The Design of a Centre of the Performing Arts: Catalyst for the Rejuvenation of Durban's Embankment

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A Dissertation submitted to the School of Architecture, Housing and Planning – University of KwaZulu-Natal, Howard College Campus, in partial fulfilment towards the degree of Master of Architecture.

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DECLARATION:

I hereby declare that this dissertation is my own unaided work except where otherwise acknowledged. It is being submitted to the School of Architecture, Housing and Planning, University of KwaZulu-Natal, Howard College campus, in partial fulfilment of the requirements towards the degree of Masters of Architecture. This dissertation has not been submitted before for any examination or degree at any university.

Signed 13th March 2009

Lauren Ann Haiden

DEDICATION:

I wish to thank my parents first and foremost, because without their unfailing love, faith and support over the past years, I would never have accomplished what I have. To mum, paps and dad words cannot express the gratitude for everything you've done for me, you are my pillars of strength. A special thank you to my extended family, you all are so wonderful and I am so grateful to have you all in my life. What is life without family afterall. And lastly, perhaps most importantly, to the my Lord and Saviour, Jesus Christ through you all things are possible.

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Abstract

The purpose of this dissertation is twofold. Firstly to investigate the aspects and issues around performing arts and their influence on architecture. Secondly, to set the brief for the design of a performing arts theatre that directly relates to its surroundings, namely Durban's bay and urban waterfront, the Embankment, as well as to the large, existing theatre community within Kwa-Zulu Natal. The building will seek to accommodate the independent theatre and dance companies that have been displaced due to the 'White Letter' bill passed in the early 1990s, creating a home base for them. The facility aims to *enliven the neglected water's edge and be a catalyst for its rejuvenation of the area.* Through this study, specific characteristics of theatre design will be investigated. These characteristics include the following: the relationship between funding and the community, theatre planning and the spatial relationships that exist between functions as well as the engagement with the public and promenade edge. Due to the fact that a theatre is a civic facility that connects a variety of different people from diverse walks of life together, an opportunity presents itself in creating a building that contributes to the both the city and its community.

This research will study the multi-faceted aspects that comprise a performing arts theatre on Durban's Margaret Mncadi Avenue (formerly the Victoria Embankment). The research will consist of primary and secondary sources. Conclusions will be drawn from both case and precedent studies but a balance between primary and secondary research is needed to obtain a workable response and brief for the design of a theatre. This research will also concentrate on urban waterfronts, in particular Durban, which exists today as a reminder of what we are focused with in today's society, namely leisure pursuits coupled with commercial skyscrapers within the inner city verify our focus as a community. It is the author's aim to provide a facility that changes this focus to include cultural activities such as a theatre as a means of pure expression.

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Note: All the illustrations within this document are by the author unless acknowledged otherwise. All photos were taken by author during February and March 2008.

Introduction

This dissertation will explore the key components which influence the design of a performing arts centre for Durban's urban waterfront, the embankment.

With the imposition of the railway lines some years ago, *the bay has been disconnected or cut off from the Central Business District (CBD) of the city*, becoming isolated and unused by the people that live or work in the city. Only in recent years have plans been implemented by the City Architect's Department in the hopes of regenerating this area and reintegrating it with the heart of the city.

Theatre in South Africa, and more specifically Durban, has come a long way since the Dutch Colonial Period of the 17th century (Hauptfleisch, 1999: 2). Each phase of the country's development was expressed through art and theatre in various ways. More recently, if one could reflect on the mindset of the colonial period where theatre was used as a weapon within political platforms, a *theatre for 'healing'* emerged in 1990 until 1993, where former president Nelson Mandela was released from Robben Island and *a new age dawned in South Africa of free speech and individualism.* From there, theatre has progressed to one for the 'Rainbow Nation' *where cultural differences have been celebrated from the streets to the theatres.* It can be said that theatre in South Africa has always been weighed down by difficulties and misunderstandings, but it has come forward with renewed vision challenging the next generation to reach higher by catering to theatre troupes productions. (Hauptfleisch, 1999:23)

Today, Durban offers two extremes in theatre facilities. The sole, large venue available is the Playhouse Theatre on Smith Street, boasting four theatres within its complex,the largest holding 1,300 seats. State funded, the Playhouse is inaccessible to small theatre companies which barely make ends meet. On the other end of the spectrum; smaller theatres such as the Sneddon Theatre on the Howard College campus of the University of Kwa-Zulu Natal, the Catalina Theatre on Wilson's Wharf, and the KwaSuka Theatre in Greyville, cater to smaller theatrical productions and offer between 150 and 400 seats. These latter theatres or venues are privately owned and leased to theatre troupes who fight to break even when having to pay rental fees each month. Together with these various overheads, as well as the inadequate theatre sizes, these troupes are required to produce a large number of smaller scaled productions and scarcely fill the house. Therefore, there is *a gap within this market* of a facility covering middle ground, housing between 600 and 850, which would provide smaller theatre companies in Durban with the facility to produce fewer shows to 'sold out' theatre houses.

This need for a facility to *'bridge the gap'*, both figuratively and literally, will work together with existing plans for development on the Embankment / Esplanade as a catalyst for regeneration and to perhaps ultimately stimulate economic growth of the CBD.

Theatre on the 'edge', shown by the research within this document, have proved a magnet for the redevelopment and enhancement of this interface. The purpose of this dissertation therefore is to look at the possibility of a theatre on Durban's edge: the Embankment.

1.1 HYPOTHESIS:

One element that lacks integration within the city limits is the portion of land to the south of Margaret Mncadi Avenue (formerly the Victoria Embankment), Durban's urban waterfront. This stretch of land has been long forgotten with the existing railway line construction dividing the Embankment from the city centre. What Durban lacks, culturally, is a theatre facility large enough that benefits not only the community directly, but the various theatre troupes and dance companies that struggle to make ends meet from month to month. Theatres, in their natural essence, are *public gathering spaces that allow people to either express or escape life's ups and downs through different media or just through physical contact* with others. It is the author's belief that by incorporating a facility focusing on these elements within the Embankment area, one could rejuvenate the edge and *infuse it with activity* and the presence of people. The harbour has the potential to act as the backdrop or setting for a theatrical performance, incorporating views and context into the patron's overall experience. This concept and idea will be discussed and developed further within this document.

1.2 RESEARCH PROBLEMS:

The *rapid decentralisation of people and activities* from the Durban inner city has been detrimental to the growth and survival of the city itself as larger companies and businesses have moved out, leaving the city devoid of life. The city can be likened to a physical container of a city's culture, ultimately an expression of its people (Marshall, 2001: 3) whereby the concentration of specific types of buildings within a city, for example the commercial skyscrapers seen in Durban, portray the underlying focus of the people. What used to be a vibrant centre of activity and source of entertainment for the general public, has becomes a place forgotten due to the dearth of activity. Roger Trancik, author of '*Finding Lost Space: Theories of Urban Design*' (1986), suggests that perhaps this cause of lost space is the reluctance of civic institutions to manage the 'appearance and physical structure of the city' (Trancik, 1986: 18). This lack of activity, especially at night, has *left voids within the fabric of the city* resulting in higher levels of crime where spaces have been lost. 'Concerns for the city today are urban sprawl and the emptying of historic cores. The waterfront provides us with opportunities to consolidate the void, to define its edge and to create a new urban vision for ourselves' (Marshall, 2001: 13). The urban waterfront enables one to *create spaces that enrich the city itself as well as the life of the people who live in it.* It also has the ability to recreate the image of the city, act as a catalyst for economic growth within the city and to draw people back into the city from the suburbs. Alex Krieger, an urban designer, advocates that, "it is along its waterfront (that) the aura of the city resides and persists" (Marshall, 2001: 13). With this said, what is the current impression being created in

Durban. The current urban waterfront offers small scale recreational opportunities such as yachting. Sadly this is aimed at an exceedingly affluent market, though not exclusively. It also offers a degree of retail initiatives, seen along the working wharf of Wilson's Wharf, which go unnoticed by a large number of the population. It appears that the overall impression of the Embankment is one of insignificant tourist attraction when placed in the same brochure as the beachfront or perhaps the newly redeveloped Point precinct.

Marshall suggests that the *urban waterfront sites should be utilised for large civic natured facilities* such as: museums, exhibition halls, convention centres, theatres and sports stadiums (Marshall, 2001: 6). This, to some degree, is seen along Durban's urban waterfront - its Embankment - in the existence of small theatres and convention facilities as well as the Maritime Museum. Since 2002, the embankment has been earmarked as a place for redevelopment and regeneration by the city; this neglected area involved the establishment of a new precinct to encourage public interests. Wilson's Wharf, the Yacht Basin and the Maritime Museum site including the BAT Centre have seen the beginnings of development along this edge (ill 1.1), however no new development has occurred in the last 10 years. At present, the eThekwini City Planning Department is developing plans for both large and small scale improvements at the yacht basin (Appendix B) such as the refurbishment of walkways, extra retail markets, maritime recreational facilities and even hotel conveniences (Mike Andrews of City Architects, Unpublished Interview, 25 February 2008). These will hopefully come to fruition within the next five years. Other plans are that the remainder of the Embankment remain dormant, though Andrews anticipates new development at both the

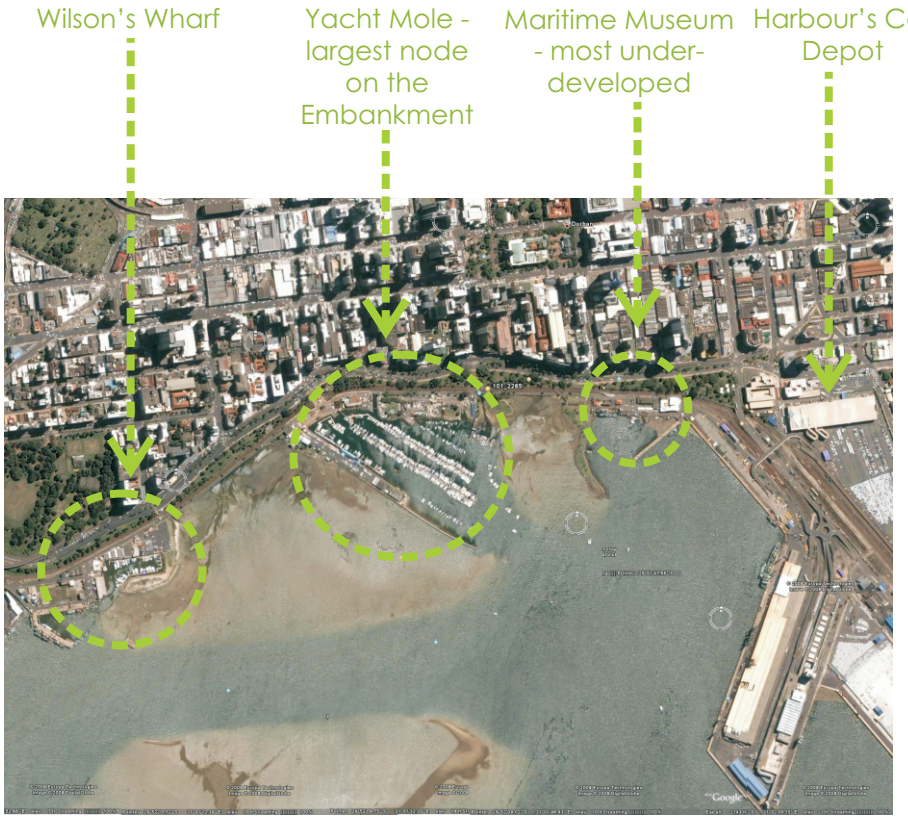


Illustration 1.1 - Aerial photograph of Durban's urban waterfront, the Embankment showing the under-developed areas, from left to right, Wilson's Wharf, the Yacht Mole and Maritime Museum site (Source: http://earth.google.com accessed 20 February 2008)

Maritime Museum and Wilson's Wharf sites soon. Unfortunately, one might argue that there are often voids within this belt, where continuous activity is broken. This occurs between Wilson's Wharf and the Point Yacht Club (PYC) and between the PYC and the Maritime Museum. These could be areas of possible development or natural, environmental conservation.

Historically, waterfronts throughout the world have provided space for the *provision of railways, ultimately cutting off the core of the city permanently from the water's edge* (Marshall, 2001: 76). This is no different in the city of Durban where a six lane carriageway and the railways found the path of least resistance along the Embankment (ill 1.2). However this path, proving the simplest means to achieve the goal of cargo transportation, wrecked pedestrian links between the city and the waterfront, making walking disjointed and the destination almost unattainable. This importance of pedestrian links to the waterfront is stressed by Craig-Smith in his book '*Recreation and Tourism as a Catalyst for Urban Waterfront Redevelopment*'(1995), whereby stating that the "degree of access and the proximity of the waterfront to heavily trafficked people places is a key objective" to its redevelopment (Craig-Smith, 1995: 138). By *adding various recreational and cultural activities on this urban waterfront, people are encouraged to cross the divide* and the Embankment is once again integrated within the city, which will be discussed in Chapter 3. Present activity at Wilson's Wharf has started this integration by incorporating craft markets and restaurants, but not enough has been implemented. The inclusion of cultural buildings along this edge could conceivably encourage more public interaction. However, the railway lines still prove a problem as interaction between pedestrians and transport vehicles

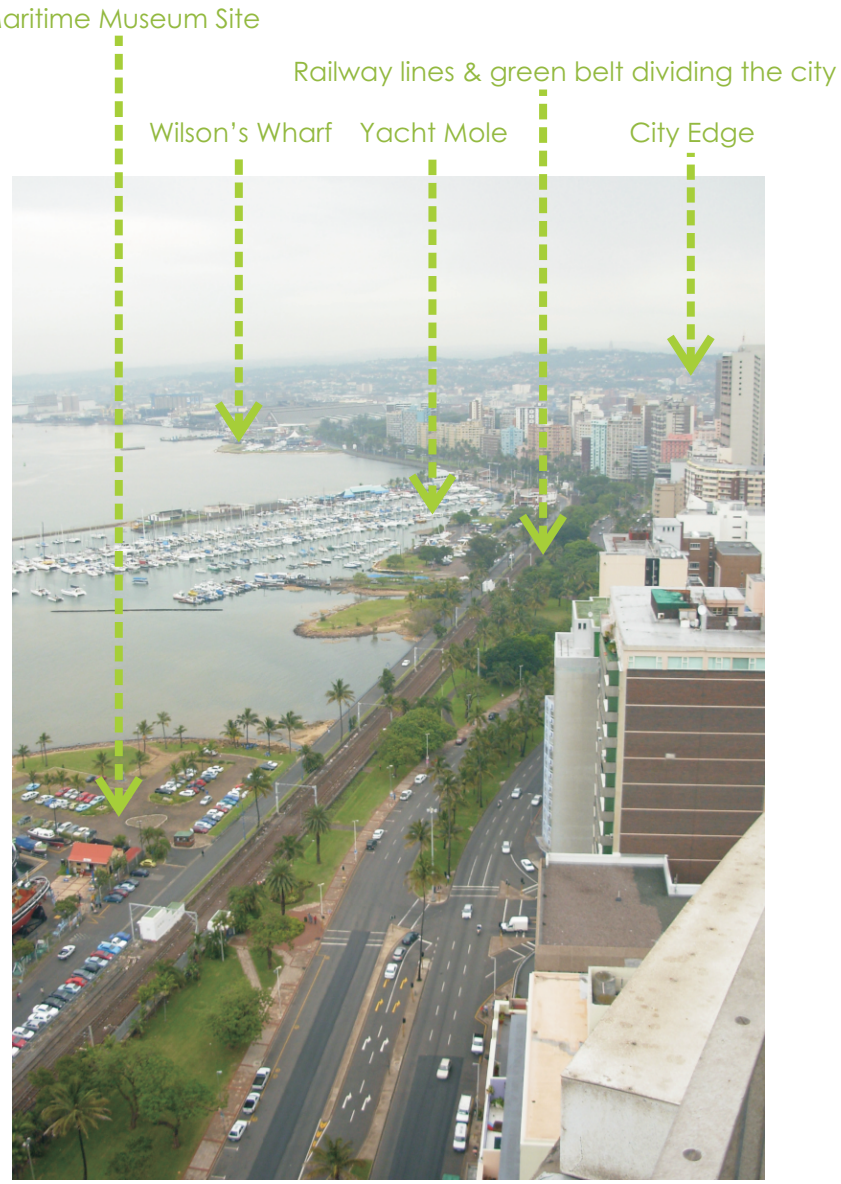


Illustration 1.2 - Photo of Victoria Embankment with six lane carriageway as well as railway lines servicing the car depot on the eastern extremity of the harbour - this vehicular dominated area physically divides the city from its urban waterfront

is potentially dangerous. Fortunately Dave Stromberg, the director of port planning at Transnet National Ports Authoriy (TNPA) who in the informal interview conducted on 22 February 2008, has clarified that the possible relocation of the car depot (ill 1.1), located off Stanger Street to another site within the Durban Harbour or Richards Bay Harbour, is in early negotiations and therefore could possibly eliminate this problem. Thus for the purpose of this dissertation, one must assume this to be the plan to be implemented in the near future which will consequently reconnect the Embankment and the city.

A performing arts centre has been termed a *multi-use performance space that can be adapted for the use of various types of the performing arts, including dance, music and theatre.* These facilities have been designed with adaptability in mind, where a range of functions co-exist under one roof. Within Durban, no such facility exists and one could argue that there is a gap in the market. Facilities like 'The Playhouse' are state subsidised, and present large international theatrical productions (Raymond Phoenix, Stage Manager of 'The Playhouse', Unpublished Interview, 26 February 2008). While smaller facilities like 'The Catalina Theatre' produce local intimate 'one-man' shows by smaller privately owned theatre troupes for a maximum of 150 people. A performing arts centre, combining both these functions, serves as a *'gathering place for the community, and aims to further engage educational opportunities while enhancing a greater understanding and appreciation of the performing arts'* (www.foxcities-marketing.org, 12 February 2008). The intention of such a facility, especially in Durban, is to provide entertainment to the general public both day and night, to serve as a 'home base' for smaller theatre companies which perhaps can't afford exorbitant rentals of state institutions, (Themi Venturas, Unpublished Interview, 26 February 2008) and to act as a platform for education and cultural discovery through the provision of educational spaces. The main intention for this dissertation is to create a building of *regional significance which contributes to the city regeneration and helps establish a new precinct* as a location for social and cultural energy.

1.3 AIMS AND OBJECTIVES:

The main objective of this dissertation is to provide a *facility which would serve the greater community of Durban,* both theatre patrons and performers alike. The balance between a theatre and its ancillary service spaces is critical in a facility of this nature being accessible to a wide range of users as a distinction between front-of-house and back-of-house exists. The facility should also act as a catalyst for the regeneration of the both the urban waterfront and the inner city, by reclaiming waterfront land that has been lost and forgotten over time, due to the introduction of railways and the increased reliance on the automobile. It should stimulate the existing cultural arts in Durban and look to change people's view on the 'sun, fun and play' conurbation. This study should also determine the fundamental design requirements such as siting, planning and relationship between public and private spaces, linkages to existing facilities and the public's general accessibility to civic buildings.

1.4 KEY QUESTIONS:

The key questions are the main concerns that need to be addressed when designing a cultural arts centre. These respond to the different aspects involved in the design of a building that firstly responds to the public interface, and secondly responds to the city.

- What components contribute to a centre devoted to the performing arts? What facilities are needed, particularly to the context of Durban? What are the typical sizes needed in comparison to what Durban can maintain and sustain? What determines the components and sizes needed?
- How will this facility be funded? Will it be state funded, solely reliant on patrons, or a combination of both?
- What is the current situation of the existing theatre facility (The Playhouse) and how effective is it within the city context?
- Are there possible physical connections to be made to this facility?
- What are the spatial and orientational requirements for theatre and rehearsal spaces; support spaces to them; administration; social spaces; and the public sphere within urban fabric?
- What is the appropriate response to an isolated space at the edge of the city? Subsequently, how can a building encourage future growth and public involvement and promote inner city living?
- How can a building act as a transitional element that speaks to two, diverse edges namely, that of the harbour and land / street edge?
- How can a building create linkages to other parts of the city?

1.5 RESEARCH QUESTIONS:

What is an appropriate cultural response that marks a transitional zone between land and sea as well as man and vehicle? How can a building overcome the rigid element of the railway lines that severs the waterfront from the city, both visually and physically? How could this building bring about possible regeneration to the embankment and ultimately the CBD? Using theatre and the natural means of expression it entails, how can this facility encourage people back to the waterfront as well as into the city? How can it bridge the social divide and bring people together through the arts?

1.6 CONCLUSION:

By beginning the inner city regeneration process at the waterfront, an edge much like the vibrant beachfront and working towards the city centre, one can concentrate one's efforts on an area that has all the potential needed to act as a catalyst for the revitalisation of the CBD. The harsh reality of the railway lines forms a barrier both physically and emotionally, however there exists a framework or plan to overcome this element by its eventual elimination. For now controlled vehicular access points at the Yacht Basin and Wilson's Wharf as well as strategically placed pedestrian underpasses allow for the public to cross over.

Theatre, and ultimately finding methods of expressing oneself, has been prevalent in societies since early civilisation. Theatre has also been to many a *means of escapism, of being transported to another time and space, totally separate from reality.* We as humans, have this need to communicate our feelings or to mask them if we so choose. Theatre, and the performing arts, *aid us in the need to express or hide one's emotions.* However the rapid flight of activity from the city has been detrimental to the existence of city theatres, as people do not want to venture out into a city they don't identify with anymore. The need to create an architecture that will ultimately rejuvenate the city, as well as become a place which everyone in South Africa can identify with, is vitally important in today's epoch. A performing arts centre, incorporating theatre, education and other public minded facilities, is one of the ways that architects and city planners can revitalise the city centre…drawing people in through a common means of expression.

