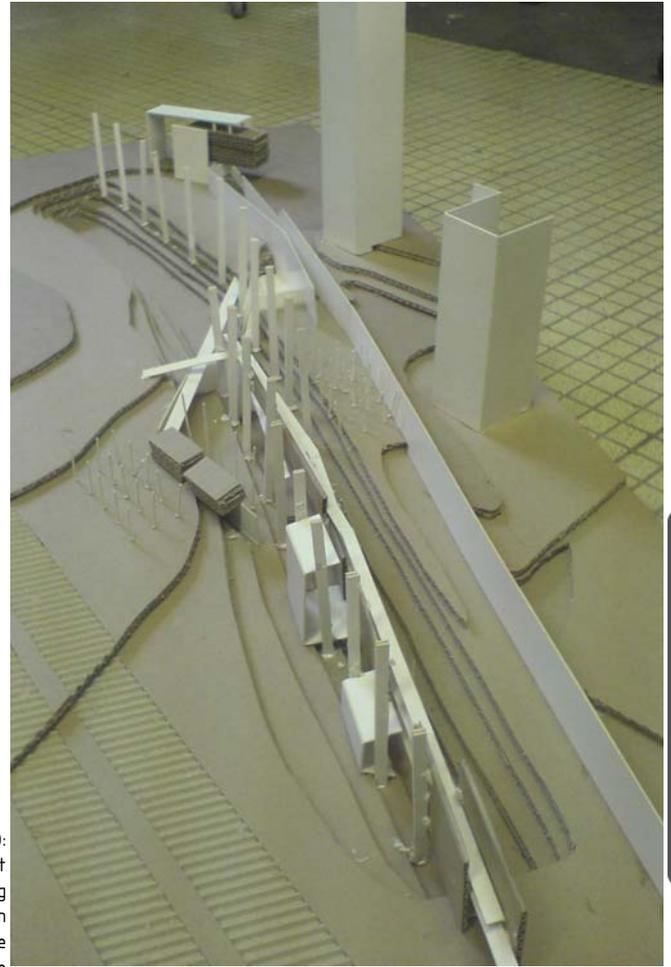


Figure 060:
Final concept
model, looking
at the northern
entrance into the
burial structure

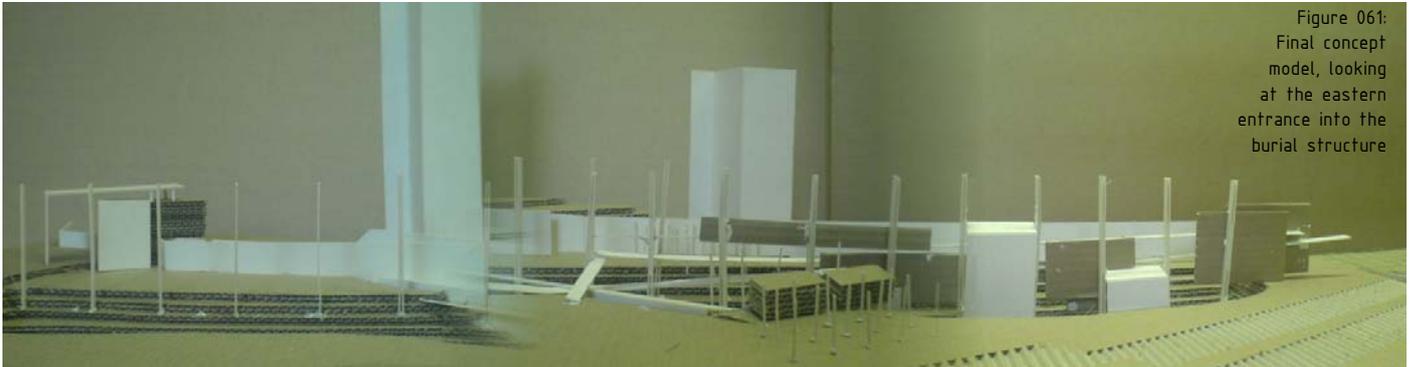


Figure 061:
Final concept
model, looking
at the eastern
entrance into the
burial structure

Site plan development

The concept of the edge drives the formal organization through contextual responses. Therefore, the place of entrance must by means of these contextual responses create a sense of gateway through which the transition from the realm of the living to the realm of the dead can be perceived.

Three entrances to the facility have been identified and defined by means of considering the opportunities presented by the linear nature of the site and proximity of the existing taxi drop and collection point.

The rectangular prisms and vertical planes respond to the rectangular nature of the urban landscape, while simultaneously responding to the natural landscape by means of utilizing timber cladding. These rigid rectangular forms signify the entrance into the facility.

These gateways are linked by movement routes which respond to the "between" condition by means of oscillating uncertainly between these realms. The structure can therefore be perceived as an edge that at once seems to connect and separate the realms of the living and the dead.

Ritual and Perception

The production of meaning, as discussed under the precedent studies section, justifies the discovery thereof by means of enriching spatial experiences that affects the senses before reason. In architecture Barthes' concept of the 'filmic' can only be experienced through a certain dialectic interaction between the mourner and structure. This perceptual interaction in architecture occurs through movement.

Through movement the spatial experience exposes and emphasizes the site as edge by the ritual that takes the mourners from being above the site to moving upon and then within it.

The design accommodates three types of users. Firstly, those partaking in the act of burial. Secondly, those revisiting a buried relative and thirdly, the public that simply use the defined movement route as a short-cut through the site.

These movement systems are explained diagrammatically in the following sections.

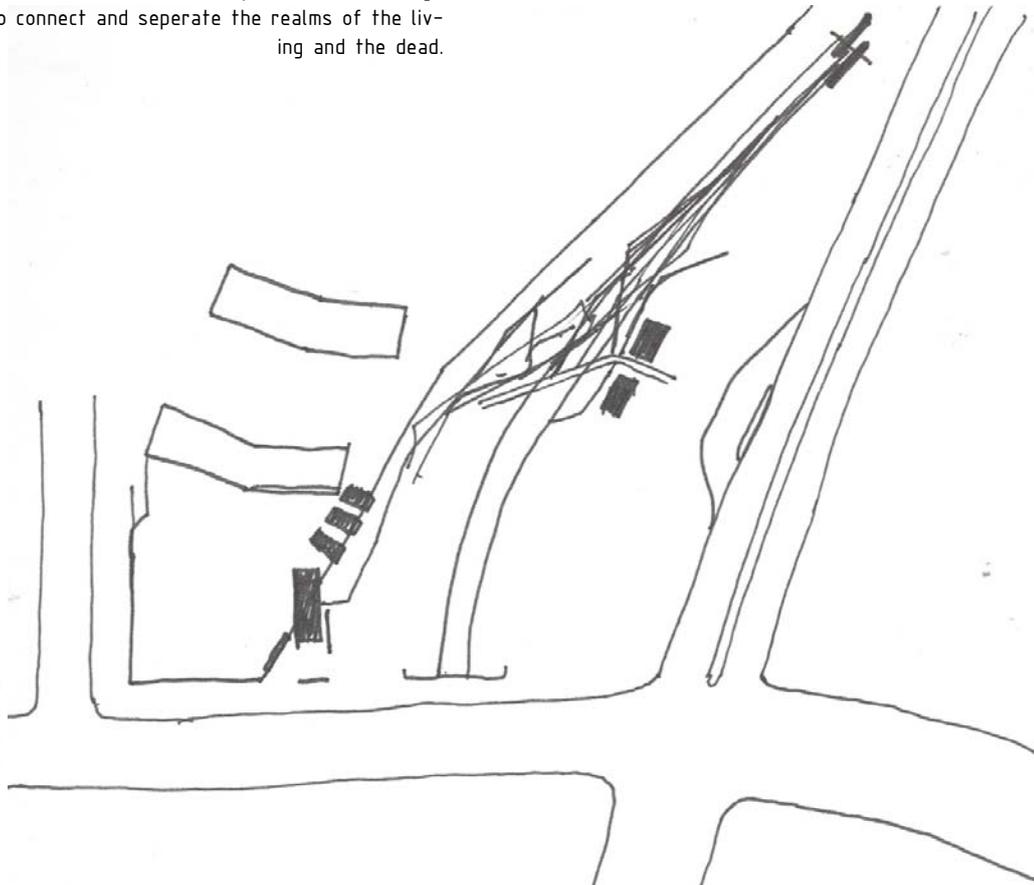


Figure 062:
Concept sketch
defining the
boundaries of the
structure

Circulation
Vehicles and hearse

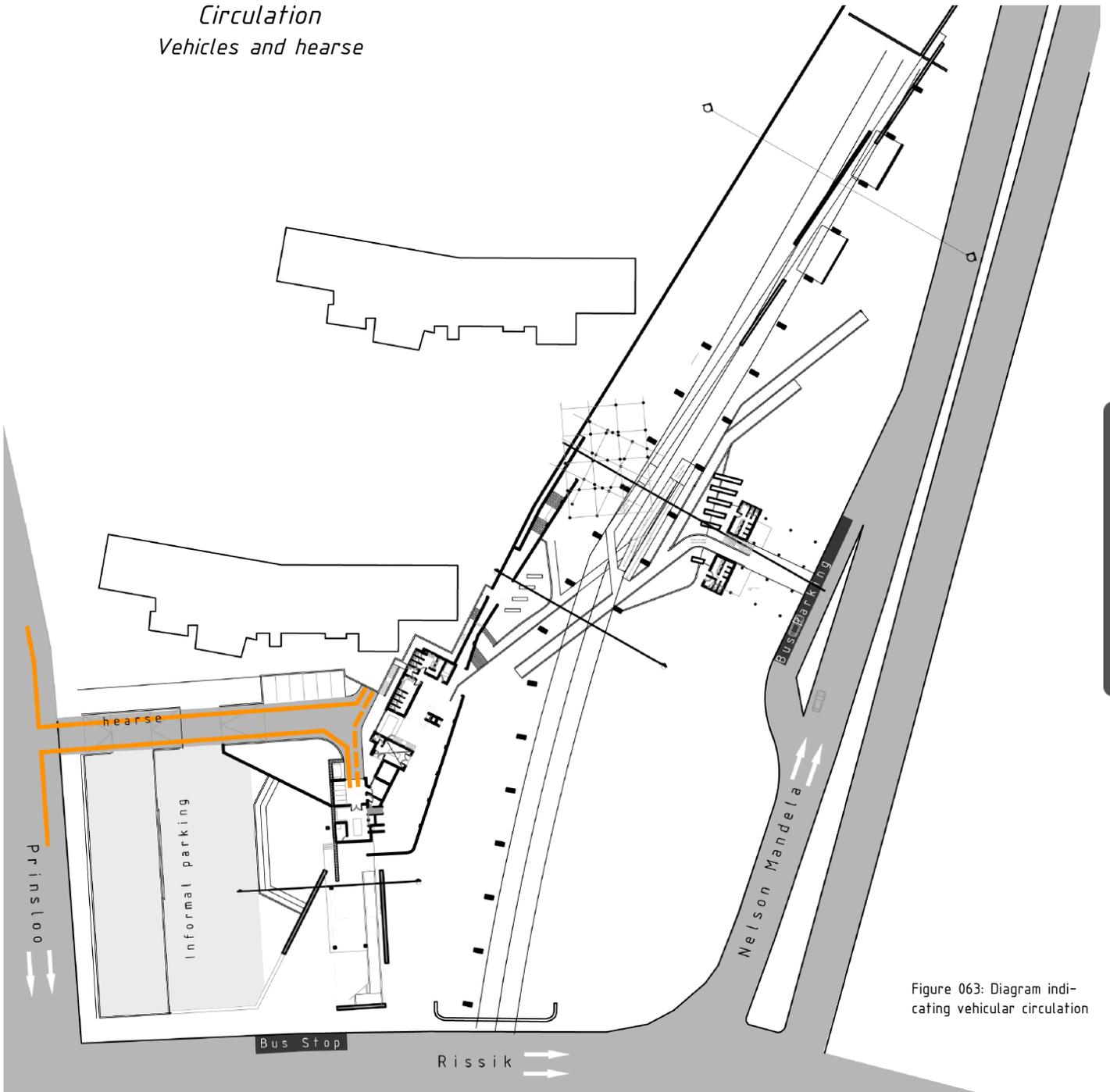


Figure 063: Diagram indicating vehicular circulation

*Circulation
Coffin*

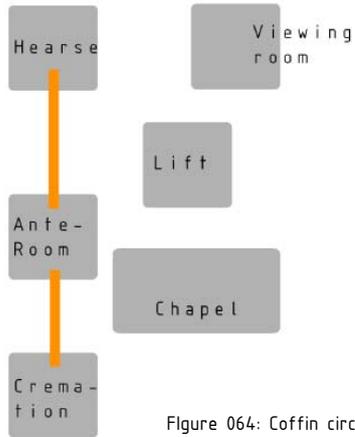


Figure 064: Coffin circulation option 1

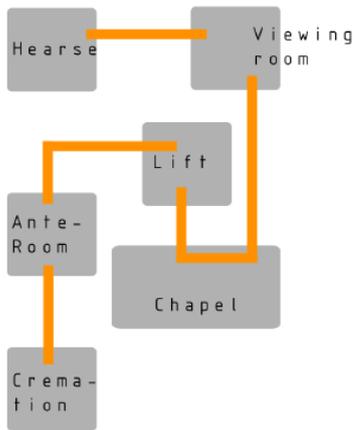


Figure 065: Coffin circulation option 2

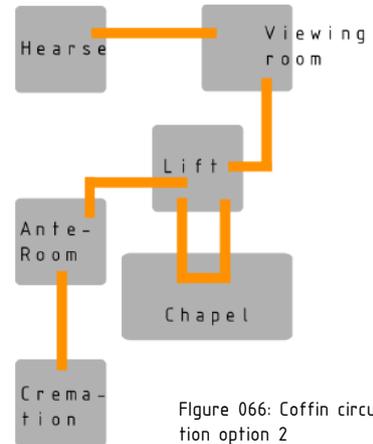


Figure 066: Coffin circulation option 2

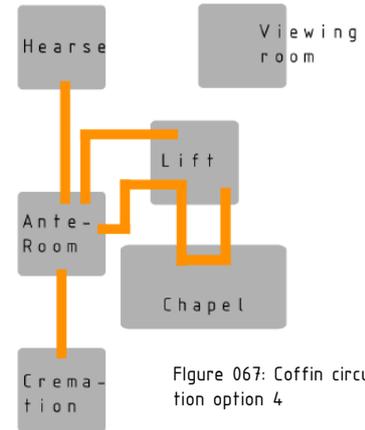


Figure 067: Coffin circulation option 4

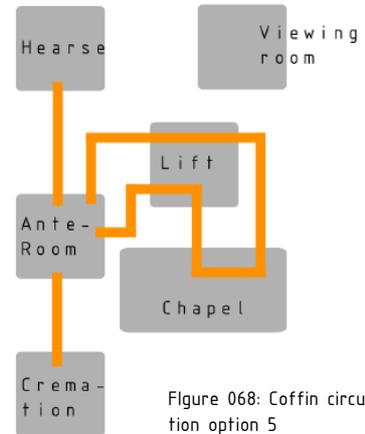


Figure 068: Coffin circulation option 5

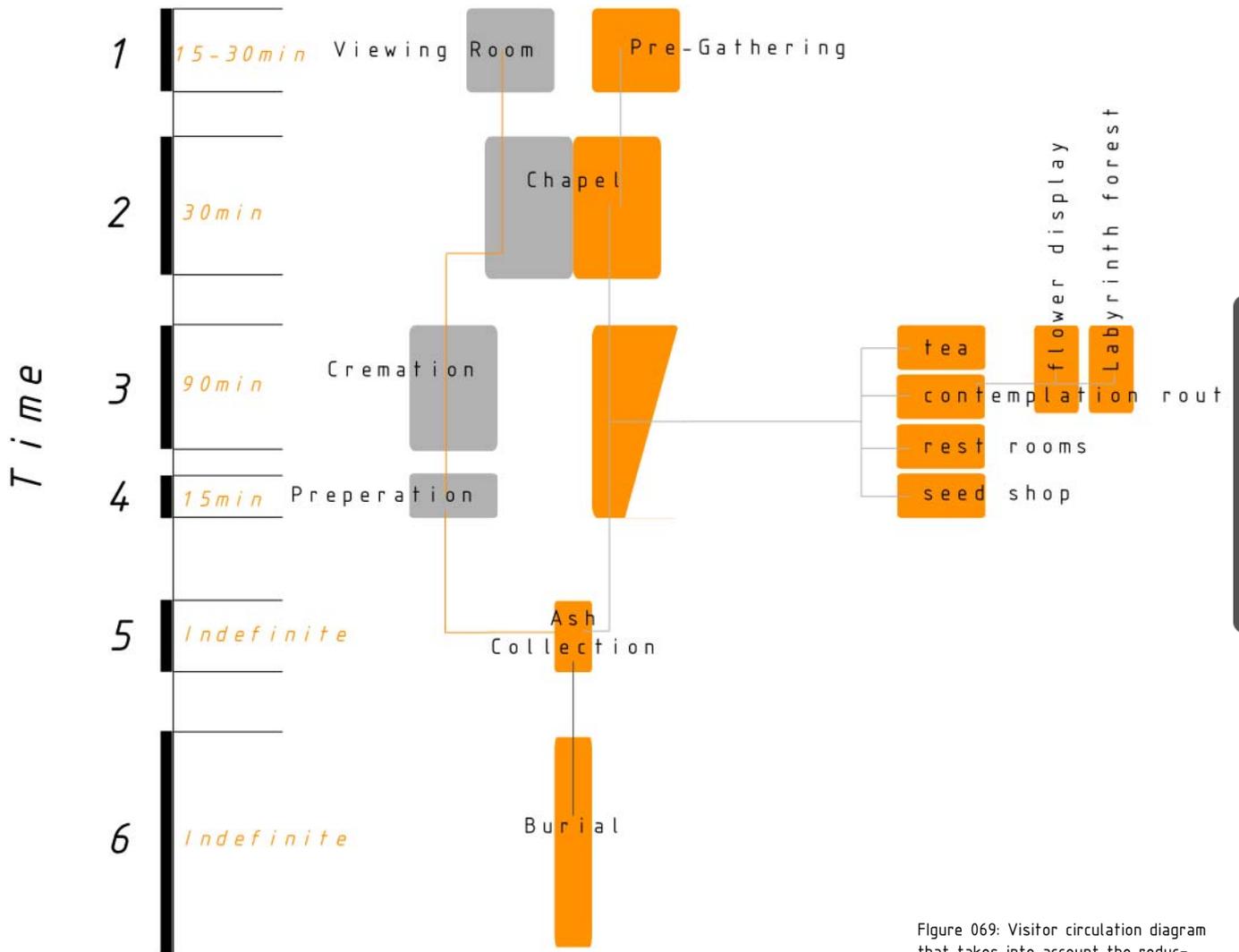


Figure 069: Visitor circulation diagram that takes into account the reduction of visitors throughout the ritual

Visitor Attendance Prediction

Movement

The diagram indicates the ritual of burial. The orange lines represent movement and the orange squares gathering

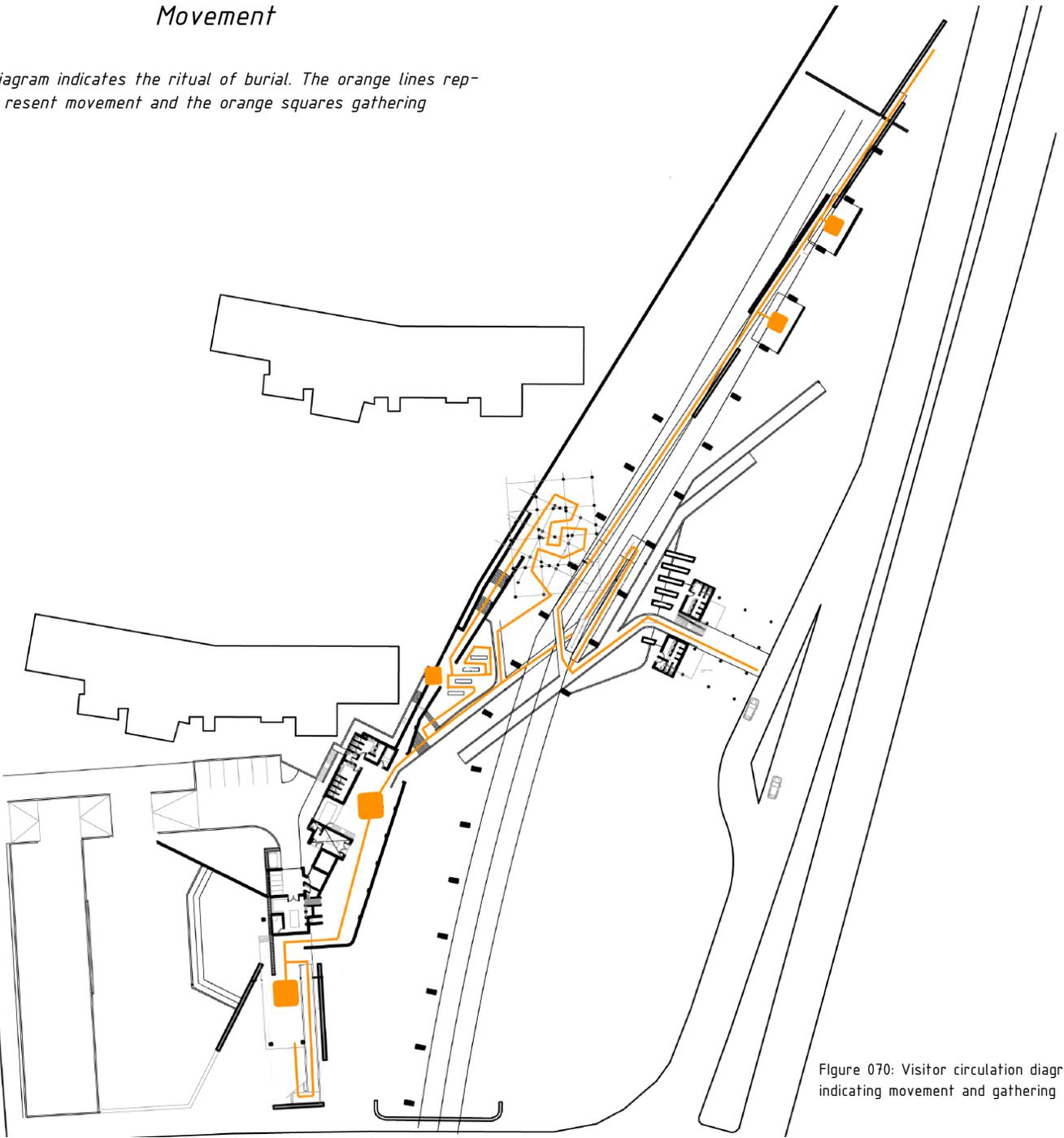


Figure 070: Visitor circulation diagram indicating movement and gathering

Movement

The diagram indicates the movement of those who would visit a passed relative or friend

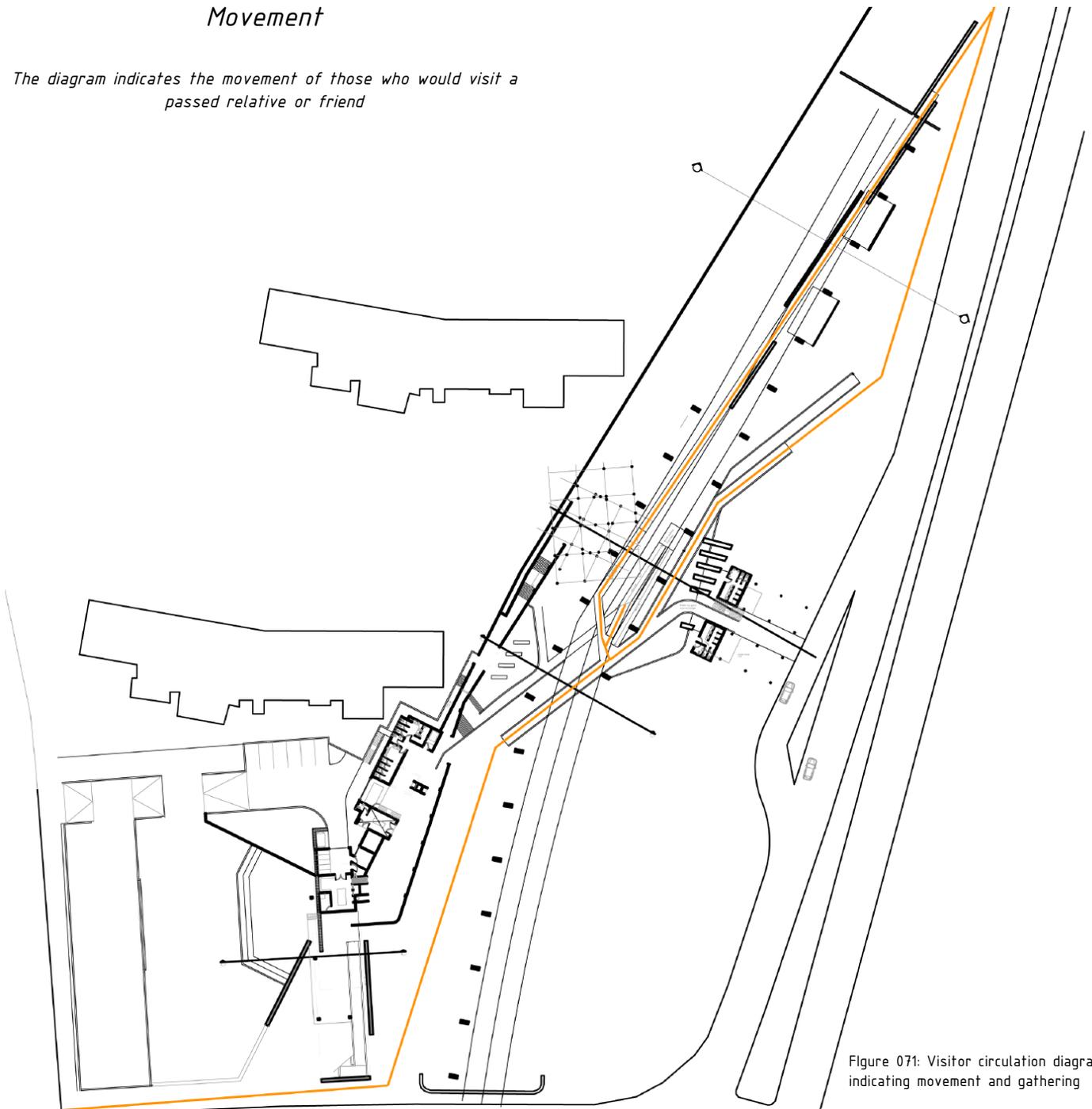


Figure 071: Visitor circulation diagram indicating movement and gathering

Movement

The diagram indicates the movement of the public simply passing by the structure as a shorter route to and from the MDC