2.1 INTRODUCTION:

The research carried out for this dissertation is aimed at developing the philosophical underpinning of the design of a performing arts theatre within the context of an urban waterfront or inner city regeneration. The study area for this dissertation is set in Durban, along its embankment of the Bay in the southern extremity of the city's central business district. The information assembled is of both local and international examples in the form of precedent and case studies which allowed for the cross examination of conditions and characteristics similar to the intended study area. This collection of this information will answer key questions that are important to the development of a design for a new performing arts centre for Durban.

2.2 STUDY AREA:

According to Dave Stromberg (TNPA), Durban's harbour boasts the largest port in Africa, connecting the Far East and the western world. It has been established as a major economic contributor to South Africa with expansion planned for the near future to both Richard's Bay and the current International Airport site on the southern coast. The harbour is the most industrialised zone within the city, however the edge to the north, despite it's close proximity to the CBD, has little development along it's edge for public use and interaction. The waterfront adjacent to Victoria Embankment has been 'given over' to non-harbour operations and has, in the past seen some small scale changes to its image with the upgrading of the Yacht Basin and Wilson's Wharf (ill 2.1 and 2.2.)(Mike Andrews of City Architects, Unpublished Interview, 25 February 2008). The Maritime Museum site, including the BAT center





Illustration 2.1 and 2.2 - Wilson Wharf's (above) and Yacht Basin's (below) showing the existing commercial and entertainment developments present there today

has not quite progressed to be a successful urban edge and due to the nature of the area, the public hardly visits (ill 2.3). However, one might argue that, in other port / harbour cities across the world, more has been developed along their waterfronts to reflect contemporary ideas of the city, it's society and it's culture than Durban has (Marshall 2001:7). This public edge of the embankment could be developed successfully into a public interface and could possibly continue up along the eastern extremity of the Bay to the Point area, with its recent rejuvenation, to include residential and commercial aspects and the widening of the harbour mouth (ill 2.4).

The late, Sir N. Pevsner, a renowned architectural historian, explains in his book 'A History of Building Types' (1976; 67) that *traditionally civic natured buildings, more specifically theatres, are "...set up in the market place or elsewhere in town" rather than in the rural countryside.* This therefore promotes the location of such a facility within the city limits. Following precedents such as the Sydney Opera House located on the harbour's edge, a similar context could be chosen in Durban on its urban waterfront. The building of a performing arts centre, including theatre and retail spaces, could act as a catalyst for both the waterfront and city rejuvenation as well as stimulate commercial aspects already present along this water edge.



Illustration 2.3 - View of the BAT Center & Maritime Museum



Illustration 2.4 - Aerial view of Durban Harbour showing its northern extremity - area that is no longer used for harbour related operations (http://earth.google.com accessed 20 February 2008)

2.3 RESEARCH PLAN:

The method of this research was divided into two distinct groups; primary and secondary research. These were subsequently analysed in order to determine their value to the design brief. Primary research included information attained through the evaluation of case studies and structured interviews, while secondary research included data collected through an extensive literature review on buildings in related cities of similar nature to Durban.

The focus of this research therefore was mainly on qualitative rather than quantitative research, whereby various conclusions were obtained from the information. A review of literature enabled one to criticize and analyse similar buildings that have been recently built, and thus gave the author the ability to make informed decisions during the design process based on what has been successful or unsuccessful in the past. Subsequently, structured interviews with various professionals, with first hand knowledge of theatres and the development within the city and along its edges, were conducted. In conjunction with these interviews, investigations were completed on various case studies within South Africa because of their close locality to Durban, portraying similar circumstances to the study. This research gathered was then used to establish the brief, relevant architectural principles and theories alike.

2.4 PRIMARY RESEARCH:

The aim of primary research was to attain qualitative information from first hand sources. Thus case studies and interviews were employed. Case studies involved the evaluation of several theatre complexes from around South Africa, namely;

- The Playhouse Theatre, Durban,
- The South African State Theatre, Pretoria
- The Civic Theatre, Johannesburg.

These facilities were assessed according to the following criteria: when constructed and where built; siting and reason for site choice; the internal functions of facilities and how they relate to one another; scale and appropriateness of the building in relation with the street edge; how the buildings engage with people at street level and any positive or negative aspects concerning the buildings. The information received from these examples were evaluated and incorporated into the dissertation's design programme.

Semi-structured interviews which developed into informal discussions were conducted with a range of professionals including theatre employees, City Architects and Harbour officials. These informed one how a building of this nature would be assembled and how people could utilise it as visitors, performers or employees. These interviews also provided information that informed the brief for the design as well as the schedule of accommodation. These ensured a better understanding of the needs and requirements of the industry and

ultimately of the facility of this nature. The following information was gained:

- The realisation of plans implemented in the past, and present plans were being implemented today
- The significant plans underway at this time for the future development of the harbour and the embankment of Durban and their implications
- The events that would be expected in such a centre, and therefore what sizes, scale etc of this building would need
- The feasibility of a civic building of this sort in Durban in the foreseeable future
- The general schedule of accommodation needed for such a facility

2.5 SECONDARY RESEARCH:

Secondary research consisted of an extensive literary survey in the form of precedent studies from books, journals and web sites. These precedent studies were chosen for their similarities to the context and study area of this dissertation which were believed to be vital in achieving a better understanding of the nature of these facilities. These similarities lie in the site context, its location, the size of the facility and how it engages the city and its people at different levels. These precedent studies were examined using similar criteria to those of the case studies, however, due to their published nature, information was easily obtained on a more technical level which included suggestions of layout, acoustical requirements, funding, structural resolutions, and spatial requirements. These precedents were then compared against one another, their information analysed and the subsequent findings applied directly to the dissertation topic.

This survey was not, however, limited to purely theatrical facilities, but also included waterfront development documented around the world with particular interest in regeneration to cities. The nature of this research, like primary research, was mainly qualitative with conclusions drawn by the researcher from the data gathered. The following buildings were selected as precedent studies:

- The Sydney Opera House (and its waterfront development plans), Australia
- The Luxembourg Philharmonie, Luxembourg
- Holland Performing Arts, Nebraska, USA
- New Jersey Performing Arts Center, New Jersey, USA

2.6 CONCLUSIONS:

The overall information collected is useful in determining many factors incorporated in theatre and civic designs. These facilities, in general, are easily accessible to the public by means of guided tours and are well documented, in both books and journals. However, theatre truths, the opinions of users and the conclusions drawn up by the researcher all contributed to a well rounded knowledge of this type of building.

The case studies allowed for the *practical application of the theories seen in the precedent studies, whether successful or unsuccessful.* This was useful in establishing the brief of what has the potential to succeed in Durban. Case studies also allowed for the first hand evaluation of different spaces by its users, paying particular attention to planning, acoustical treatment and public interaction. Precedent information was somewhat restrictive in that one had to accept the findings of the authors. However, interviews provided the information that could not be gathered from these sources. Interviews were intended to be informal, but with set questions that were referred to if needed. This gave way to a broader range of topics discussed more freely by both researcher and professional, and resulted in a more thorough understanding.

3.1 INTRODUCTION:

This chapter will deal mainly with a review of the literature examined for the design of theatre buildings, namely what components a theatre complex requires, and the relationship between each component and how it is assembled. It will also cover waterfront regeneration as a catalyst for urban renewal, where the proposed design information will form the initial stages of transformation along the Embankment. The chapter will also examine the theoretical framework that will inform the design of a performing arts centre for Durban's Victoria Embankment (now Margaret Mncadi Avenue) focussing on redefining lost space as well as the relationship between building and person at street edge. It also aims to explore how one would ascertain an appropriate response to a waterfront edge treatment, that would encourage future growth and public involvement, but also act as a transitional space between water and land.

3.2 LITERATURE REVIEW:

The literature review will look at the city of Durban and its lack of unity with its urban waterfront, the suggested location of theatres as well as analyse its internal functions and workings along with the design of auditoriums and their auxiliary spaces. Distinct relationships exist between spaces that need to be researched, in order to attain a clearer understanding of this building typology and its composition. This review will consist of the following topics: waterfront development, history of theatre, theatre planning and technical requirements. The information gathered will form the basis for the brief of a new design of a performing arts centre on Durban's Embankment.

3.2.1 Waterfront Development:

'People have a fundamental yearning for great bodies of water. But the very movement of the people toward the water can alsodestroy the water' (Alexander, 1977: 136). The *lure of water, with its unending movement and change, is another reason why the urban waterfront draws such numbers of people and action.* Water is the only element that has a magical quality that can move a human spirit (Marshall, 2001: 78). Here he is as close as possible to the 'intuitive spirit that represents life itself' (Azeo Torre, 1989: 4). Marshall, author of the book 'Waterfronts in Post-Industrial Cities' (2001), suggests that while the city is 'a physical container of our culture' (Marshall, 2001:2) the waterfront is the expression of that culture through its activities found at its edge (Marshall, 2001:4). Durban, for example, expresses a strong sense of commerce within the heart of the city, while an air of urban redundancy is seen on its urban waterfront. The urban waterfront has been described by Azeo Torre, author of the book 'Waterfront Development' (1998), as an artery that sustains life and creates a unique environment at its edge (Azeo Torre, 1989: 2). This is true for many reasons, but perhaps the most pertinent is that is accommodates a variety of activities and functions that attract the diverse people that live nearby. It offers a range of 'stimuli' including foods, goods, people and harbour vessels that all together make up the harbour imagery. The industrial port city, such as the city of Durban, offers this connection to the waters edge as well as forming the backdrop for constant change and activity. However, the spaces along this edge that become the transition zone between harbour and city are often overlooked and neglected. Historically this perimeter provided the room for the

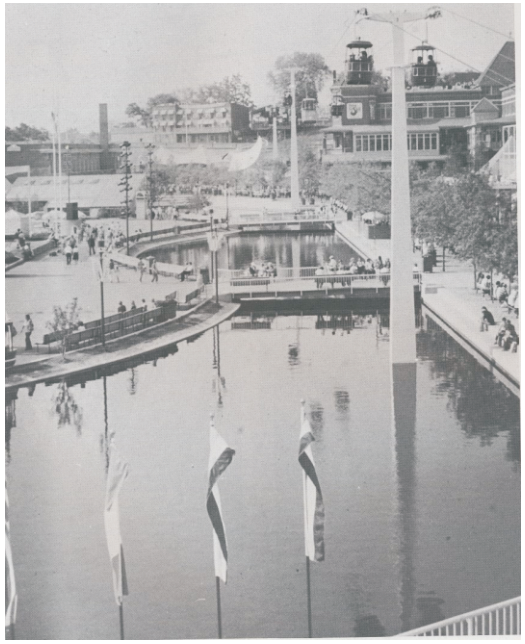


Illustration 3.2.1 - The central watercourse at Knoxville Expo '82, Tennessee shows the redevelopment of an once forgotten area and provides opportunities for people to reconnect to the water's edge (Source - Azeo Torre 1998: 26)



Illustration 3.2.2 - Pier 39 San Francisco shows the focus of the city on the water's edge (Source - Azeo Torre 1998: 11)

construction of railway lines as it was often the path of least resistance, but this ultimately led to the separation of the city from the waters edge. This is the case within Durban itself whereby the railway lines cut off the Embankment from the city, isolating it from the heart of the activity. Today, however, people are *rediscovering the old asset by providing opportunities for cities to reconnect with their waters edge* by means of activating this neglected space in various ways (ill 3.2.1).

The principal purpose of urban waterfronts include the 'achievement of public access to the waterfront, improvement of the image of derelict waterfront areas, and the achievement of economic regeneration by breathing new life into such areas' (Craig-Smith & Fagence, 1995: 137). Adequate parking facilities and friendly 'people places' in the form of walkways and sitting areas greatly improve the degree of accessibility of the public to the waters edge. These sites, benefit from the central position, located between the city and a busy harbour, allow for paramount visibility and become a 'stage' on which the most important pieces of society are placed. As a result, the *waterfront becomes a direct reflection of what we are as a society today* (ill 3.2.2); a visual expression of who the people of the city actually are.

This urban waterfront edge is the *ideal location for recreational, entertainment and cultural facilities* (Marshall, 2001: 78), creating the foundation of a tourism district, and requires opportunities to eat, people watch and just sit and relax while looking out over the water (Azeo Torre, 1989: 38). These are points of focused interest along the active, pedestrian edge (ill 3.2.3). This urban waterfront development requires a variety of activities and mixed-use



Illustration 3.2.3 - Walkway at Moonwalk, Mississippi connects the edge between the land and river's edge complete with seating and planting. (Source - Azeo Torre 1998: 56)



Illustration 3.2.4 - Photograph of the promenade along Wilson's Wharf - the only space along the Embankment which engages with the public and waters edge

functions to ensure its economic stability (Azeo Torre, 1989: 28). Recreation and tourism type facilities have the possibility of being catalysts for redevelopment along not only this edge but also within the city limits. Durban's own urban waterfront has, unfortunately become dependent partially on leisure-related issues particularly boating and sailing activities, for financial revenue. Cultural facilities, such as the BAT Center and the Catalina Theatre, have become overshadowed by craft markets and yacht facilities, and as a result are not utilised by the public. This however, is a result of the lack of vehicular and pedestrian access to each site due to the railway lines. It is important to the success of any waterfront development to avoid the isolation of one activity and rather concentrate on integrating and mixing different activities within the area as to avoid monotonous repetition (Craig-Smith & Fagence, 1995: 144). Developments like Wilson's Wharf have made this concerted effort to accommodate a variety of different amenities and activities by accommodating the Catalina Theatre, craft shops, cafés, restaurants and leisure boating facilities that positively contribute towards the area's economic regeneration as well as improve the image of the waterfront. This diversity entices more people to this area than it does perhaps to the yacht basin or maritime museum sites (ill 3.2.4) which lack that diverse nature.

The city of Sydney boasts a successful example of urban waterfront regeneration where the city reintegrated a derelict, unused portion of the harbour into the city. Sydney and its image is inextricably linked the water, seen later in chapter 4 when its Opera House is discussed thoroughly, and its accomplishment is in that the waterfront does not ignore the physical realm of the city. The harbour of Sydney projects the image of the city by defining its

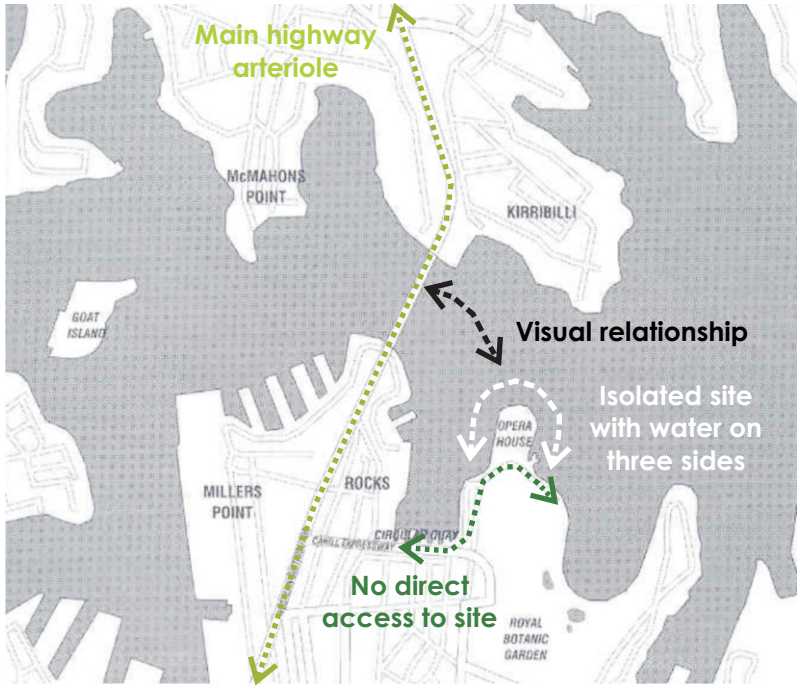


Illustration 3.2.5 - Map of Sydney's convoluted harbour with the Opera House at the entrance of the harbour with the bridge in the background (Source - Marshall 2001: 21)



Illustration 3.2.6 - A broad walkway which connects adjacent offices, hotels and restaurants can be a pleasant environment for people to enjoy (Source - Azeo Torre 1998: 96)

identity and character through this edge. For Sydney, the *aim was to re-establish pedestrian networks through the city to the waters edge* and along it. However, due to a series of highways that blocked this route; this was found to be challenging (Marshall, 2001: 18). It was realized that the Circular Quay, a historically working port of the city, needed to adapt to the changing conditions of the times and needs of the city of Sydney. As a *result an assortment of elements; residential, civic and commercial alike, were introduced to enrich the 'lost' area and create a place that encourages the public back to this edge.* The Circular Quay now is a symbolic gateway to both the city of Sydney and Australia (Marshall, 2001: 32) and is flanked by the Opera House and the Harbour Bridge (ill 3.2.5). The city further developed a nine mile waterfront promenade from Glebe to Garden Island. However, it still hasn't lost the feeling of being isolated, as the edge is only accessed by means of limited points.

The redevelopment of once neglected spaces along an urban waters edge allows for expressions of hope concerning urban vitality. By preserving the waters edge, *waterfronts can recreate the image of the city* and have the ability to attract people back to the city (Marshall, 2001: 5). Within the context of Durban, Wilson's Wharf (fill 3.2.6) is an example of a successful integration of activities reflecting the nature and character of the city. The current plans for the yacht basin, (see Appendix B), have somewhat facilitated a regeneration plan. However, cultural amenities have been forgotten with the preoccupation with yachting. From this research, Durban, with the exception of Wilson's Wharf, is not an environment conducive to the public, as the waterfront lacks pedestrian walkways et cetera and focuses rather on recreational yachting which isn't accessible to all social groups within the city.



A - Existing retail & craft market to be retained & upgraded
B - Future vehicular access point (after removal of railway lines)
C - Existing vehicular access point
D - Point Yacht Club building retained - converted to refreshment node
E - Future vehicular access point
F - Upgrade of current Maritime Museum
G - Upgrade of BAT Center

1 - Mixed Use / Residential Developement
2 - Pedestrian bridge marks start of boulevard
3 - Reconstructed beach
4 - Mangrove Research Center (Semi Basement)
5 - Introduction of tram line (people mover across embankment)
6 - Reintroduced Mangrove Swamps with boulevard continuing through
7 - SITE for performing arts theatre (Semi Basement)
8 Fish market (Semi Basement) - retain Café Fish
9 - Lighthouse
10 - Consolidated Yachting Facility
11 - Pedestrian Underpass
12 - Hotel facilty
13 - Reintroduced Mangrove Swamps with boulevard continuing through
14 - Defined Park / picnic space
15 - Harbour Cruises docking area
16 - Current harbour operations - possible future transport node with boulevard continuing from Albert Park, past the future ocean terminal through to the Point

Illustration 3.2.7 - Diagram of Victoria Embankment with initial overall design proposal for the area

The purpose of this dissertation is partly to establish an urban design framework plan for Durban's Embankment that will provide a variety of activities for the public that facilitates the integration of the physical edge of the Embankment back into the city (ill 3.2.7).

3.2.2 A BRIEF BACKGROUND TO THEATRE DESIGN:

Some may argue that the history of theatre design began fundamentally with Vitruvius, the Roman architect and engineer who lived in the first century BC (Izenour, 1977: 32). However, others may insist that theatre origins stretch as far back as the ancient Greeks in the sixth century BC, where people 'disguised themselves and performed dances to the spirits of nature' within the market place or 'agora', to an audience seated on timber benches (Leacroft, 1984: 1). Whether seated informally or in such grandeur, it can safely be said that theatre and the means of expressing oneself has endured for over 2,500 years. History separates the development of theatre design into two distinct periods; from 400BC until 400AD, approximately 800 years, and then during the late Renaissance period in the mid 16th century, another period of 400 years is identified until 1970 (ill 1.3). A gap of inactivity - approximately 1,100 years known as the Dark Ages - divides these two periods to which only religion and war can be responsible for. The church outlawed theatre as being 'of the flesh and the devil' (Izenour, 1977: 32) and the times of castles, cathedrals and cloisters prevailed and the art of storytelling thrived. Continuing siege rendered theatre and performance spaces redundant during wartimes, until the gradual revival of classical humanism in the late 16th century Italian Renaissance started theatres gradual renewal in modern times.

The start of theatre in Ancient Greece shows the Athenian 'agora' housing a place called the 'orchestra,' close to a series of informal wooden benches, or 'ikria', which were placed around as seating for the audience. A later transformation took the theatrical environment outside the boundaries of the agora and saw the

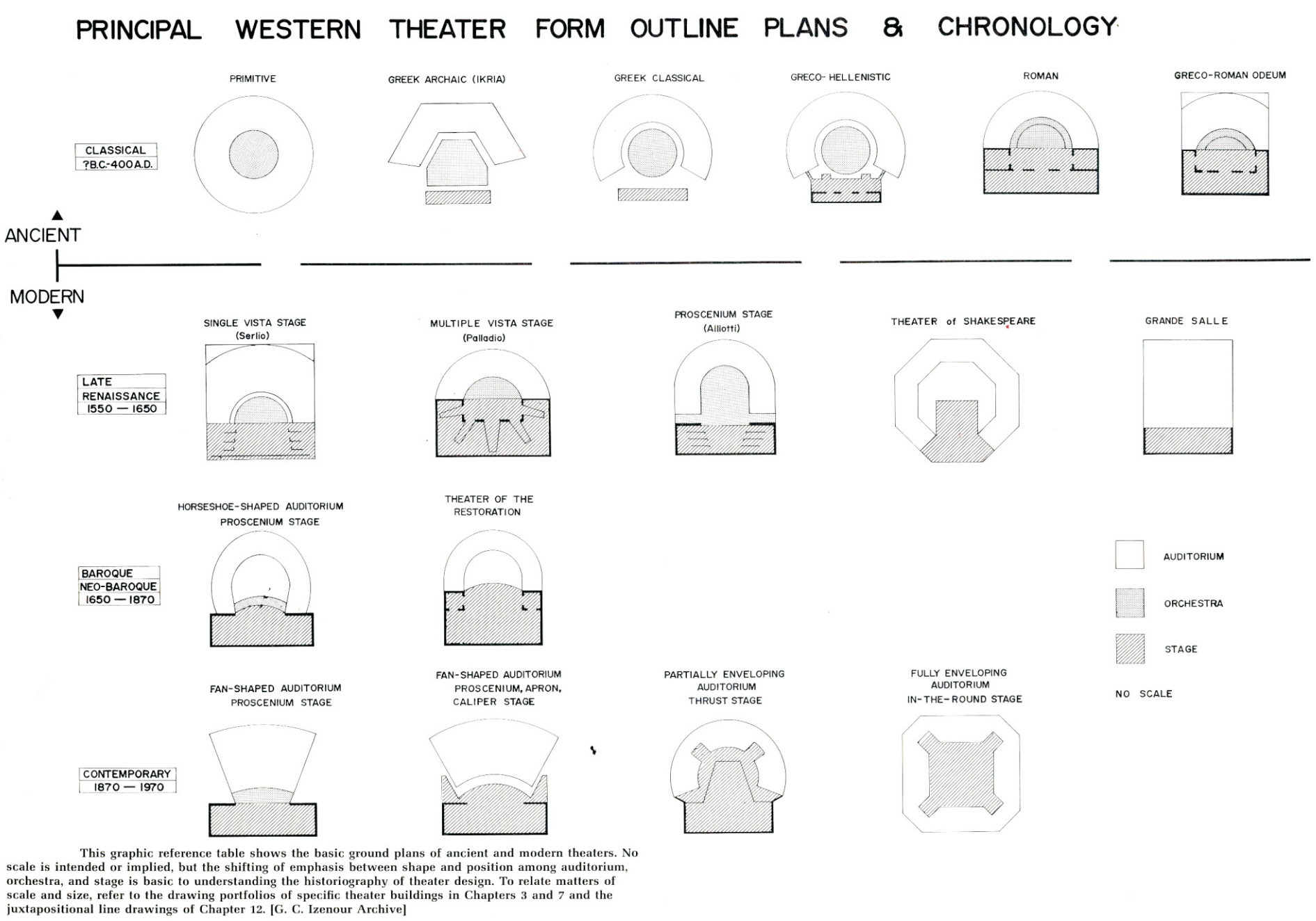


Illustration 1.3 - An illustration showing the differences in basic ground floor plans of ancient and modern theatres. One sees a distinct shift in emphasis between shape and position among auditorium, orchestra and stage (Source - Izenour, 1977: 33)

subsequent development of timber benches into stone steps set into the landscape. The hillside made an ideal 'cavea' or 'theatron', (known today as raked seating), to which the best view of the orchestra could be obtained. In a span of just over 200 years, from the late sixth century BC till the fourth century BC, one can see a distinct growth of theatre form (ill 1.4) from linear timber benches to the replacement of these with stone steps flanked by wings that curved to encircle the orchestra. The introduction of the 'skene', or timber stage building, and of painted scenery was seen to enhance the drama. The Theatre of Dionysus in Athens (ill 1.5) illustrates the incorporation of a 'skene', possibly used as dressing or storage rooms, and stone sockets for timber posts. Further development was evident in the Hellenistic Period, during the second century BC, with the introduction of a timber 'proskenia', or stage, which raised the actor off the ground and ensured good sightlines for all audience members. This gradually become a more permanent structure, built of stone, and concealed the 'skene' which provided entrances for actors and made access possible to newer raised stages on the upper levels.

Roman theatre adapted itself from Greek theatre, perhaps more evidently from Hellenistic theatre, with the inclusion of the 'cavea'. Yet, here seating was reduced with the incorporation of additional buildings housing scenery and stages thrusting forward into the audience (Leacroft, 1984: 27). Another improvement was the introduction of the paved orchestra with parapet surrounding. The latter served to protect the audience during gladiatorial battles, or could be flooded to accommodate 'naumachiae' or water ballet performances (ill 1.6). Roman theatre also sees a drastic change in site selection; by rejecting the Greeks use of the natural topography

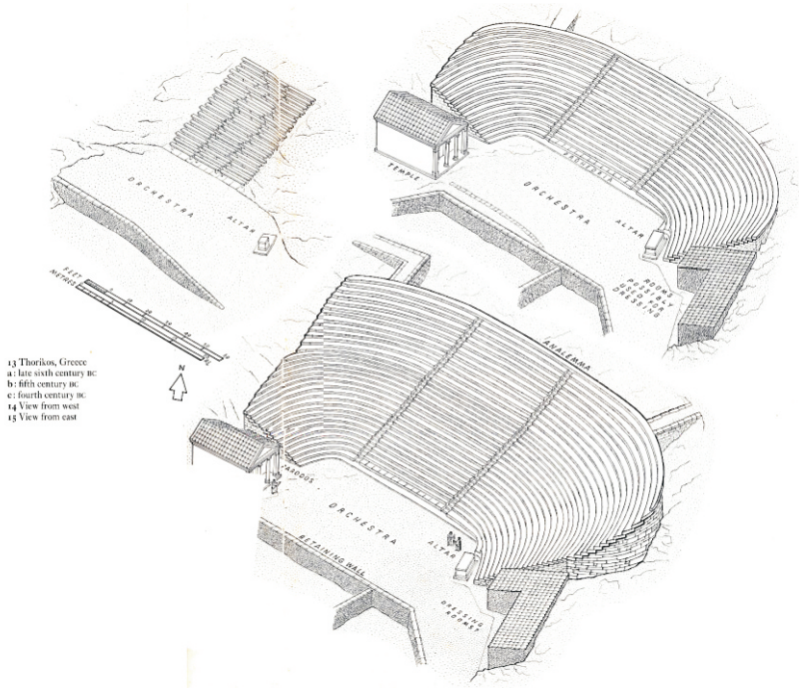


Illustration 1.4 - Development of theatre seating from benches to stone steps at the Theatre Thorikos, Greece (Source - Leacroft, 1984: 7)

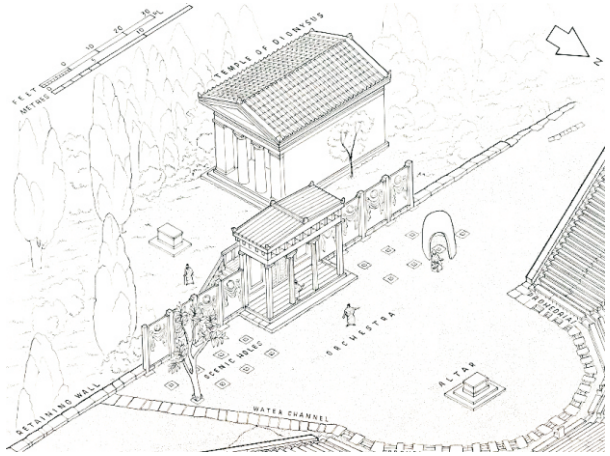


Illustration 1.5 - The Theatre at Dionysus, Athens showing the introduction of the 'skene' or timber stage building as well as scenic holes for free standing props (Source - Leacroft, 1984: 12)

restricted to the sites appropriate steepness, the Romans opted for flat sites from which theatres rose from the ground imposingly. This naturally lead to the merging of the 'scaena', or scene building, and the auditorium into one architectural entity. This is evident at the Theatre of Marcellus in Rome (13-11BC) and also illustrates how the semi-circular auditorium was built upon a series of arches and barrel vaults (ill 1.7).

A large leap forward shows the development of galleries during the England's Elizabethan Period. Here the adaptation of yards used for bull- or bear-baiting, within an unroofed circular or polygonal building, produced a medieval style theatre with a raised rectangular stage set within an open space (Pevsner, 1976: 69). A social hierarchy is obvious here, whereby the peasants stood within the yard surrounded by three levels of gallery space reserved for nobles (ill 1.8).

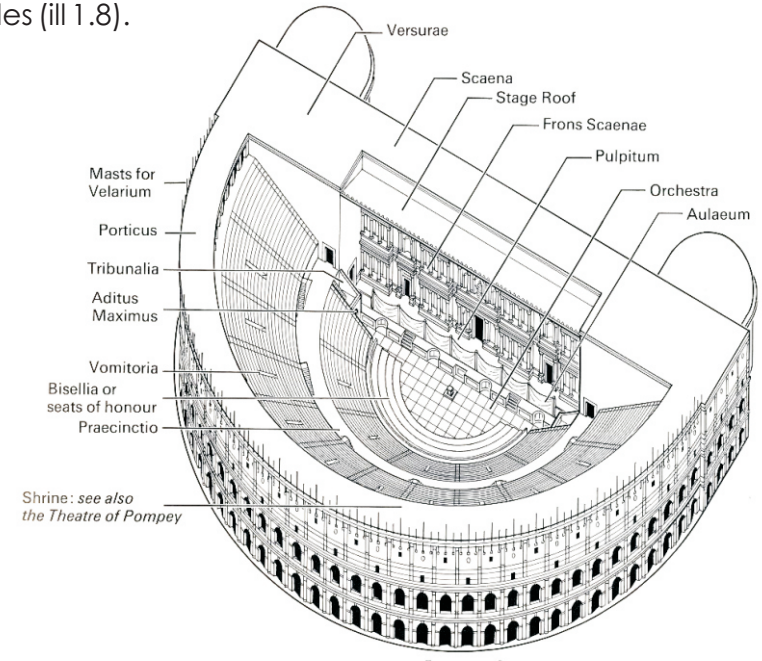


Illustration 1.7 - The Theatre at Marcellus, Rome showing semi circular auditorium construction with stage (Source - Leacroft, 1984: 29)

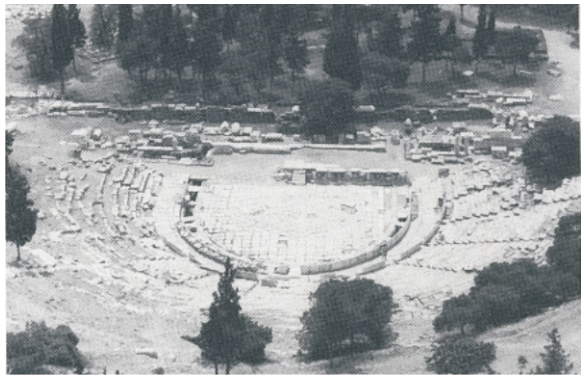


Illustration 1.6 - Paved Roman orchestra and protective walls surrounding it at the Theatre of Dionysus, Athens (Source - Leacroft, 1984: 27)

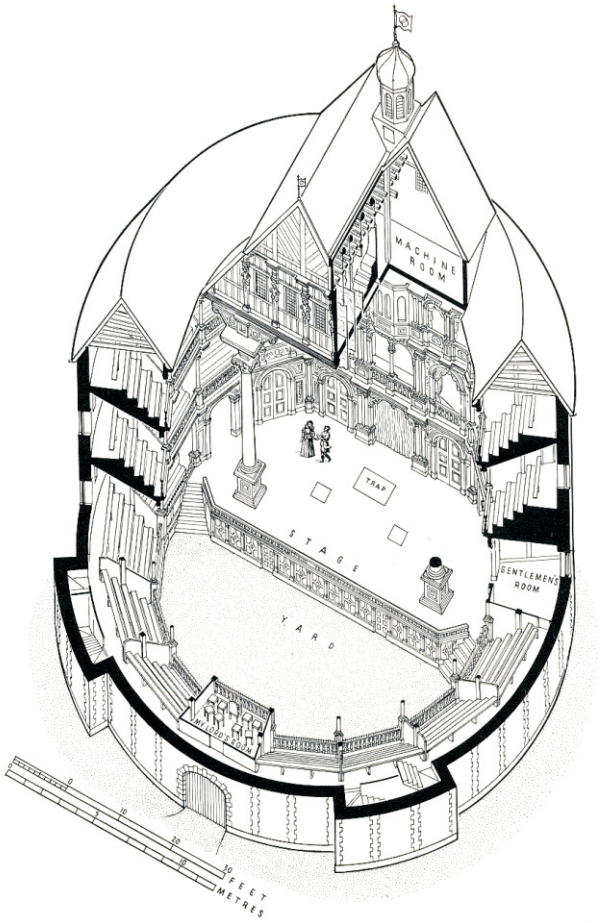


Illustration 1.8 - Similar to the Roman Theatres, the second Globe Theatre, London illustrates the definite class distinction of the early 17th century with the yard and gallery spaces (Source - Leacroft, 1984: 57)

The semi circular stage and auditorium remained the norm during this time, whereby the actor's realm of the illusion of reality created by the drama and the audience were integrated. The later development of the proscenium (or picture box) theatre (ill 1.9) separated the two realms quite definitely. However some modern innovations have succeeded in linking these spaces again by means of pushing the stage forwards into the audience, known as a 'thrust' stage. Scenic wings, which allowed for an elaborate central perspective on stage, replaced the 'periacti' in the 1630s, which were still widely used in the late sixteenth century and early seventeenth century (ill 1.10 and 1.11). Galleries were replaced in the early sixteenth century by 'boxes' used by clerics, the noblemen, council members and other affluent people (Pevsner, 1976: 71). By the late seventeenth century, these boxes were widely accepted as a place solely for the upper class.

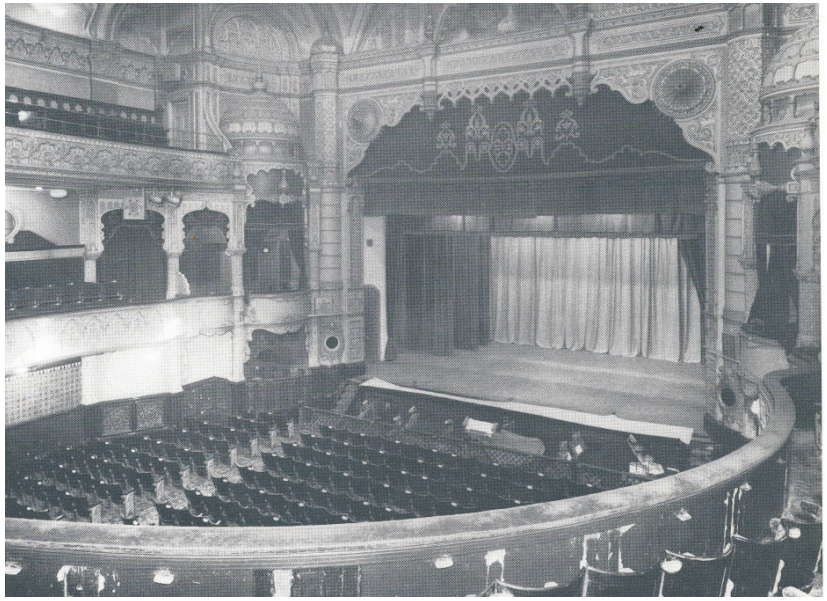


Illustration 1.9 - The Palace at Varieties, Leicester shows the progression of theatre with the 'picture box' or proscenium theatre, a distinct divide is evident between the actors and audience (Source - Leacroft, 1984: 149)

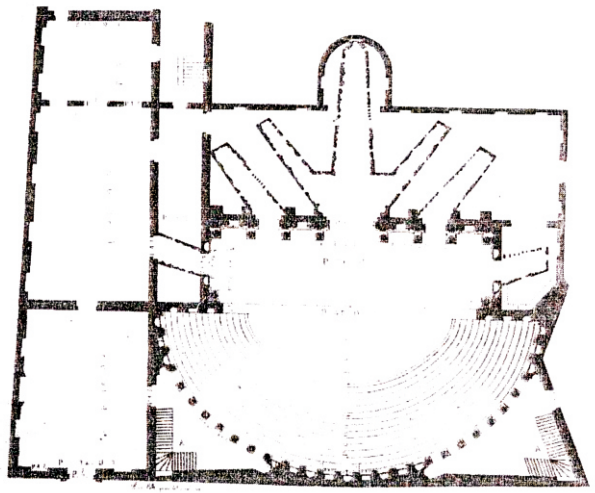


Illustration 1.10 - Teatro Olimpico, Vicenza (1584) illustrates the internal 'streets' in perspective or 'vistas' as seen from the audience (Source - Persvner, 1976: 66)

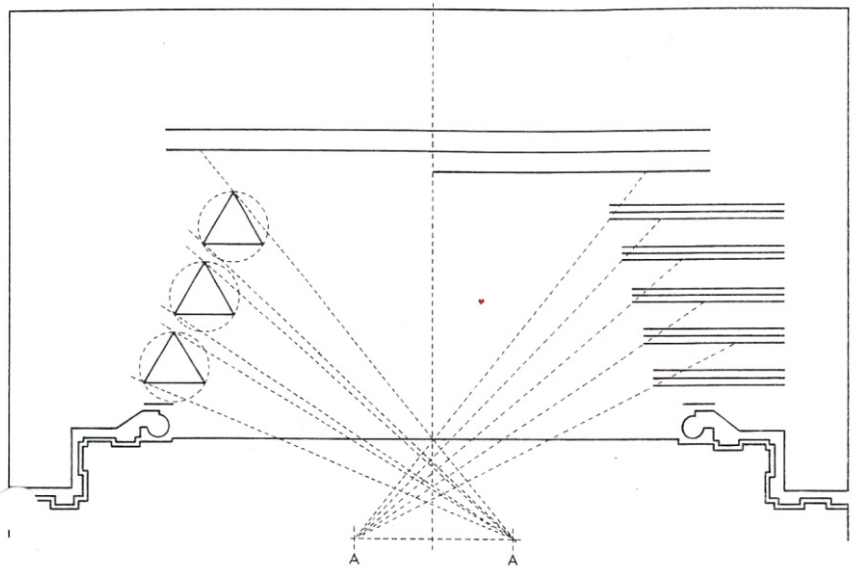


Illustration 1.11 - Plan of the typical Renaissance stage showing 'periacti' to the left and wings to the right of the Das Theatre, Streit in 1903 (Source - Persvner, 1976: 70)

The 'thrust' stage, a derivative of the Elizabethan period, projected forward with the audience on three sides and made the actor the focal point of the theatre with the audience encircling him/her (ill 1.12). The orchestra was removed from its traditional location to above the rear stage wall but this allowed a larger audience to be seated within an acceptable distance of the actor. Movement was restricted as scenery can only be in the background and actor's entrances and exits were fixed points. A similar theatre design is that of the theatre in the round. Here similar restrictions are placed on scenery and actors, with the low props being replaced within view of the audience, through doors which both actor and patrons make use of. However, a more engaging dramatic experience is attained through the close interaction between actor and audience (ill 1.13).

Theatre, or stage design has not altered significantly since the Elizabethan times in the mid 16th century, they perhaps only increased in size and quality. It is perhaps more of a shifting of emphasis between shape and position among the audience, stage and orchestra that has been refined and advanced throughout history. The question of whether the actor should be placed in the centre of the audience or within a picture frame, is perhaps more to do with individual's tastes as it is with acoustics and sightlines. What is most important is the need to provide man with the means to express his views, experiences or character. Here theatre becomes vital to man's existence, a means of expression as well as diversion.

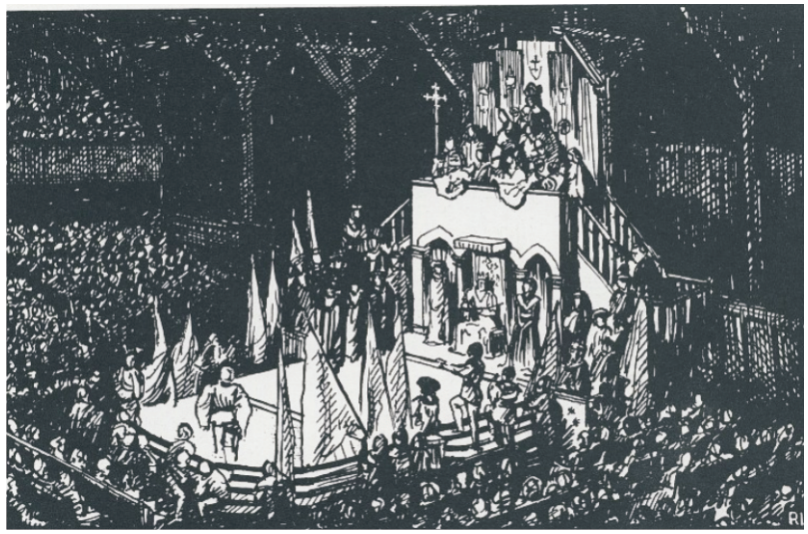


Illustration 1.12 - Assembly Hall, Edinburgh (1948) showing thrust stage with royal seating behind (Source - Persvner, 1976: 66)

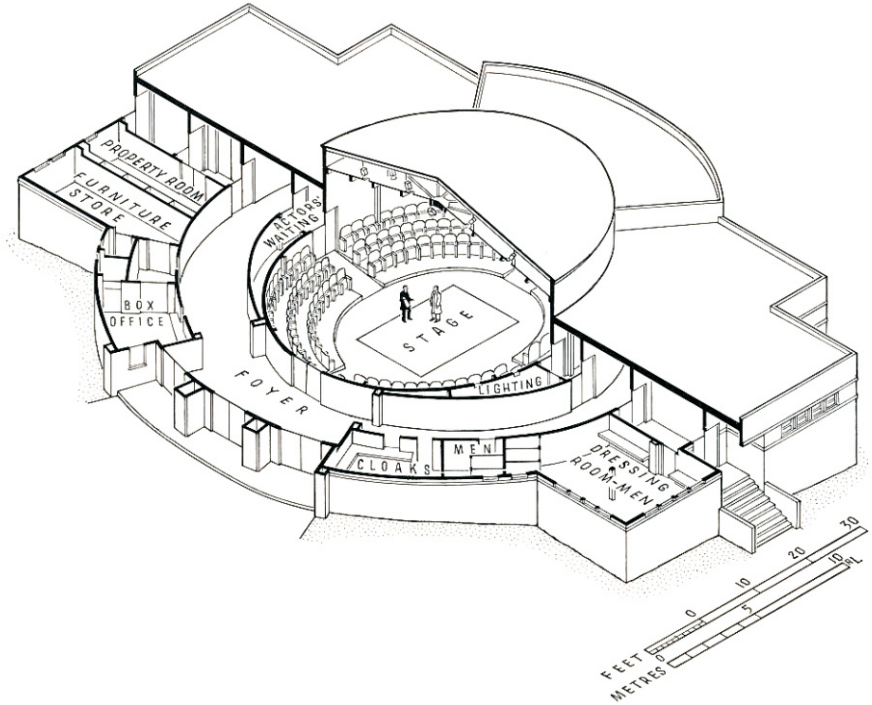


Illustration 1.13 - The Penthouse Theatre, Seattle Washington is an example of theatre in the round where the audience encircles the actors (Source - Persvner, 1976: 70)

3.2.3 Theatre Planning:

In today's world, live theatre competes with cinema and television and so it must become a unique place to experience, providing the 'maximum possible scope for performance' as well as 'conditions of wellbeing and enjoyment' to theatre patrons (Moro, 1964: 103). The question of what a theatre comprises, the elements that make such a facility and its suitable location requirements will be explored both in this chapter as well as throughout the body of this document. Theatres preferably require an 'island site', providing access from two sides (Ham, 1972: 239), this is due primarily to the need for a distinct back and front of house as well as providing access to the fire brigade to all sides of the building if necessary.