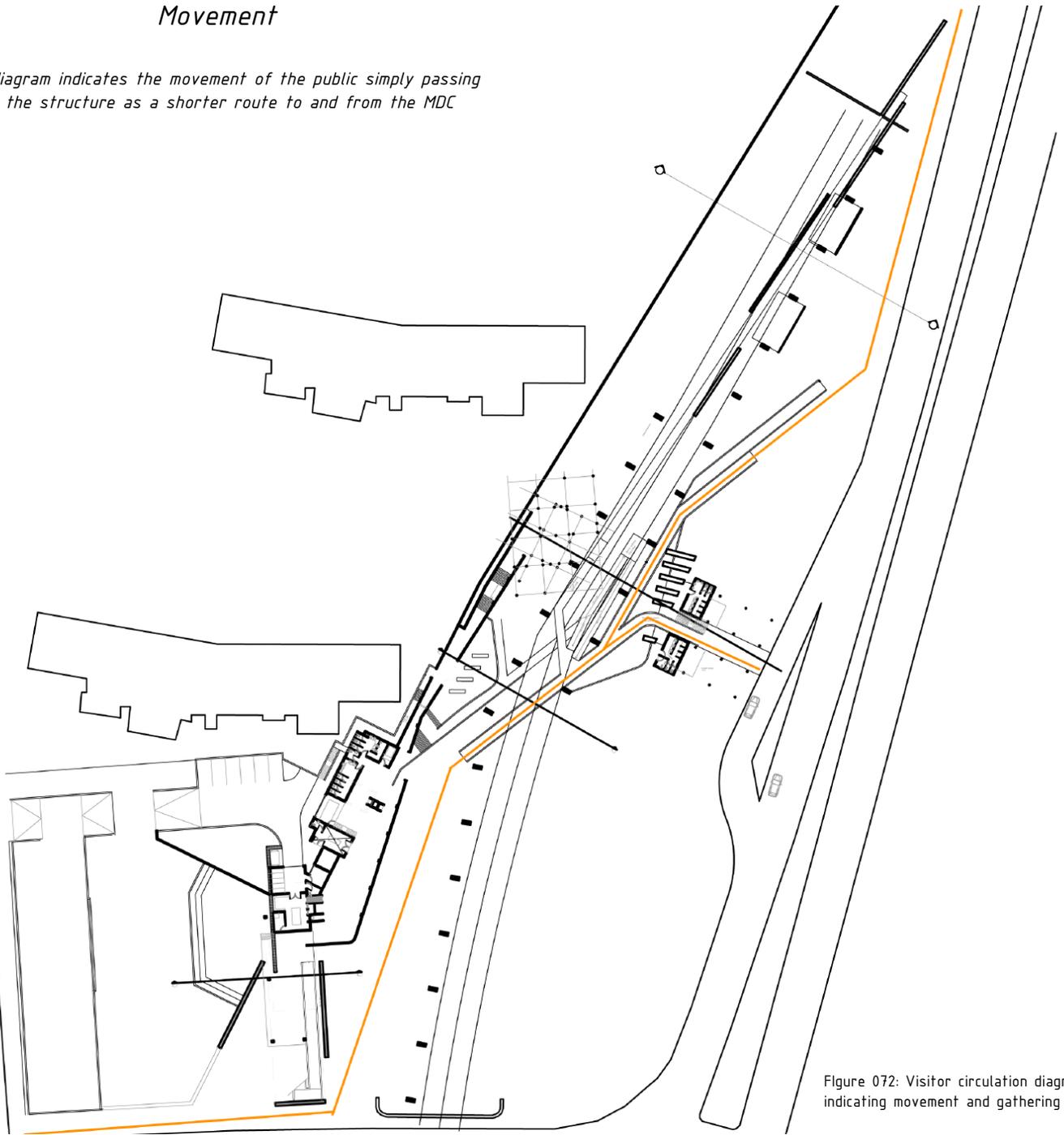


Figure 072: Visitor circulation diagram indicating movement and gathering



Figure 074: Diagram indicating the re-planting of trees

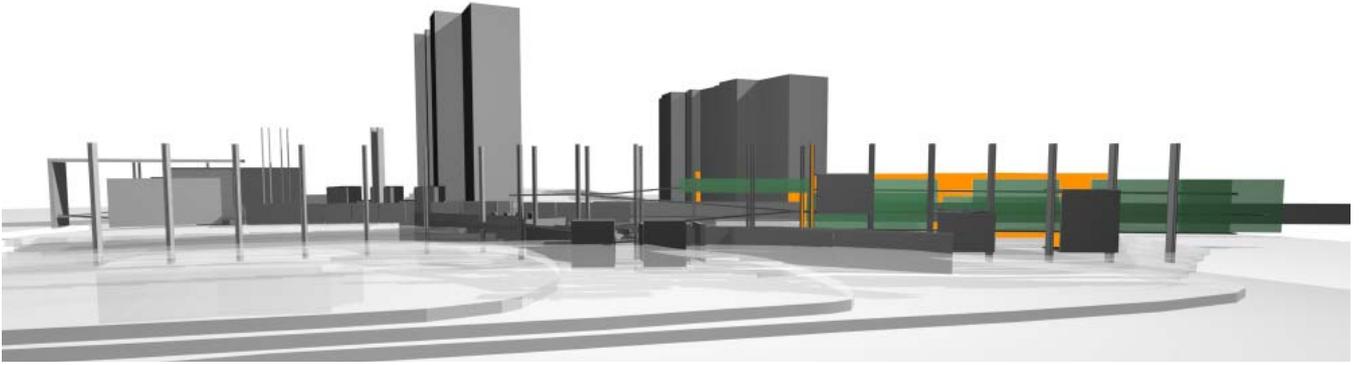


Figure 075: Three dimensional block model elevation

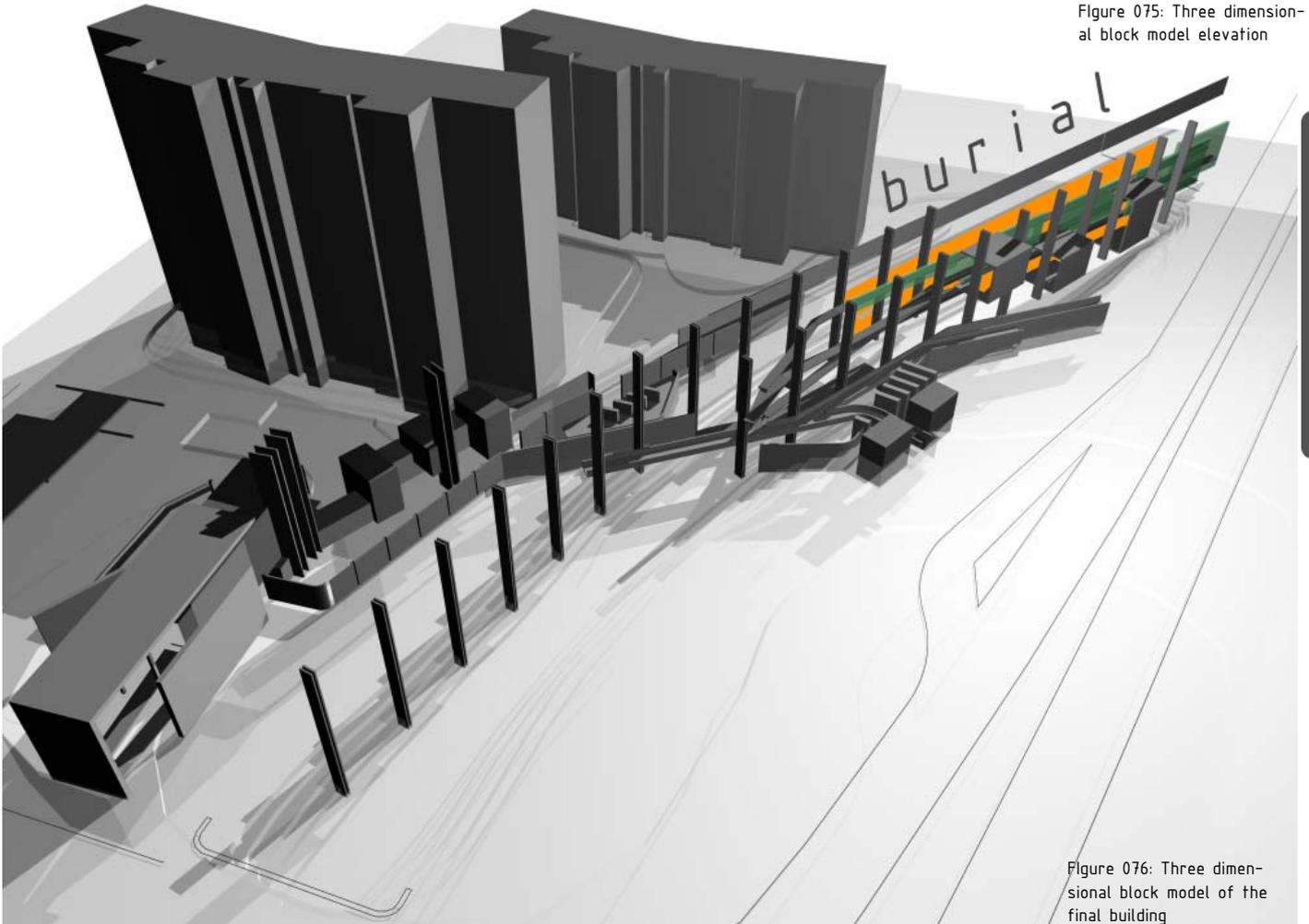


Figure 076: Three dimensional block model of the final building

Burial Structure:

Location:

The river has been defined earlier as the veil which separates the realm of the living from the dead. The implication of the presence of this "third, the between, chora or *différance*" is enhanced in the deep cleaving of the river into the terrain and by the rigid concave form of the concrete culvert which implies the existence of this non-space. This non-space is represented in the following diagrammatical section:

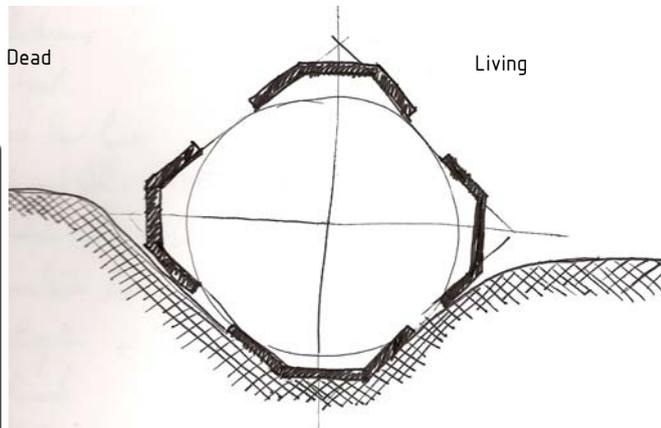


Figure 077: Diagrammatic representation of the time-space interval of 'the between' above the river

Suspending the burial structure above the river opens up the time-space of the "between" (similar to Eisenman's method of disfiguring in the Wexner Centre) in which the living meets the dead. As explained during the theoretical argument, the tension created where these polar opposites meet makes apparent the cracks and fissures preventing the existence of unity. The ramps which are suspended in the "between", makes apparent and "widens" these cracks, forever deferring completeness. The burial structure is the gap which separates the realms of the living and dead.

Form:

Ramps

After the collection of the ashes, the procession leads the mourners from the contemplation and flower display space towards the burial area. The unstable, uncertain, emotional condition of the mourners is enhanced in the ramps which seem to hover unsupported over the river, oscillating three-dimensionally left and right, back and forward. Lost in Tschumi's labyrinth, the mourners are entangled in time ever more deeply. The non-perpendicularity and non-parallel nature of the urban sculpture re-interprets Tschumi's expression in his follies. Forces which seem to converge fly apart and forces which fly apart converge in Tschumi's exploded cubes. These simultaneously converging and diverging forces are interpreted as movement vectors in the form of ramps, which seem to oscillate indecisively between the dualisms of existence and non-existence.

Platforms connect the different levels where the ramps converge and offer places of rest and lookout points. The structure will be used mostly between five and six pm since commuters who are returning home conveniently pass it. The significance of this time during the winter months is that another transition takes place in the form of the sunset. The integration of time and event results in a moment which reminds the visitor of his/her connection with time, in the form of the natural cycles often disguised behind the mass of skyscrapers. Pollution trapped in the urban heat island in combination with the Drie Lelies buildings that frame the moment dramatizes the sunsets into a surreal event. Once again, juxtaposition occurs between the artificial and natural, as the colours and textures of the sunset contrast starkly with the static,

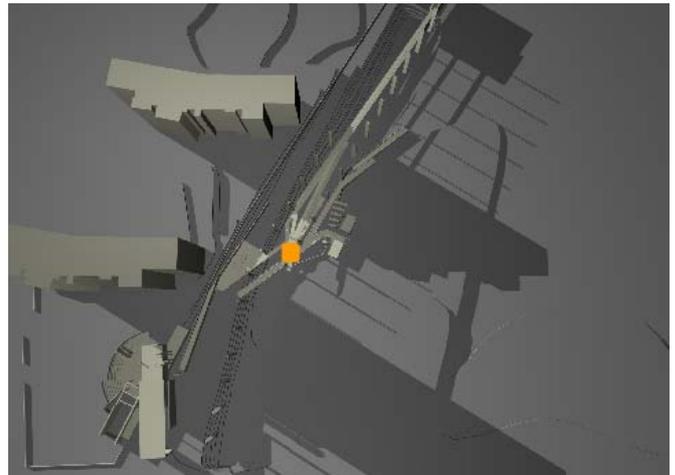


Figure 078: Shadows during winter at approximately five pm and the sunset caught between the Drie Lelies Buildings

Planter caskets:

Signage in the floor of the platforms indicates direction, and the procession resumes in the direction of the burial area. On the timber ramp the rhythmic sound of footsteps interrupts the regular occurrence of the vertical supports of the balustrade, divided by the equal intervals of the massive concrete columns. This collapses traditional time and the heterotopia functions at its full capacity.

The mourners are led into the narrow vertical garden between the green vertical planes which extend past the ramps above and below. A sense of weightlessness prevails; the cantilevered supports are hidden behind the vertical planes, and only the vertical members carrying the structure on which the boxes rest create the illusion that the ramps are supported by these secondary members. In addition their slenderness and lack of connection with the ground creates further confusion and the feeling of weightlessness is strengthened. This ethereal quality is furthermore enhanced by the sunlight which is filtered through the creeper screens and mist from the irrigation system.



Figure 79: Secrets of the woods. Image with permission from Gerrie Venter.

Tectonics

The concept of time as the continuing artist finds its physical expression most strongly in the tectonic resolution of the burial structure which will now once again be broken down into its various constituent parts for the sake of explanation; however, it should again be noted that it is the interdependent spatial relationship between these parts that determines what is experienced. In this way the senses are affected before one's reason is.

The conventional method of burying the ashes in a wall of remembrance is queried and a new concept of burial related to time is proposed. Conventionally the ashes that are placed in a casket in the niche of a face brick wall convey a sense of finality (the pyramid). If the body is not cremated but buried it is allowed to decompose; hence the body becomes part of the soil that in turn becomes part of the vegetation which eventually is ingested by insects, birds or mammals etc. The body therefore becomes part of an ecosystem and since matter cannot be destroyed, ends up as an element of infinity (the labyrinth).

What is proposed is that the cremated ashes of the deceased are mixed with soil, after which seeds of small shrubs or flowers are planted. The choice of plant material is dependent upon the choice of the relatives of the deceased (from a restricted list; refer to appendix). This allows these relatives to make their own personal

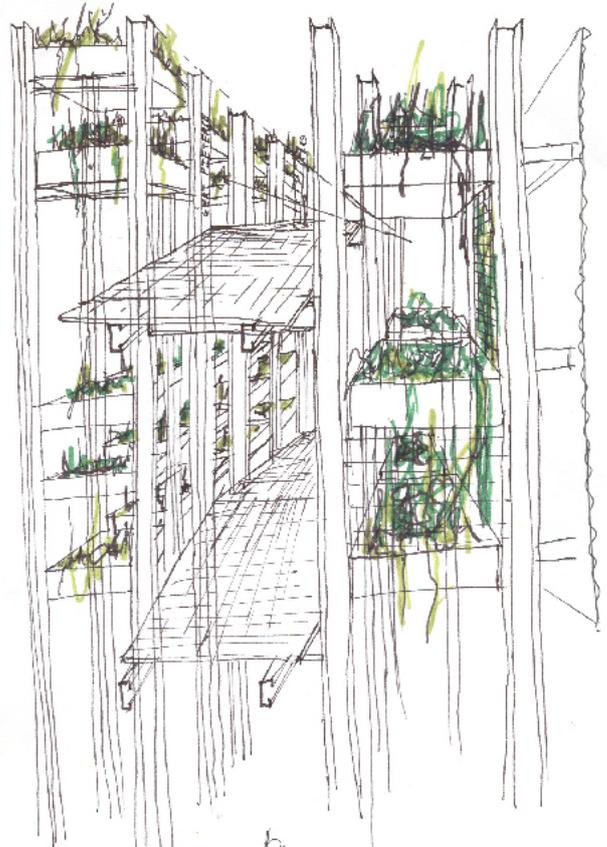


Figure 080: Initial concept sketch of burial structure

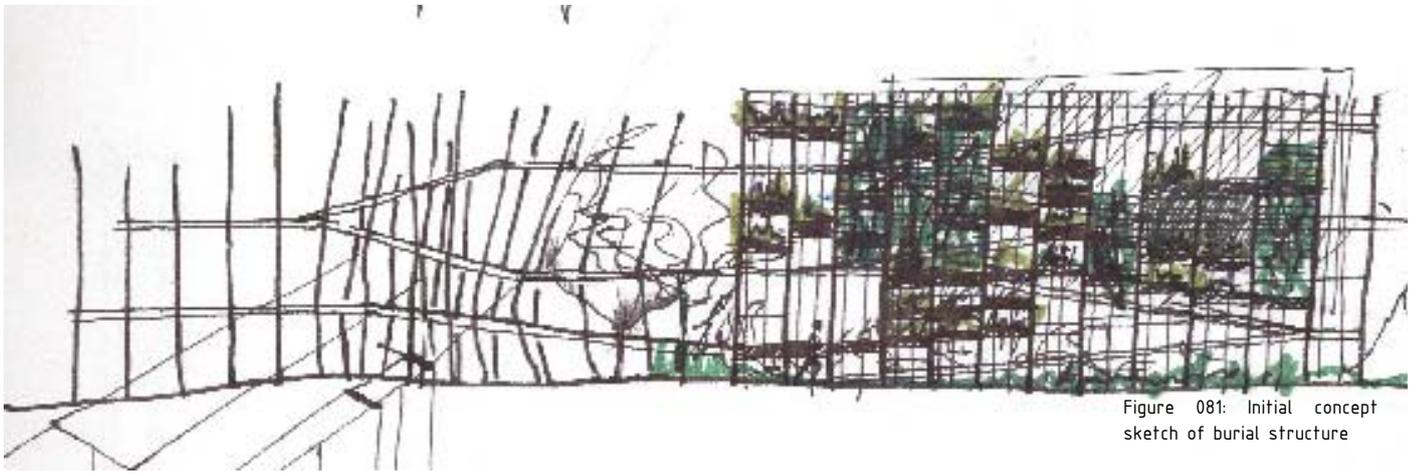


Figure 081: Initial concept sketch of burial structure

The planter caskets are organized in pre-determined vertical planes along the length of the ramp system. Each planter casket weighs approximately twenty kilograms and will be carried by two persons who will place it in position at the predetermined location.

The semi-permeable vertical plant screens between the planter caskets and the road create a sense of privacy for those either burying or visiting a deceased loved one, without isolating them from the street: this is indicated in diagram XXX. Furthermore, homogeneity when viewed from the road is created by these screens which merge the layers of different colours and the textures behind them. The vertical planes hover somewhere between earth and sky: canvases painted by time.

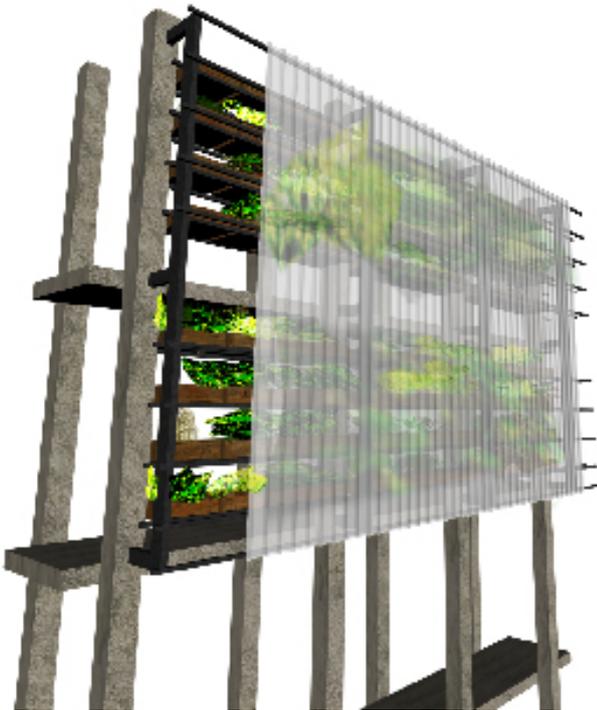


Figure 082: Initial three dimensional model of the burial structure

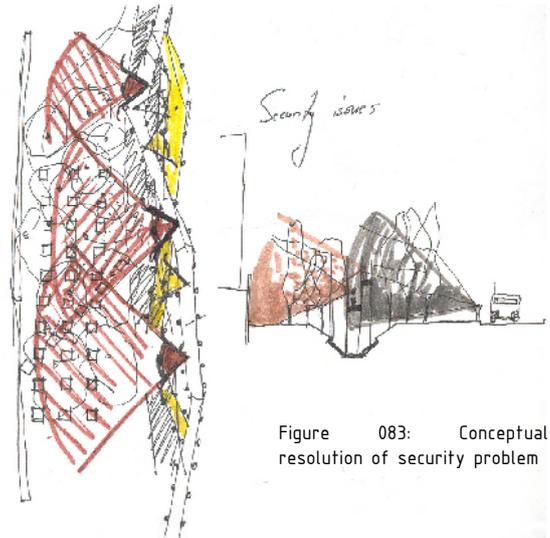


Figure 083: Conceptual resolution of security problem

Building in the channel is prohibited since large debris, for example trees, would be trapped by any foreign element there, reducing the surface flow, which would result in a snowball effect, trapping more debris. According to an interview conducted with a water engineer at the Tshwane Metropolitan Council, the fifty-year flood line lies within the boundaries of the culvert as previously indicated.

The vertical supports for the burial structure would therefore have to be placed outside the culvert. A cantilevered structural system is suggested. The following diagrams (Figures 084 - 088) indicate the conceptual development of the structure:

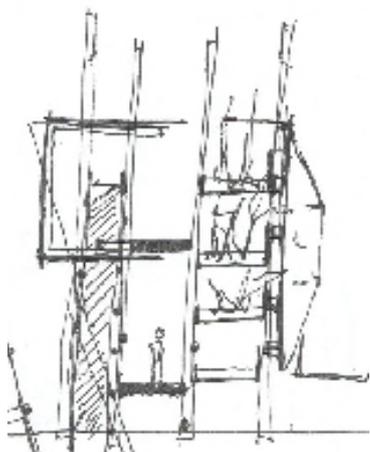


Figure 084:

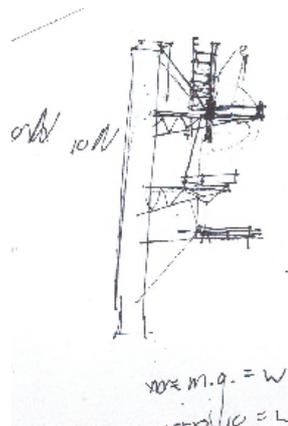


Figure 085:

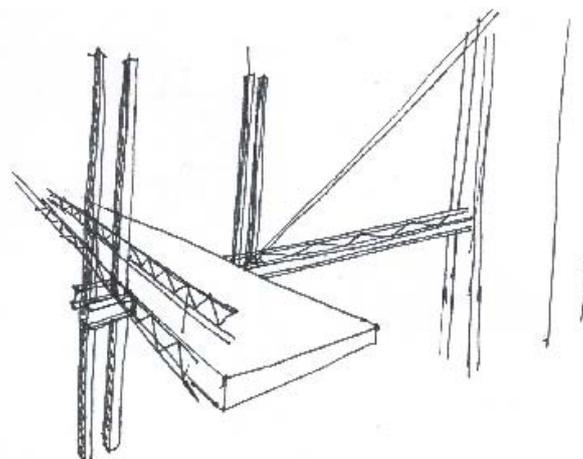


Figure 087:

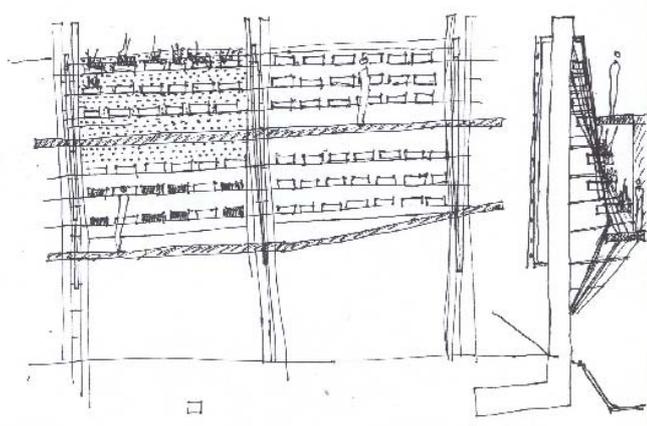


Figure 086:

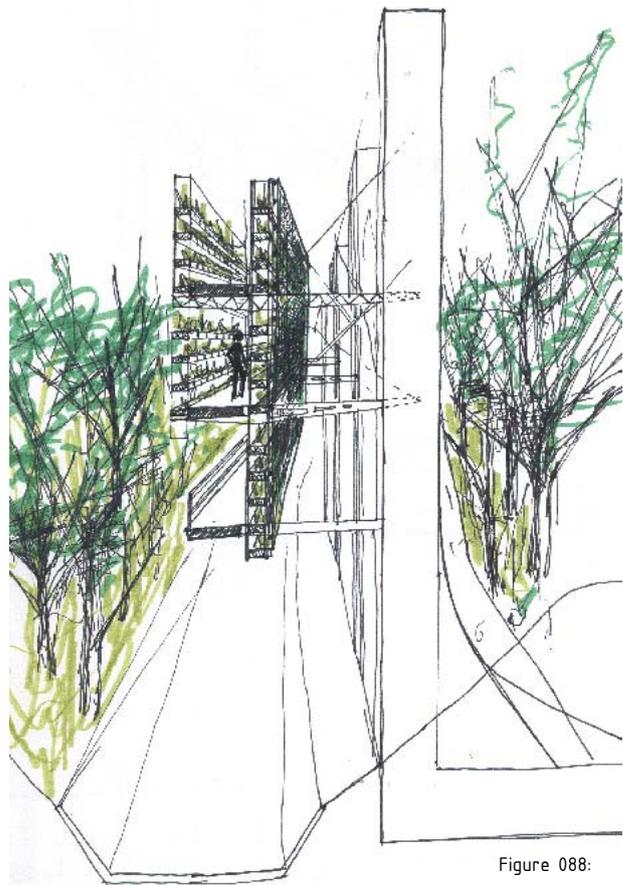


Figure 088:

This practical constraint leads to theoretical opportunities that could deepen the theorized effects in terms of the physical and psychological relationship between the structure and the mourners. The separation of the concrete columns and ramp system creates the opportunity to hide the cantilever support system behind the vertical green planes, thus generating the illusion that the ramp system is suspended in nothingness. The concrete plane furthermore follows the curvature of the river, once again drawing attention to its presence. As one drives North along Nelson Mandela Drive the effect of perspective allows the columns to appear as a massive curving vertical plain, yet movement exposes its brokenness and its permeability becomes apparent. Repetition and mass dominate the second phase of movement. The columns now appear as monumental concrete piers spaced at regular intervals. But, in the third phase as movement progresses and the structure is viewed perpendicularly, the massive piers are once again fragmented into two slender concrete planes. The sense of stability therefore decreases through progression and the concept of the labyrinth is strengthened.

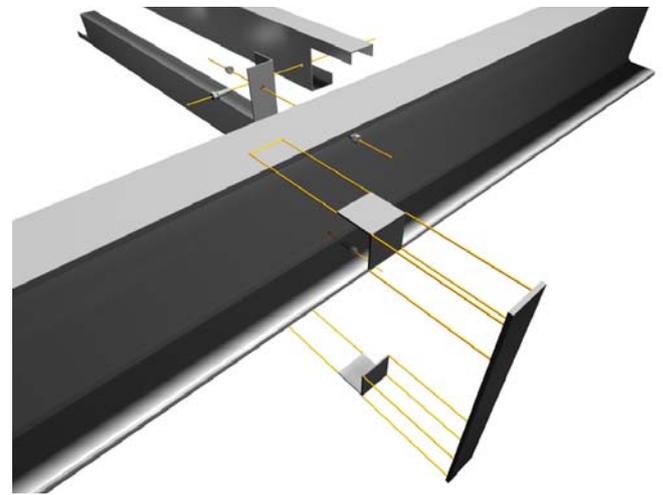


Figure 090: Exploded view of burial structure detail.