There are many different models of theatre ranging from an opera house to a small multi-purpose hall. However, all have a number of requirements that need to be considered when designing a theatre, and these consist of the following:

1. Seating Capacity
2. Standard of audience amenity and comfort
3. Form of audience / performer relationship
4. Type of production
5. Orchestral Requirements
6. Pattern of Use
7. Production Facilities

For the purpose of this dissertation, a 'club theatre' model has been chosen since it is considered the middle of the range facility, catering for amateur and professional performers while offering average comfort and scope, and one which is currently lacking in Durban today (Moro, 1964: 109 Table II).

George Izenour, author of the book '*Theater Design*' (1977) explains that a 'club theatre' offers a minimum of 500 seating capacity, with a flexible proscenium stage catering for average size performances weekly. Additional spaces include a flexible orchestra pit, possibly small workshops with storage space, separate rehearsal rooms as well as some sort of retail and club facilities. This type of facility does not rely on state funding but rather on theatre subscriptions and other sources of income in order to sustain itself. The following information was mainly gathered from Roderick Ham's book called 'Theatre Planning' and pertains to the internal functioning of theatres. The orchestra pit is generally located between the stage and the auditorium so as to ensure both the singers and performers can see the conductor. The orchestra pit also doubles as additional seating, an apron or 'thrust' stage when the floor is raised, by means of hydraulic rams and electrical screw jacks, pushing the performers closer to the audience (ill 3.2.8). Similarly, the main stage has the ability to act in the same way. An individual mechanical lift system allows the stage to be arranged in many ways, to change the traditional square shape, including a raked format which improves sight lines and gives theatre productions the added perspective created with scenery as well as a variety of floor arrangements to choose from (ill 3.2.9). The stage lifts also allow scene wagons (shallow platforms) to be brought up from workshops beneath the stage where they are housed. Besides the main stage, back and side stages must be provided for with similar dimensions. The production spaces - loading docks along with workshops - have a direct association with these spaces and need a minimum opening of 12m high and 3m wide to accommodate large trucks or scenery. The scenery dock is also situated adjacent to the stage as to allow for easy movement of props and scenery between each area. The

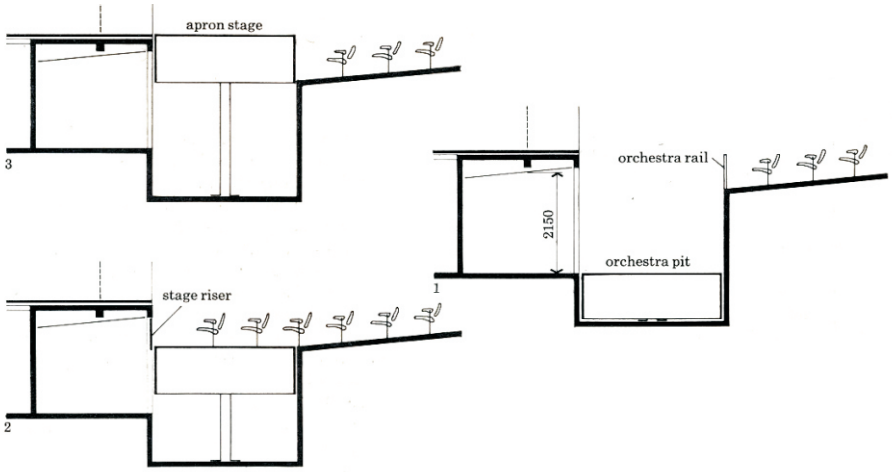


Illustration 3.2.8 - Diagrams of Orchestra Pit with adjustable lifts to either incorporate a space for musicians or additional seating (Source - Ham 1972: 63)

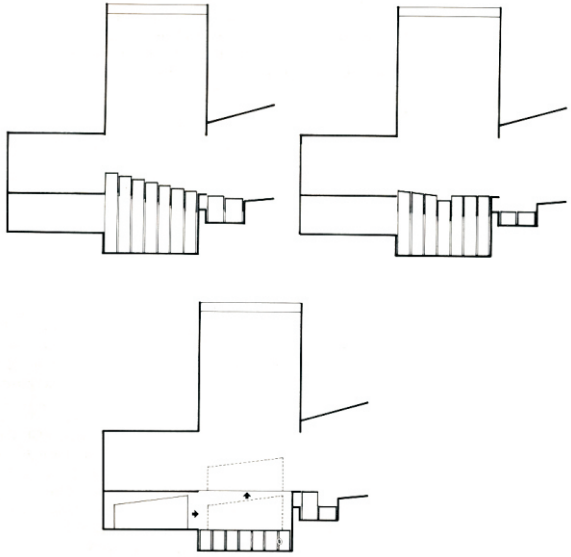


Illustration 3.2.9 - Diagrams of stage lifts that allow for a raked appearance of the stage providing better sight lines as well as transportation of stage scene wagons (Source - Ham 1972: 84)

height of the proscenium is mainly determined by the sightlines of the highest point of the audience; the higher the opening, the higher the 'fly tower' ought to be. This relationship between fly tower and stage affects the arrangement of seating within the auditorium, whether on one tier or two with additional balcony space included or not. The fly tower is the space directly above the stage, often roughly three times the stage area, that houses scenery and other machinery needed for theatre operations. It accommodates a counterweight flying system, a series of 'fly bars', which is responsible for scenery changes by lower and raising scenes when needed. It is generally wider than the proscenium opening by a minimum of 2m on either side (ill 3.2.10). Stage lighting is vital to stage design in that its primary function is to illuminate the actor and his setting while providing the audience with a dramatic experience through what is known as 'motivating lighting'. In theory, stage lighting found on side spaces as well as lighting rigs suspended above the auditorium, should be versatile ensuring that a wide range of angles on the stage is attained (ill 3.2.11 & 3.2.12). Auditorium lighting and spotlighting should effectively be crossed and strike the actor's face at a 45 degree angle in order to avoid unfavourable dark shadows cast under his eyes. These lighting points are controlled from a central position located at the rear of the auditorium, normally under the balcony if present, with its observation window allowing an unrestricted view of the stage. Additional side lighting rigs are also commonly used (ill 3.2.13). Sound is equally important to the stage and its performers and should be controlled likewise to the lighting, often locating its control room adjacent to each other. These spaces should be heavily sound insulated so as not to disturb the theatre patron's experience.

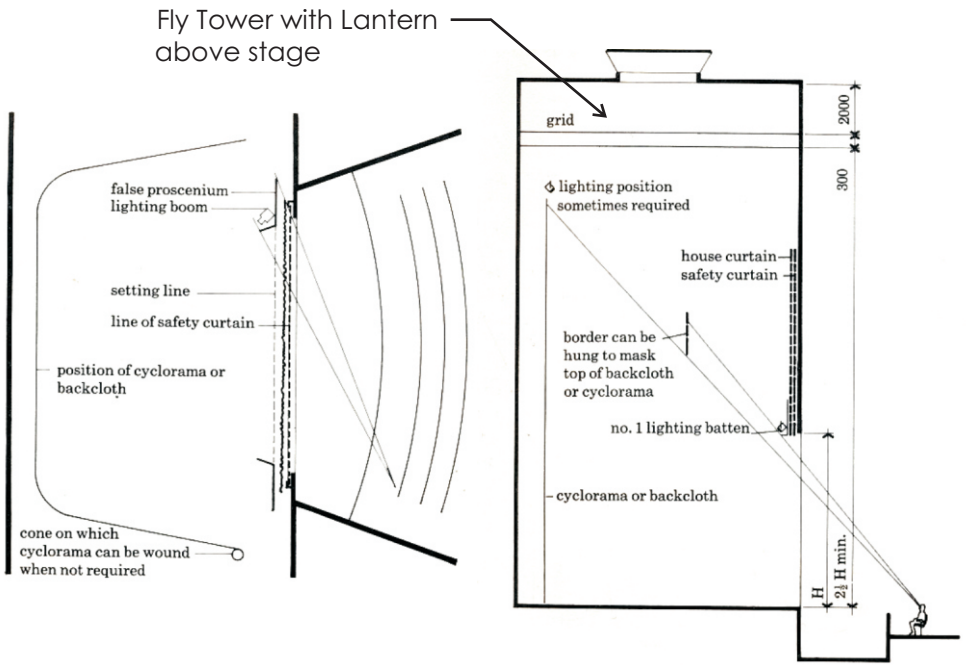


Illustration 3.2.10 - Diagrams of the relationship between the proscenium arch and fly tower (Source - Ham 1972: 74)

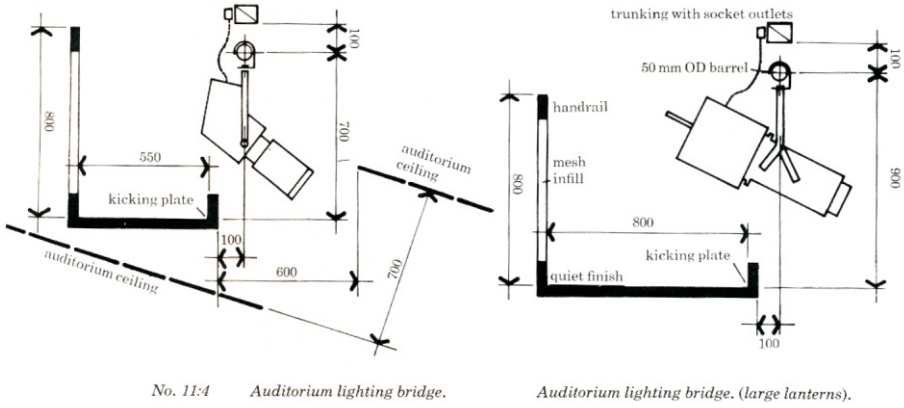


Illustration 3.2.11 - Diagrams of lighting rig suspended over the auditorium seating (Source - Ham 1972: 118)

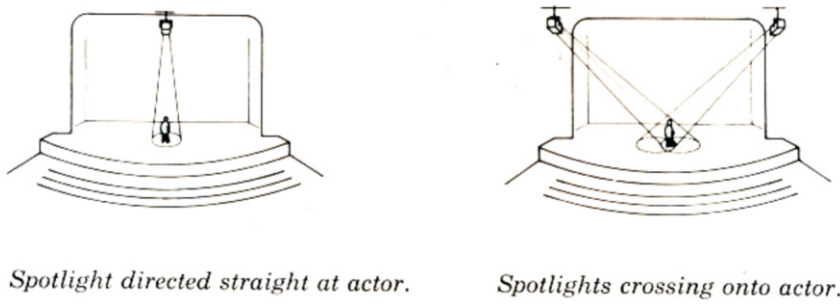


Illustration 3.2.12 - Diagrams showing spotlight configuration suspended over auditorium (Source - Ham 1972: 113)

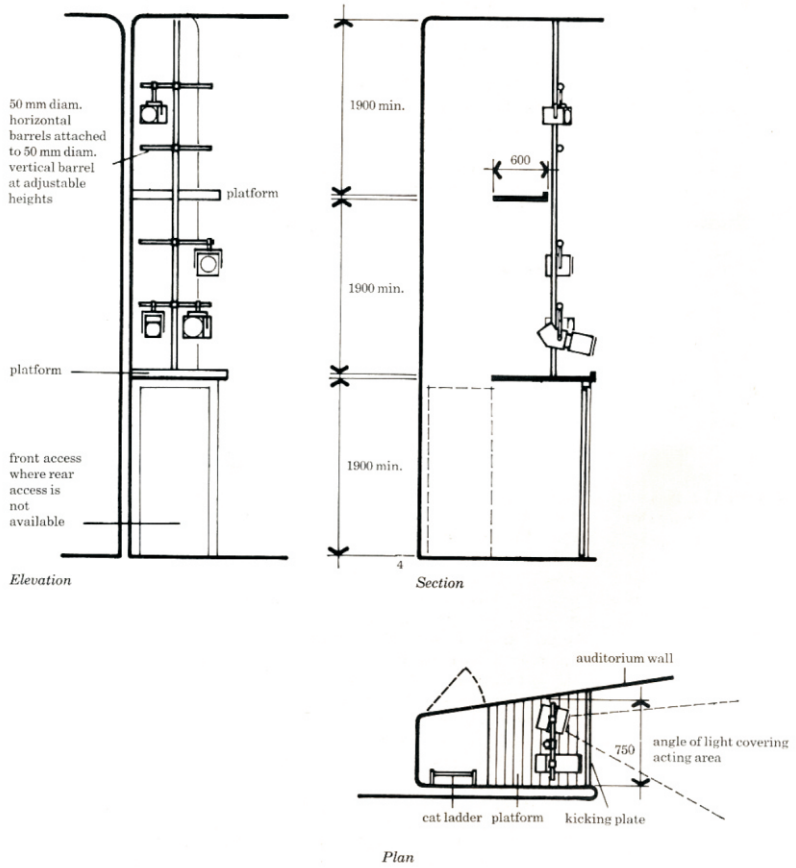


Illustration 3.2.13 - Diagrams of lighting rig located on the side lines of the auditorium (Source - Ham 1972: 117)

In addition to the main, back and side stages, a series of interconnected back-of-house areas which form part of the performer's realm need to be included into the design. Change and dressing rooms for theatre performers should be adequately provided for according to the largest type of production the complex could possibly cater for. These spaces require sufficient sanitary facilities such as showers etc. Green rooms (a lounge or common room for performers) should act as the intermediary space between the stage and the dressing areas, providing a sound lock so as to prevent sound crossing between the two areas. Rehearsal spaces serve as flexible venues for the theatre complex, both serving as rehearsal spaces for productions in progress and offering the possibility to rent them to the public. At least one of these spaces should be roughly the same size as the stage, with an extra 2m circulation space on the sides and back as well as 3m in the front for directors. It should be equipped with adequate lighting rigs, similar to the stage, and with the provision of sprung timber floors if ballet is expected to be accommodated within the complex. All these spaces should ideally be naturally ventilated with adequate natural lighting available so as to provide the performer with a direct relationship with the outdoors.

Public areas, excluding the auditorium, have little relationship to these back-of-house operations and therefore a separate entrance space should be provided for the patrons. Public spaces include the theatre's foyer area, including refreshment stands, the box office and any retail or commercial enterprises such as restaurants or bars. These latter functions serve as to create an active, vibrant environment for the visiting patron as well as serve as an income generator for the complex. The foyer, or 'in between zone', acts as a

structuring element within the complex guiding people through the building and provides the theatre patron with a lively and theatrical atmosphere. These spaces have a different 'face' to that of theback-of-house, a public face, which has a direct interaction with the street edge and the passerby and should be designed to stimulate this link (ill 3.2.14).

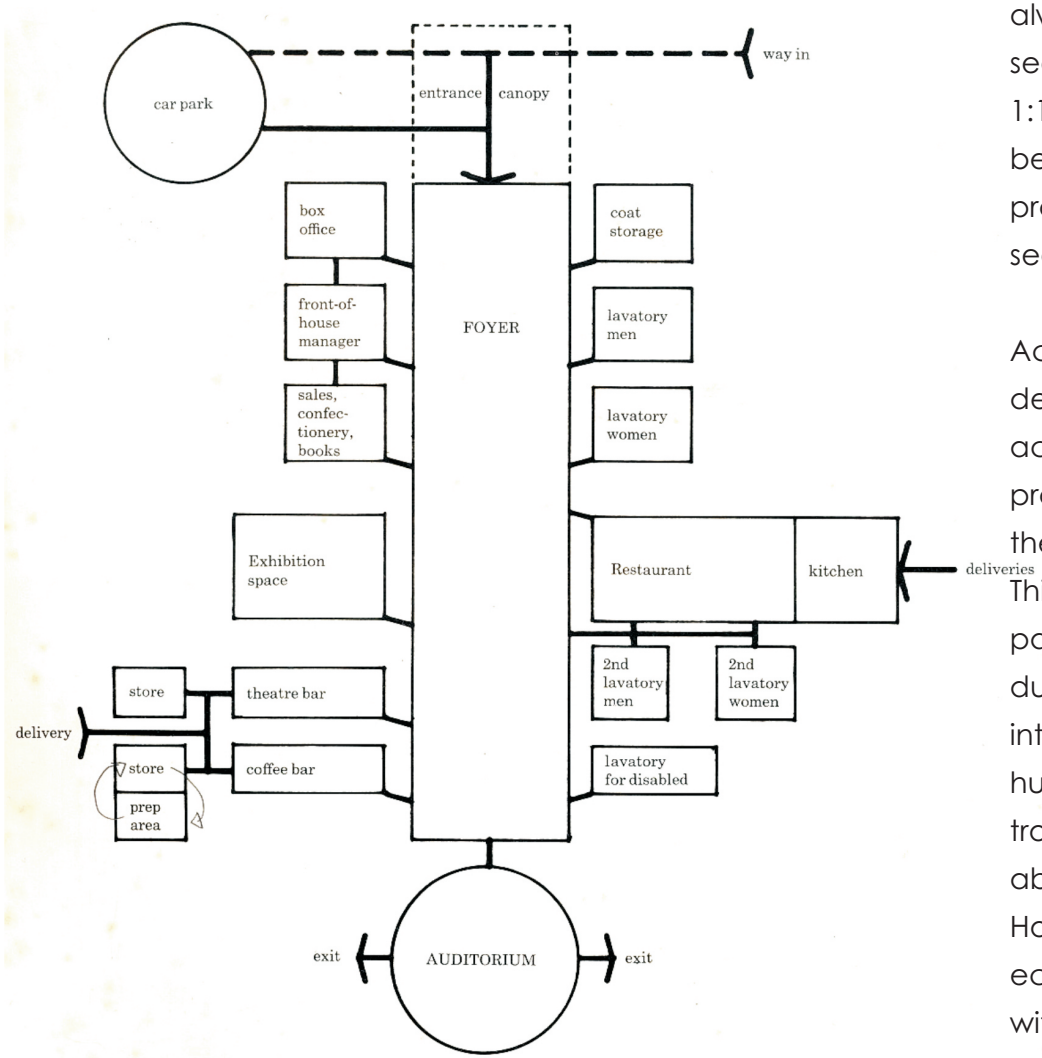


Illustration 3.2.14 - Diagram showing relationship between the public spaces needed within a theatre complex (Source - Ham 1972: 234)

3.2.4 Technical Requirements:

Theatre has a *very specific and proportional relationship between its seating capacity, the sight lines and acoustic treatments.* Adequate sight lines are important when arranging theatre seating within the auditorium. In general, theatre seating positions the audience above the stage, looking down at the actor. However, this isn't always possible, especially in the first few rows, and so tiers or raked seating is often employed. Seating should be at a minimum rake of 1:10 without steps or a maximum rake or 1:35 with steps, either should be continuous across cross aisles if present, have been proven to provide satisfactory sight lines (ill 3.2.15). Curved rows or banked seating at an angle also aid this problem.