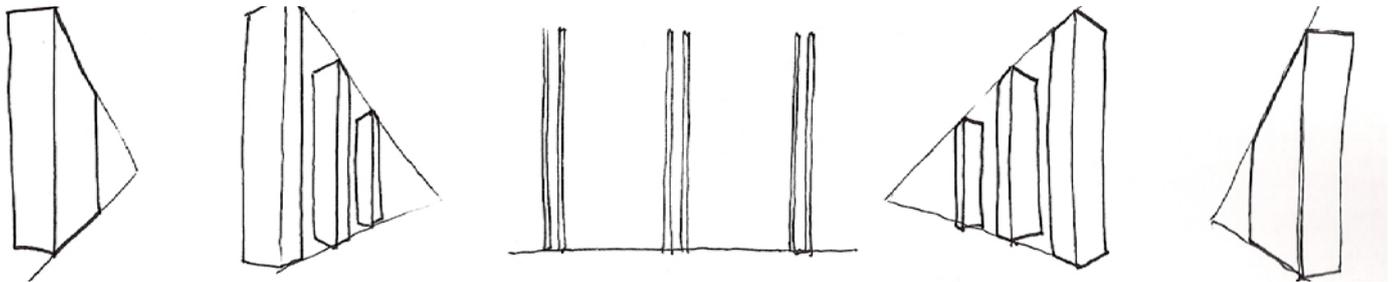


Figure 089: Explanational sketch indicating the fragmentation of the concrete columns by means of change in perception

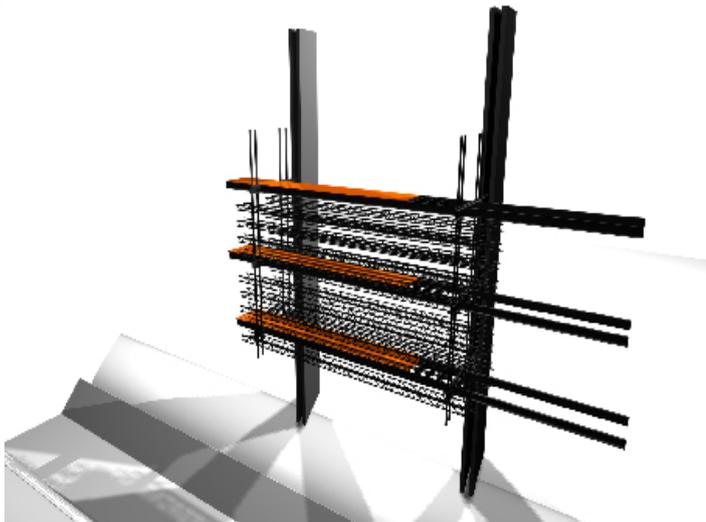


Figure 091: Three dimensional rendering of a burial structure module

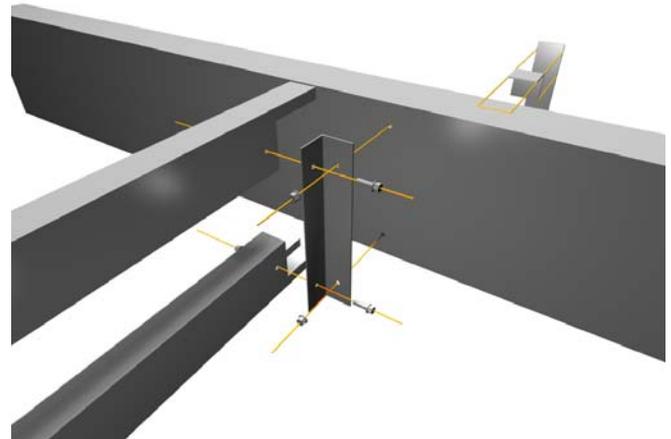


Figure 092: Assembly drawing of lipped channel steel joists connecting to the U-profile steel beams

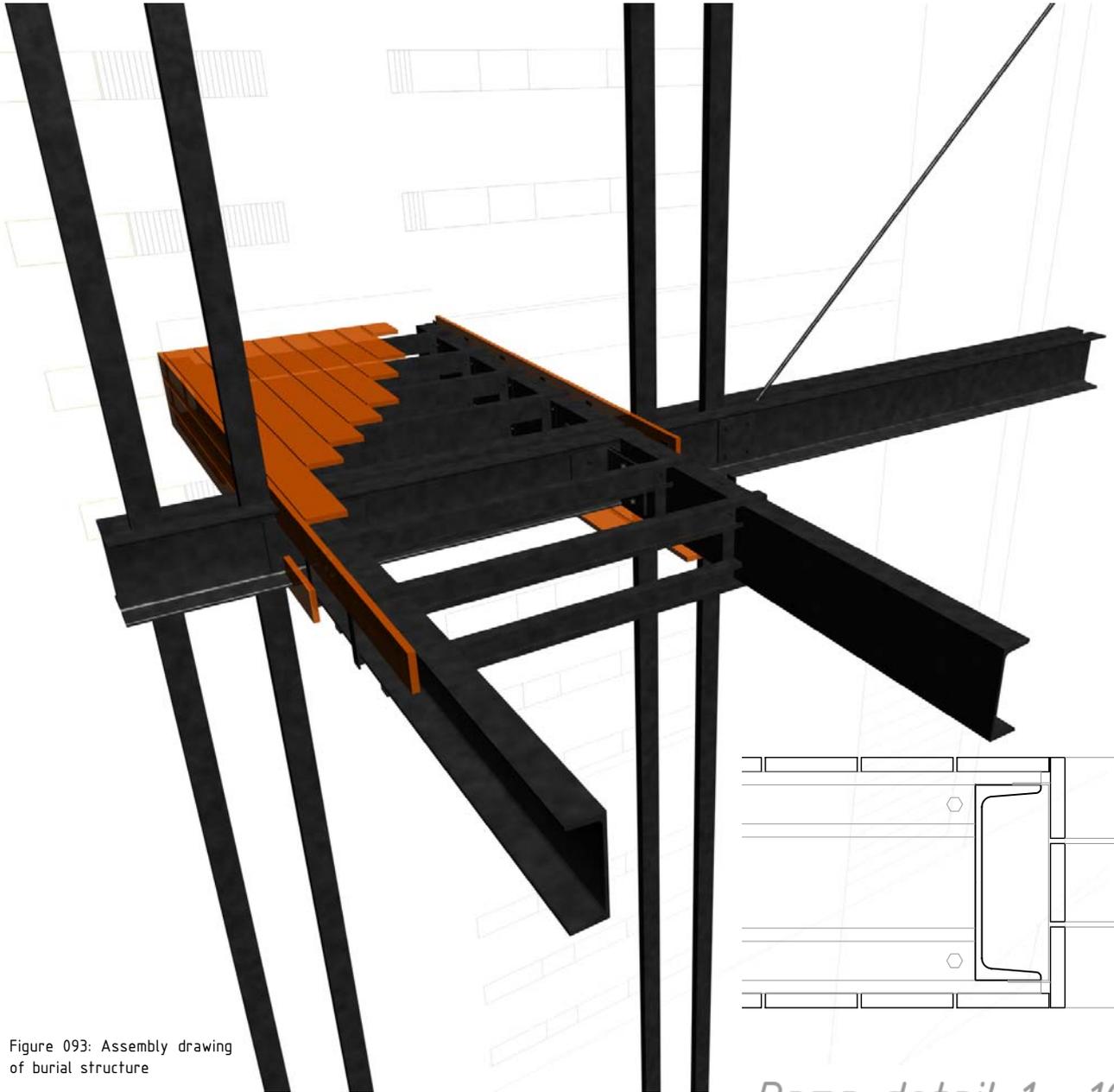


Figure 093: Assembly drawing of burial structure

Ramp detail 1 : 10

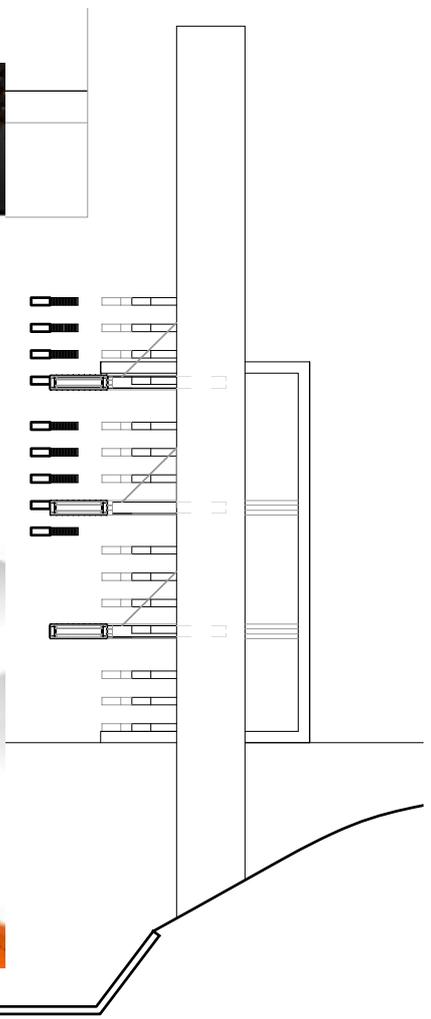
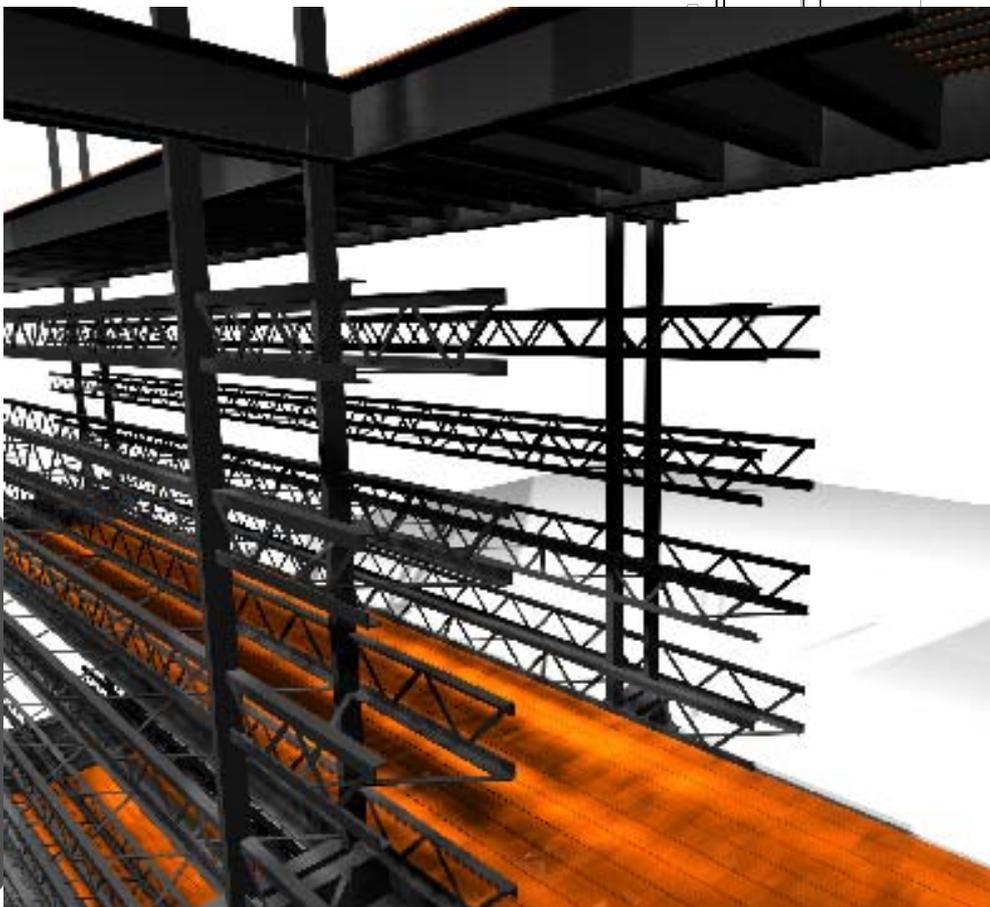


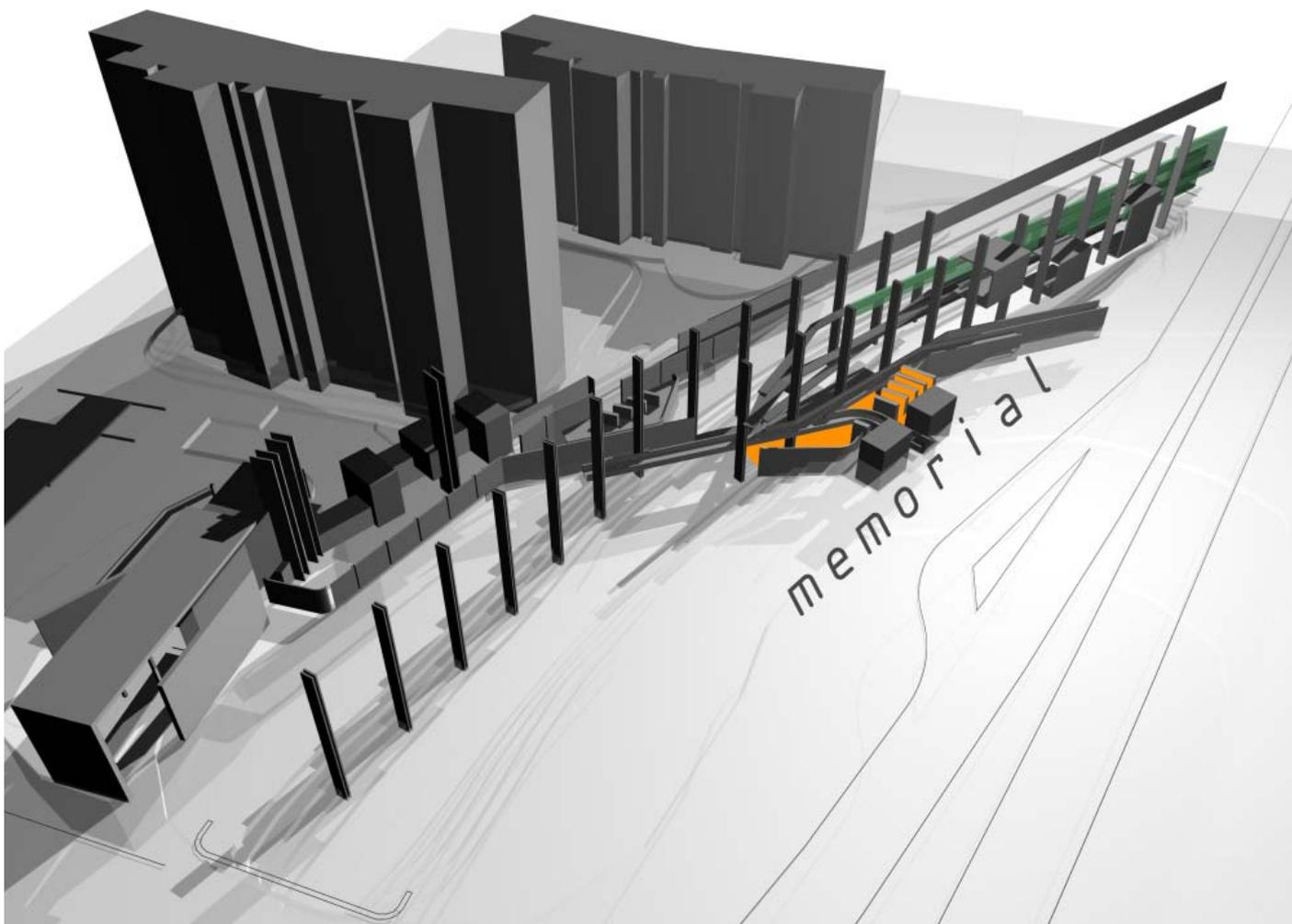
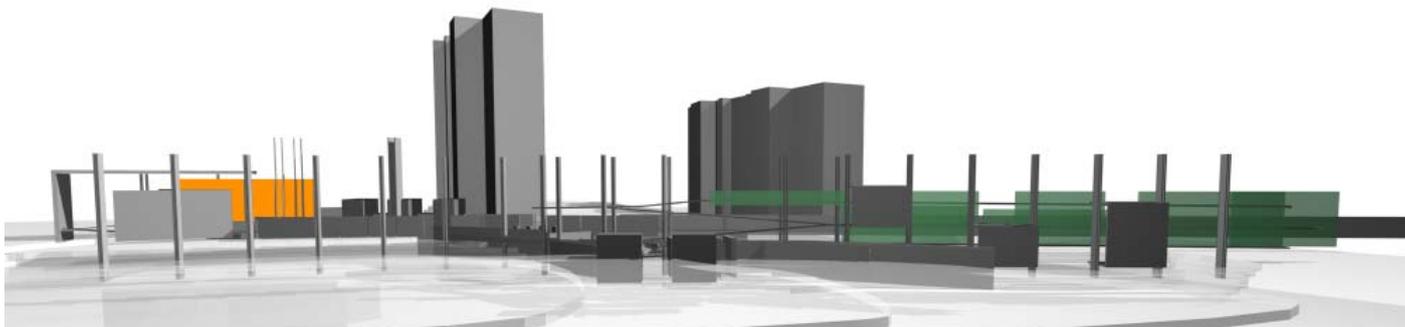
Figure 094: Abstract three dimensional rendering showing the structure which contains the planter caskets

Burial Module Section 1 : 200

In between these concrete piers, fragments of concrete boxes are attached to the burial structure. These fragments serve multiple functions. They act as gathering and overspill spaces where the final burial ritual occurs in the form of planting the seed in the planter casket: the end of the ritual signifies the beginning of a new. Furthermore, these elements allow for contemplation spaces that extend over the river edge; people visiting can sit on the edge with their feet hanging over it and appreciate the convergence of the natural and artificial. These spaces could also function as picnic areas: A heterotopic space which accommodates different events

utilized by a dramatically fast-changing hybrid population.

The essence of what is achieved through the burial structure is that it is a constantly changing vertical landscape suspended between earth and sky, east and west, the realm of the living and dead. Building between widens the cracks, tears or fissures, illuminating the presence of *différance* through its disappearance. It is not constructed to escape time, but to entangle the visitor ever more deeply in it.



Memorial

The memorial of the forgotten would be a burial place for those who have died without being identified. Initially it was proposed that the memorial be dedicated to selected deceased politicians or celebrities who had contributed to the fight against apartheid. Yet, the anti-utilitarian undertone and concept of the return of the refused, neglected and negated seems to plead against another memorial honouring the heroes of our time. What about the insignificant, those whose death has gone unnoticed?

Location:

The formalization of the existing taxi stop allows direct access to the memorial linking it to the region via Nelson Mandela Drive. Its position is furthermore integrated with the burial structure by means of the public concrete bridge which is connected to one of the platforms leading into the burial area and the concrete fragments.

The site, defined as a gateway into the MDC and Pretoria, will mark the beginning of a pedestrian route which leads into the MDC and CBD through the defined precincts proposed by the MDC.



Figure 095: Possible tourist walkway through Pretoria



Figure 096: The regional connectivity by Nelson Mandela Drive Justifies the location of the memorial

foundation circle

Concepts & Meaning

The memorial space that cuts into the river bank provides an intermediate semi-public space. By means of taking away or cleaving the memorial space itself is created. Memorial walls connect the memorial to the public realm. Cleaving these walls connotes a reference to the forgotten (refuse), an abstraction of an archeological ruin through which the unknown is made known. The appropriateness of the space created by the removal of earth suggests the pre-existence of something that had been there previously, but was passed by unnoticed and is now made apparent through its absence. Presence appears through absence.

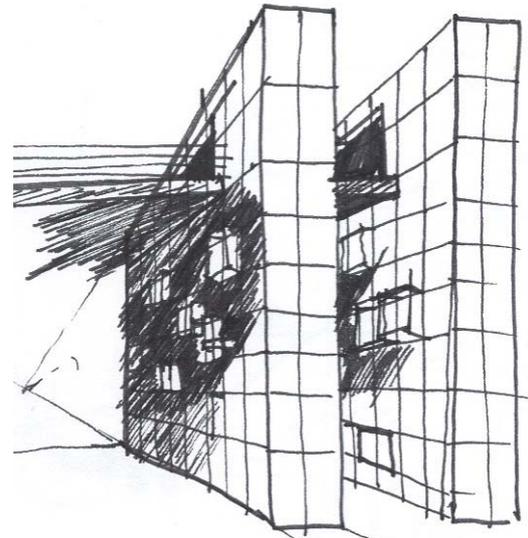


Figure 097: Concept sketch of the wall disappearing in time

Form

By means of the cleaving process the boundary implying the "between" is widened and drawn into the memorial space. Once again the non-perpendicularity of the design seems justified as the retaining walls respond to the ruptures of the "between" condition.

Materials & Ritual

The burial walls consist of removable concrete tiles fixed to a prefabricated airbrick concrete wall. After the construction is completed and all the tiles are set in position these walls appear complete. Yet, the walls are deconstructed in time: For every unidentified AIDS victim a tile is removed from the memorial walls and replaced along with his/her ashes, by volunteers from the public, in the niches provided in the fragmented concrete structures. The memorial walls are therefore deconstructed and the concrete fragments are constructed as time progresses. Once again the work of art is sculpted by the public and time.

This process allows for the respectable burial deserved by every individual no matter how insignificant.

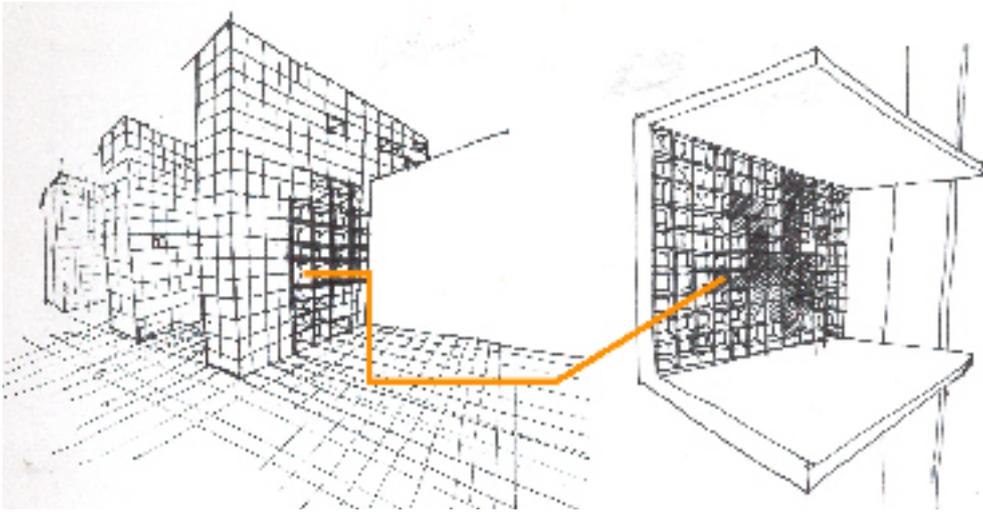


Figure 098: Concept of the positive and negative appears through the deconstructed memorial walls and constructed concrete fragments emphasizing the structure as a continuously changing process

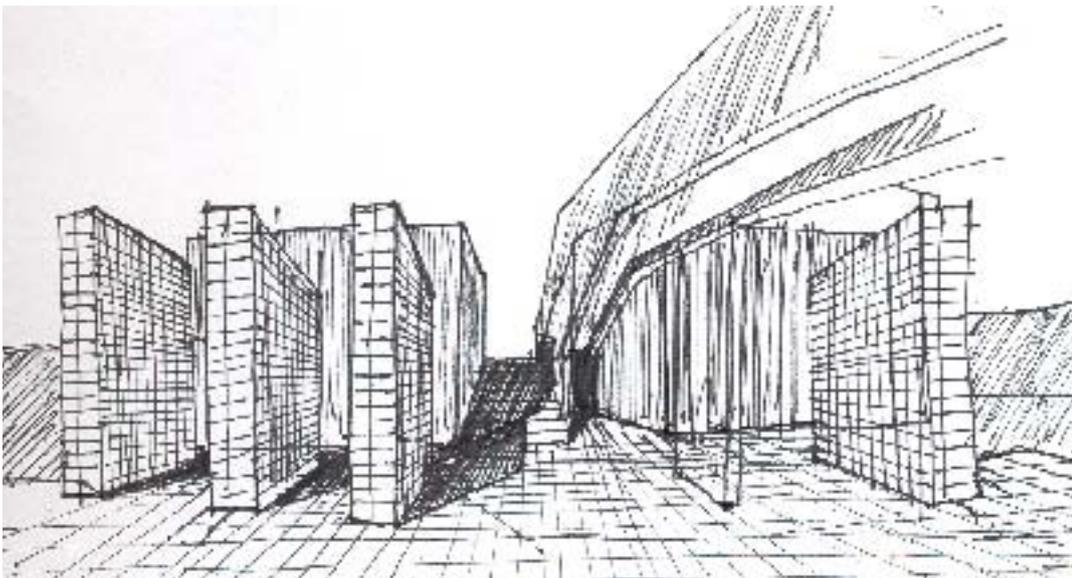


Figure 099: The tile pattern enhances the concept of cleaving

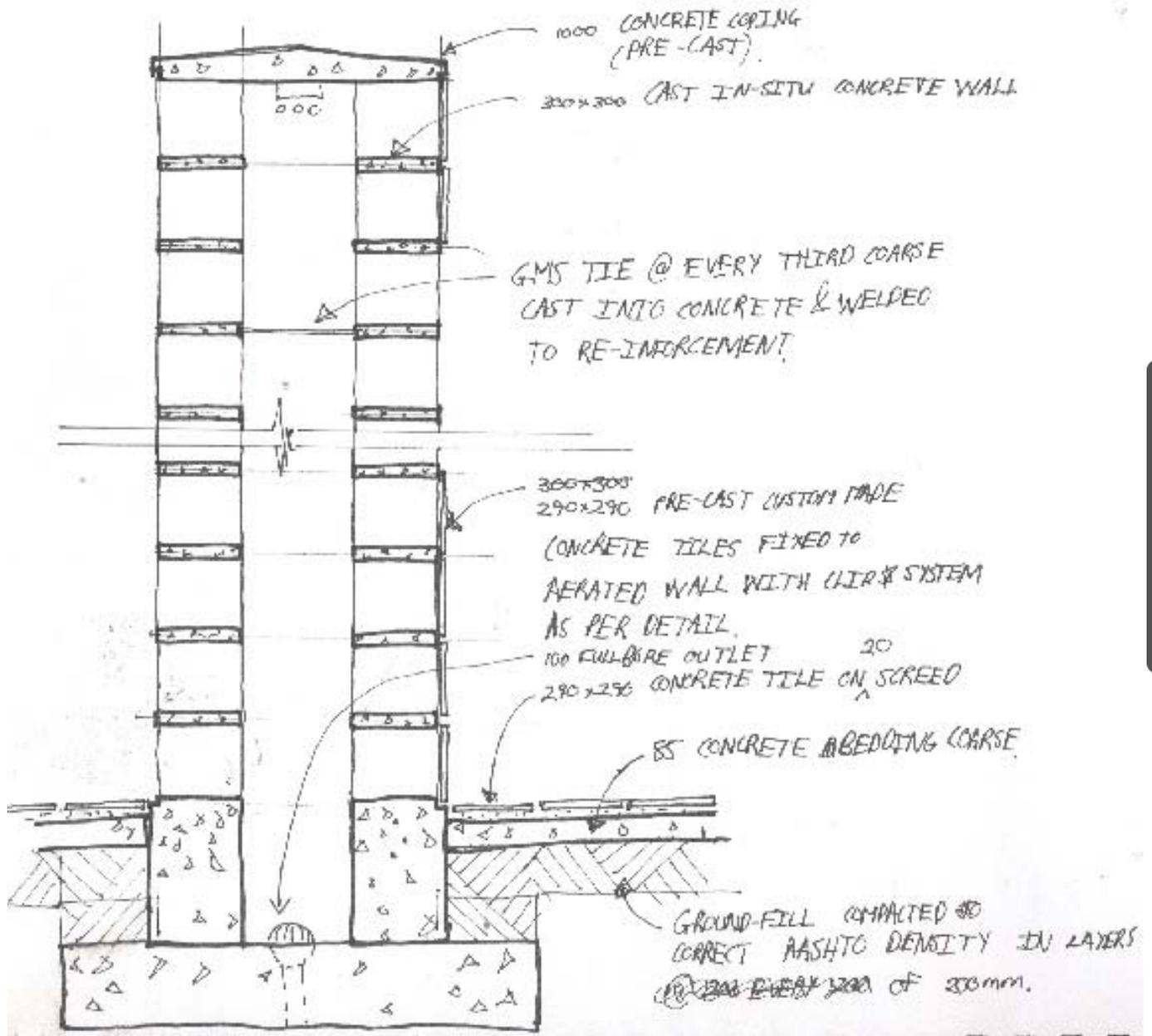


Figure 100: Conceptual construction possibility of the memorial wall

Figure 103:
Detail of
memorial wall
and floor
connection

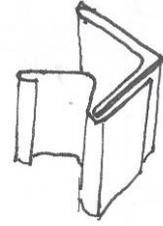
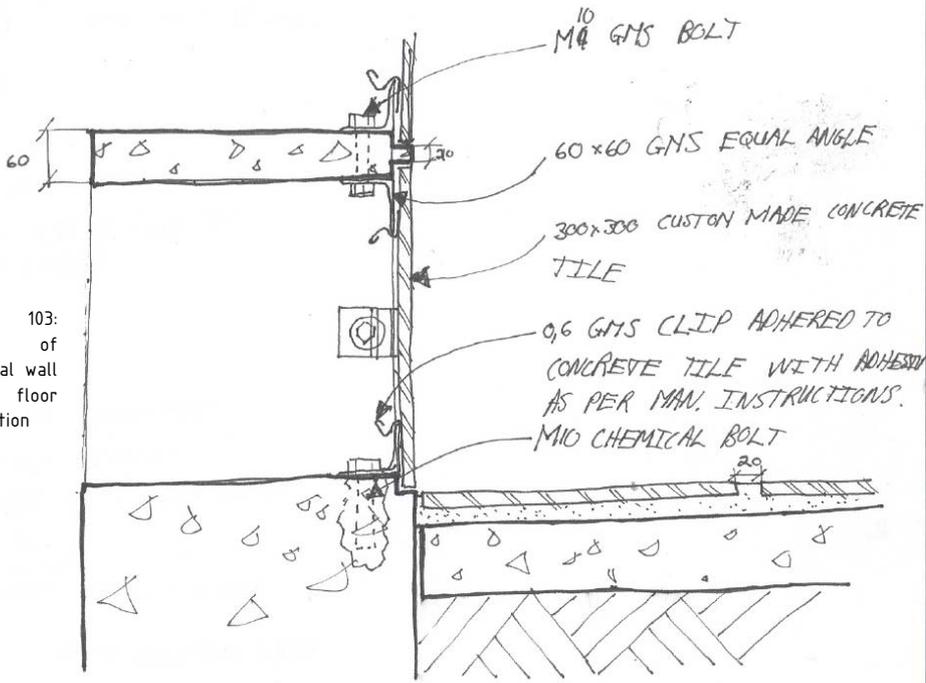


Figure 102:
Clip System
w h i c h
c o n n e c t s
t h e t i l e s
t o t h e c o n c r e t e
s t r u c t u r e
h o u s i n g t h e
a s h e s

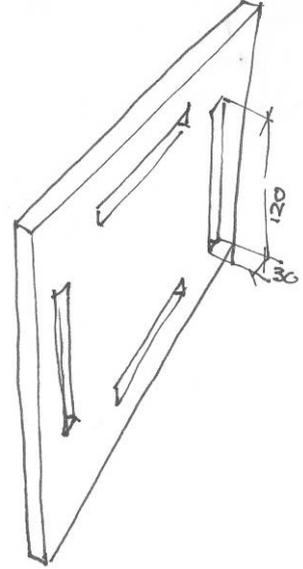


Figure 102: Tiles with slots so that the can be
easily removed from the wall.