Acoustical control is probably the most crucial aspect in theatre design in that it allows the direct audible connection between the actor and the audience. Above all else, the theatre should be protected from external noise, often enclosing it within the heart of the complex. The shape of the theatre is also an important factor. This directly affects the seat arrangement again where, when sound passes over the audience at a low angle, it is strongly attenuated due to the highly absorbent properties of the patrons. The more intimate a theatre is, the less acoustical treatment is needed as the human voice, with its directional properties, can travel with no trouble reaching the last row of seating. The audience, once seated, absorbs about 70% of the sound present within the auditorium. However, additional sound absorbing materials is needed to avoid echoes across the space. Reflective surfaces are also essential within this space, particularly at the proscenium opening, to reflect the sound coming from the stage directly to the audience members seated at the back. These reflectors allow for the possible 1:10 rake

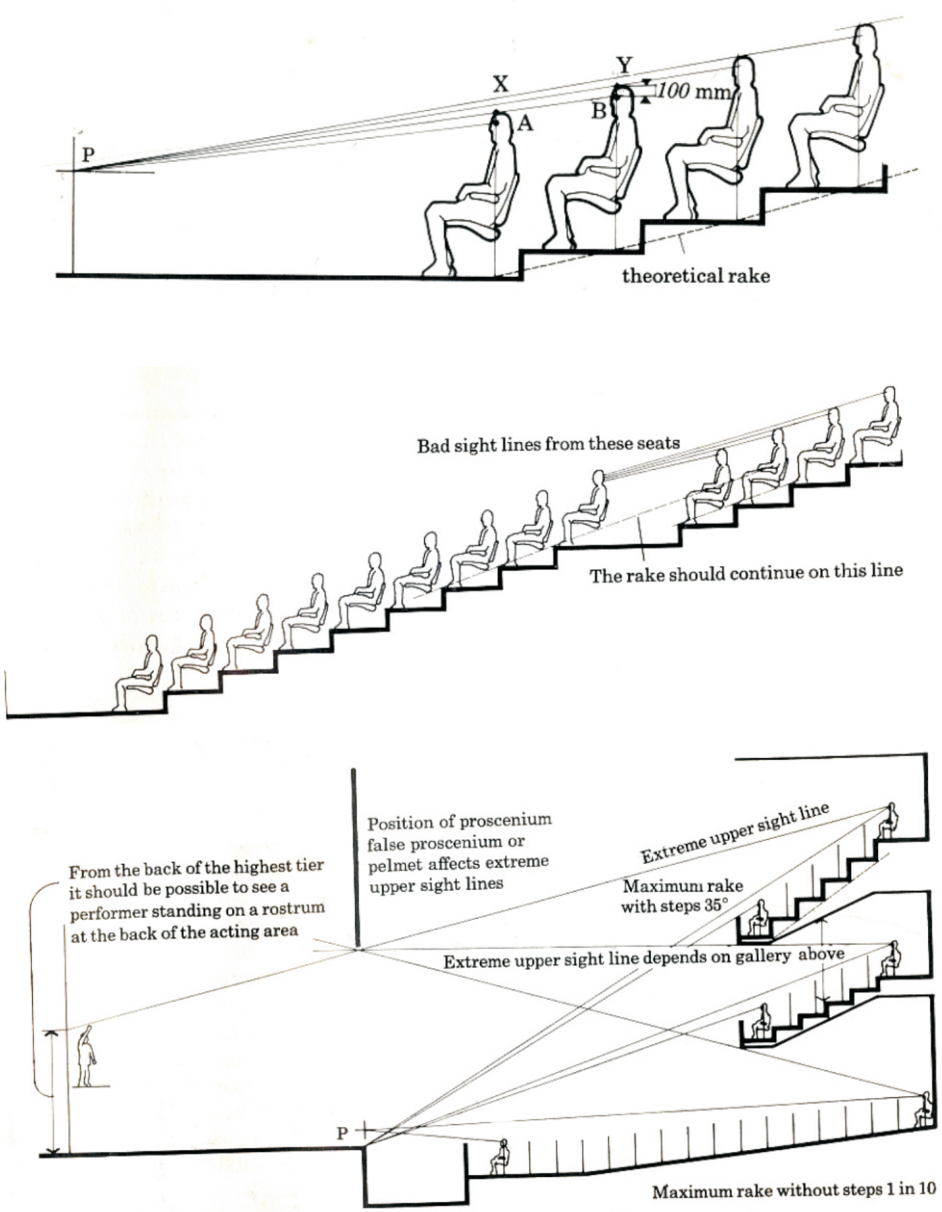


Illustration 3.2.15 - Diagrams showing method is calculating sight lines for the auditorium of the theatre (top), the disadvantage of walkways dividing the seating arrangement (middle) and the introduction of balconies (bottom) with the minimum rake of 1:10
(Source - Ham 1972: 30, 34 and 32 respectively)

that was not attainable in theatres of ancient Greece, due to their open-aired form, and are usually employed when the distance between stage and the rear of the auditorium is greater than 18m. Acoustics are directly proportional to the volume of the auditorium and inversely proportional to the amount of absorption the space accommodates. A volume of roughly 3m³ per audience member provides the correct amount of total absorption, both the people and materials, which offers suitable conditions for speech. Reverberation time, a common term used in theatre design, is defined as the time it takes for an interrupted sound to fall by 60dB. This will aid the overall acoustics of a space, if it is neither lacking nor too excessive. It has been discovered that a reverberation time of between 1 and 2 seconds is considered acceptable, by today's standards, for musical theatre as well as not being unduly bad for speech (Simon James, production officer of the JHB Civic Theatre, Unpublished Interview, 7 March 2008). For speech, the reverberation time should preferably be between 0.5 and 1 second, but in today's context with theatres accommodating different types of productions, one single standard cannot be maintained and a theatre must be able to adapt.

Safety is critical to any civic design, and this is no different in theatres. Especially in proscenium type models, fire is the greatest danger posed to the audience and the performers due to the vast amount of scenery and flammable materials present. It has become common practise to confine the flame and smoke, in case of fire, to the stage area by means of a 'fire safety curtain' (ill 3.2.16 & 3.2.17). Limited numbers of openings are allowed to penetrate this curtain so as to reduce the risk of the fire spreading. It can be deployed both automatically and manually and allows the smoke to be exhausted

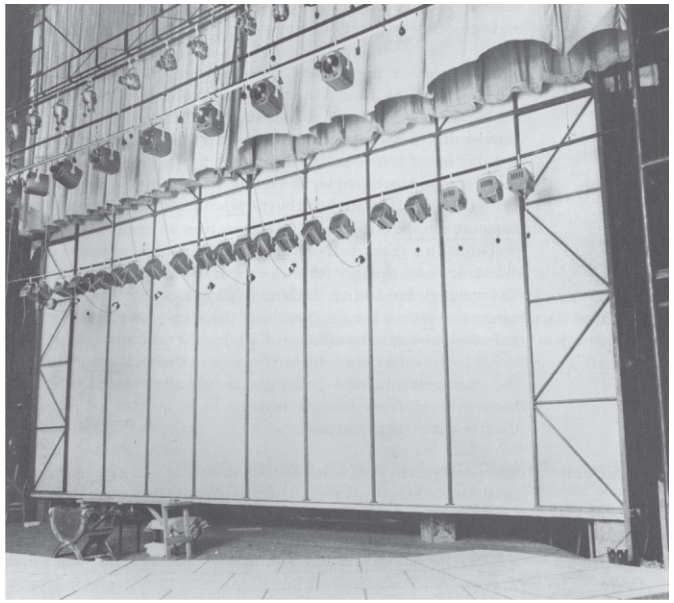


Illustration 3.2.16 - Photograph of the safety curtain lowered into place over the proscenium arch (Source - Ham 1972: 44)

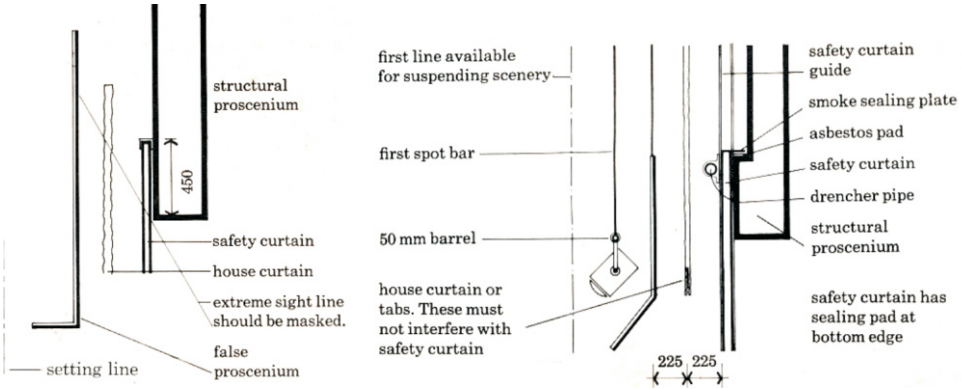


Illustration 3.2.17 - Plan (left) and section (right) showing the proscenium arch and safety curtain (Source - Ham 1972: 81)

through the fly tower's chimney, called 'haystack lanterns' found at the apex of the structure. This facility forces the air up and out allowing minimum smoke damage to occur to the auditorium The safety curtain is usually made up of a steel frame of angles or channels on the stage side and an asbestos cloth with wire reinforcement woven in with an additional steel sheet on the audience side. This upward movement is aided by the constant flow of air towards the stage from the auditorium. Additional hydraulic hose reels, fire hydrants and even a water drencher system on the proscenium arch are available if needed. According to code, at least two fire escapes need to be provided from each tier or floor, at the rear of the auditorium. They should allow all the theatre patrons to exit the space within 2.5 minutes at a rate of 45 people per minute per opening.

Ventilation of the auditorium is equally important in theatre design because of the mounting temperatures caused by large volumes of people as well as the amount of flammable materials present within the space. For human comfort, the ventilation system must be designed in such a way as to produce the correct amount of air movement and the desired temperature to be considered comfortable. Draughts and stagnant pockets of air should be avoided. Inlets should be located either at floor level and extracted upwards or above the audience and extracted beneath seats. The system should operate at a low noise level and should allow 25% of fresh air into the space at 28m³ per person per hour.

Additional information applied to this dissertation can be seen in Appendix C.

3.3 THEORETICAL FRAMEWORK:

The theoretical framework discussed within this portion of the chapter, will be concentrated on several theories - finding lost space within a city, urban and waterfront regeneration, transitional spaces, boundary and edge treatment within an urban setting and Nietzsche's stance on Existentialism. These theories will form the basis for the theoretical discourse and applied to the design of a performing arts centre for Durban's Embankment.

3.3.1 Ordering Disorder

The concept of waterfront and city regeneration through theories pertaining to urbanism will be explored within this chapter. Urban theorists, Roger Trancik and Kevin Lynch, together with their theories will form the basis of discussion . Firstly, Trancik's theory of 'lost space', expressed in the book '*Finding Lost Space: Theories of Urban Design*' (1986), and how to define it has been expressed by many urban designers. It is defined as a space that has been left over or forgotten amongst the fabric of the city, a space without spirit or values and a place that ought to be rejuvenated in some way in order for it to contribute fully to the city itself. Undefined spaces are prevalent in Durban in the form of parking lots or places that gather waste, namely the Centrum Site as well as certain areas identified along Victoria Embankment. These *'anti-spaces' create voids within the city fabric and create a distinct lack of unity between the buildings and the streets connecting them.* Certain buildings in isolation and wall developments with no regard to their street edge, create spaces that are void of human activity such as abandoned waterfronts, train yards, large open plots etc which have no positive connection to the city or its waterfront (ill 3.3.1). Pedestrian links

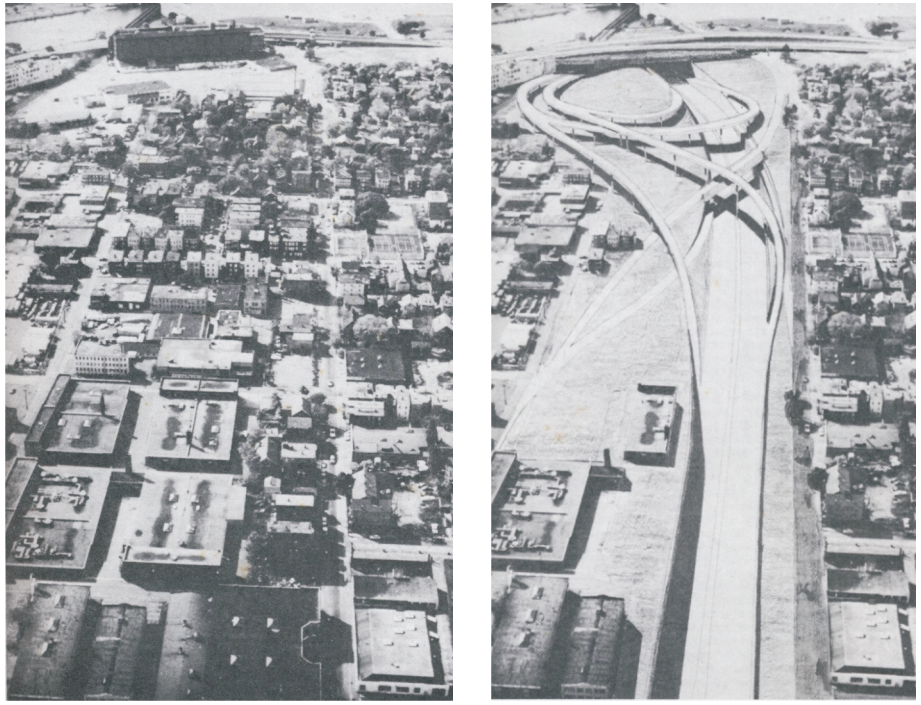


Illustration 3.3.1 - Cambridge, Massachusetts - image shows common 50s and 60s proposal of highways through urban areas, this introduction would destroy an established community and create a physical barrier through the city (Source - Trancik 1986: 7)

between important destinations are often broken up by vacant lots making walking disjointed. This is seen once again along Durban's urban waterfront where earmarked conservation sites on either side of the yacht basin lack the proper pedestrian infrastructure, giving prevalence to the car. Another critical aspect of the city fabric is that today's cities, including Durban, are dominated by highways, thoroughfares and parking lots due to the introduction of the automobile some years ago. This allowed cities to lose much of their cultural meaning and purpose, as streets are plainly seen as arterioles for cars rather than a space for social contact and interaction. Trancik believes that *the 'exterior space should be the force that gives definition to the architecture at its borders'* (Trancik, 1986: 18) and developed three urban design theories, namely Figure Ground Study, Linkage Theory and Place Theory. Through these one might establish a means to combat this urban affliction (ill 3.3.2). The figure ground study is founded on the study of relative land coverage of buildings as 'solid mass' (figure) to the open void (ground). It is essentially a diagram showing the relationship between the spatial field of the solids and voids within the city (ill 3.3.3). The linkage theory is derived from lines connecting one element to another, specifically the pedestrian ways, streets, linear open spaces or other elements that physically link the site to the city and is seen in Fumiko Maki's adaptation of Trancik's original thought (ill 3.3.4). Maki further divides the theory into three types of spatial linkage namely, compositional, mega and group form. These serve as vibrant movement channels through the fabric of the city and link together different nodes of activity. Place theory adds the components of human needs as well as both historical and cultural contexts into the intended site. This theory also emphasizes the idea of *genius loci or spirit of place whereby all place is unique and needs*

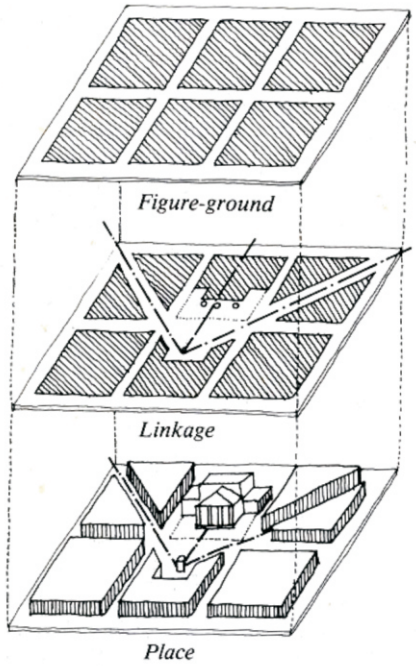
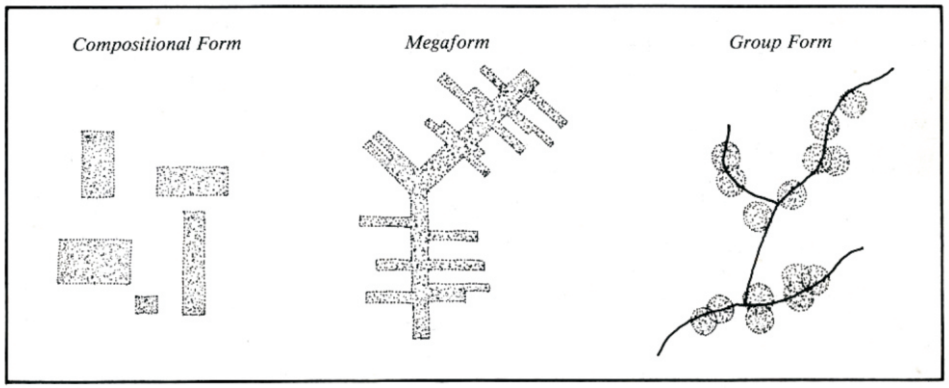


Illustration 3.3.2 - Diagram of three urban design theories and how each relates to the other (Source - Trancik 1986: 98)



Illustration 3.3.3 - Example of a figure ground study at the Piazza del Campo, Siena (Source - Trancik 1986: 63)



Compositional form - individual buildings are composed on a 2D plane
Mega form - structures are connected to a linear framework in a hierarchical, open-ended system
Group form - group form results in from an incremental accumulation of structures along an armature of communal open space

Illustration 3.3.4 - Diagram of the theoretician, Fumihiko Maki's three types of spatial linkage in support of Trancik's 'Linkage Theory' (Source - Trancik 1986: 107)



Illustration 3.3.5 - Sketch by Ralph Erskine of Västervik, Sweden in 1971 showing the uniqueness of a place prevalent to the Trancik's 'Place Theory' (Source - Trancik 1986: 117)

to encompass some sort of emotional content as well (ill 3.3.5). 'A place is a space which has a distinct character. Since ancient times the 'genius loci', or spirit of the place, has been recognized as the concrete reality man has to face and come to terms with in his daily life. *'Architecture means to visualize the genius loci and the task of the architect is to create meaningful places where he helps man to dwell'* (Trancik, 1986: 114) Trancik strove to identify these 'anti spaces', to infuse them with life and meaning, and in doing so making a coherent whole once more where a void existed. These newly regenerated sites speak to and link together vast parts of a city that had be divided, both visually and physically through the means of architecture and space.

Christopher Alexander, author of numerous books including 'A Pattern Language' (1977), takes Trancik's ideas of 'lost space' further by insisting that *one must re-establish the 'nucleus' or core of the city, the original location of activity,* in order for the centre to continue to grow and attract people back to the magic of the city proper (Alexander, 1979: 59). This is can be applied to the urban waterfront as it is a potential center of activity. However, theoretician Paul Righini, believes that an area or *building should also reflect the values and relevance of the community that lives in the vicinity and should be apart of the collective form of the city,* ultimately expressing a sense of place through its identity in its simplest form. He believes that the identity is connected to the thought that each place has features and characteristics that enable one to recognise it as being unique to others (Righini, 2000: 257). Within the city, open spaces operate as 'movement' channels between buildings or act as 'rooms' within the city in the form of piazzas, squares or plazas. They also allow for the integration of functions and activities while

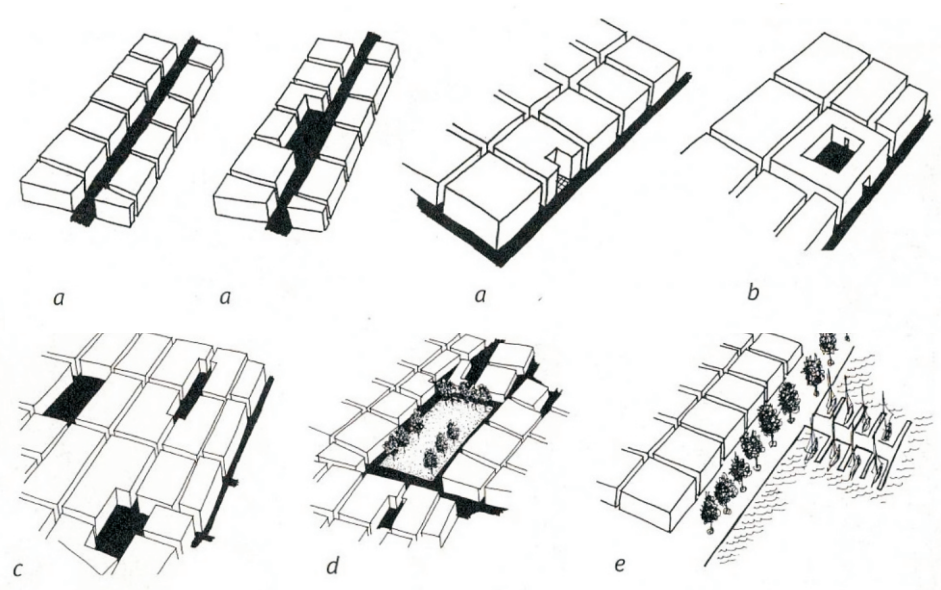


Illustration 3.3.6 - Types of Urban Voids and Solids found within the fabric of the city (Source - Righini, 2000: 250)

the buildings define the edge and give the street a sense of enclosure and security. Squares provide a central space with a unique identity and focus to a container as well as assist in the change of direction of streets. Mostly importantly they serve as outdoor rooms fit for human contact and events. Righini and Trancik identify 3 Principal Types of Solids and 5 Types of Urban Voids which are seen below (ill 3.3.6). Where 'a' represents the different entry foyer space or transitional area, 'b' represents the inner block void (semi-private), 'c' represents the network of streets and squares, 'd' represents the public parks and gardens and lastly 'e' represents the linear open space systems related to large bodies of water, namely water- or riverfronts. The last example has been identified as the equal to the study area of this dissertation.

Righini's urban ideas were mirrored by Kevin Lynch, another urban designer, who believed that *a city must be unique and memorable where nothing is experienced in itself, but rather in relation to its surroundings and as a sequence of circumstances* et cetera leading up to the final point. In his book (Lynch, 1960: 9) '*The Image of the City*' (1960), the idea of legibility is prevalent. *'A highly legible city would be one that is well formed, distinct and remarkable,* it would 'invite the eye and ear to greater attention and participation' (Lynch, 1960: 6). This legibility reinforces a certain image to the viewer and allows one to become aware of their environment, to begin to look carefully at it and truly understand its effect on the city. The environmental image one identifies is divided into three components, namely identity, structure and meaning. 'A workable image requires first the identification of an object, which implies its distinction from other things, its recognition as a separate entity. Second the image must include spatial or pattern relation of the

object to the observer and to other objects. Finally, this object must have some meaning for the observer, whether practical or emotional' (Lynch, 1960: 8). One can easily identify the Embankment by its unique use of harbour imagery reflected in it's architecture as well as being physically separated from the city by means of the railway lines. Spatially, this edge comprises of various nodes which are linked by means of a boardwalk, though today it is somewhat redundant within the overall scheme as each node is an solitary entity that is not integrated into a larger whole . What it lacks in practical meaning, it makes up for in its emotional potential which evokes a certain feeling to each visitor and makes the Embankment a truly unique place within the city.