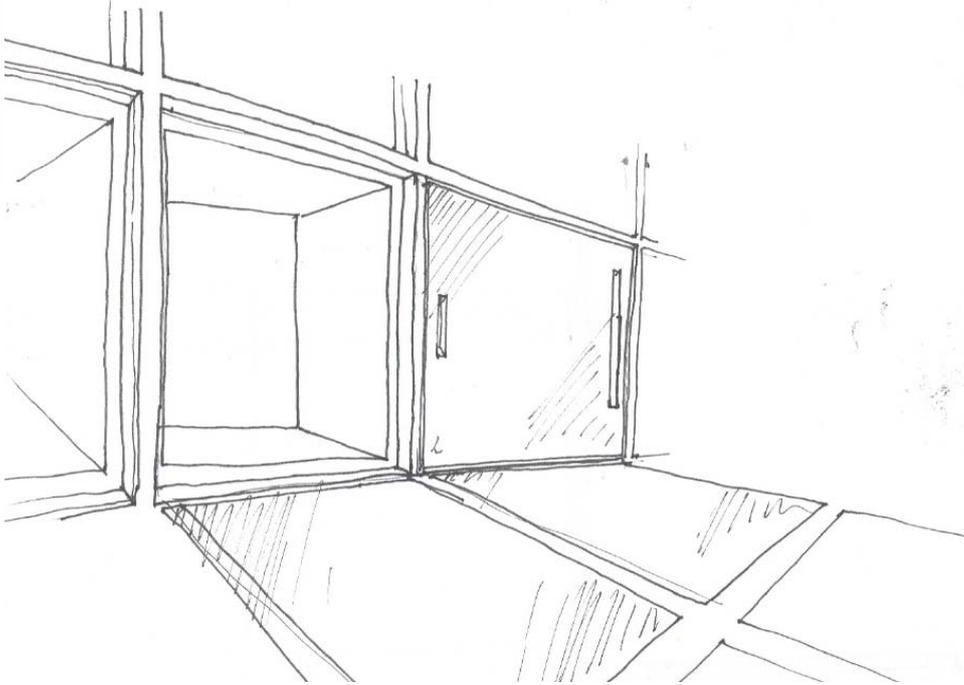
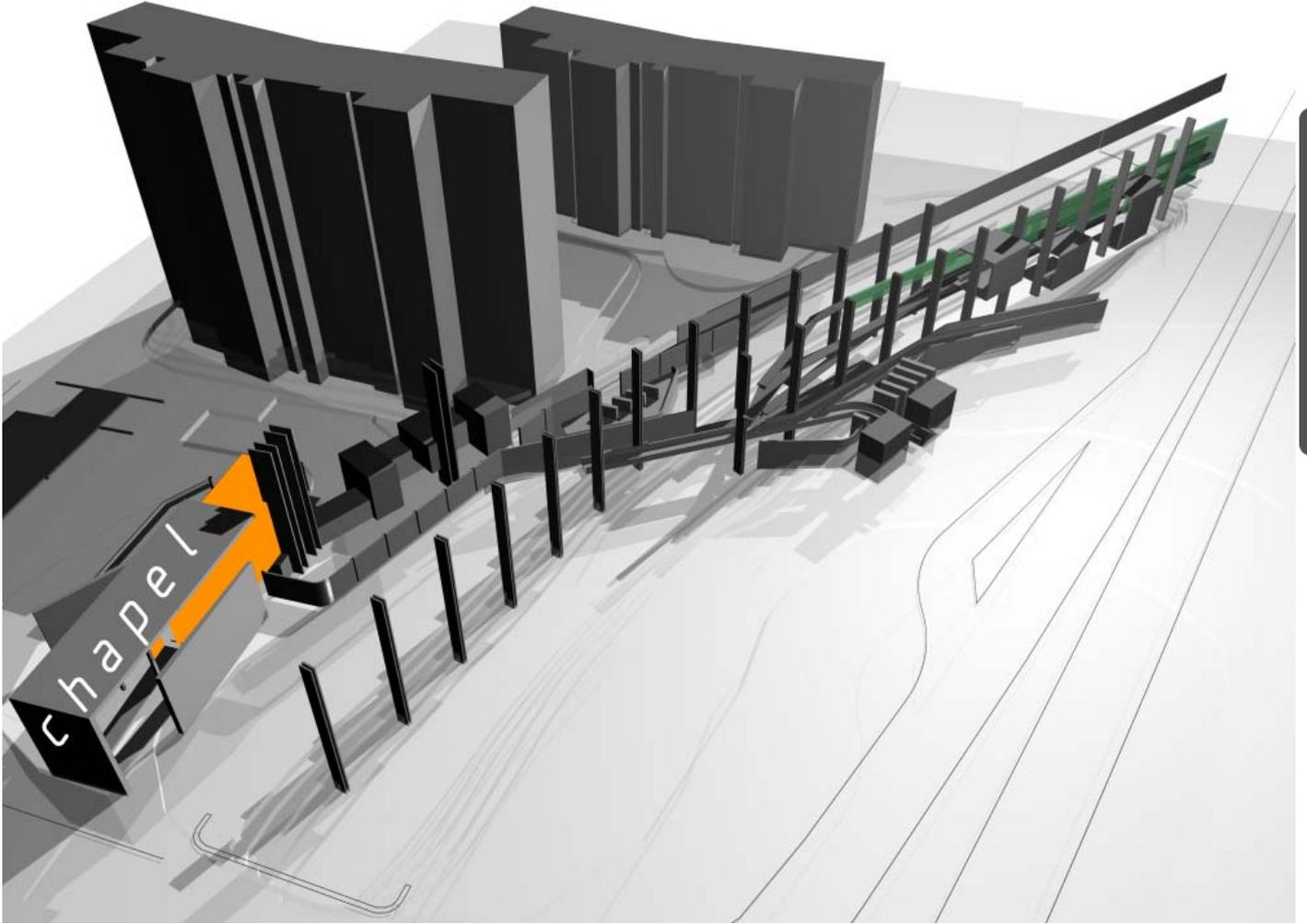
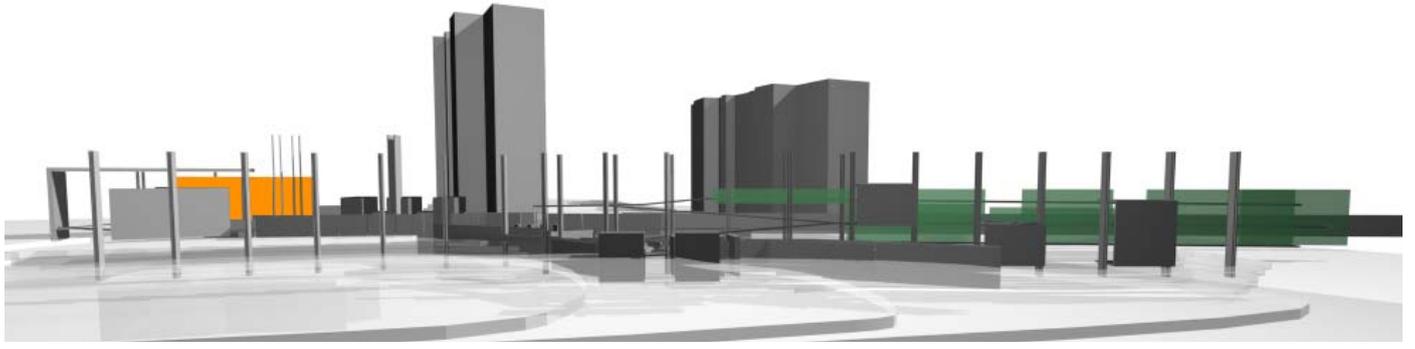


Figure 101: Three dimensional drawing of memorial
wall and floor connection



Chapel

Location

The location of the chapel on the site was determined by both theoretical and practical considerations.

Accessibility: The precedent study diagrams illustrating the movement of coffins have indicated the importance of the chapel being in close proximity to the crematorium. As shown in the physical site analysis the segment to the south of the Drie Lelies buildings is currently not utilized (Interview with landlord of the Drie Lelies buildings). The opportunity that emerges is the possibility of opening a separate circulation route for the hearse that can be accessed from Prinsloo Street, thereby servicing both the crematorium and chapel simultaneously, while separating the hearse from the public realm.

Ritual: The separation of the chapel and burial area introduces a sense of ritual that begins at the chapel and linearly directs movement through the urban sculpture into the burial area.

Opportunities: The unused space (2700m²) south of the Drie Lelies buildings allows for the possibility of large gatherings of up to approximately 2700 people (SABS 0400). The chapel would therefore function as a preaching altar from which memorial services could be held. A similar approach in which the chapel functions as a preaching altar occurs at the Los Nogales School in Bogotá, Columbia, designed by Daniel Bonilla Arquitectos in 2002. Figures 104, 105, 106 and 107 indicate the massive wall planes which opens the interior of the chapel to the gathering space outside. No formalized amphitheatre was provided.

(06) - 30

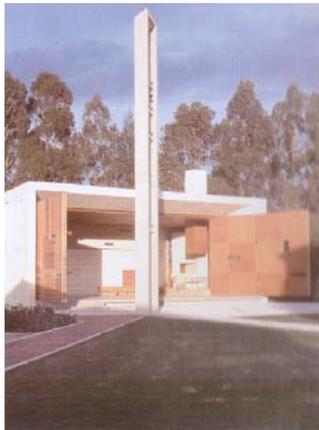


Figure 104: Los Nogales chapel. Functions as a preaching altar which allows for the accommodation of large gatherings by means of the wall planes which swing open.



Figure 105: Los Nogales Chapel. Wall planes closed during smaller services

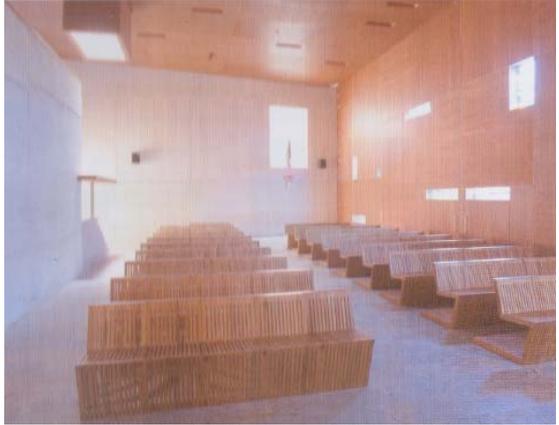


Figure 106: Los Nogales Chapel. Ethereal light quality created through the combined use of small window openings and reflective timber finishes.

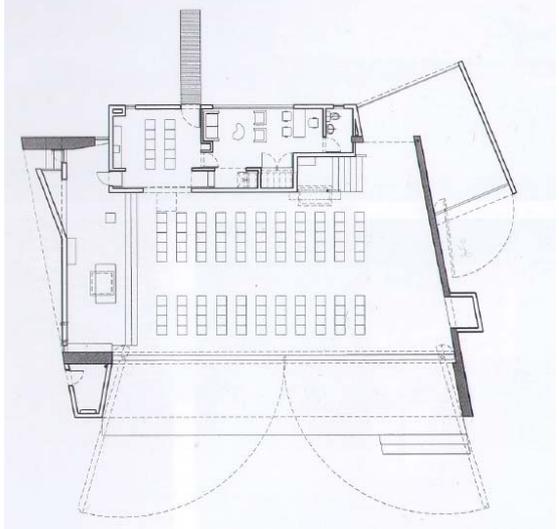


Figure 107: Los Nogales Chapel Plan. Entrance to the chapel occurs through an intermediate space which allows for the eyes to adjust from the outside glare.

Form

The converging city grid fragments the functionalist Modernist box in such a way that the functional space which it used to enclose is opened, while simultaneously enclosing or defining space which was left open and undefined in its previous condition. The method employed by Masson, as described by Taylor (1992, p.240), in which the lines on his drawings open as much as they close, has been interpreted spatially by means of suspending the chapel between the fragmented planes of the concrete box so as to open the time-space of the "between" via the process of fragmentation, by means of which the chapel acquires the quality of a veil and of a spatial transition emphasizing the start of the ritual process.

The converging city grids that meet diagonally are significant because they convey a sense of explosion and change. The chapel responds to the urban context through both its orientation and form. In terms of orientation the rectangular prism which contains the chapel responds to the Western city grid and thereby incorporates the unused space to the south of the Drie Lelies buildings. Its rectilinear form furthermore responds to the rectilinear nature of the surrounding urban context.

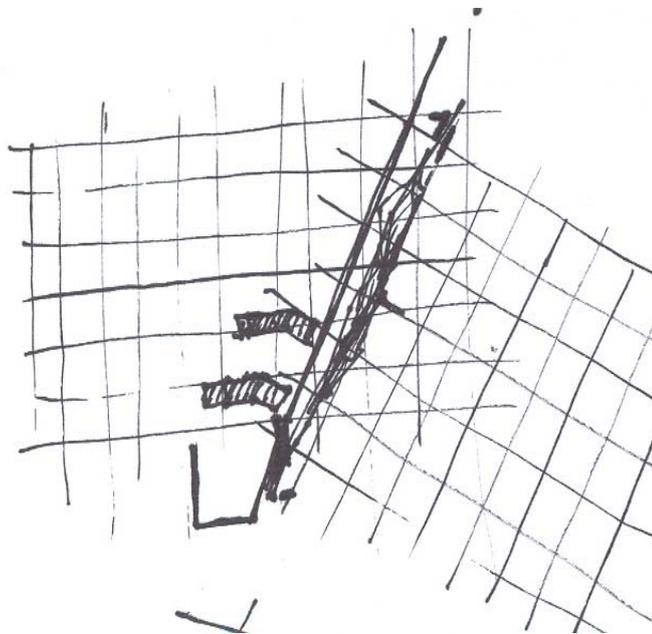


Figure 108: The converging city grids

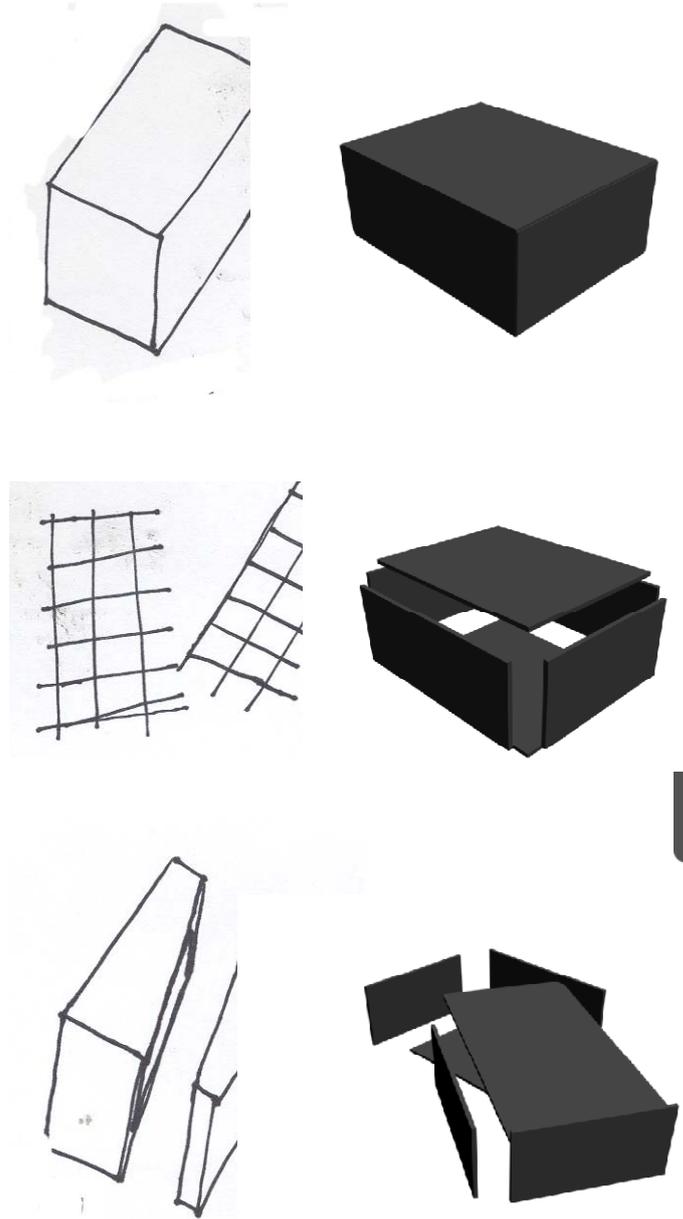


Figure 109: The formal translation of the process of fragmentation

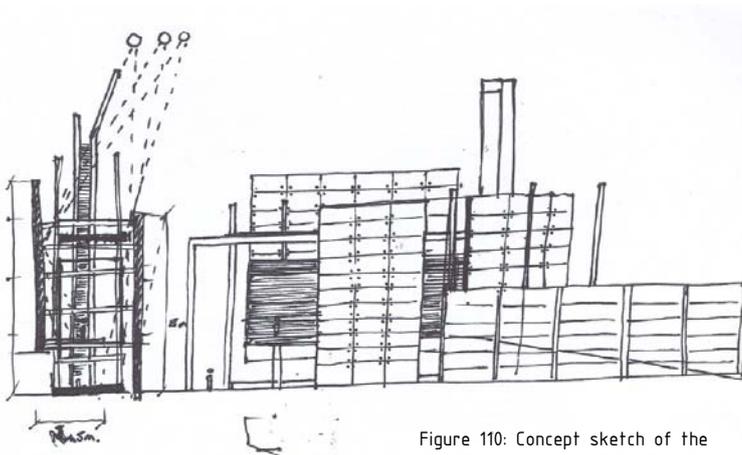


Figure 110: Concept sketch of the chapel

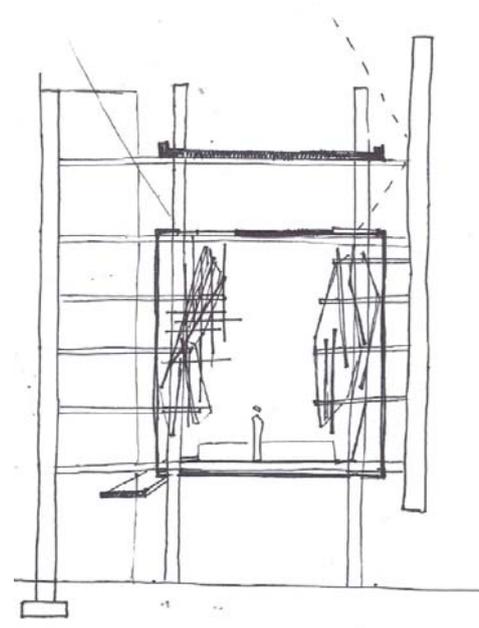


Figure 111: Early concept sketch showing scale and light transmittion

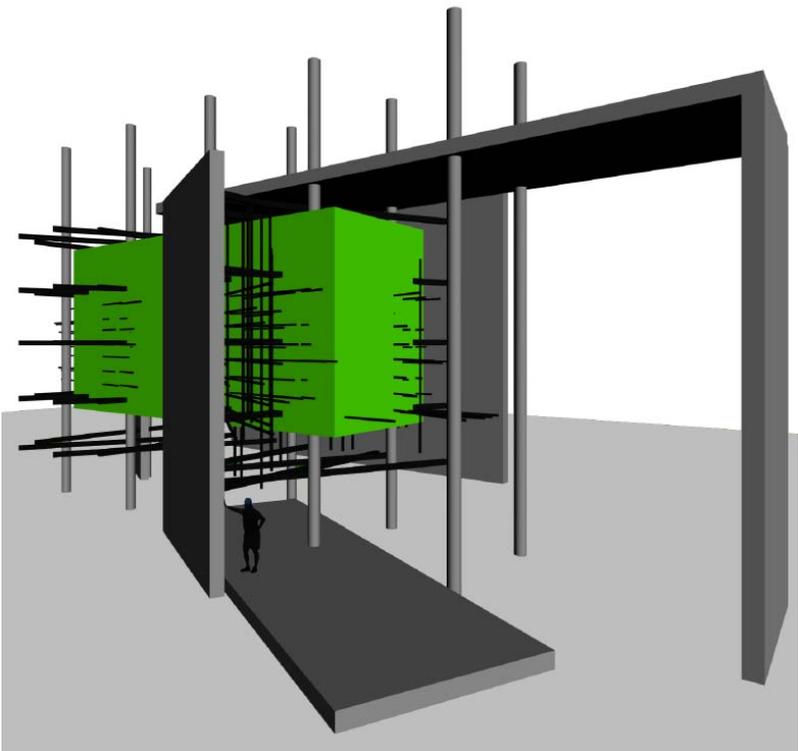


Figure 112: Conceptual three dimensional model`

The rectilinear prism is suspended between earth and sky thereby the notion of veil or edge is once again emphasized. Furthermore, when the chapel is utilized as preaching altar during large gatherings, its height above the natural ground level allows for a visual connection between the mourners and the preacher. Thus, by means of elevating the preacher above the natural ground level the need of an expansive ampitheatre is eliminated.

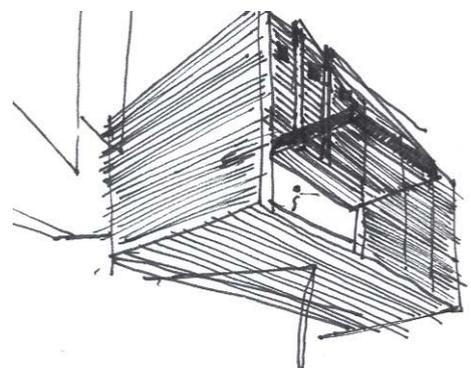


Figure 113: Chapel which opens to large gatherings

Structure

The rectangular prism which is suspended between the fragmented concrete elements must therefore be as light as possible in order to eliminate large structural members that transfer the loads from the prism to the concrete elements to the ground. This allows for the prism to be perceived as independent from the massive concrete fragments.

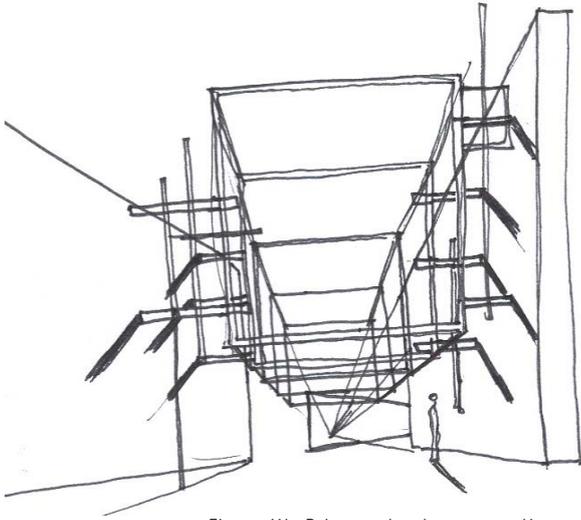


Figure 114: Primary structure conception

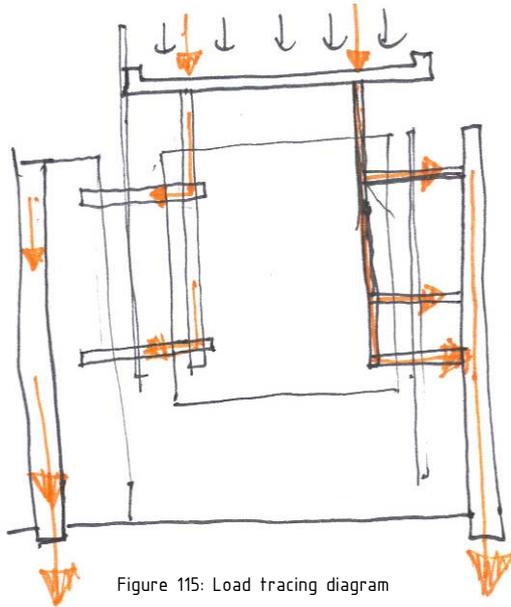


Figure 115: Load tracing diagram

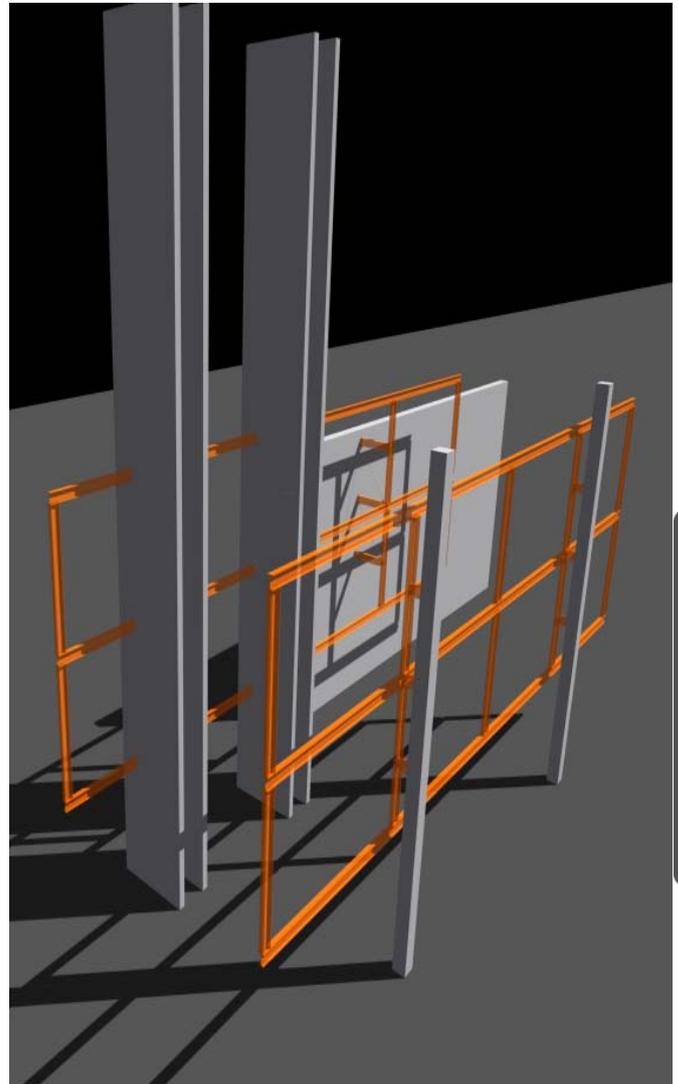
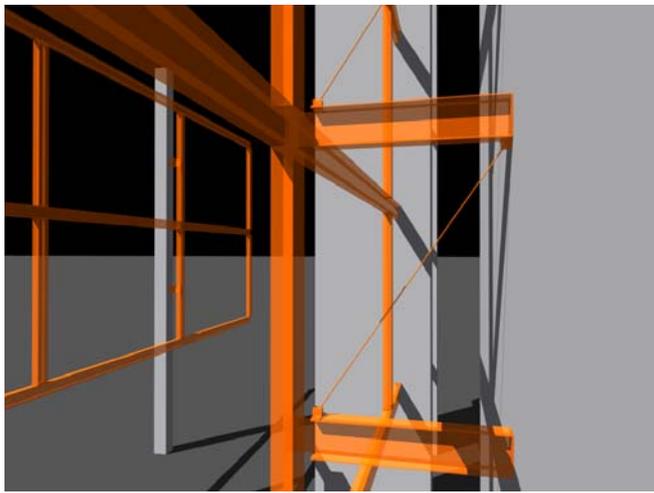


Figure 116: Primary structure load tracing digital rendering.

Primary Structural System

The vierendeel is mostly used where long spans are required and braced truss systems are not feasible as bracing is often in the way of window or door openings.



The vierendeel truss transfers the horizontal forces of the roof and floor vertically to the concrete elements. The vierendeel truss, due to its effective depth (l_{xx}), allows for long spans. However the truss is weak along the (l_{yy}) axes and wind loads must be considered. Figure XXX indicates that the secondary structure in the form of the roof and floor plane connects and supports the trusses along the (l_{yy}) axes, thereby increasing its strength..

Secondary Structural System

Galvanized mild steel lipped channels transfer the vertical loads of the floor and roof plain horizontally to the vierendeel trusses. The cold-rolled profiles weigh less than extruded profiles while they provide sufficient depth to span between the vierendeel trusses. (Wegelin 2006, 3.12) Furthermore, workability is improved due to the reduction in section thickness and is easily handled on site

Figure 117: Primary structure load tracing digital rendering indicating connection between vierendeel truss and concrete elements.