Shape, colour as well as physical arrangement facilitate the making of an environment's holistic image. These elements can be translated into these the following components - paths, edges, districts, nodes and landmarks. These components, when applied to a design, allows the viewer or the user to identify with the overall image of the city or area. Paths, seen as streets, walkways, canals and railway lines, act as channels along which one moves. Edges, both active and passive, can define space and provide continuity within a particular area of the city or site. Districts, like the Embankment, are identifiable by certain characteristics such as texture, form, detail, activities and building type. Nodes are the strategic points along a path that facilitate a shift in direction, activity or structure. Unique points within a city or building may also be considered nodal points of interest. Landmarks, or a point reference within a city, usually allows the viewer to identify a particular area or district distinct from another easily and acts as a ordering device along one's journey.

Durban's urban waterfront lacks this legibility explained above but by applying both Trancik's and Lynch's theories of urbanism, its unique image will allow people to be able to identify with this edge and to reconnect it back into the city. This is will be completed within the design portion of the dissertation by means of a new urban design proposal plan for Durban's Embankment.

3.3.2 Blurring Boundaries

The question of what is a theatre and how one experiences the theatre building is one that is far simpler than anticipated. Theatre, even in today's society is similar to that of the Ancient Greeks in that as people, *we all have a common means of expression.* Dance, drama and art allows us to communicate with various social groups and economic classes. Here the boundaries are blurred between each group as both the patron and performer 'speaks' the same language through one's body movement. The role of theatre today has somewhat dwindled with the invention of film and the cinema and theatre is not as popular as it has been in the past. However, unlike the theatres of the past, today's theatre complexes include a wider range of facilities that allow it to be a mixed use building rather than having one solitary purpose. A theatre building itself is *a place for expressing an idea or story to the masses as well as a being a social place for the interaction and contact of people.* Though the building itself has a distinct back and front of house, it is a purely public building and should provide a large degree of accessibility to all people. Through the treatment of the threshold, one can blur the boundary between private and public spaces as well as the treatment of the edges of the building and site. The threshold within a theatre facility is an important liminal and is clearly seen between the stage and seating where performer and audience are separated by a defining element: the orchestra pit. Theatre, like cinema, is also a *means of escapism* for some whereby one has the ability to forget their ordinary, monotonous life and become absorbed within the storyline being portrayed.

Another facet of the concept linking the theme of escapism to that

of the *blurring of boundaries,* is how the human race wears figurative 'masks' to hide or conceal how they feel about a situation. These masks obscure our reality and what others see isn't always what is in truth authentic. In the same way, within theatre performance, actors wear masks to portray a particular storyline or emotion. This can be translated into architecture by means of screens that obscure the façade through the interplay of light, darkness and texture.

Within the design of a performing arts theatre, the focus is on blurring the interface that exists between the building and the people who used it, as well as *what happens between the buildings at street edge that is fundamental to its success.* People's need for stimulation is intrinsically linked to a vibrant street edge. The street provides the opportunities for contact between the public at different levels as well as being a source of inspiration to the monotonous world dominated by the automobile. Within the city, different levels of interaction need to be provided for both in hard edges, represented by busy city markets, as well as in soft edges such as parks or squares (ill 3.2.7). People's need for contact through experience calls for the reliance on activity nodes along a street edge which are important as they engage the passerby. Gehl, the author of the book *'Life between Buildings using Public Spaces'* (2000), believes *there is a distinct connection between street life, the events accommodated on the street and the numbers of peoples present* (Gehl, 2000: 23) where, if the right activities and people are assembled, they would simulate each other ultimately creating a self-reinforcing process. This is true for individual sites as well and can be translated into a connectivity between the people experiencing both the building and its edge through activities and events. This allows for a sense of place to be created both inside and outside a building. Gordon



Illustration 3.3.7 - Hard edges consisting of squares and plazas facilitate the human need for interaction and contact.
(Source - Gehl 2000: 34)

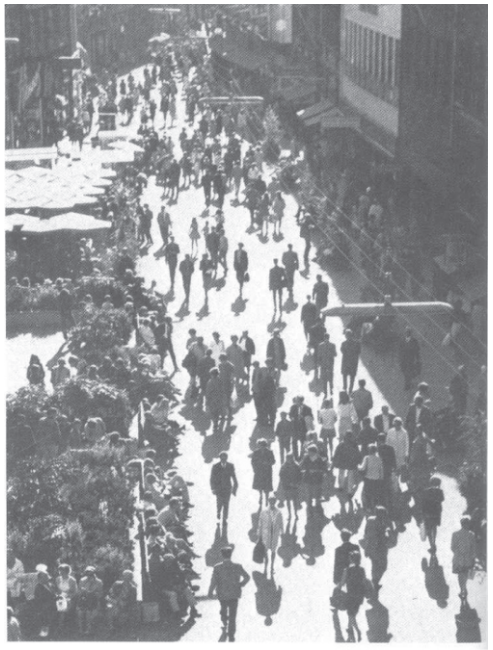


Illustration 3.3.8 - Life between buildings act as breathing spaces within the city (Source - Gehl 2000: 78)

Cullen believes that "visual expression contributes to giving a feeling of a sense of place and through this inspired people to be in the space" (Gehl, 2000: 183). This visual expression can be interpreted in various ways such as activities, personal contact and the overall aesthetic of the particular area.

The *concept of 'intermediary spaces', or transition zones, consist of squares, plazas, pedestrian streets or resting areas which act as a breather room between buildings* (ill 3.2.8). These devices are conceived as places for social interaction. A *place fused with activity, during both day and night, which draws people in and brings the street to life through the public's interaction.* The sight of action and interaction between people encourages the use of these positive spaces and in turn, the local community feels personally responsible for their preservation. Gehl feels that flexible boundaries, or transitional spaces, are needed which function as connecting links between the public realm of the street and the building and should therefore be inviting (Gehl, 2000: 115) as to encourage people to cross over. While lecturer Herman Hertzberger insists that the 'threshold' holds the key for these types of spaces, they emphasize a well defined relationship between public, semi-public, semi private and private spaces (Hertzberger, 1991: 32). This in-between space is the key to eliminating the harsh edges and sharp division seen commonly between the building and the street edge (ill 3.2.9 & 3.2.10). These intermediary spaces act as the transition zone between the active street and the introspective quality of living and work spaces.

On a much larger scale examining the entire edge, there are many areas of transition between two entities. There is a natural transition

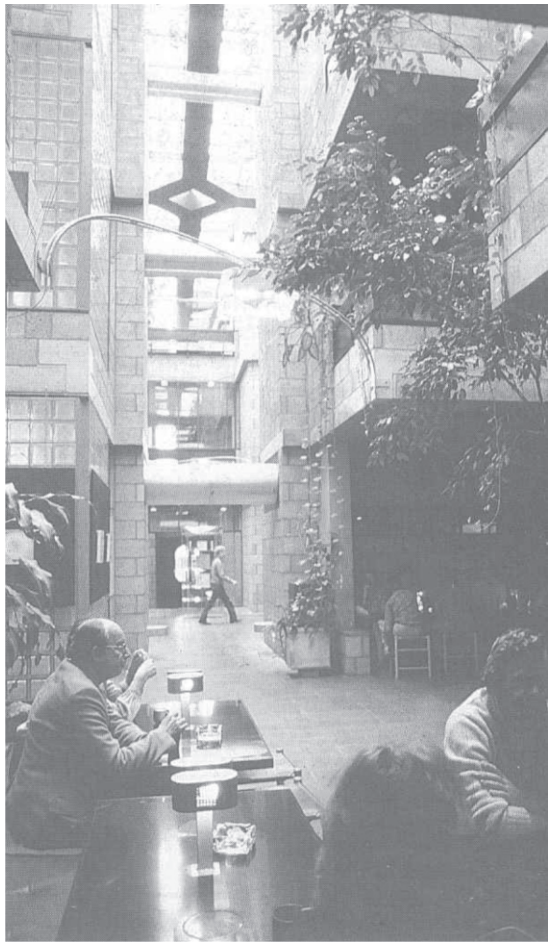


Illustration 3.3.9 - The active street edge softens the transition between street and building (Source - Hertzberger 1991: 80)

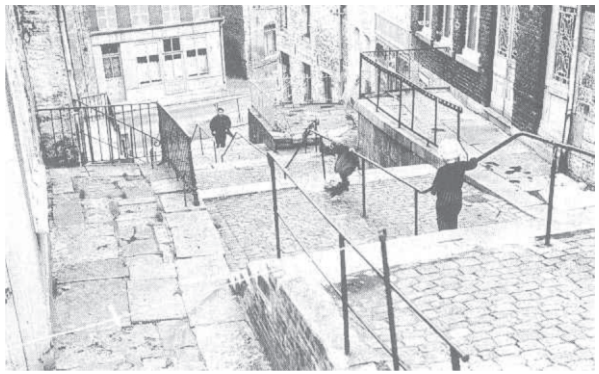


Illustration 3.3.10 - A series of terraces or steps provide the transition between public and private spaces(Source - Hertzberger 1991: 178)



Illustration 3.3.11 - A series of ways one can transit from public to private spaces, paying close attention to how the building connects to the ground (Source - Alexander 1979: 551)

between land and the harbour edge which is normally dealt with by either a subtle or dramatic height distinction. A man made transition exists between the city and Embankment edge as a result of the railway lines and green belt offering only a visual connection between both. Smaller transition zones will need to be designed to facilitate the progression from any point of the site into the building itself using the above mentioned edge and threshold treatments of Gehl and Hertzberger (ill 3.2.11). "Make of each place, a bunch of places of each house and each city, for a house is a tiny city, a city a huge house" – Aldo Van Eyck (Hertzberger, 1991: 193)

Connection to earth is another theory that contributes to the notion of transition space by experiencing it vertically rather than horizontally. Christopher Alexander felt that *one should connect one's building to the ground by means of a series of paths, terraces and steps around its edges to interweave it to its surroundings and to avoid it being a structure is isolation,* unconnected to its place or setting (Alexander, 1979: 787). By doing this the connection between the building and space around it is enlivened and becomes a *positive space* within the precinct and city context. Similarly, Bacon also felt that the way a building rose out of the ground would determine the quality of the entire structure (Bacon, 1967: 24) be it positively or negatively. A strong relationship of the building to the active edge of the space it occupies connects it to the context in which it sits and allows the person using the building to identify with it and not be a solitary building, a barren place that is inaccessible to the public who are meant to use it. Currently, the sites located along the Embankment are highly isolated elements, often surrounded by high fences or avoided based on their unfavourable appearances. Apart from the boardwalk running

along the main wharf of the Yacht Mole, there is a distinct lack of public gathering spaces, raised or at ground level, that would facilitate an inviting atmosphere for visitors to the area.

3.3.3 Awareness of Space and Self

The theory of Existentialism is the 'subject view of life and the world, aiming at bringing the concrete life world into clear view' (Fallico, 1962: 18). This idea expresses that individuals create the essence and meaning of their lives and was taken further by the philospher F. Nietzsche. He believed that by creating and understanding art & music, Existentialism can be broken down into two physiological states or categories, namely *'dreams' and 'intoxication'.* This was further connected to the two ancient Greek gods of art – Apollo of art and sculpture and Dionysus of the non-visual medium. Here art is translated into dreams while the non visual or music is linked to intoxication. Nietzsche argues that a *man is drawn to tragedy in life,* whereby people are naturally fascinated by the pain and suffering of others and he further insists that this is an essential part of the human makeup. This is clearly understood by Roman gladiatorial battles when the people turned out in their droves to witness the spectacle. However Nietzsche believes it stems as far back as the ancient Greeks and their need for theatres. They are considered the most universally envied race of mankind and were probably the most capable of seducing the 'modern man' into life and ultimately tragedy through the means of storytelling and theatrical expression (Nietzsche, 1993: 4). Through the contrast between light and darkness; one can apply, in the similar manner, the same concept to the design of a theatre. *Light, with its multifaceted nature, could represent a dream like state - pure and limitless - while darkness, the state of intoxication, with its giddy mass of mixed feelings.*

Similarly fine art, music, theatre and the performing arts act as a way of expressing both these ideas of pain and suffering as well as pleasure and joy. 'Tragedy induces a state of intoxication in which we are not passive spectators…but participators, even if to some extent shielded ones, in the very mixture of ecstatic pain-cum-pleasure that, in its undifferentiated state, constitutes reality' (Nitezsche, 1993: xxiv). In essence, the theatre patron becomes immediately aware of the world's state when emerged in the drama of theatre and art through this state of intoxication. Art, at its most relevant, tells the truth through the eyes of the artist and through the manipulation of colour and emotion, the viewer is able to bear the truth he/she is witnessing. '…art – not the morality – is presented as the properly metaphysical activity of man' (Nietzsche, 1993: 7). Similarly, music evokes a direct expression of spirit and strength of character by its very nature and stimulates a dream like state which allows us to accept the reality. *Theatre, is in effect, the combination of both art and music.*

In 1927, Le Corbusier stated that 'Architecture is the masterly, correct and magnificent play of masses brought together in light' (Lam, 1977: 10). This is seen particularly well in examples like the Parthenon and various Renaissance and Gothic cathedrals. Light and its manipulation thereof, is one of the most powerful form givers used by architects and designers. Similarly, darkness or shadow is equally effective. The contrast between happiness and tragedy can be translated figuratively into light and dark whereby each evokes a different emotion from the viewer and unique response towards the design and treatment of a building. Balthasar

Neumann was an architect who focused on churches which showed the interaction of natural light on the facade as well as within the interior cavity His designs portrayed a dramatic composition between motion, colour and surprise through light manipulation within an ordered and complete whole (Otto, 1979: 15). With his preoccupation with the interaction and contrast of light and shadow, the sense of monumentality and grandeur are expressed both within and without the church itself. Due to the fact that the interiors were kept lucid and transparent, the viewer experiences a new impression of the space where the relationships between parts shift and change according to the lighting levels with each step they take (Otto, 1979: 15). *Spaces are defined dramatically giving direction and focus.* Like churches, theatres require the sense of grandeur which can possibly be expressed through the transformation of space through manipulating light and shadow.

When designing a building, elements such as form, space and time are crucial to its overall success, especially in order for the passerby to notice and identify with it (ill 3.3.12). The design of cities is much the same, where the awareness of these elements within the city's fabric is a 'pitiless indicator of the state of man's civilisation' (Bacon, 1967: 13). The awareness of space as an experience is the fundamental concept that fuses together and forms the interrelationship between form and space. *Form defines the space between while time becomes the means to which people experience both form and space.* It is therefore imperative that these three elements should work in harmony. The alertness of these elements allows the visitor to connect with the full spectrum of senses and feelings created by the architect within a space which in turn fuses the



Illustration 3.3.12 - Sketch showing relationship between form, space and time as well as between light and dark (Source - Bacon 1993: 24)

space with 'genius loci' or spirit of place. Architectural form, materials, texture, modulation of light and dark, colour all contribute a distinctive spirit or character to a space. '...one of the prime purposes of architecture is to heighten the drama of living. Therefore, architecture must provide differentiated spaces for different activities, and it must articulate them in such a way that the emotional content of the particular act of living which takes place in them is reinforced' (Bacon, 1967: 19).

Islamic domes are a reflection of the inner space as well as the beliefs of Islam. Similarly, in cultures across the world, one can identify 'architectural form as an expression of the philosophical interaction between the forces of mass and space (which ultimately) reflects the relationship between man and nature and the universe' (Bacon, 1967: 16). This interaction between space and form is therefore critical to the success of a building which is identified and perceived by its users. The contrasting effect of light and dark is one frequently used in architecture in order to achieve a dramatic tension between the elements on the façade or between the solid of the building and void created in the spaces between. In manipulating both, a tension is created that gives the building it's form. Furthermore, while *darkness evokes a feeling of unhappiness and morbidity, light suggests the opposite expressing cheerfulness and clarity.* Therefore one must attain a sense of balance between each not only on the facade but within the building as well. Large volumes, airy spaces, the use of different degrees of translucent materials and clerestory lighting are just some of the tools used to achieve this balance and can be applied successfully in the design of lobbies and other public spaces within a theatre complex.

3.4 CONCLUSIONS:

Applying the previous discussed theoretical ideas to the site and design of a theatre complex, one finds a similarity between this type of building to that of city design. *A theatre, in its essence is a civic natured building that has a direct relationship to the public as well as to the street edge.* The line between public and private within a theatre facility is slightly less defined and could be translated rather into front of house and back of house. This transition between these two spaces, of varying interaction and privacy, needs to be dealt with sensitively and perhaps by means of individual places with clearly defined functions such as a restaurant with the public eating zone and the private kitchen and storage area. Another distinct means of transitioning between the active street edges and the quieter, more reflective environment needed within a theatre facility is by means of a public plaza or square that acts as an outdoor room within a larger development. The intended study area of the Yacht Mole on Durban's urban waterfront requires this sort of space as this is lacking today to facilitate the idea of a social building accessible to all. In the initial stages of the design, it was found that there are three distinct transition zones that need to be addressed in uniquely different ways (ill 3.4.1). Firstly, the transition from city to site edge, accommodating services, requires a more ordered treatment that responds to the rigid structure of the city itself in the way of regular fenestration and a proportional breakdown of the facade. Secondly, the transition from marina, bus stop and drop off zone to the raised main entrance into the theatre facility. Here, a change in level anticipates the change from busy vehicular edge into a reflective pedestrian plaza, with additional planting, and affords the person a new perspective over the Yacht Basin. Due to

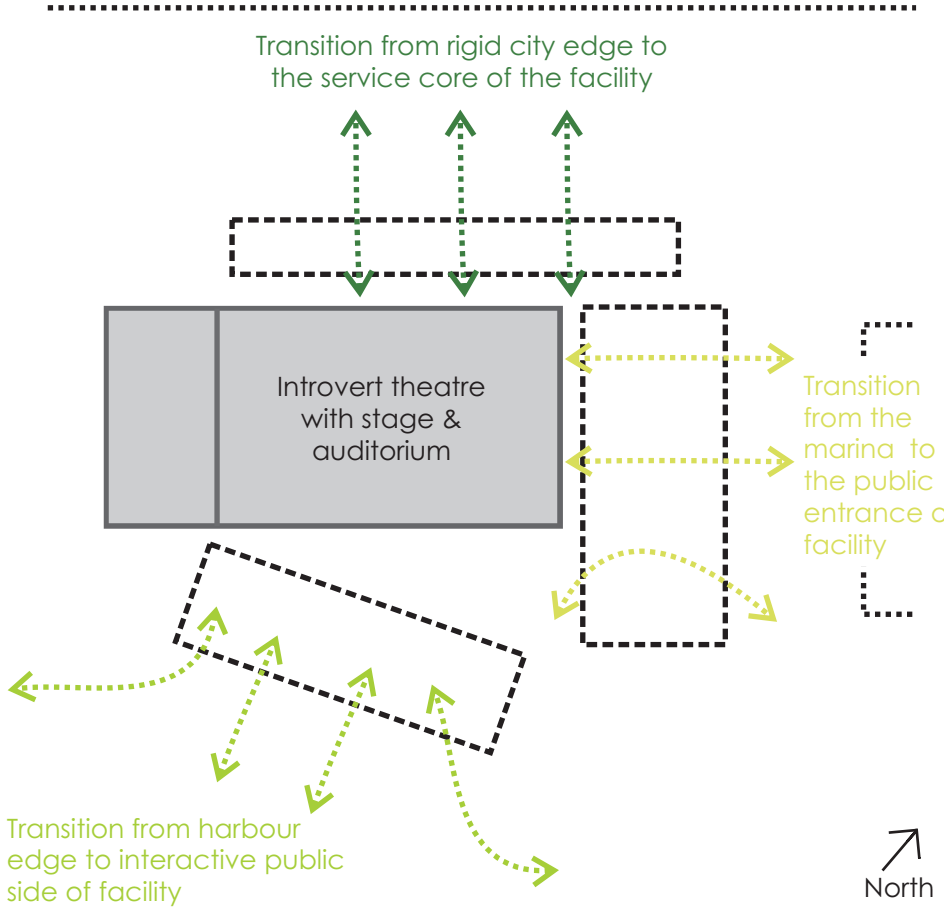


Illustration 3.4.1 - Diagram of intended facility showing internalised theatre with separate auxillary accommodation around, each responding to it's own unique context

the reflectivity of the water and its orientation, this facade's possible use of translucent glazing and screens would mimic the dialogue between the yachts and marina. Finally, the transition between the rehearsal facility and harbour to the south provides a fluctuating edge which needs to be address by possibly incorporating a series of paths and terraces that will facilitate the feeling of connecting back to the water's edge. Reflective materials, similar to the entrance facade, could be incorporated to portray the water's clarity and transparency. Smaller transitional process will be observed when progressing from the active lobby and eating spaces to the quieter auditorium.

The inner workings of a theatre, though complex, are defined by the relationship between each space. *Ultimately a 'blind box', a theatre offers little connection to the outside world except through its foyer space and public facilities such as commercial and educational aspects.* These spaces need to have a direct relationship to the edge in order for the facility to be seen as a community space. Edges between building and site need to be addressed by taking to account which are vibrant, busy edges and which are quieter, reflective edges. Stimulation at the active edges, such as restaurants and seating, would provide opportunity for contact between people visiting the facility. Using various means of transition spaces namely; plaza, park and pedestrian boulevard, breathing spaces are provided within the area (ill 3.4.2). By raising the building up off the street edge by means of platform / terraces, facilitates a vertical transition that gives a feeling of both ownership and rising to the occasion of theatre as well as allowing one to view the natural theatre of life' below, complete with street vendor, busking and informal performances.