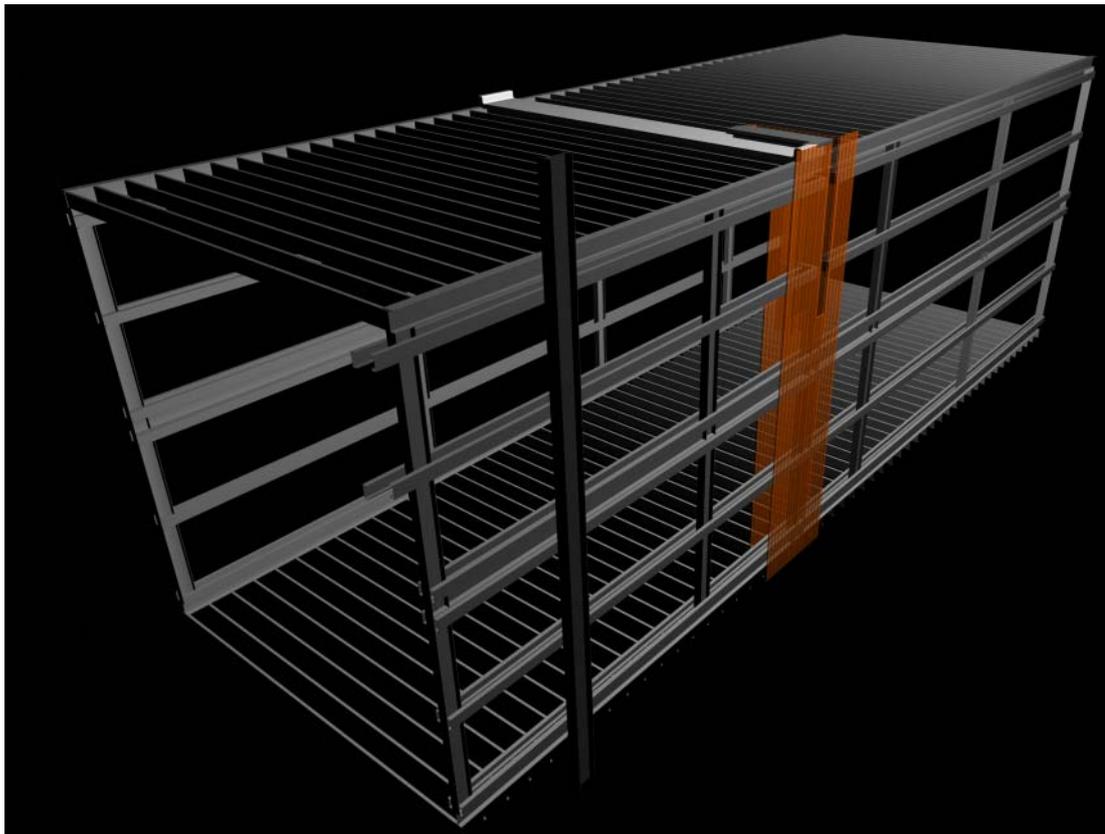
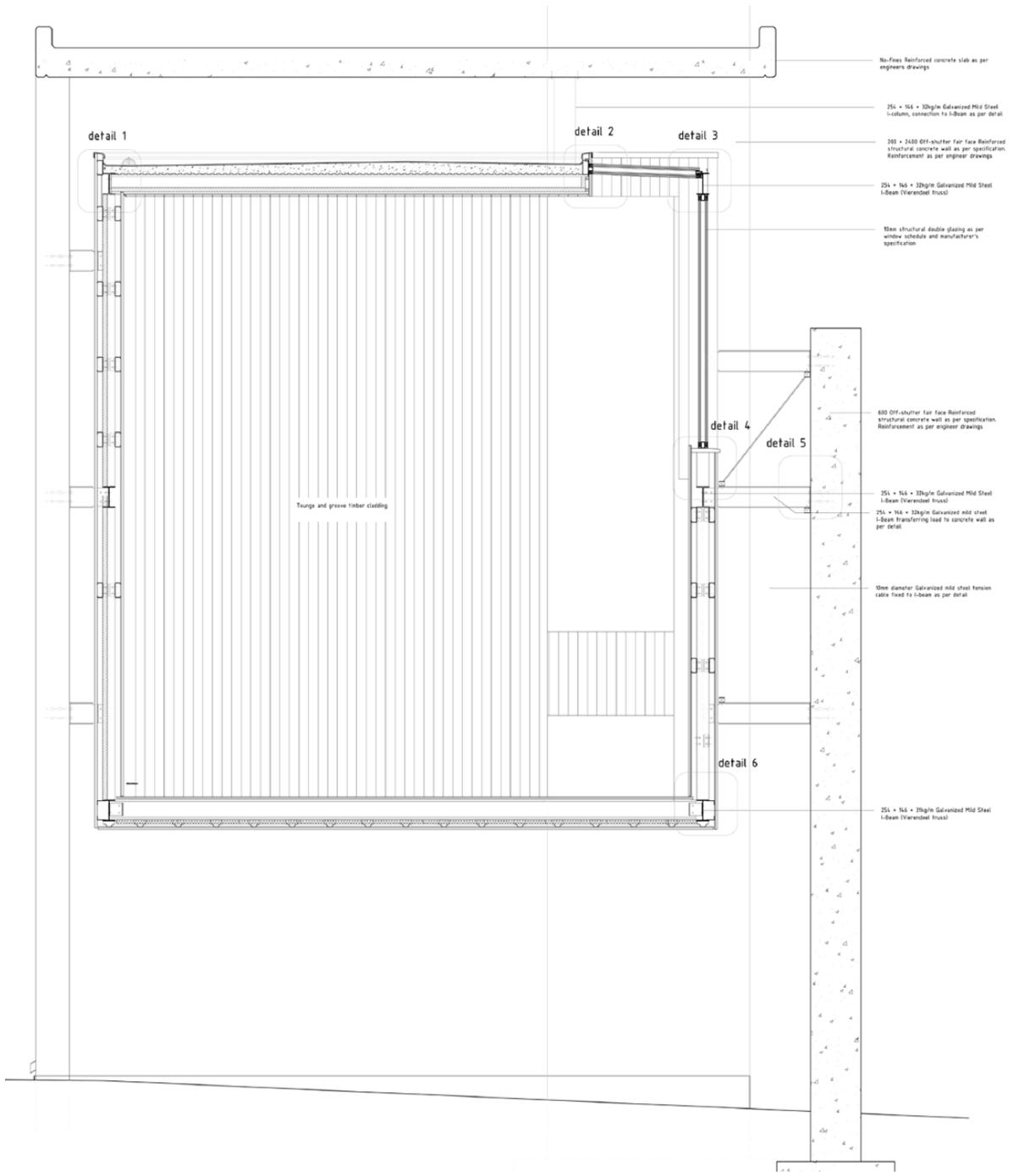


Figure 117: Secondary structure load tracing digital rendering indicating connection between vierendeel truss and lipped channels onto which the timber founge and groove boards are fastened.



Tongue and groove timber cladding

detail 1

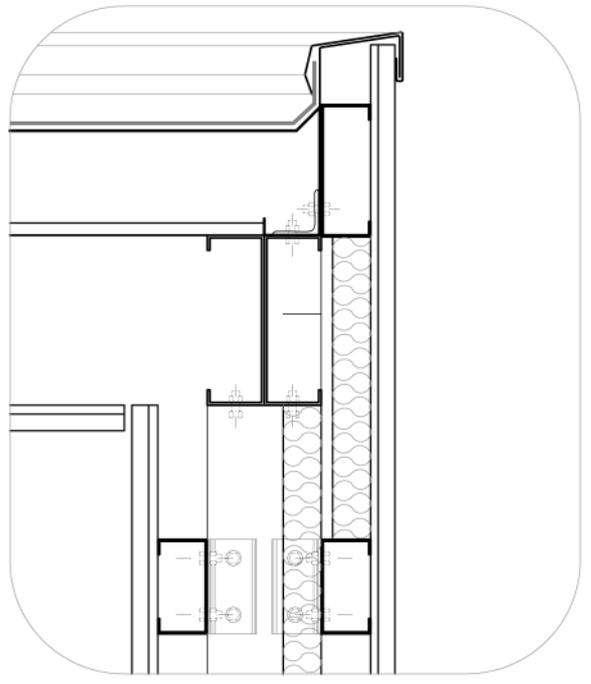
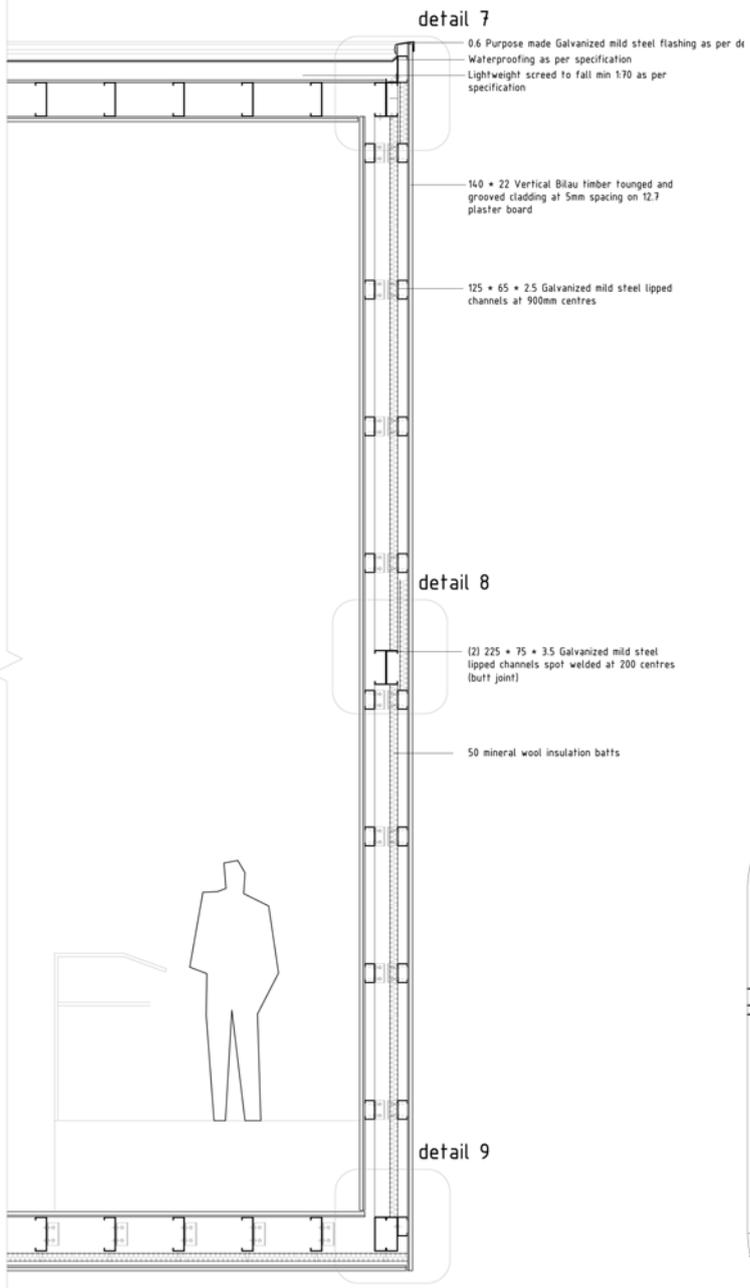
detail 2

detail 3

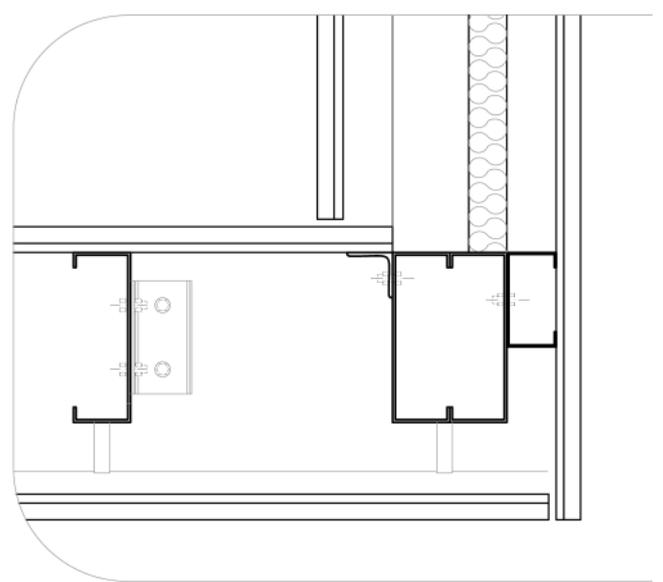
detail 4

detail 5

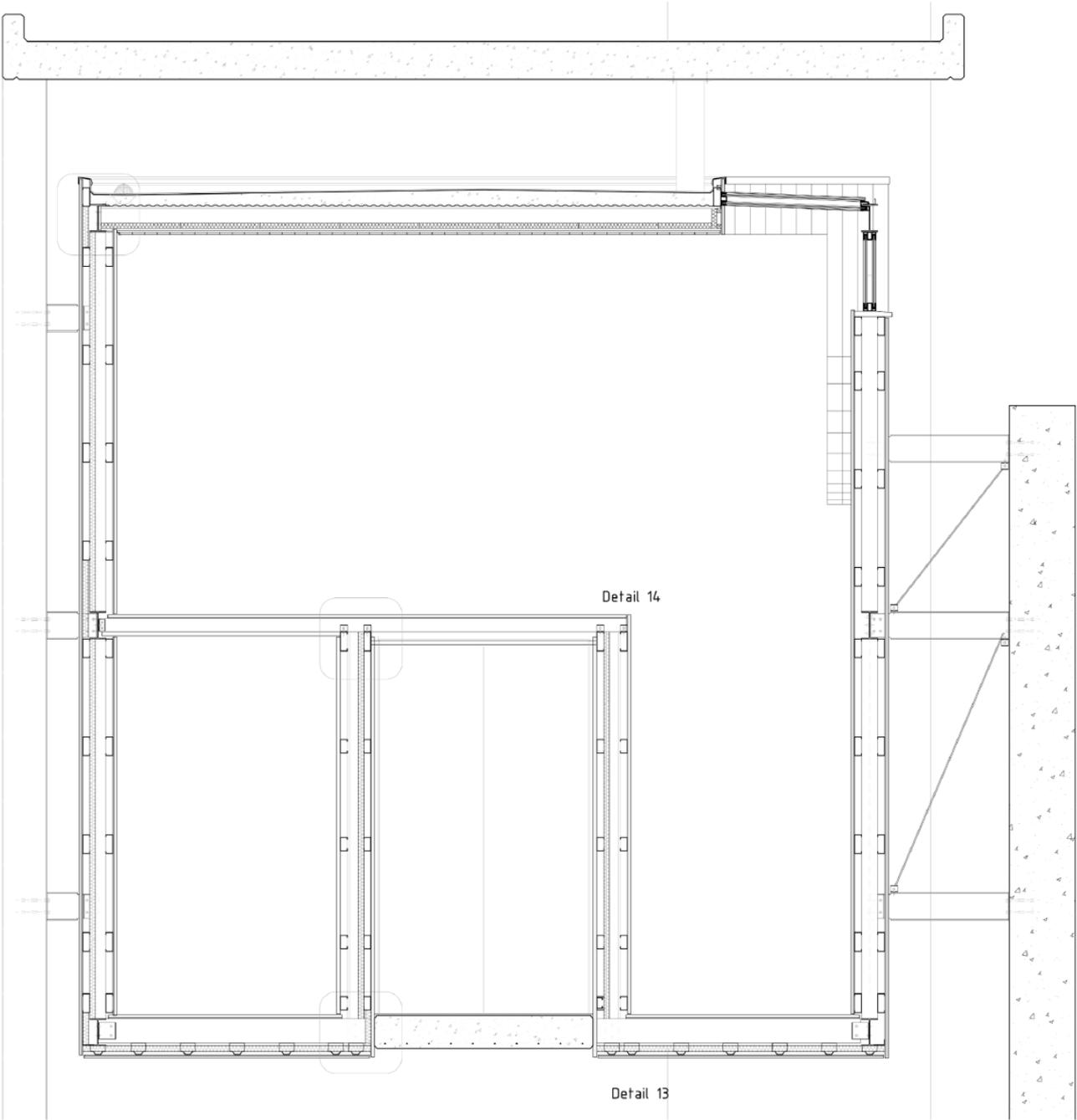
detail 6

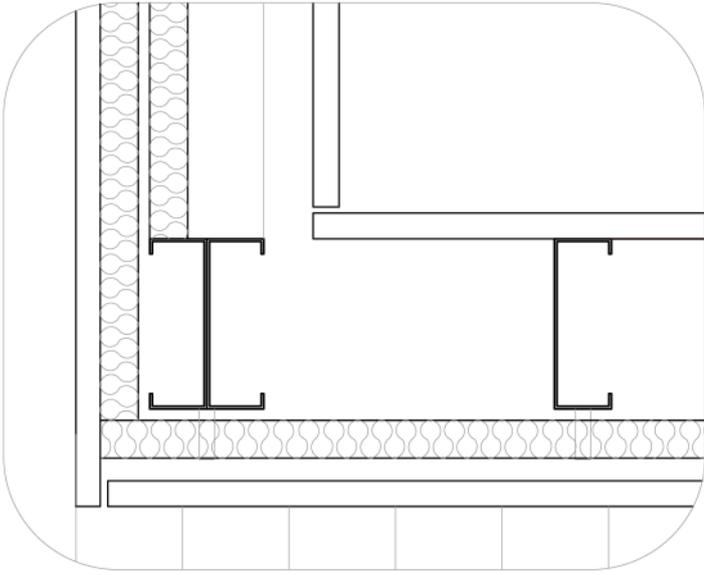


*Roof and Wall Connection
Detail 1 : 10*

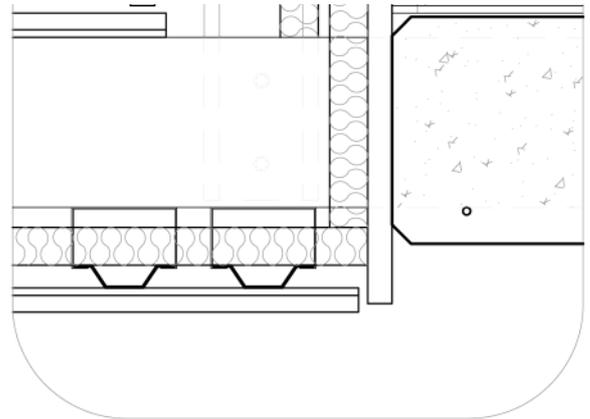


Wall Floor Detail 1

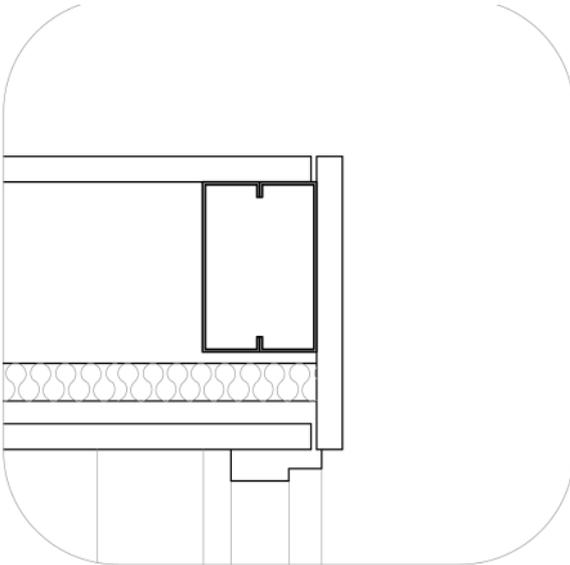




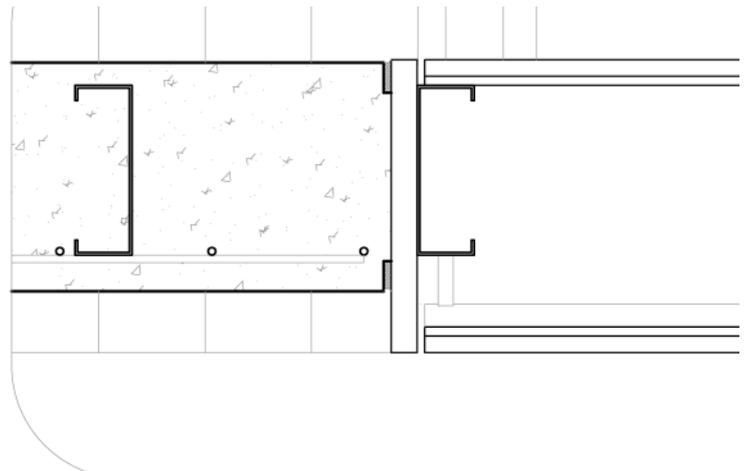
*Wall and Mezzanine Floor
Connection Detail 1 : 10*



*Ramp and Chapel Connection
Detail 1 : 10*



*Mezzanine Floor
Edge Detail 1 : 10*



*Ramp and Chapel Connection
Detail 1 : 10*

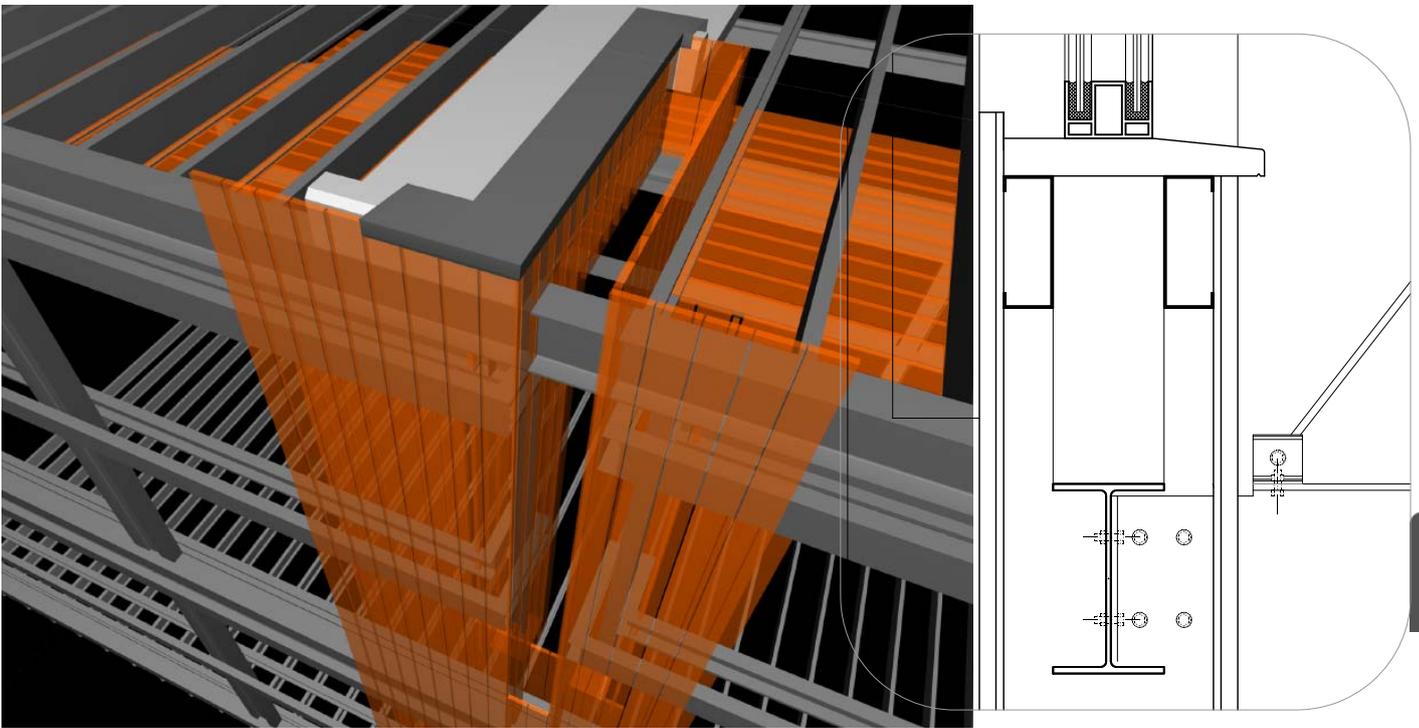
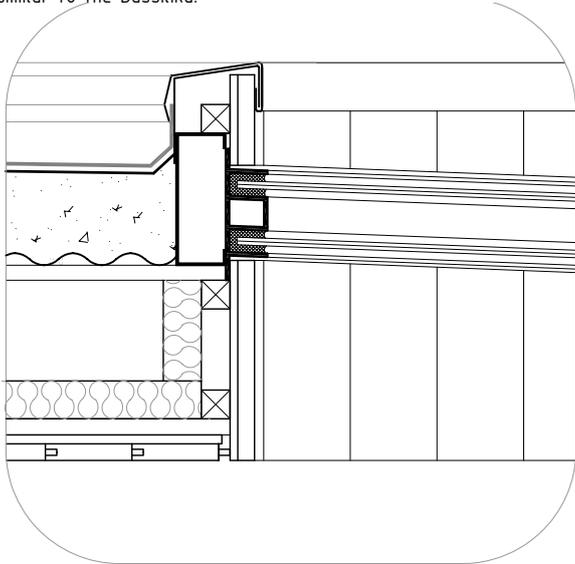
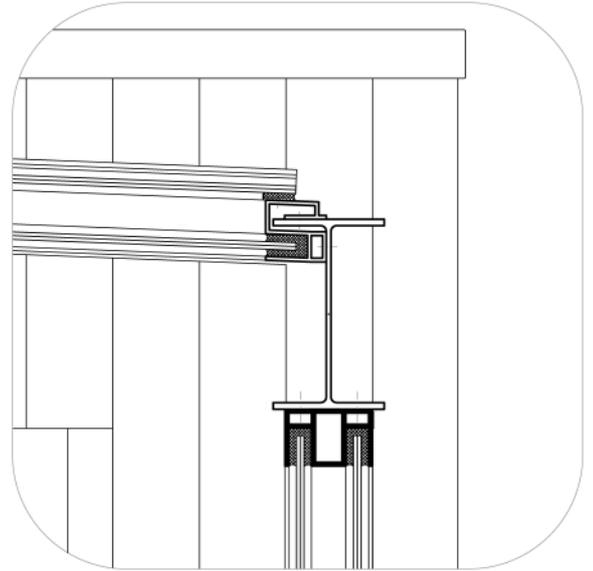


Figure 118: Opening which slices through the vertical and horizontal planes allows light into the interior similar to the Basilika.

Window Detail 3 Scale 1 : 10



Window Detail Scale 1 : 10



Window Detail 2 Scale 1 : 10

Light

Narrow openings that slice away at the intersection of the walls and roof create planes of light which ethereally filters into the chapel. A sense of progression is created by means of simultaneously increasing the size and number of the openings from the entrance towards the preaching altar.



Figure 119: Light Planes that filter into the chapel

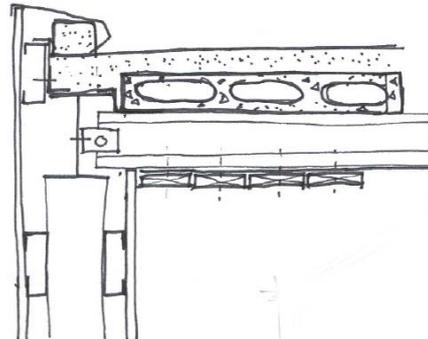
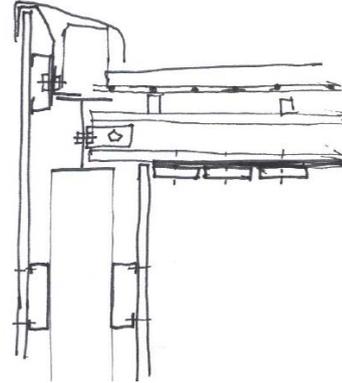
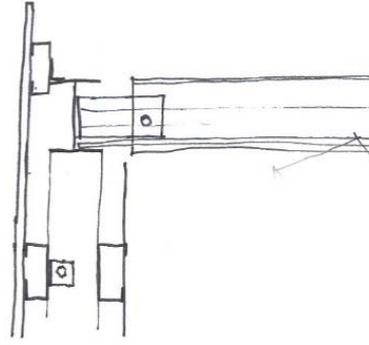


Figure 121: Roof detail conceptual development

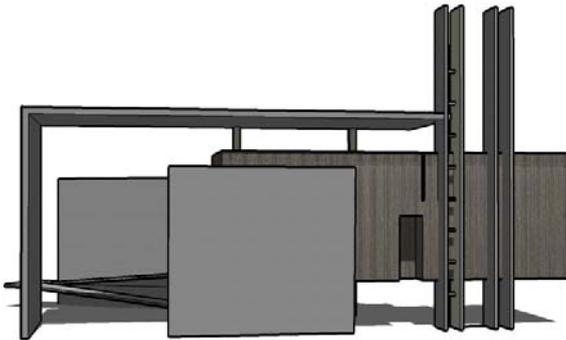
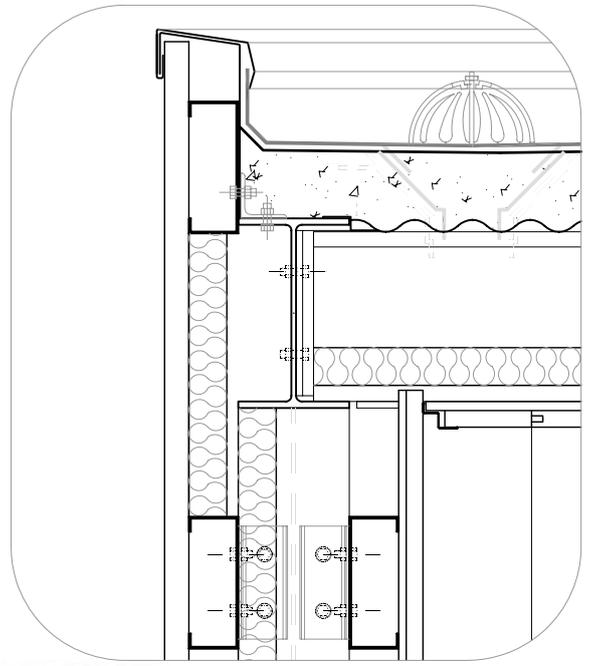
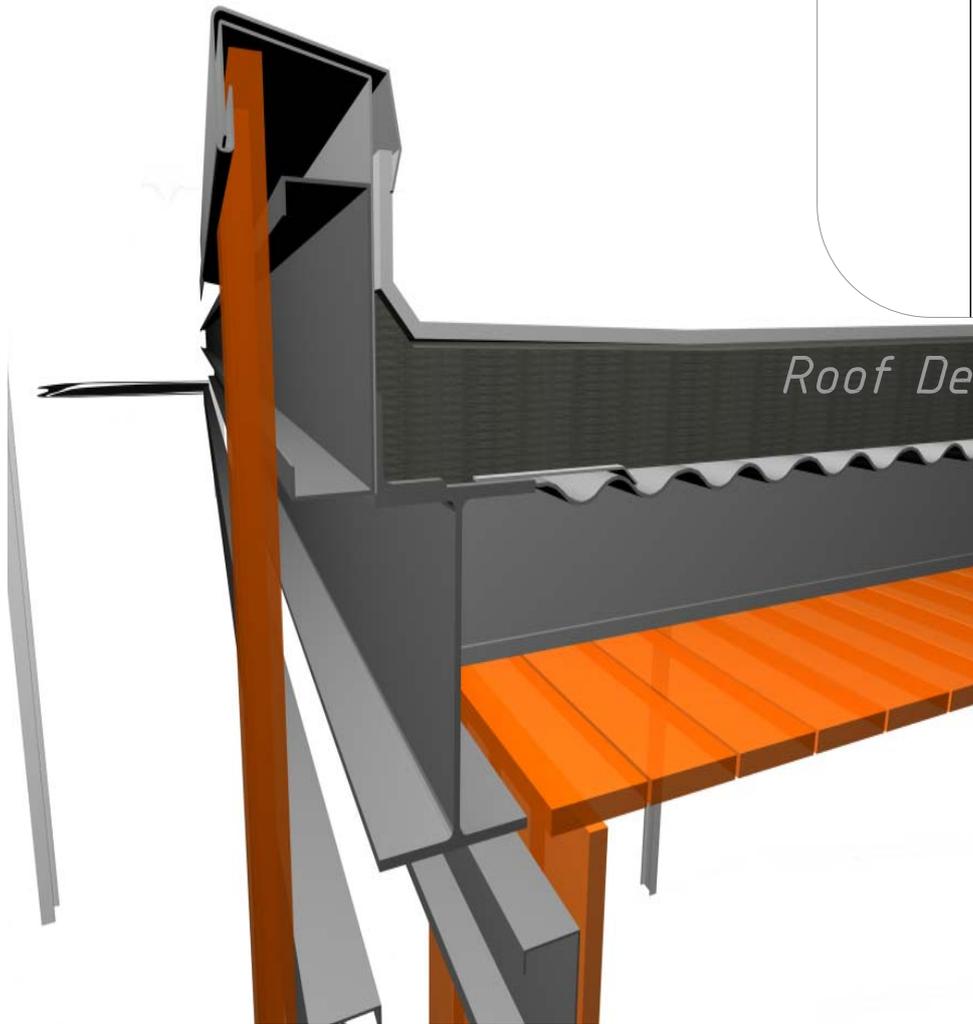


Figure 120: Indication of materials



Roof Detail Scale 1 : 10

Figure 122: Roof detail resolution

Acoustics: Inside

In order for the chapel to function efficiently in terms of acoustic performance the extended distance sound travels because of reflections should not exceed the direct travelling distance by more than ten metres as the lapse in reverberation time would result in hearing difficulties. (Interview with Pieter Nel). Absorption material provided at critical places decreases the amount of sound reflected, the following diagrammatical section illustrates where the absorption material should be in order to prevent sound impediments.

Materials:

The chapel, administrative towers and public bathrooms at the memorial are clad with vertical balau timber tongue and groove boards. Their vertical placement emphasizes the sense of verticality. Once again, the concept of time as the ongoing artist finds its physical expression through the use of balau as a dynamic material whose properties (texture & colour) alter over time. By the use of balau the chapel can be perceived as the veil which responds to both the urban (as described before) and the natural context.

Outside Noise

The inverse relationship between sound and ventilation poses a practical problem in the sense that the chapel must be ventilated and acoustically isolated from the noise generated along Jacob Mare and Nelson Mandela Drive. Double glazing is proposed and ventilation is accommodated for through the voids between the steel structural members as indicated in the figure XXX. on the following page.

(06) - 42

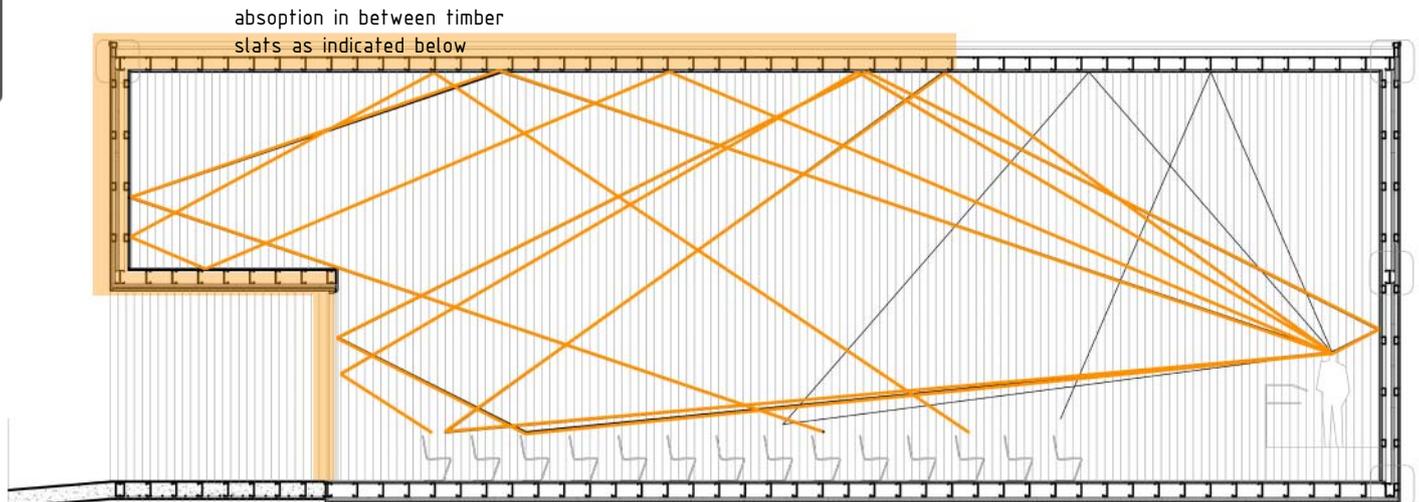


Figure 123: Acoustics

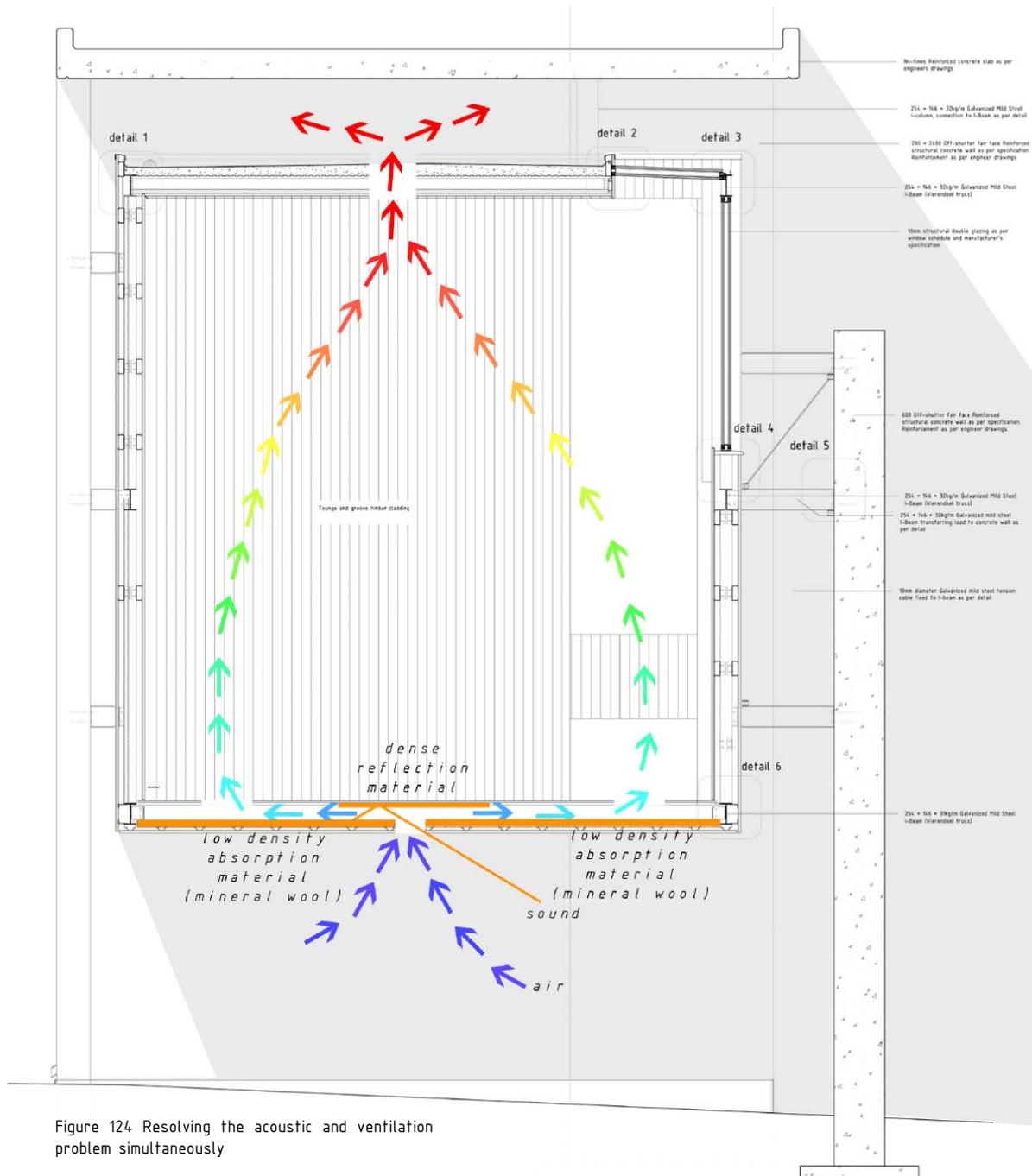


Figure 124 Resolving the acoustic and ventilation problem simultaneously

technical documentation

Conclusion

The above design has attempted to bring into being a hiding place, a place of rejuvenation, within the city. The site simultaneously valorizes the dead who have been treated almost as refuse and invites the living to accept – not to refuse – its invitation to rest and contemplation within the city itself, not at a remote and marginalized place.

Because the site's identity as edge is the result of dynamic relations between the artificial and natural, urban and rural, life and death, the building attempts to resist a sense of closure and stability. In other words the project does not attempt to dissolve neither the physical nor the metaphysical convergence of these juxtapositions but in turn to illuminate them through the extension and exposure of the site's material constituency. The intervention then emphasizes the between and transitory condition of the site by means of the architectural translation of the concepts derived from the nature of the project and the condition of the site.

Appendix 1

Project Justification

The need for cremation facilities in the South African context arises due to numerous factors. The following section considers some of these factors which contribute to this growing need.

Deaths

According to statistics, the number of reported deaths from all causes increased dramatically from 1997. The total amount of deaths during 2002, when compared to the total amount of deaths during 1997, shows an overall increase of 57 percent.

Year of death	Age (years)					Total
	0-14	15-24	25-49	50+	Unspecified	
1997	40,495	19,831	92,479	159,731	5,571	318,287
1998	47,407	22,723	113,848	178,616	5,095	367,689
1999	46,534	24,629	129,383	178,637	2,719	381,902
2000	47,419	26,252	149,391	188,714	2,193	413,969
2001	48,954	28,026	171,942	201,127	1,887	451,936
2002	56,250	30,815	199,485	210,729	1,989	499,268
Increase 1997-2002	38.9%	55.4%	115.7%	31.9%	-35.7%	56.9%

Figure 125: Amount of deaths from 1997 to 2002 [3]

Cremation statistics

Statistics in the USA as shown below clearly indicate the growing demand for this method of disposing of the deceased. Not only is the growing demand for cremation growing in America, but also in South Africa.

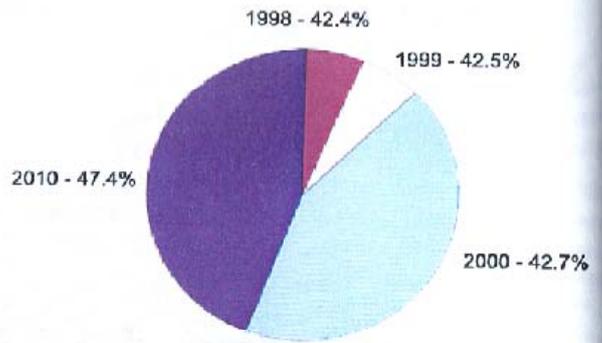


Figure 005 : Population Percentage Cremated in Canada

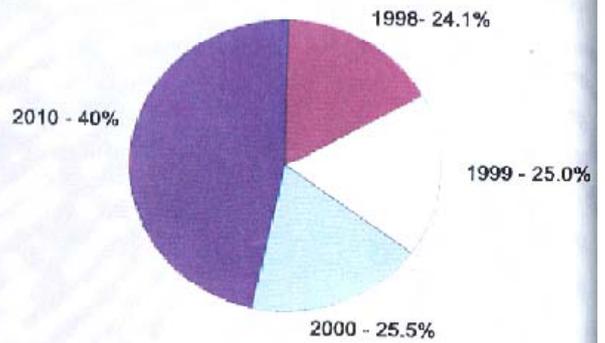


Figure 007 : Population Percentage Cremated in USA

Figure 126: Population Percentage cremated in the USA and Canada.

(06) - 50

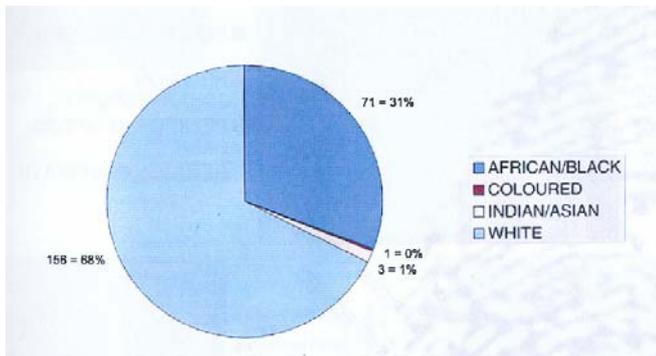


Figure 127: Pretoria crematorium statistics for October 2002

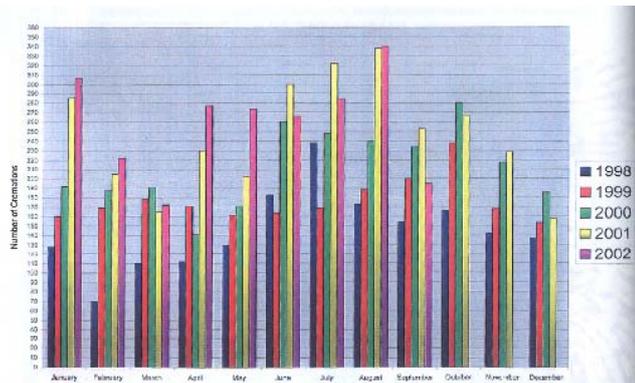


Figure 128: Kempton Park Crematorium Statistics

The average area taken up by a single grave is approximately seven square meters. (Meijer 1999, 21) On average the size of a cremation urn containing the ashes is approximately 215mm(L) X 175mm(W) X 262mm(H). The average area taken up by a single urn on plan including the niche in a cremation wall would be approximately 0.06 square meters. If the height of the cremation wall is restricted to two meters 6 urns can be inserted into the wall per 0.06 square meters of earth. Thus the average area taken up per urn now equals 0.01 square meters per urn. Burial therefore takes up seven hundred times more space than cremation.

If hypothetically considering that 499 268 people's bodies had to be disposed of during 2002 by means of burial alone and that every grave takes up approximately seven square metres of area (Meijer 1999, p.21) the total amount of ground surface taken up during 2002 would be 3 494 876 square meters or approximately 3,5 square kilometres.

If all the corpses were disposed of by means of cremation which takes up 700 times less space the total amount of occupied burial area would result to being approximately 5000 square meters. Clearly cremation as means of disposal would be more sustainable in terms of the footprint it occupies.

Social feasibility

The religions which utilize cremation as a burial rite include most Christian groups, Hindus and some reform Jewish groups. African traditional religion, Orthodox Judaism, Islam and some Christian groups prohibit the use of cremation as means of disposal of the deceased because of reasons irrelevant for the purpose of this dissertation.

According to census data the dominant religion in the Tshwane metropolitan region is Christianity. Even though Christianity is not the only religion within the region that disposes of the dead by means of cremation, the possibility of establishing an inclusive facility which is not specific to any particular religion seems unrealistic. For example, Jews are buried in a specially consecrated cemetery, which isolates the possibility of sharing the facility. Therefore a multi-denominational facility is proposed.

Appendix 3: Accommodation Schedule

Ritual Accommodation Schedule					
Space required	Size	Ventilation		Light (Lux)	Research
		Air	Allowance		
		temp(C)	W/m ² dC		
Pre - Gathering	130m ² min	Outdoors	Outdoors		SABS 0400
Viewing room	20m ²	15	0.17	300	Circulation around coffin
Vestry for clergy	6m ²	20	0.33	500	Pta crematorium
Priest room	6m ²	20	0.33	500	Pta crematorium
Chapel	130m ² min	18	0.17	300	Standard size of chapels at crematoria in gauteng
Post - Gathering	130m ² min	18-21	0.17-0.33	300	SABS 0400
Bathrooms: Men (65) wc: Total +- 17m ²	2 (4m ²)	22	0.67	150	SABS 0400 table 6
Urinals:	3 (3m ²)				
hwb:	3 (3m ²)				
: Ladies (65) wc: Total +- 20m ²	5 (10m ²)	22	0.67	150	SABS 0400 table 6
hwb:	3 (3m ²)				
Kitchen	20m ²			500	Appliances required
Flower Room	50m ²	15		300	

Crematorium Accommodation Schedule					
Ante - Room	16m ²	15		300	Coffin circulation ergonomic data (Neuferts Architectural Data)
Furnace Room	25m ²	16	mechanical	300	Furnace size + Circulation
			(6/hour)		
Cremulator Room	6m ²	16	N/A	300	Cremulator 1m ² + circulation
Furnace Operator Office	9m ²	20	0.33	500	Desk, Cupboards etc
Administrator's Office	9m ²	20	0.33	500	Desk, Cupboards etc
Ash Storage	6m ²	15	0.17	150	Chiang 2003
Coffin Storage	12.5m ²	15	0.17	150	Cremations per day
Bathroom wc:1		22	0.67	150	SABS 0400
hwb:1	6m ²				

Appendix 3: Plant list

Season of flower	Attract insects	Propagation
Spring and autumn	Yes	From seeds or by division of clumps
Sept - Nov	Yes	From seeds or by division of clumps
Jul - Oct	Yes	Easily propagated from cutting and seeds
Winter	and birds	From seeds or by division of clumps
Spring	Yes	Flowers only in full sun
Sept - May	Yes	Will flower in light shade
Spring	Yes	Propagate from seed. Shade
Jul - Sept	Yes	Seeds/ removing offsets from 'parent' bulbs. Sun
Anytime	Yes	Lift and replant rooted runners
Aug - Nov	Yes	From seeds or by division of clumps
Sept - Jul	Yes	From seeds/cuttings or by division of rhizomes
Spring	Yes	Cuttings/ lifting and replanting rooted runners
Spring and summer	Yes	From stem cuttings/ rooted runners
Dec - Mar	Yes	From seeds or by division of clumps
Dec - Jan	Yes	From seeds or by division of clumps
Oct - Dec	Yes	From seeds or by division of clumps
Sept - Mar	Yes	Seed or cuttings
Sept - Dec	Yes	Seeds/ removing offsets from 'parent' bulbs. Sun
Sept - Nov	Yes	Dividing older clumps and replanting younger rooted branches
Spring	Yes	From seeds or by division of larger clumps
Feb - Apr	and birds	From seeds or by division of larger clumps
Spring and summer	Yes	Cuttings/ lifting and replanting rooted runners
Spring	Yes	Seeds
Mar - Sept	Yes	Lifting rooted runners. Needs full sun to open flowers completely
Apr - Jun	Yes	Seeds/ removing offsets from 'parent' bulbs. Shade
Spring	Yes	Seeds or cuttings. Warm sunny position
Jul - Sept	Yes	Rooted stems easily transplanted
Varies acc. To species	Yes	Seeds/ removing offsets from 'parent' bulbs.
Sept - May	Yes	Seeds itself
Jan - Apr	Yes	From seeds/cuttings or by division of tuberous roots
Sept - Feb	Yes	From seeds/cuttings or by replanting younger newly-rooted sections
Summer	Yes	From seeds or by division of larger clumps
No flowers	No	Division of rhizomes
No flowers	and birds	From seeds or by division of larger clumps
No flowers	and birds	From seeds or by division of larger clumps
No flowers	No	Division of rhizomes
No flowers	No	Division of larger clumps or replanting 'chickens'
No flowers	No	From cuttings or by lifting rooted runners
No flowers	Yes	From cuttings or by lifting rooted runners
No flowers	Yes	Seed, leaves or division of larger clumps
No flowers	No	From cuttings or by lifting rooted runners
No flowers	No	From spore or division of larger clumps

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Prinsloo Street

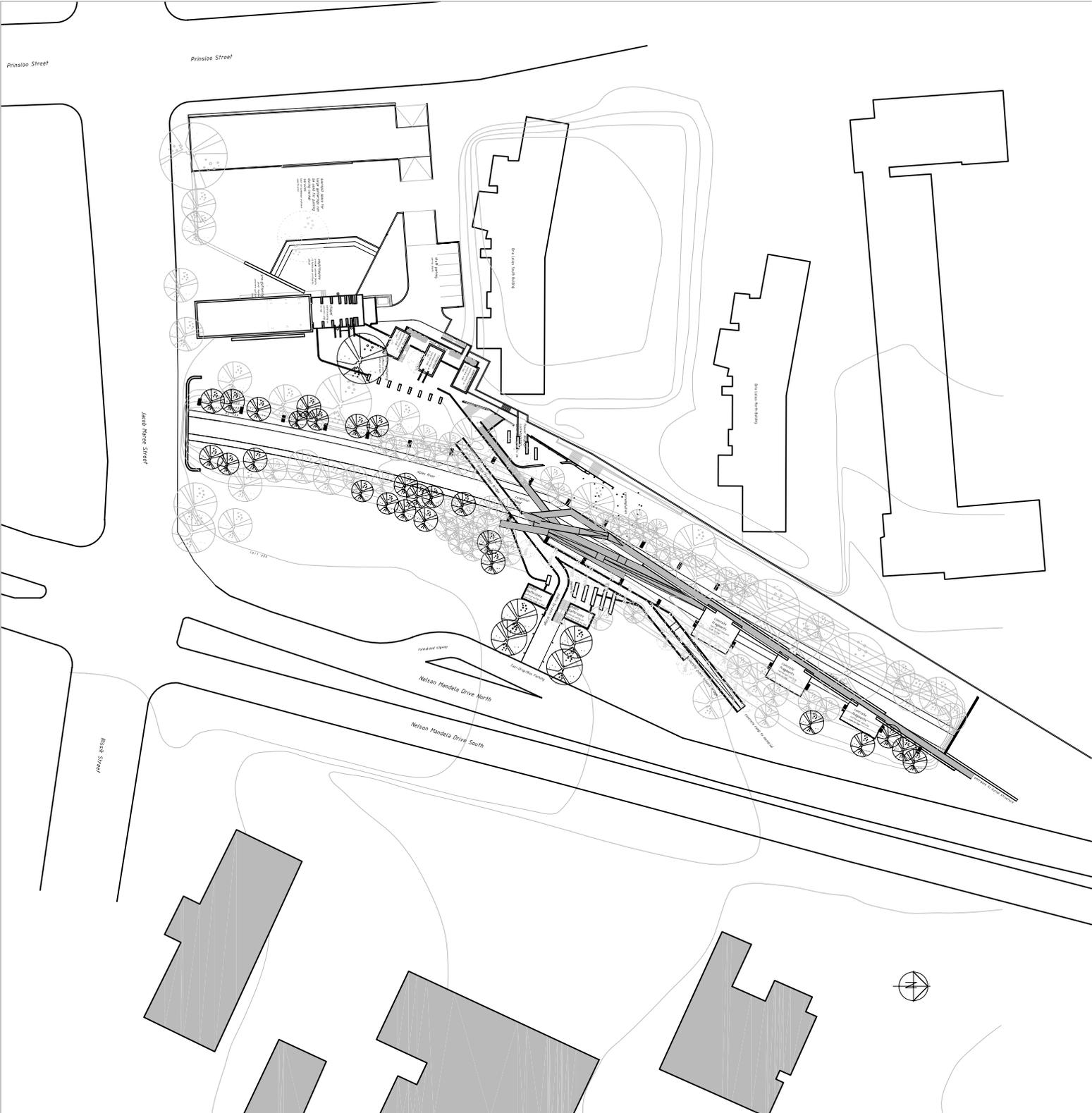
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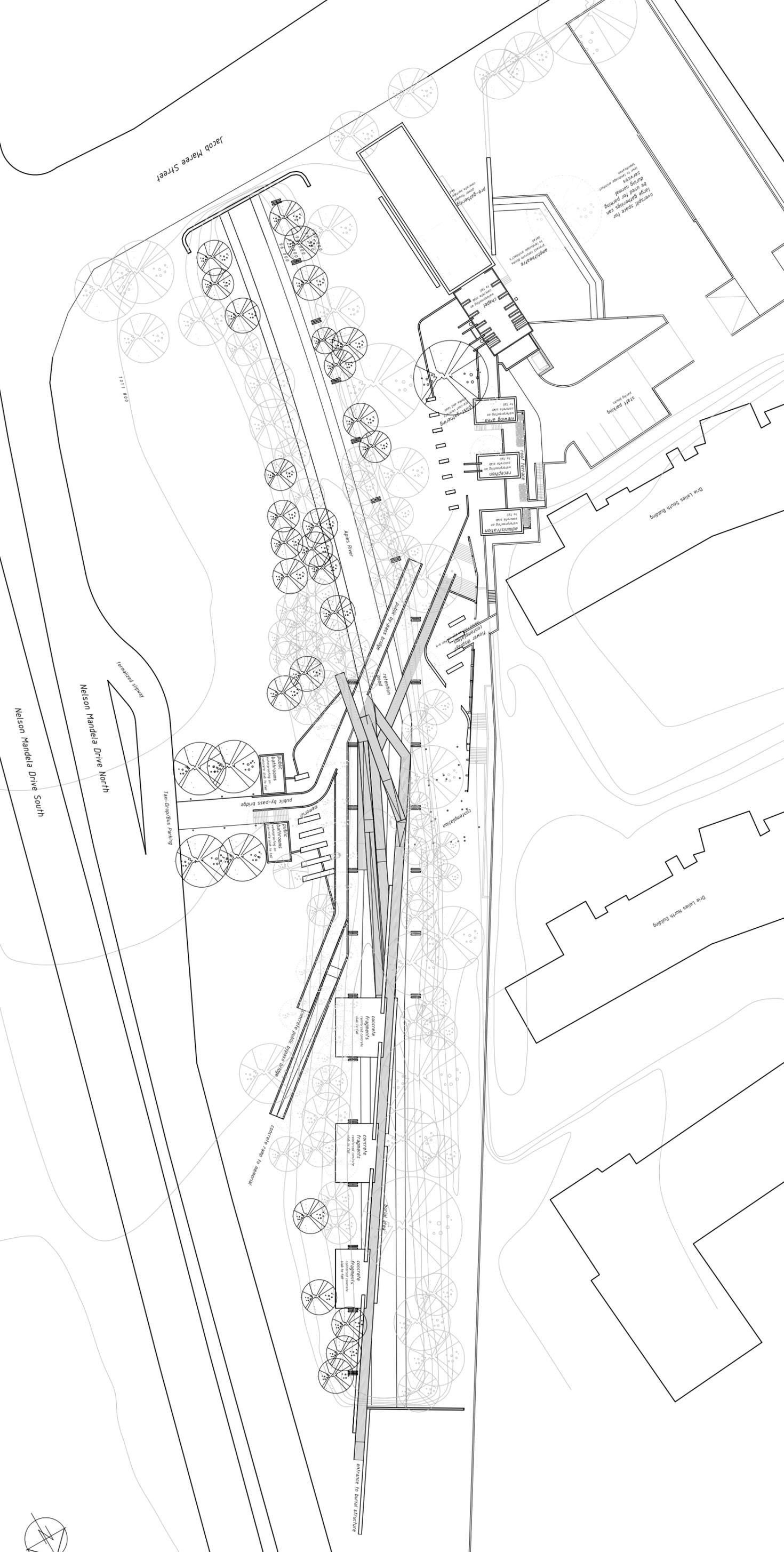
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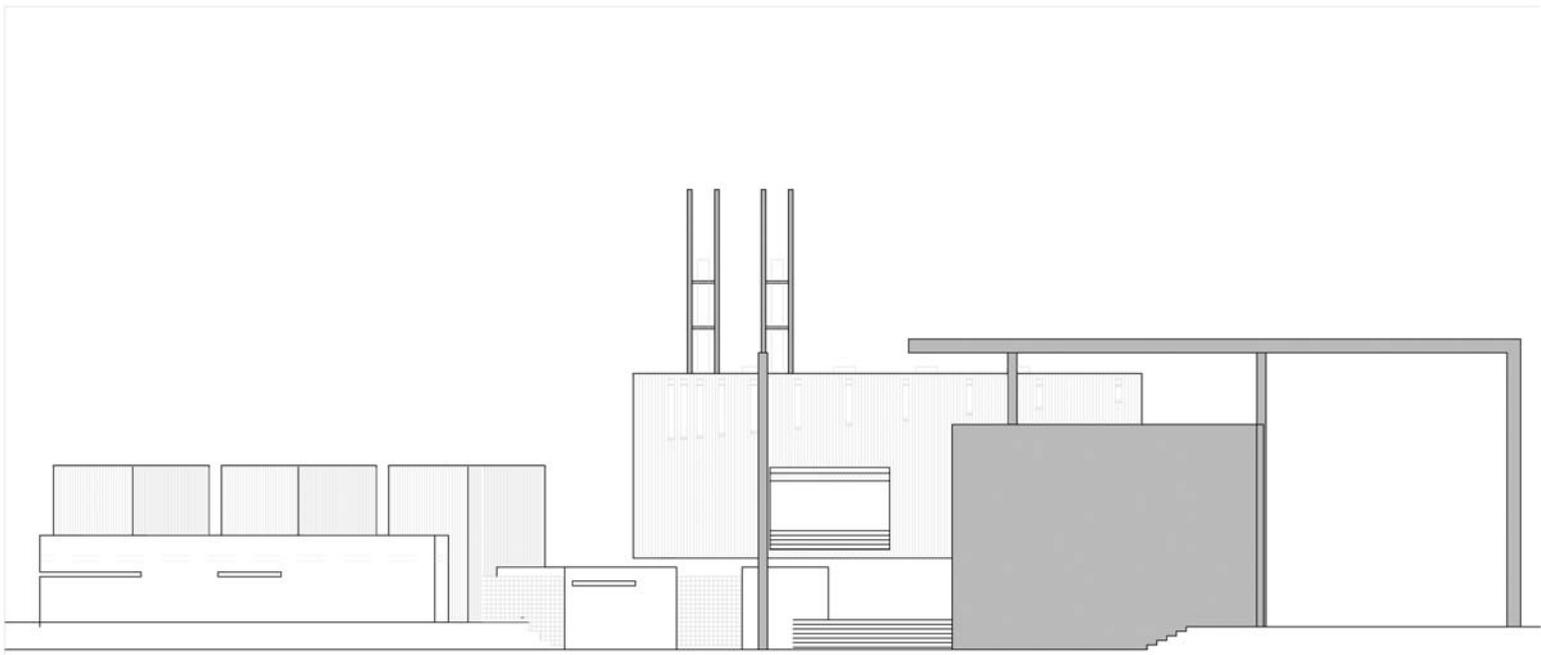
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Nelson Mandela Drive North