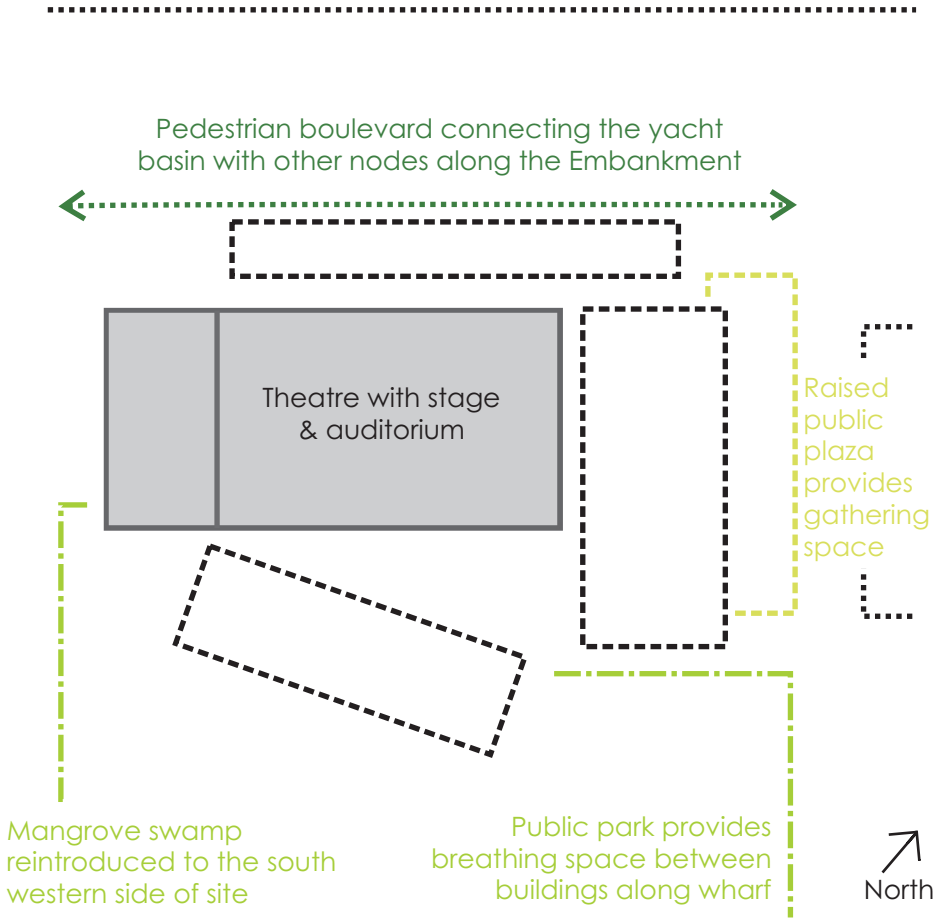


Illustration 3.4.2 - Diagram of intended facility showing edge treatment with public 'breathing' spaces surrounding the theatre complex

In theatre and dance, role playing or masking oneself into a specific character is commonly seen and this should be translated into an architectural solution onto the facade of the building in order for the public to immediately identify with the building and what it houses. This can be achieved by means of screens and the like as well as the interaction between light, darkness and texture. Similarly, one can take the planning of the facility and translate each individual element into that of a portrayed facade to each context - city, marina and harbour - with the theatre itself being the core or real self one seldom shows (ill 3.4.3). The centered theatre, the heart of the facility, portrays the pure, raw emotions or character that not many people will ever see or experience. These feelings are sheltered, hidden and reserved for those who are welcomed in. Conversely, the elements clinging onto the main core represent masks one wears, that *forms our protection and mimics our surroundings or context to allow one to blend in.* They portray a different set of emotions, that perhaps differs from what is real, and one that people allow others to see and can include; extroverted, translucent, studious, open, fresh, inviting, ordered and serviceable. These physically translate into elements that represent and form the variety of functions accommodated within the theatre complex.

When discussing the theory of 'lost space', one can easily identify the Embankment in it's entirety constituting a lost, neglected area within the city limits that requires evaluation and subsequent regeneration. By infusing the yacht basin with activity to form a nucleus along the Embankment that reflects the values and interest of the people the live and visit there, the area is rejuvenated and the space is tied back to the city. However, when focused onto the intended site, defining the lost space becomes a little more difficult

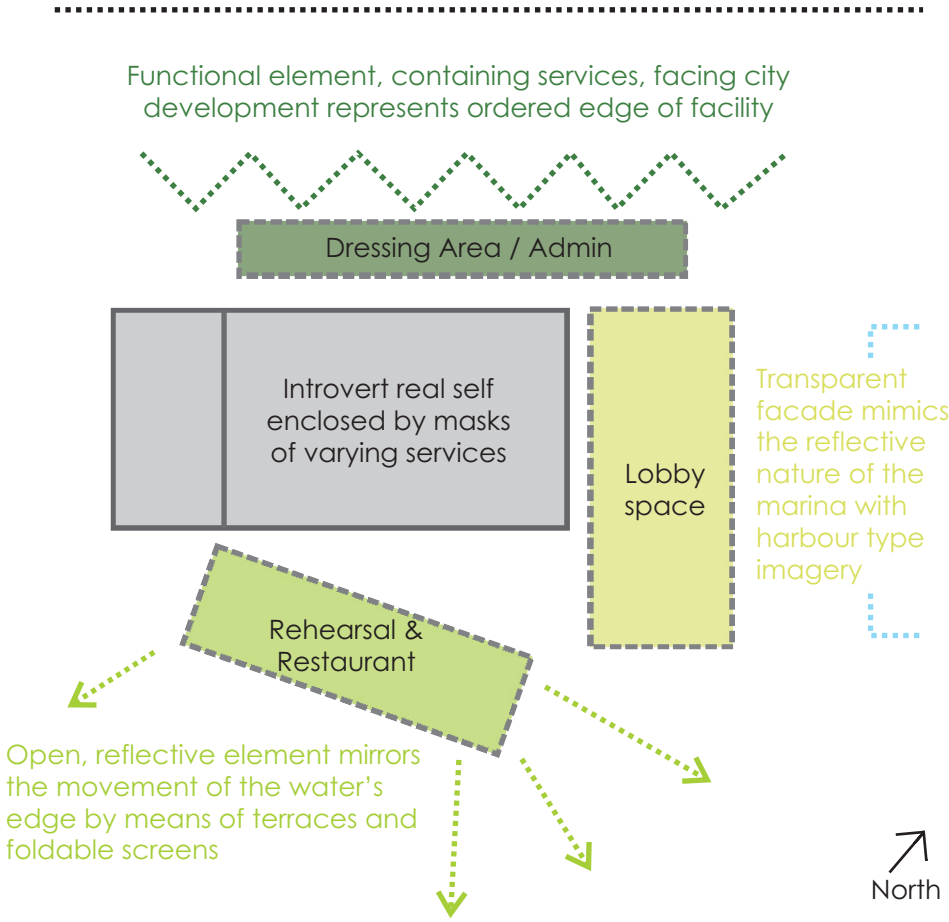


Illustration 3.4.3 - Diagram of intended facility showing clip on elements that both express and represent different functions within the facility

to identify. The constant flow and movement of water along the south western side of the site offers possibilities in that, during low tide when the waters recede, a band of land is left somewhat forgotten until high tide. The space becomes a deserted area where no one ventures. By the incorporation of terraces at different levels, with additional walkways and paths along each ledge, the connection between land and sea becomes possible at different times of the day when the water ebbs and flows, in and out. The possible inclusion of radiating walls away from the water's edge, at various heights, could possibly tie back into the facility, act as vertical support for the pathways as well as mimic, metaphorically, the mangroves that intend to be reintroduced to the area as they once were.

4.1 INTRODUCTION

For this dissertation, several international examples were chosen for a broader scope of theatre design in the world. Typically, a theatre consists of serveral crucial elements namely; the stage and auditorium, the public accessible areas such as the foyers as well as the non-public elements which comprise of both performer and technical or service spaces. The precedent studies chosen each house these distinctly separate areas. The inclusion of local examples was desired by the author, however they were poorly published and not of the similar context needed for this study, and I have chosen to focus on these local examples during the next chapter of case studies.

In this chapter, the precedent studies will be analysed under the following criteria, which include: *siting in relation to the city centre, spatial organisation within the building, accessibility of the facility by the public, the engagement and subsequent interaction of the public at street level and the flexibility of the facility in order to cater for a variety of uses.* Another important aspect to be researched is their landmark value and contribution to city or waterfront regeneration. The intention of this dissertation is to gain insight of the components of a theatre complex and how they relate to other another and the public. From this research, conclusions are drawn, which will assist in the establishment of a satisfactory design programme for a new performing arts centre along Durban's urban waterfront.

4.2 SYDNEY OPERA HOUSE

Architect: Jorn Utzon
Location: Sydney, Australia
Date completed: 20 October 1973

4.2.1 Background:

The site for the Sydney Opera House was identified in the early 1940s by the National Theatre Movement in Australia as the new home for the Sydney Symphony Orchestra as its previous venue lacked the adequate facilities it needed (Murray, 2004: 2). At this time, Melbourne greatly surpassed Sydney in terms of cultural venues and such, therefore Eugene Goosens, the conductor of the Symphony Orchestra, set about realising the cultural upgrade of Sydney. A world competition was announced in September 1955, which was open to all countries, with an original brief indicating provisions required for a large hall to seat between 3,000 and 3,500 people and a smaller hall seating 1,200 people. The competition was won by Danish architect, Jorn Utzon (Ziegler, 1973: 25). His initial design, which didn't include the required drawings for the competition, was critised as 'nothing more than a magnificent doodle' (Murray, 2004: 10). However, this powerful interpretation of billowing sails or clouds now appears t-shirts and souvenirs the world over, and could be considered by some as one of the most identifiable buildings on the globe (ill 4.2.1). Utzon drew *inspiration for the building's form from Mayan temple platforms and the 'floating' quality of Chinese roofs* (Weston, 1999: 14) which is clearly seen in the solid podium and floating roofs of the Sydney Opera House, they are in effect simple yet dramatic. Another important aspect that influenced the design is said to be Utzon's close proximity to the Oresund, the strip of water



Illustration 4.2.1 - View of Sydney Opera House and Circular Quay, one can see the distinct iconic power the Opera House has over the entrance to the harbour
(Source - Architecture Sept 1989: 103)

separating Denmark and Sweden, from his studio (Murray, 2004: 15) as well as a famous old shipping town called 'Helsinfor' (Ziegler, 1973: 23).

4.2.2 Siting & Landmark Value:

The site on Bennelong Point is rich in history and overlooks one of the finest harbours in the world (Ziegler, 1973: 23). In the 1940s, the site housed Sydney's main tram depot which initially the Department of Transport weren't eager to relocate (Murray, 2004: 4) (ill 4.2.2). The site of the Sydney Opera House takes up the whole tip of Bennelong Point and thus has water on three sides with a boardwalk encircling the site providing access to and from the building.

In terms of landmark value, by drawing on ancient cultures and elemental components from nature, the *Sydney Opera House is one of the world's truly iconic structures.* Not only for its worldwide recognised profile but also because of Utzon's desire to push the boundaries of architecture and techology. It is fact that the building was a pioneer of its time in terms of technology, materials and structure but it is much more than that now (Murray, 2004: xvi). The shells themselves, with their uniform curvature throughout in both directions, are a familiar and well loved view along the Sydney coastline (ill 4.2.3).

4.2.3 Spatial and accommodation organisation:

The shells are orientated approximately North-South on the podium, with the main steps leading up from the access road at the base of Bennelong Point (ill 4.2.4). The placement of both halls side by side along the site allowed for vertical scene changing (ill 4.2.5), with the podium below, housing all the preparation space needed for the

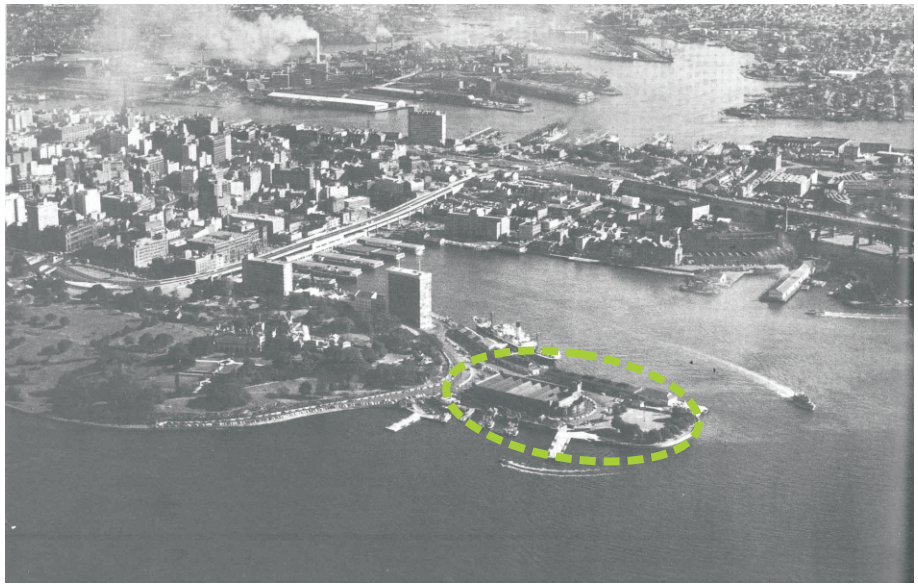


Illustration 4.2.2 - View of site in 1958 with main tram depot, circled in yellow, taking prime position at the entrance to the harbour's mouth (Source - Ziegler, 1973: 36)

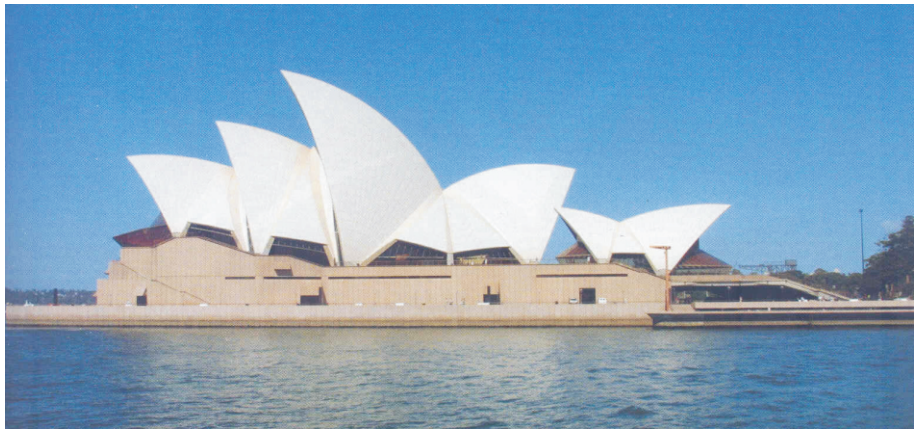


Illustration 4.2.3 - Side profile of the 'shells' is an iconic form often seen on postcards and t-shirts, however the bold forms do not relate to the structure within the building (Source - Arkitectur DK, Dec 2003: 467)

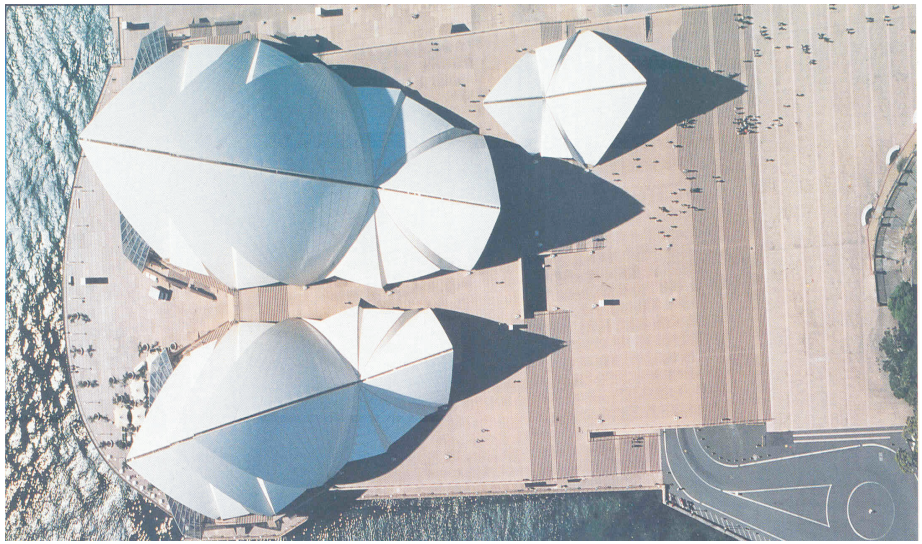
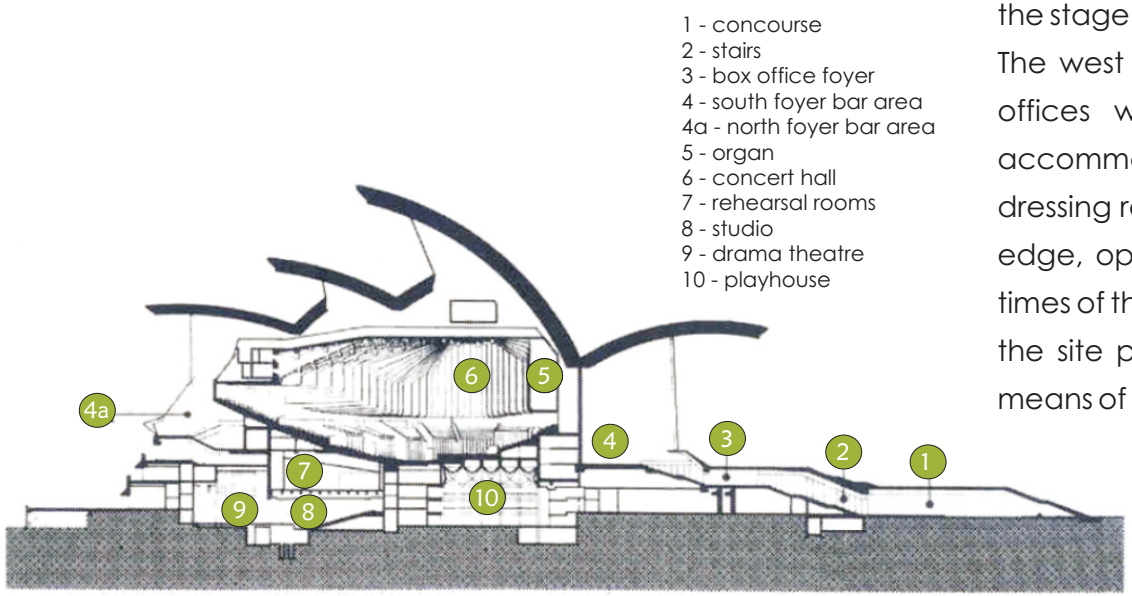


Illustration 4.2.4 - Aerial view of the complex showing main steps leading up to podium with vehicular access below (Source - RIBA Journal, Dec 1999: 13)

Illustration 4.2.5 - Section through hall showing relationship between the spaces as well as main steps up to podium. Also evident is the lack of functional relationship between the sail like forms of the exterior and the ribs within the theatre spaces (Source - Murray, 2004: 123)



performance above (Amundsen, 2003: 468). The fly towers are concealed within the roof shells, therefore allowing the building to take a different form to conventional theatres. The full first floor, or podium level, houses the concert hall and opera theatre as well as the box office and various eating spaces (ill 4.2.6). Utzon's intentions for the interior theatre spaces were that the *ceilings should be 'an expression of sound, much like a giant musical instrument'* (Amundsen, 2003: 486). The ribs are expressed throughout the building, shaped like a 'Y', giving the space a cathedral like appearance due to the concertina approach. It must be noted however, that the Opera House's main sail like image, the icon for Sydney, is not translated into the theatres within the building, thus the building lacks an organic, functional relationship of the forms.

The podium houses various spaces which contribute to the functioning of the opera house (ill 4.2.7). Beneath the concert hall seating, is another complete Drama Theatre with its own foyer opening directly onto the western side of the boardwalk. Beneath the stage of the concert hall lies the rehearsal and recording studios. The west (harbour side) of the podium houses the administrative offices while the eastern side, beneath the opera theatre, accommodates five large and five small rehearsal rooms with fifty dressing rooms. The public restaurant, placed nearer to the water's edge, opens up onto the boardwalk, enlivening this space at all times of the day. A vehicular access road runs down the full length of the site providing access to backstage areas and is entered be means of the concourse beneath the podium steps.