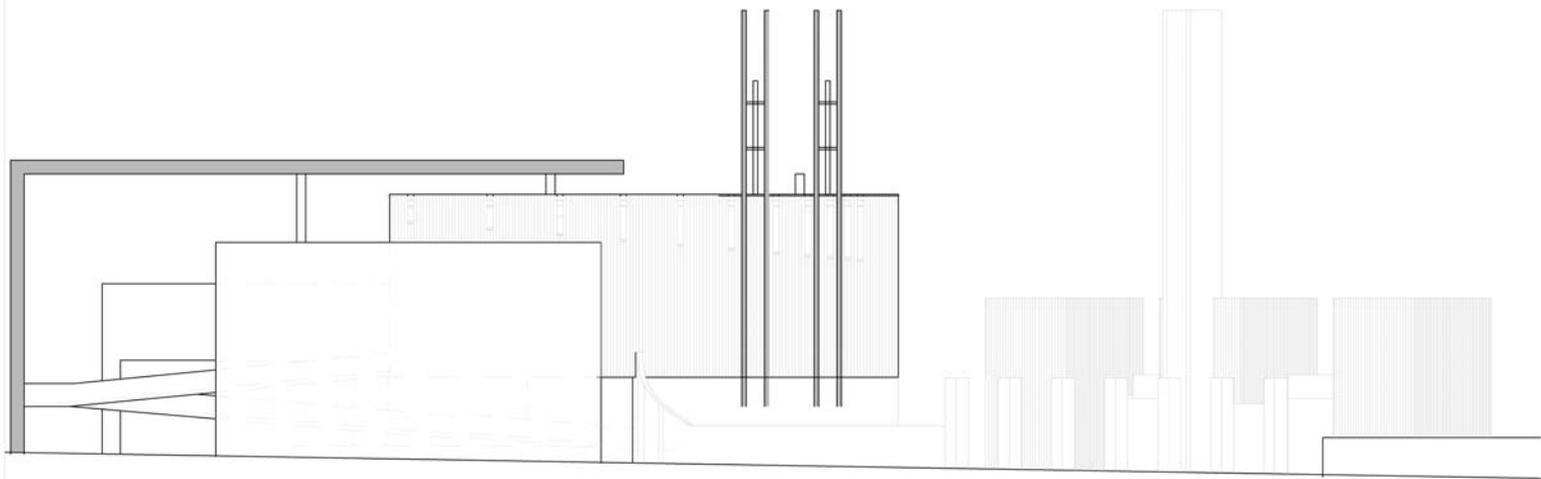
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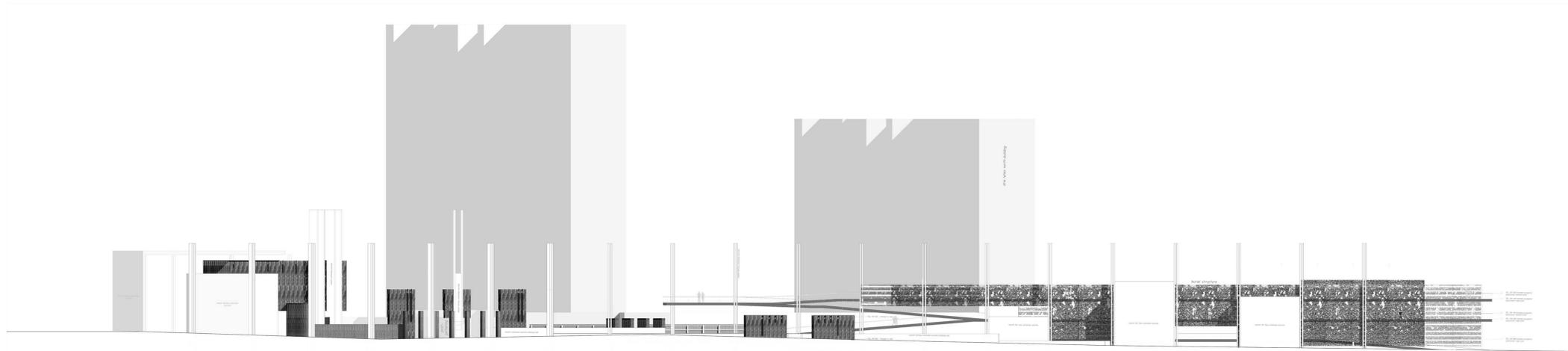


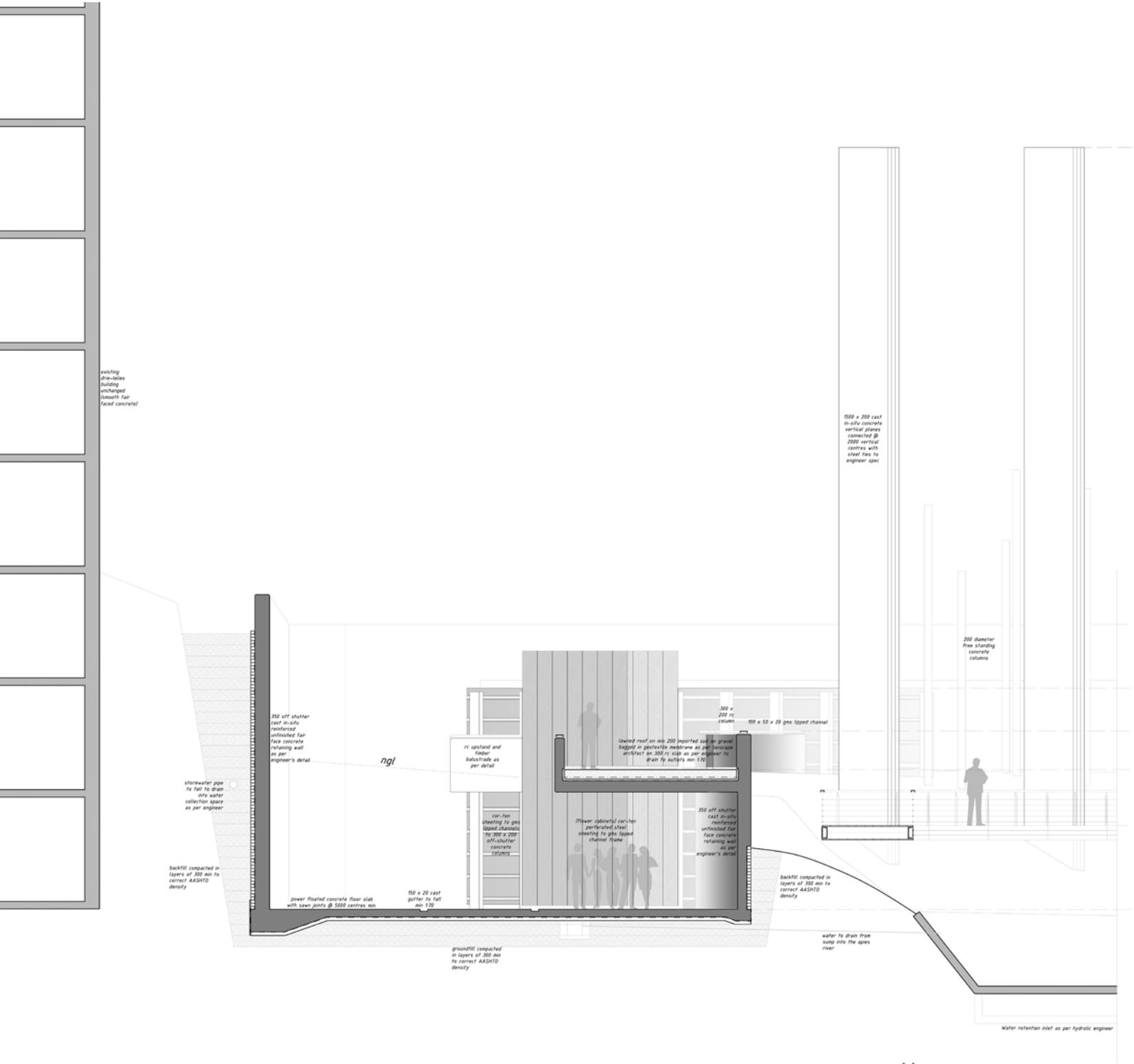


west elevation



east elevation





existing
shed-like
building
unchanged
smooth fair
faced concrete

stormwater pipe
to fall to drain
into water
collection space
as per engineer

backfill compacted in
layers of 300 mm to
correct AASHTO
density

350 off shutter
cast in-situ
reinforced
unfinished fair
face concrete
retaining wall
as per
engineer's detail

ngl

rc upstand and
finer
substrate as
per detail

con-ten
sheeting to gas
space channels
for 300 x 200
off-shutter
concrete
returner

1500 x 200 cast
in-situ concrete
vertical planes
connected @
2500 vertical
centres with
steel ties to
engineer's spec

shaded roof on top 200 imported soil on gravel
hedges as geotextile membrane as per engineer
or/next on 300 rc slab as per engineer to
drain to surface min 1%

300 x
200 rc
column

100 x 50 x 20 gms topped channel

350 off shutter
cast in-situ
reinforced
unfinished fair
face concrete
retaining wall
as per
engineer's detail

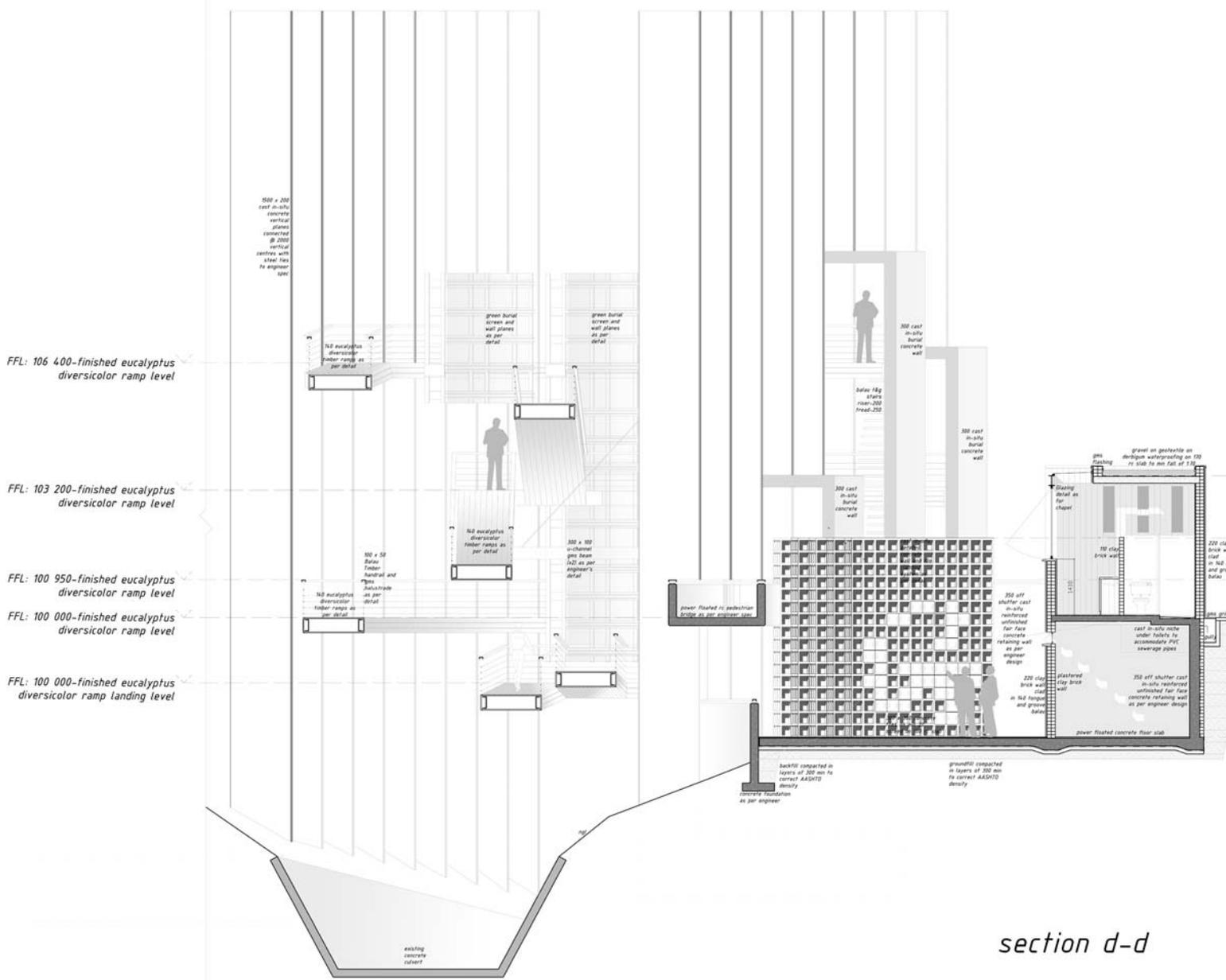
backfill compacted in
layers of 300 mm to
correct AASHTO
density

water to drain from
into the open
river

200 diameter
free standing
concrete
columns

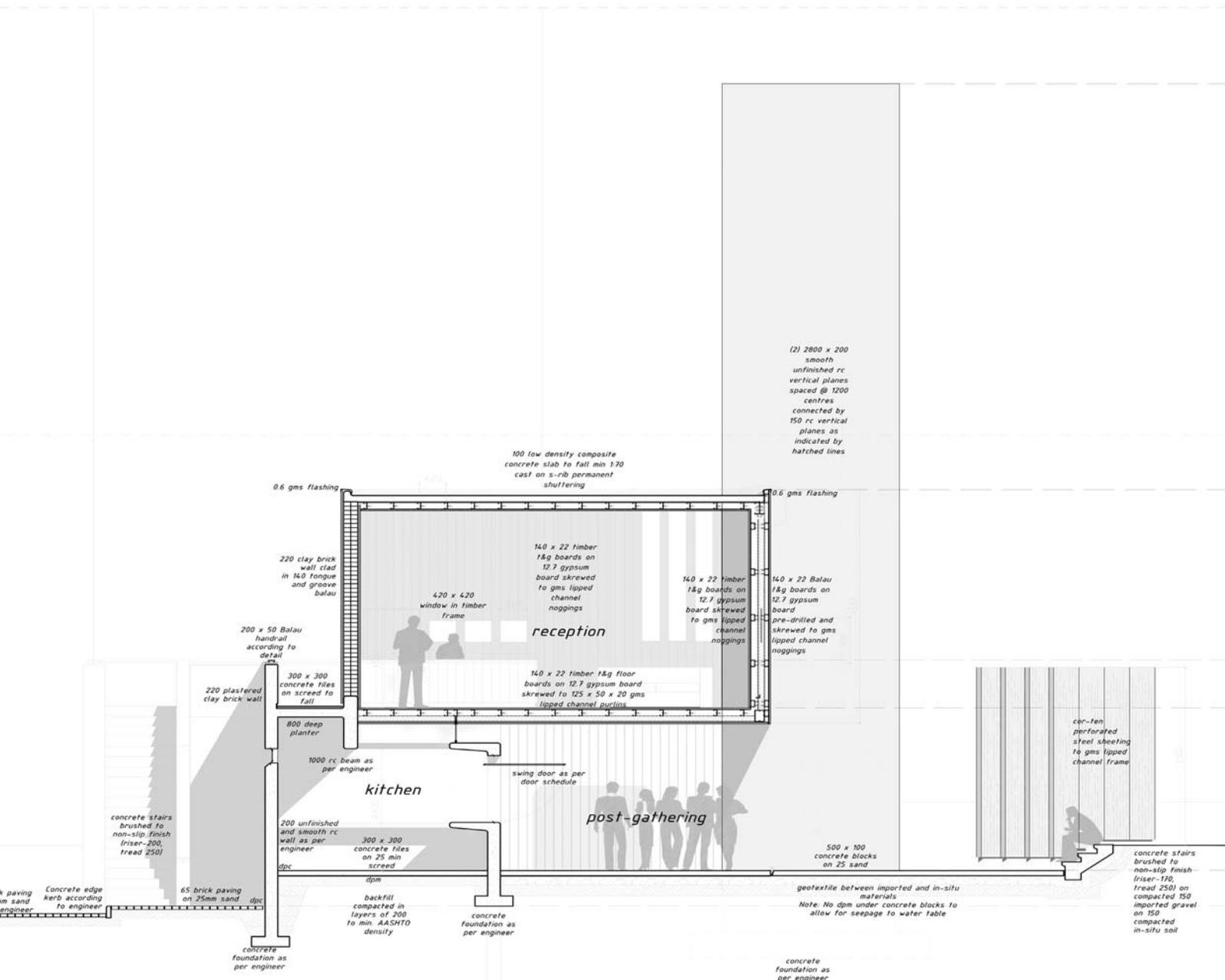
Water retention dike as per hydraulic engineer

section c-c

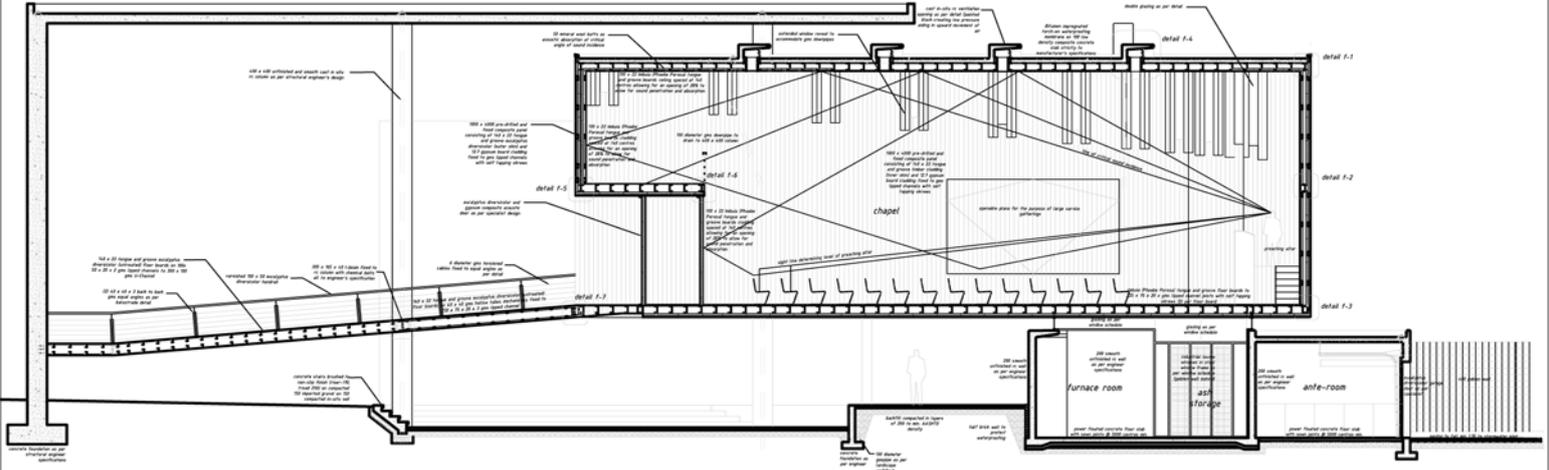


- FFL: 106 400-finished eucalyptus diversicolor ramp level
- FFL: 103 200-finished eucalyptus diversicolor ramp level
- FFL: 100 950-finished eucalyptus diversicolor ramp level
- FFL: 100 000-finished eucalyptus diversicolor ramp level
- FFL: 100 000-finished eucalyptus diversicolor ramp landing level

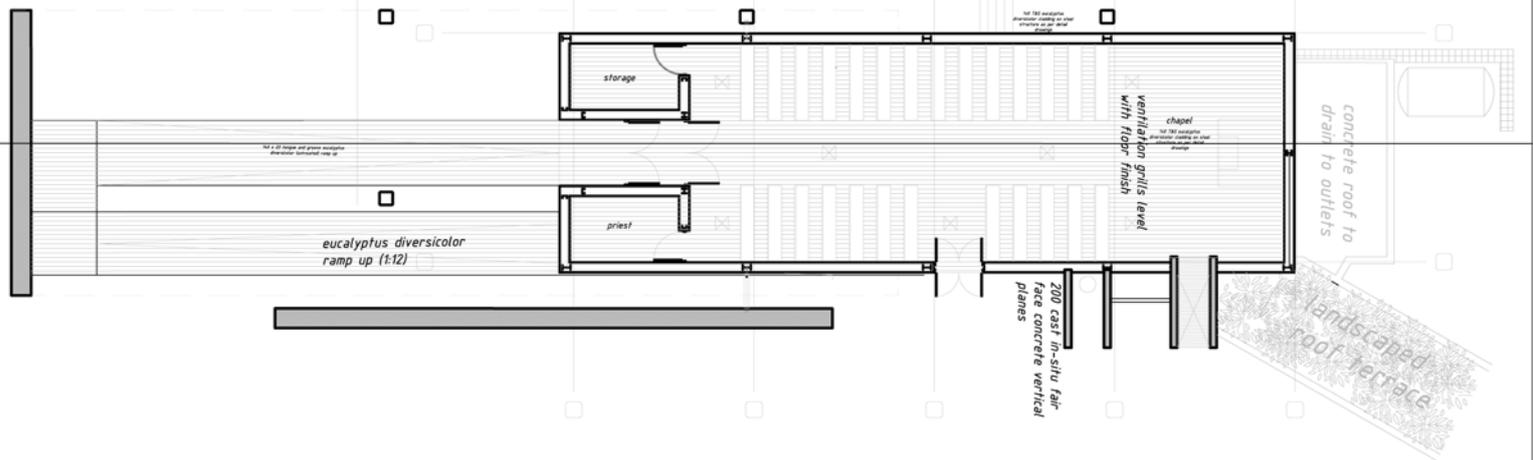
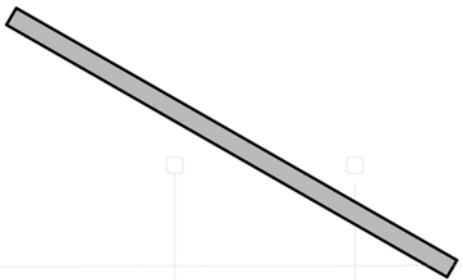
section d-d



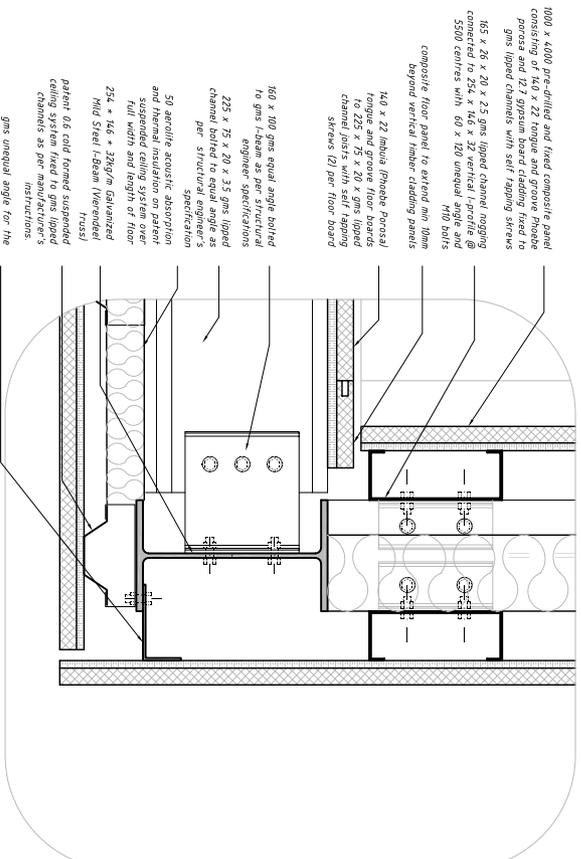
section e-e



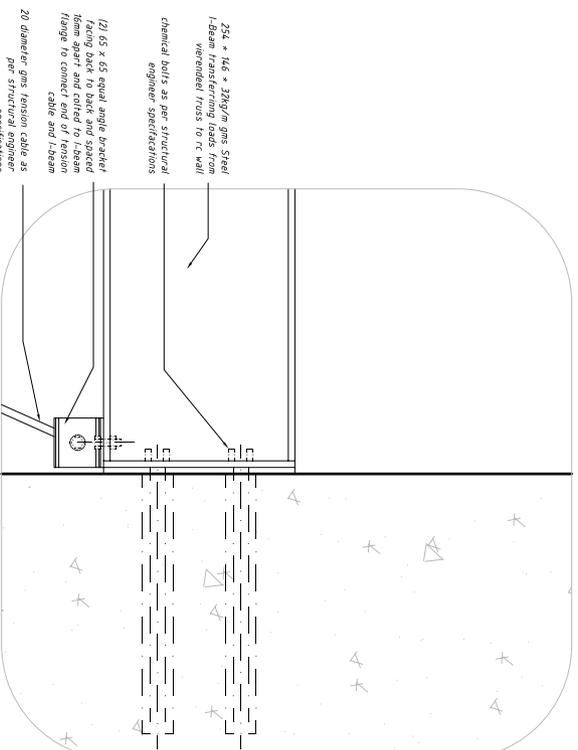
chapel section



chapel plan



detail a-3 1 : 5



detail a-4

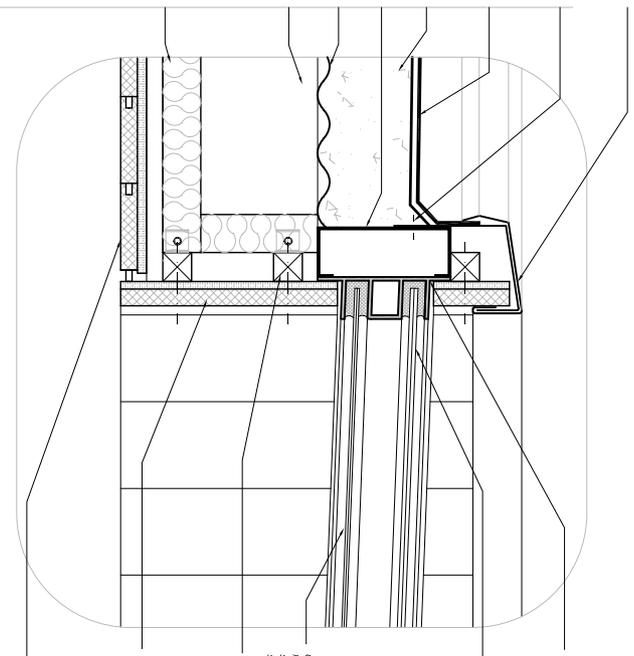
65 cold formed double flashing system to be connected with self-lapping screws and neoprene washer

pop-out connecting lipped channel and bottom flashing

Blumar impregnated larch-on hydrophobic membrane on 100 low density composite concrete slab to full min 170 strictly to manufacturer's specifications
100 no-fines low-density rc slab (900kg/m³)

195 x 65 x 20 x 2.5 gms lipped channel frame with 60 equal gms l-beam with 60° equal angle
gms corrugated sheeting on lipped channels with self tapping screws as per specification
225 x 25 x 20 x 3.5 gms lipped channel connected to l-beam with unequal angle sleeve as per structural engineer

50 aerogel acoustic absorption and thermal insulation



purpose made gms window frame according to window schedule to be bolted with gms M6 bolts to bottom and top of lipped channel lip

10 clear laminated structural glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

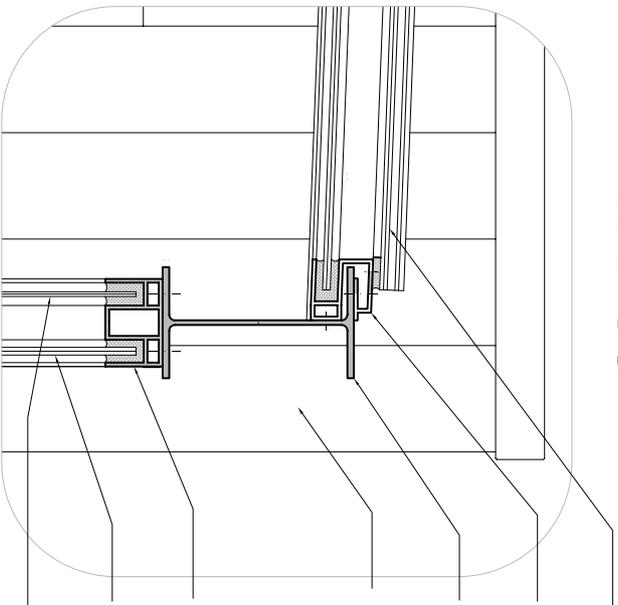
gms glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

38 x 38 S4-Flue grade 5 timber nogging spanning between joists and nailed to 314 x 30 x 2.5 gms l-beam and 225 x 25 x 20 x 3.5 gms lipped channel with M10 gms bolts

pre-drilled and manufactured composite panel consisting of 140 x 22 tongue and groove Eucalyptus divertsolator and 127 gypsum board cladding fixed to gms lipped channels with self tapping screws

140 x 22 Inluba (Inluba Pressed) tongue and groove ceiling to 225 x 25 x 20 x gms lipped channel joists with self tapping screws (22 per ceiling and lipped channel connection)

detail a-5



10 clear laminated structural glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

purpose made gms window frame according to window schedule to bottom and top of lipped channel lip

254 x 146 x 30kg/m Galvanized Mild Steel l-beam (Weathered Truss)

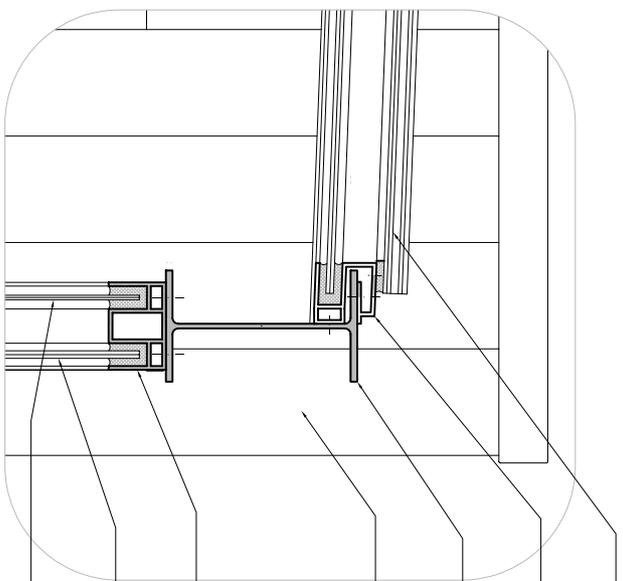
pre-drilled and manufactured composite panel consisting of 140 x 22 tongue and groove Eucalyptus divertsolator and 127 gypsum board cladding fixed to gms lipped channels with self tapping screws

purpose made gms window frame according to window schedule to be bolted with gms M6 bolts to flange of gms I-profile beam

10 laminated structural glazing to neoprene spacer and sealed with appropriate polymer sealant

gms glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

detail a-6



10 clear laminated structural glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

purpose made gms window frame according to window schedule to bottom and top of lipped channel lip

254 * 146 * 204g/m Galvanized Mild Steel I-Beam (Vierowinkel Truss)

pre-finished and manufactured composite panel consisting of 140 x 22 tongue and groove Eucalyptus diversicolor and 127 gypsum board cladding fixed to gms window frame with self tapping screws

purpose made gms window frame according to window schedule to be bolted with gms M6 bolts to flange of gms I-profile beam

10 laminated structural glazing to be separated from neoprene spacer and sealed with appropriate polymer sealant

6mm glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

detail a-6

6mm glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

10 clear laminated structural glazing to be separated from frame with neoprene spacer and sealed with appropriate polymer sealant

purpose made eucalyptus diversicolor window frame

purpose made gms window frame according to window schedule to be channel with gms 70 bolts to lipped channel

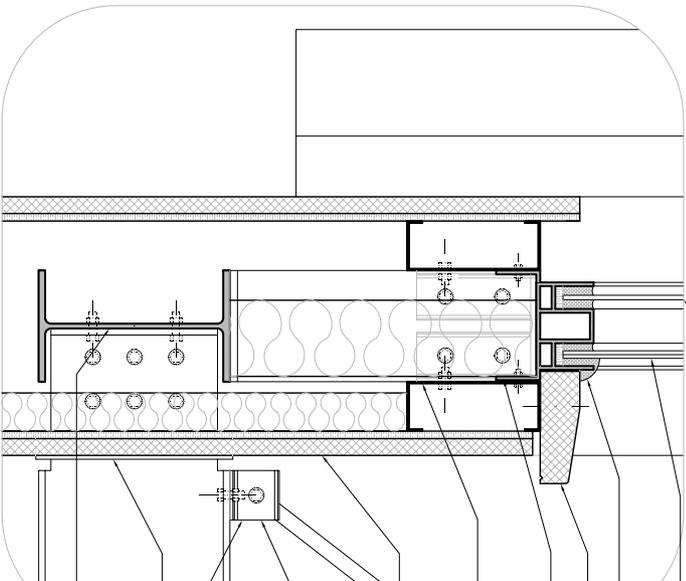
165 x 26 x 20 x 25 gms lipped channel nesting connected to 254 x 146 x 32 vertical I-profile @ 3500 centres with 60 x 700 unqual angle and 190 bolts

100 * 400 pre-finished and fixed composite panel consisting of 140 x 22 tongue and groove eucalyptus diversicolor (outside) and 127 gypsum board (inside) cladding fixed to gms lipped channels with self tapping screws

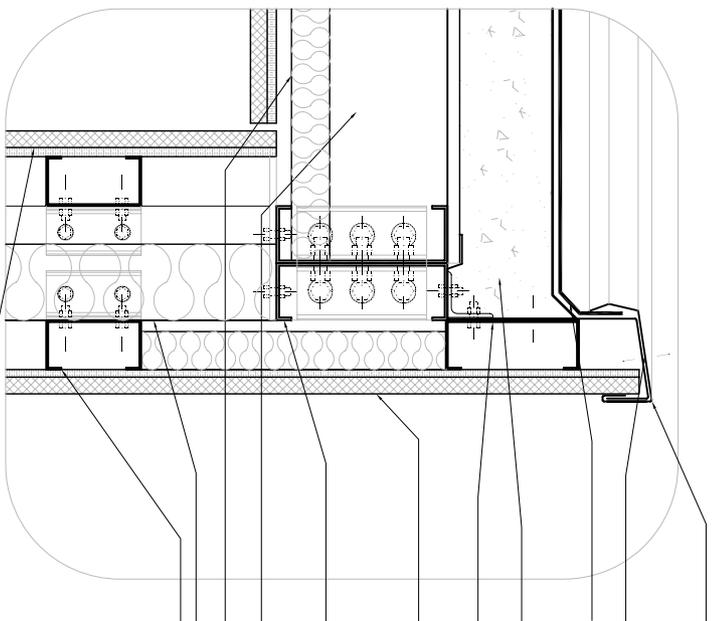
Ø2.65 x 65 equal angle bracket facing back to back and spaced 16mm apart and called to I-beam flange to connect end of tension cable and I-beam

20 diameter gms tension cable as per structural engineer specifications gms 40 x 40 equal angle frame

254 * 146 * 33kg/m Galvanized Mild Steel I-Beam (Vierowinkel Truss)



detail a-7



detail f-1 1 : 5

65 self formed double flashing system to be connected with self-tapping screws and neoprene washer

pop-rivet connecting lipped channel and bottom flashing

Bitumen impregnated torch-on waterproofing membrane on 100 low density composite concrete slab to fall min 1% strictly to manufacturer's specifications

100 no-fines low-density rc slab (900kg/m³)

175 x 65 x 20 x 2.5 gms lipped channels with 60 x 60 equal angle

1000 x 4000 pre-drilled and fixed composite panel consisting of 14,0 x 22 tongue and groove

125 x 26 x 20 x 2.5 gms lipped channel (inside) and 127 gms lipped channel (outside) cladding fixed to gms lipped channels with self-tapping screws

(2) 225 x 75 x 20 x 3.5 gms lipped channels welded back to back and connected to L-beam with unequal angle sleeve as per structural engineer

224 x 146 x 30kg/m Galvanized truss (or L-beam) (top/bottom)

50 aerogel acoustic absorption and thermal insulation

100 mineral wool bairt

125 x 26 x 20 x 2.5 gms lipped channel (mechanically connected to 150 x 75 x 20 x 3 vertical truss) from 3520 centres with 60 x 120 unequal angle and M10 bolts

1000 x 4000 pre-drilled and fixed composite panel consisting of 14,0 x 22 tongue and groove plate (eucalyptus divercedor (outside) and 127 gypsum board (inside)) cladding with self-tapping screws

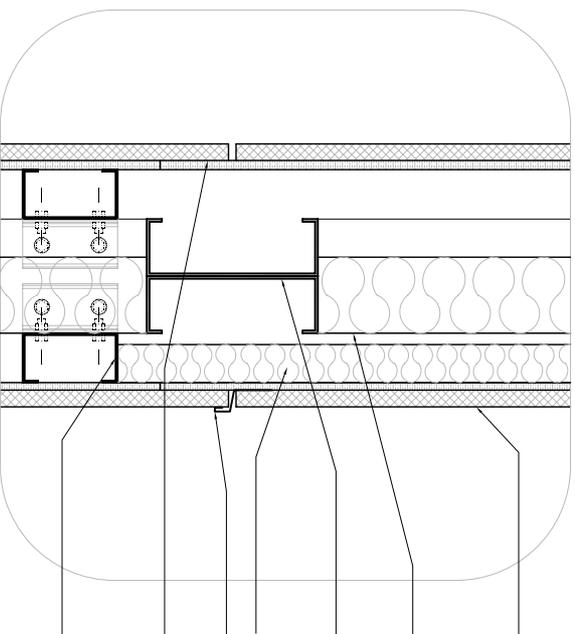
1000 x 4000 pre-drilled and fixed composite panel consisting of 14,0 x 22 tongue and groove eucalyptus divercedor (outside) and 127 gypsum board (inside) cladding with self-tapping screws

(2) 225 x 75 x 20 x 3.5 gms lipped channels welded back to back and connected to L-beam with unequal angle sleeve as per structural engineer

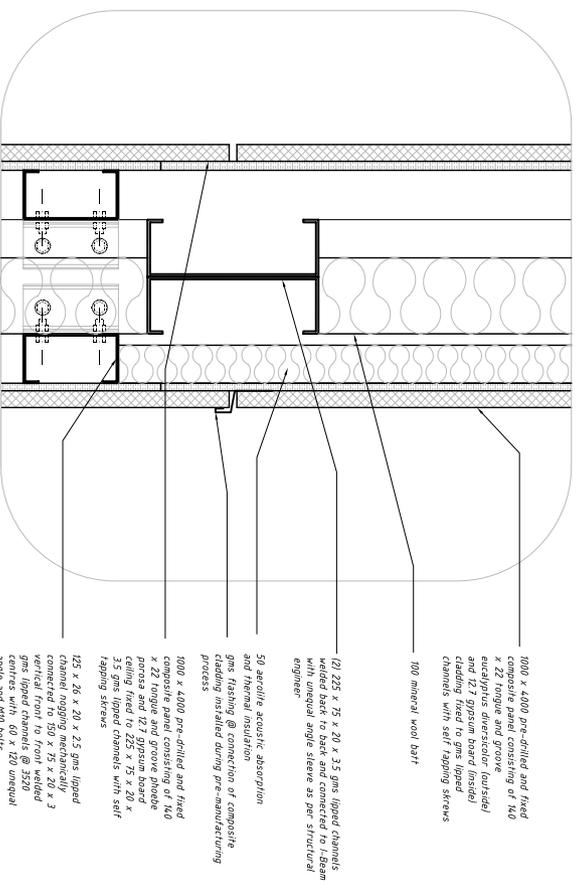
50 aerogel acoustic absorption and thermal insulation gms flashing @ connection of composite cladding installed during pre-manufacturing process

1000 x 4000 pre-drilled and fixed composite panel consisting of 14,0 x 22 tongue and groove plate (eucalyptus divercedor (outside) and 127 gypsum board (inside)) cladding with self-tapping screws

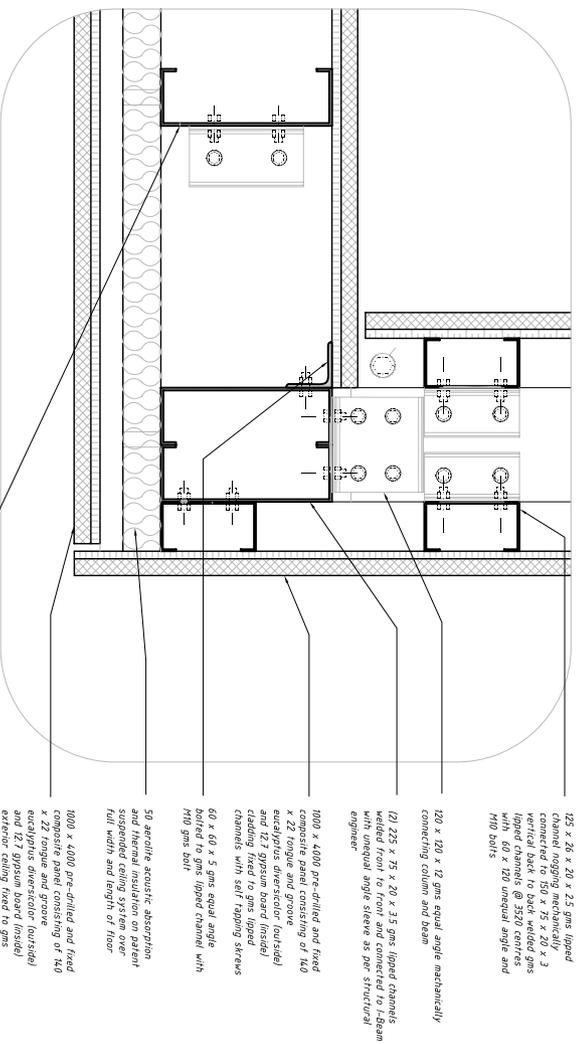
125 x 36 x 20 x 2.5 gms lipped channel (mechanically connected to 150 x 75 x 20 x 3 vertical truss) from 3520 centres with 60 x 120 unequal angle and M10 bolts



detail f-2 1 : 5



detail f-2 1 : 5



detail f-3 1 : 5

1000 x 4000 pre-drilled and fixed composite panel consisting of 140 x 22 tongue and groove eucalyptus diverstator (outside) and 12.7 gypsum board (inside) cladding fixed to gas lipped channels with self tapping screws

100 mineral wool baf†

125 x 26 x 20 x 3.5 gms lipped channel fixed back to bare structural steel with unequal angle sleeve as per structural engineer

50 acoustic acoustic absorption and thermal insulation gms flashing @ connection of composite cladding installed during pre-manufacturing process

1000 x 4000 pre-drilled and fixed composite panel consisting of 140 x 22 tongue and groove phosphate porous and 12.7 gypsum board x 12.7 gypsum board cladding fixed to gas lipped channels with self tapping screws

125 x 26 x 20 x 2.5 gms lipped channel lagging mechanically connected to 150 x 75 x 20 x 3 vertical front to front welded gms lipped channels @ 3250 centres with 60 x 120 unequal angle and m10 bolts

125 x 26 x 20 x 2.5 gms lipped channel lagging mechanically connected to 150 x 75 x 20 x 3 vertical back to back welded gms with 60 x 120 unequal angle and M10 bolts

120 x 120 x 8 gms equal angle mechanically connecting column and beam

125 x 75 x 20 x 3.5 gms lipped channels welded front to front and connected to I-beam with unequal angle sleeve as per structural engineer

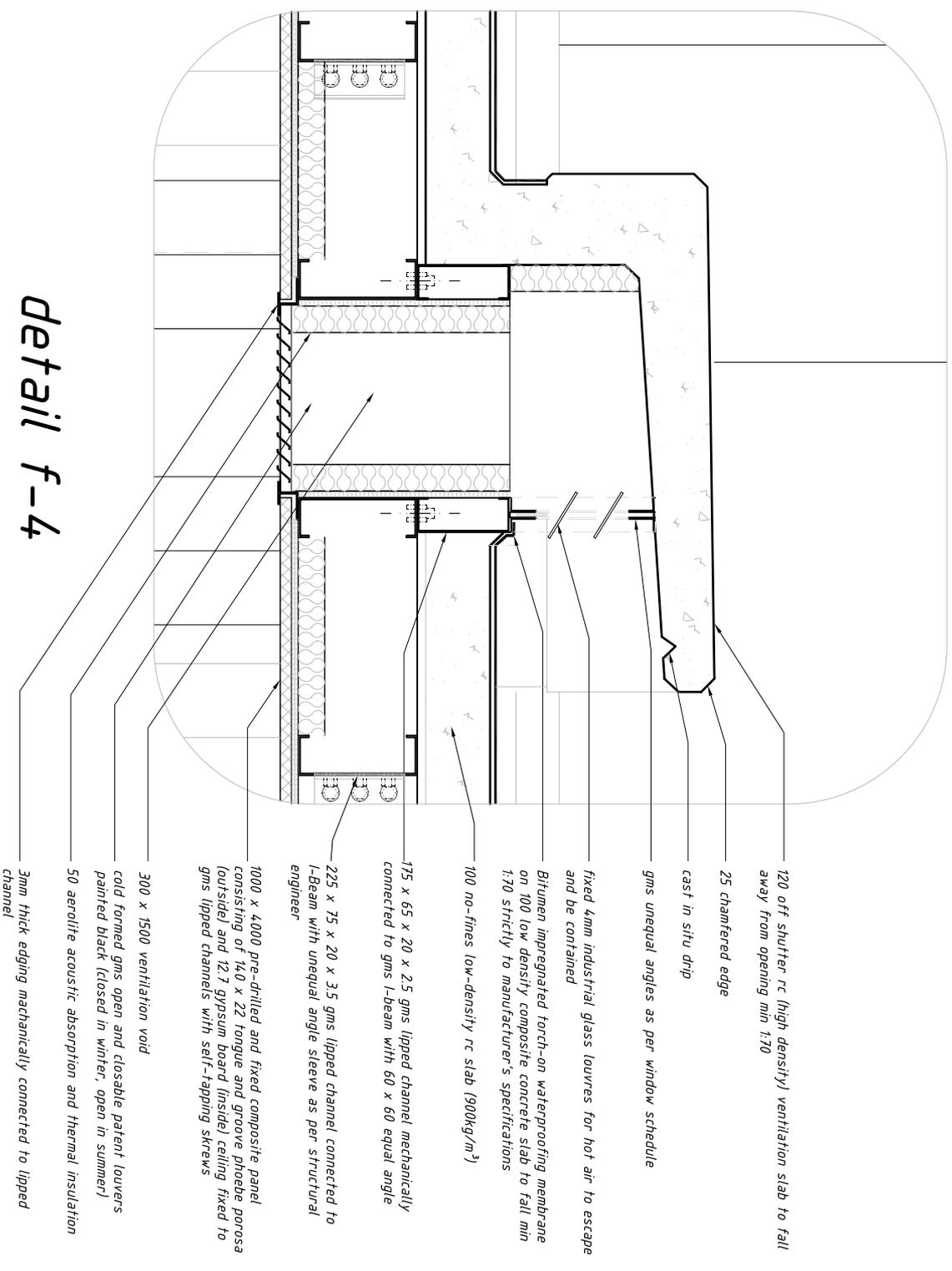
1000 x 4000 pre-drilled and fixed composite panel consisting of 140 x 22 tongue and groove eucalyptus diverstator (outside) and 12.7 gypsum board (inside) cladding fixed to gas lipped channels with self tapping screws

60 x 60 x 5 gms equal angle M10 gms self

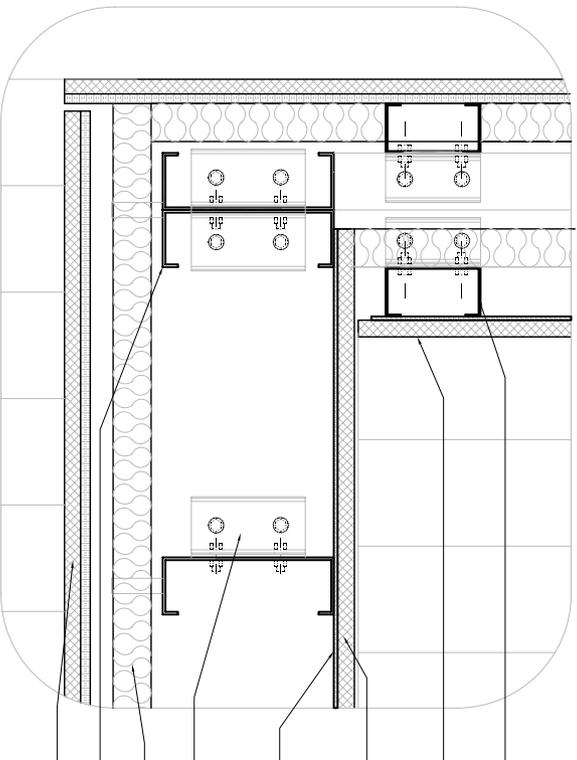
50 acoustic acoustic absorption suspended ceiling system over full width and length of floor

1000 x 4000 pre-drilled and fixed composite panel consisting of 140 x 22 tongue and groove eucalyptus diverstator (outside) and 12.7 gypsum board (inside) extreme ceiling fixed to gms as per manufacturer's instructions

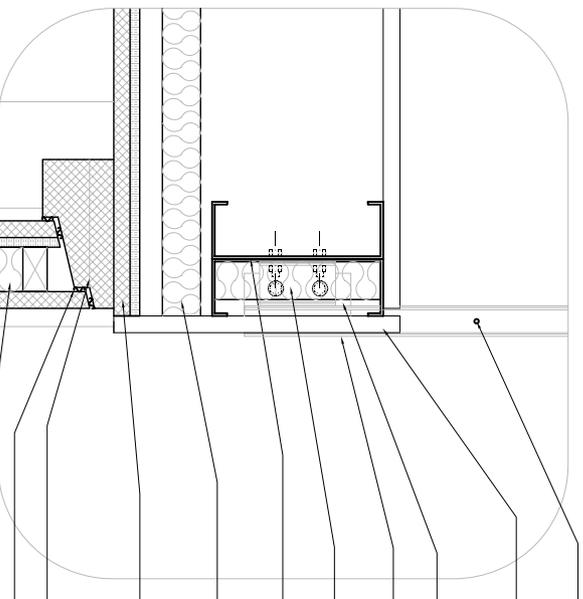
225 x 75 x 20 x 3.5 gms lipped channel drilled to equal angle as per structural engineer's specification



detail f-4



detail f-5 1 : 5



detail f-6 1 : 5

125 x 26 x 20 x 2.5 gms liped channel nailed to back welded gms liped channels @ 350 centres with 60 x 120 unequal angle and 110 bolts

100 x 22 Inhibu (Phosco Porcell) tongue and groove flooring boards spaced at 140 centres allowing for an opening of 28% to allow for sound penetration and absorption

100 x 22 Inhibu (Phosco Porcell) tongue and groove floor boards spaced at 140 centres allowing for an opening of 28% to allow for sound penetration and absorption

5mm veil below spaced tongue and groove floor boards

80 x 160 x 8 gms equal angle bolted to I-Beam as per structural engineer

50 aerolic acoustic absorption and thermal insulation on patent suspended ceiling system over full width and length of floor 225 x 75 x 20 x 3.5 gms liped channel bolted to equal angle as per structural engineer's specification

pre-drilled and fixed composite door panel consisting of 140 x 22 tongue and groove extrusion/diversicolor (outside) and 127 gypsum board nailed to internal timber frame (60 x 38 S4 Pine)

6 diameter gms cable tensioned at end connection between 40 x 40 equal angles

100 x 22 Inhibu (Phosco Porcell) tongue and groove edge boards spaced at 140 centres allowing for an opening of 28% to allow for sound penetration and absorption

10 x 80 x 140 gms vertical basoplate bolted to gms equal angles

(2) 40 x 40 galvanized and painted equal angles back to back spaced 1mm apart and welded to 10 x 80 x 140 gms basoplate

60 x 60 gms equal angle bolted to 225 x 74 x 20 x 3.5 gms liped channel with 110 bolts

(2) 225 x 75 x 20 x 3.5 gms liped channels welded back to back and connected to I-Beam with unequal angle sleeve as per structural engineer

50 aerolic acoustic absorption and thermal insulation on patent suspended ceiling system over 101 width and length of floor

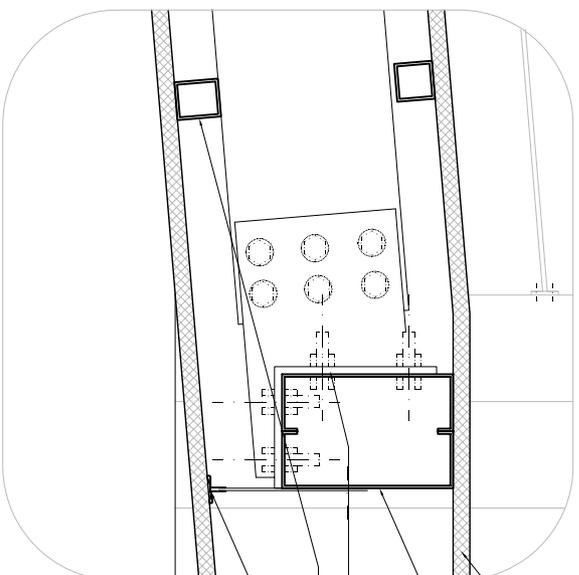
1000 x 4000 pre-drilled and fixed composite panel consisting of 140 x 22 tongue and groove extrusion/diversicolor (outside) and 127 gypsum board (inside) with a 60 x 60 x 140 gms basoplate between them as per manufacturer's instructions

Eucalyptus diversicolor acoustic doorframe as per door schedule neoprene seal

60 mineral wool insulation

22 x 100 phosbe porosa cladding spaced at 140 centres and nailed to S4 pine frame as per structural engineer's instructions for sound incidence and absorption

pre-drilled and fixed composite door panel consisting of 140 x 22 tongue and groove extrusion/diversicolor and 127 gypsum board nailed to internal timber frame (60 x 38 S4 Pine)



140 x 22 eucalyptus dimensioner floor boards spaced 6mm apart to be skewed to gms lipped channels by means of gms self tapping screws

125 x 75 x 3.5 gms lipped channels welded at its ends and connected to beam with unequal angle sleeve as per structural engineer

10 hot rolled equal angle baseplate as per engineer specification and design
50 gms hollow square section mechanically fastened to baseplate
125 x 75 x 3.5 gms lipped channel

0.6 cold formed gms pallet ceiling system to 3mm gms flat plate to lipped channels

detail f-7 1 : 5