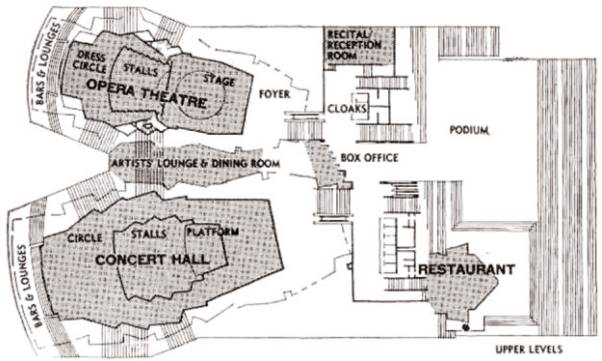


Illustration 4.2.6 - Main podium level showing the practical arrangement of the theatres side by side with the main steps up to foyer, restaurant and box office
(Source - Yeomans, 1973: 11)

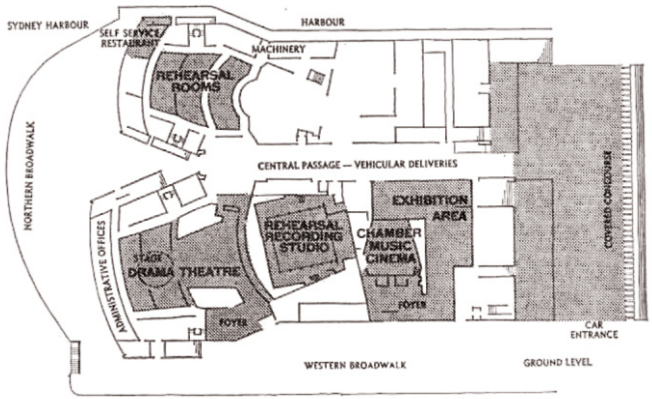


Illustration 4.2.7 - Boardwalk level showing theatres side by side with central vehicular access way and concourse to the south, also present is the promenade that encircles the opera house enlivening the edge of the harbour once more
(Source - Yeomans, 1973: 10)

4.2.4 Acoustics:

The external concave profiles of the 'shells' are translated to convex curves internally as this was deemed as a better shape to distribute the sound (Amundsen, 2003: 478). This was achieved by means of a series of precast ribs which were raised into place to form the fan-like shapes of the roofs (ill 4.2.8 and 4.2.9). This also created space between the two structures allowing for services such as lighting, air conditioning, audio electrical cabling and insulation to be housed (Amundsen, 2003: 486). Suspended fabricated acoustic ceiling panels were fitted to the underside of the ceiling to further reduce sound reflection. Large amounts of timber, specifically birch plywood, was utlised within the two halls to achieve the correct reverberation times (Ziegler, 1973: 68). Leather used on seating to achieve a good response in the higher frequencies which form an important part to stage singing (Yeomans, 1973: 32).

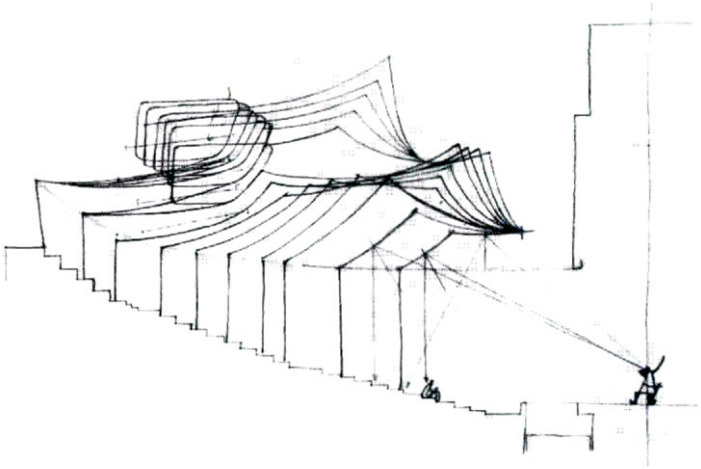


Illustration 4.2.8 - Diagram of curvature of the internal rib structure within the Opera Theatre showing line of sound
(Source - Arkitectur DK, Dec 2003: 478)

Sounds from the harbour also created noise problems for the theatre design, especially within the mouths of the shells (ill 4.2.10). This was solved by enclosing these spaces with noise-resistant sheet glass and rib bronze with an inner lining of concrete (Ziegler, 1973: 57). Most panels are 18.8mm thick and have two layers of glass, one plain coloured and one ambered coloured, which have sound excluding properties as well. An acoustic test was done in December 1972, by Sir Bernard Heinze to an audience of workmen, and the results were deemed satisfactory to even the most demanding critics (Ziegler, 1973: 67).

4.2.5 Flexibility:

Many areas within the complex are available for receptions, business meetings, cocktail evenings and buffet luncheons (Ziegler, 1973: 81). However, these are the only facilities offering a flexible layout as the theatres and halls facilitate the Opera House's main function, providing a space for a variety of performance.

4.2.6 Building fabric:

Utzon's idea that each shell should come from a hypothetical sphere with the same radius allowed all the roof elements to be cast from the same identical moulds (Amundsen, 2003: 477) (ill 4.2.11). This duplication of precast components found a similarity in the cellular structure of nature and inspired the Additive Architecture of the 1970s (Weston, 1999: 12). The roof comprises three expressed roof systems placed upon the massive horizontal podium; one over the concert hall, a second over the opera theatre and the third over the restaurant area. The podium was formed of poured concrete in formwork insitu and then clad with slabs of concrete finished with acid etched, pink-grey granite from the Blue Mountains, 110 miles

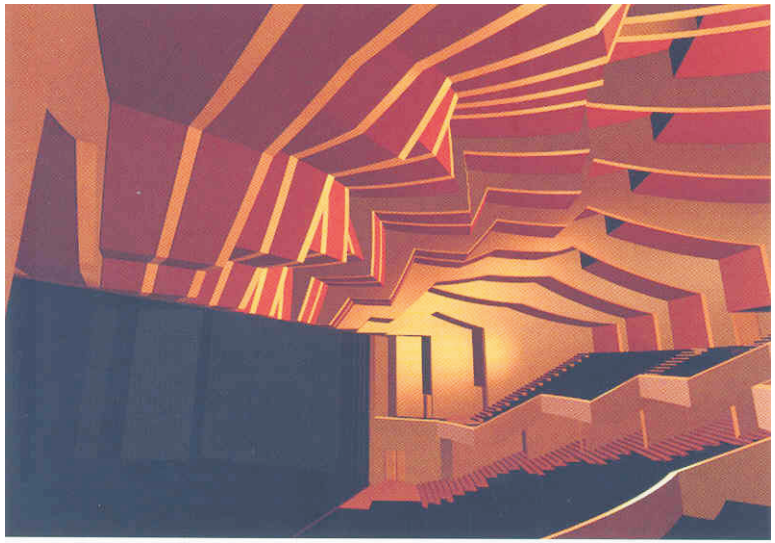


Illustration 4.2.9 - 3D model through The Opera Theatre showing concertina arrangement
(Source - Arkitectur DK, Dec 2003: 487)



Illustration 4.2.10 - The insertion of noise resistant materials within the mouths of the 'shells' helps reduce exterior noise while allowing natural light into the spaces below (Source - Ziegler, 1973: 68)

west of Sydney. Most of the materials utilised in the Sydney Opera House are prefabricated including the paving, cladding and panels (Yeomans, 1973: 23), which greatly reduced the original cost of the structure. A network of tile grids, or chevrons, covers the ribs and allows sunlight to add texture and life to a seemingly bland surface (ill 4.2.12). A combination of smooth matt tiles and glazed, textured ones transform the shells and almost bear a resemblance to fresh and frozen snow (ill 4.2.13). *Utzon drew inspiration for this from many exotic sources such as Japanese ceramics and Islamic domes,* (Weston, 1999: 14) as well as local harbour imagery which was a constant point of reference in his childhood town. The relevance of this shows the fundamental influence his childhood and travels were on his later designs, most noticeably the Sydney Opera House. By drawing inspiration from many sources, and translating them into something new, produced an unique structure that the world had never seen before. A landmark for Sydney and ultimately Utzon's career.

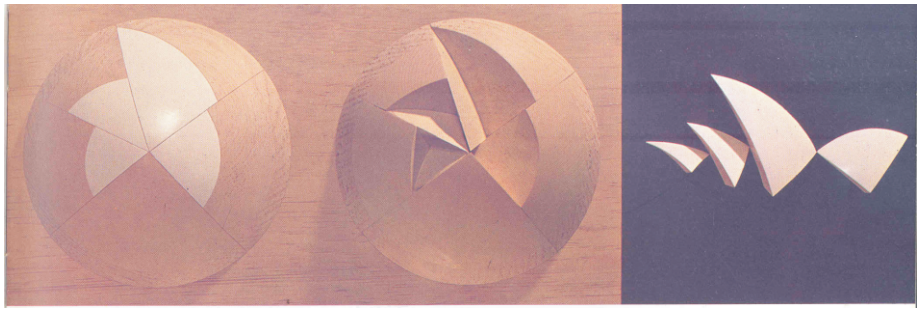


Illustration 4.2.11 - Model showing spherical geometry of the 'shells' that Utzon developed (Source - Ziegler, 1973: 35)

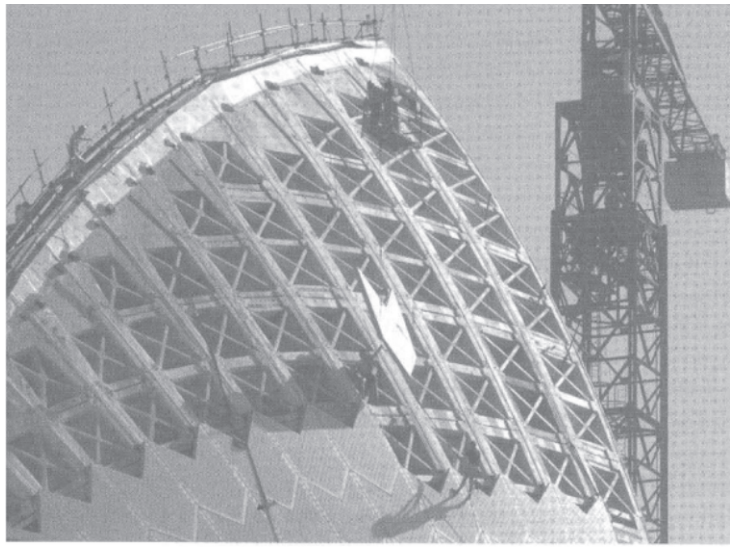


Illustration 4.2.12 - Sections of tiled chevrons being hoisted up and fixed to the ribs of the sail like roof structure (Source - Murray, 2004: 59)

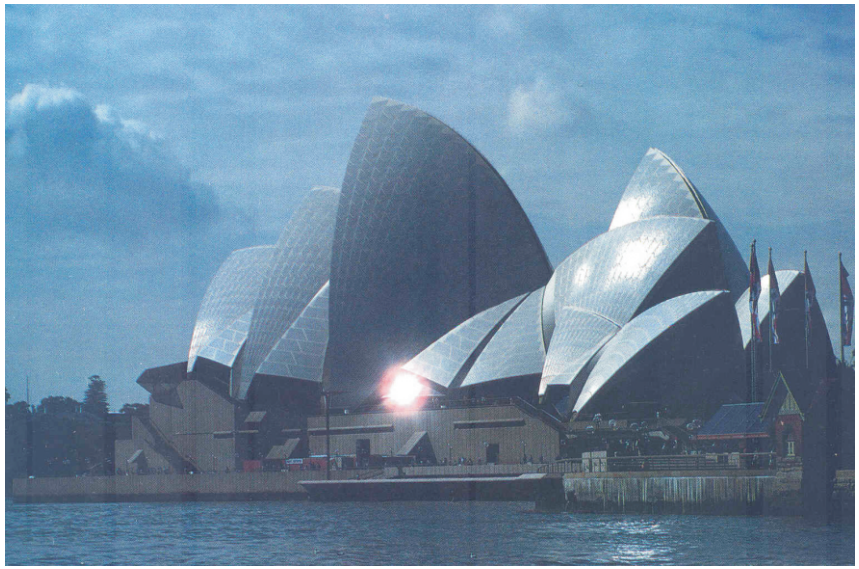


Illustration 4.2.13 - View of the completed Sydney Opera House's 'shells' in the sunlight portraying how varied weather systems will cause the Opera House to take on a different appearance (Source - Architecture, Sept 1989: 110)

4.2.7 Accessibility & Public Engagement:

The Boardwalk that surrounds Bennelong Point allows for the seamless integration between building and public area (ill 4.2.14). Facilities which open out onto this space include restaurants and foyers of the smaller theatres within the Sydney Opera House. This provides an active edge which the public makes the most of and ultimately owns. Her Majesty the Queen noted that 'the Opera House is not something sacred, but a living place' (Kaji-O'Grady, 2006: 55). The podium, and the change in level, helps portray a sense of 'arriving to the occasion' as well as distinguishing between the public and private realms (ill 4.2.15).

4.2.8 Conclusions:

Perhaps one of the *most costly and time consuming buildings of all time,* the Sydney Opera House took 16 years of planning and 14 years of construction (Wilson, 1989: 103). However, since its opening in 1973, the Sydney Opera House has repaid it's A$100 million costs many times over as both a cultural centre and tourist hub (Murray, 2004: xv) and is the only Australian building known in other parts of the world. It is an icon recognised by all, and even rivals great structures like the Parthenon, the Taj Mahal and the Pyramids in terms of profile and structure. Still, if a structure such as the Sydney Opera House were to be built today, it would probably be clad with disposable materials so as to circumvent that immense cost of maintenance of one million permanently fixed tiles. John Zadaricchio, engineering services manager of the Sydney Opera House, confirms that corrosion maintenance to the shells, due to its close proximity to the sea, is the major cost issue that the Opera House experiences today (Wilson, 1989: 108) however, the facility generates more than enough revenue to deal with this crisis, even still the subject of cost is inevitable when discussing public buildings.



Illustration 4.2.14 - View along Boardwalk showing the active edge of the Opera House at both day and night (Source - Architecture Australia, May/June 2006: 53)

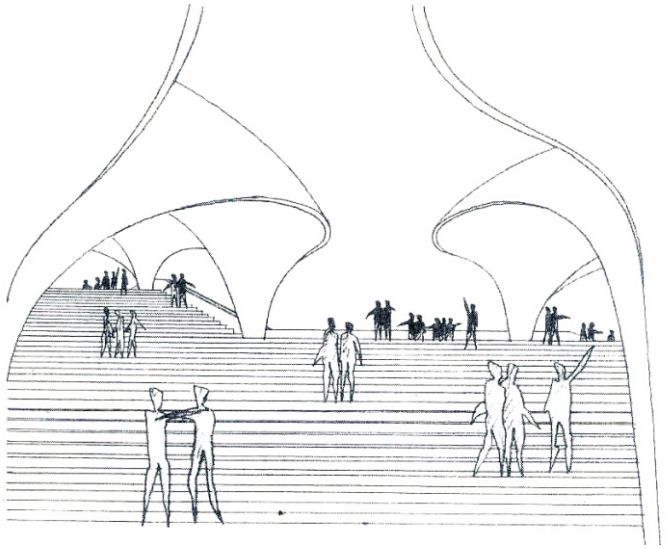


Illustration 4.2.15 - Perspective from human view of entrance up main steps onto podium, fins create a sense of enclosure whilst still allowing the visitor to experience the scenery of the harbour and city (Source - Murray, 2004: 7)

4.3 LUXEMBOURG PHILHARMONIE

Architect: Christian de Portzamparc
Location, Luxembourg City, Luxembourg
Date completed: June 2005

4.3.1 Background:

The Philharmonie Luxembourg, officially named the Grande-Duchess Joséphine-Charlotte Concert Hall, was designed by Frenchman Christian de Portzamparc in response to a competition held in 1997 (ill 4.3.1). The brief called for a 1,500 seat concert auditorium, a 300 seat chamber music hall and a theatre seating 120 people, which in hindsight has over catered for population of just under 80,000 people. It is located in a city important to the development of Europe. Luxembourg was the founding member of the European Union (Giovanni, 2006: 118) and is regarded as of the "Capitals of Europe", not only because of its central location in the heart of Europe, but also because it caters for a wide range of political, economical and, more recently, cultural aspects of Europe.

4.3.2 Siting & Landmark Value:

Located in Luxembourg City, southern Luxembourg, on the main thoroughfare and ceremonial boulevard of John F. Kennedy Avenue. De Portzamparc recognised the need for an urban centrepiece on the triangular site, the *Place de l'Europe*, which was surrounded by monumental glass governmental structures and responded to the boulevard positively. *The building is a successful landmark in a city developing its cultural infrastructure, whereby it creates a new focus among the monotonous government buildings.*



Illustration 4.3.1 - A sculpture within a monotonous landscape of government buildings showing the faceted facade and rising curving forms (Source - Architectural Record, Aug 2006: 118)



Illustration 4.3.2 - The elliptical shaped complex with columns, unevenly spaced giving it a ever changing facade
(Source - Architectural Record, Aug 2006: 119)

The building is elliptically shaped with a series of 823 tall, closely spaced steel columns which act as dense cladding and carry the thin, radius edged roof (ill 4.3.2). These columns, like trees, are haphazardly arranged in order to shift the perception of the building between transparency and opacity as well as to create an interesting façade no matter from which direction a visitor would approach (Giovanni, 2006: 118). Two shells rise up out of the earth on either side of the main structure and appear to wrap around it; these are clad in metal panels and house the ticketing office and the Chamber Music Hall. These curved structures give the building a solid base and anchor it to the earth, without them the main structure would be but a solitary sculpture in the landscape (ill 4.3.3).

4.3.3 Spatial and accommodation organisation:

The main structure houses the majority of functions within this complex, namely the auditorium with stage and orchestra pit, rehearsal spaces and various service spaces (ill 4.3.4 & 4.3.5). The triple volume lobby wraps around the entire complex and forms

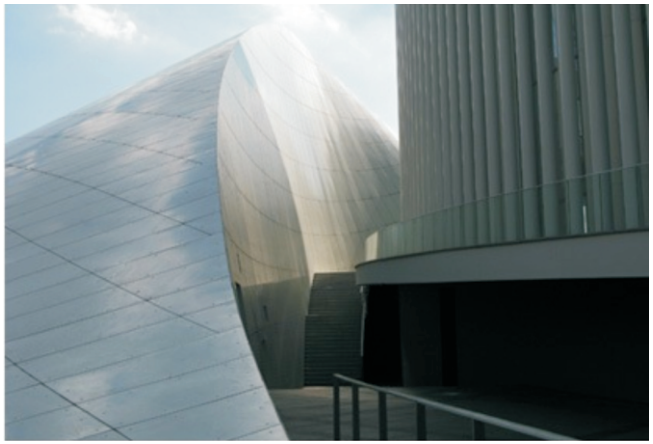
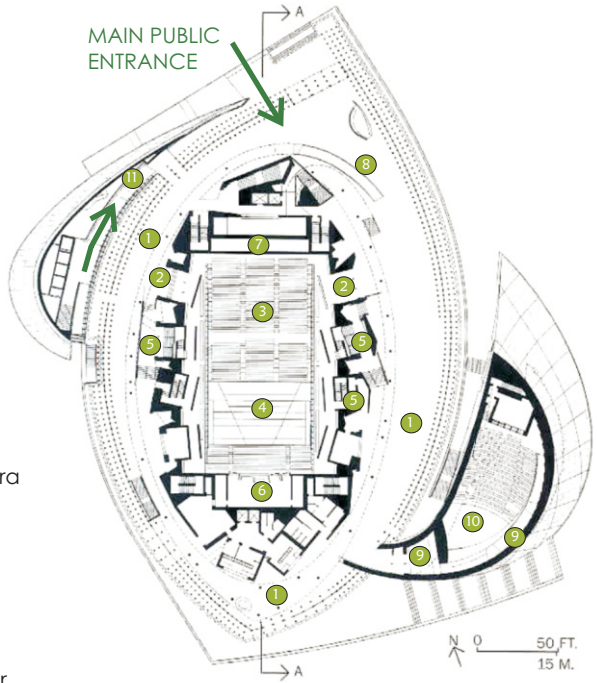


Illustration 4.3.3 - View between the curved structure leading up from the parking and the building itself
(Source - http://.homepage.mac.com Accessed 13 Feb 2008)



1 - Lobby
2 - Access to orchestra
3 - Auditorium
4 - Stage
5 - Seating towers
6 - Organ
7 - Mechanical
8 - Ramp to seating towers
9 - Ramp to chamber music hall
10 - Chamber music hall
11 - Access to parking
12 - Ticketing
13 - Rehearsal (below)
14 - Soloist dressing
15 - Dressing
16 - Stage door



Illustration 4.3.4 and 4.3.5 - Plans of Luxembourg Philharmonie showing internal street wrapping around theatre (Source - Architectural Record, Aug 2006: 120)

an internal street, linking together various halls and other facilities, complete with repetitive elements seen on the façade being translated to the ceiling above. This allows for a continuation of aesthetics throughout the building (ill 4.3.6). *A striking image within the lobby space is the rhythmic masses of the seating towers; these reflect the internal seating arrangement of the auditorium* (Giovanni, 2006: 118). These massive seating towers transform the auditorium on the inside into a large gathering space surrounded by 'buildings' and might resemble, for some, market spaces of the past. This creates an intimacy unknown to many concert halls around the world, where the performers are encircled by the audience (ill 4.3.7). The main auditorium combines the proven acoustics of the 'shoe box' hall with the qualities of a Shakespearean stage (http://philharmonie.lu, 14 February 2008) while providing the audience with an unique experience. The black box theatre is located below this main auditorium and is used for smaller, intimate recitals. The upper level supports ticketing or the 'box office', the dressing areas for the performers as well as several rehearsal spaces in different sizes.

4.3.4 Acoustics:

Within the main auditorium, the shoe box hall creates reverberant sound throughout while the seating towers shapes, which are angled toward the stage, diffuse a wide spectrum of sound, especially the lower frequencies (Giovanni, 2006: 120). Other surfaces also aid in the absorption of sound. The unique acoustic curtains present within the hall increase sound absorption for amplified music, while the three sound reflectors suspended above the audience help distribute sound during a piano recital. Sound from musical instruments tends to arc upwards, unlike dramatic



Illustration 4.3.6 - View of internal lobby volume with external structure of the facade is expressed within the lobby space (Source http://philharmonie.lu/en Accessed on the 14 Feb 2008)



Illustration 4.3.7 - View of theatre showing seating towers on either side that give the theatre an appearance of a cityscape (Source - http://philharmonie.lu/en Accessed on 14 Feb 2008)

theatre; this allows those closest to the musicians to receive sound directly (Giovanni, 2006: 120). The chamber music hall has a similar response in its inward curved walls and suspended acoustic panels over the stage (ill 4.3.8). Acoustical technician, Albert Yaying Xu of the Paris based firm Xu-Acoustique, achieved a satisfactory reverberation time that varies from 2.0 seconds for orchestral music to 1.6 seconds for amplified jazz or pop.

4.3.5 Flexibility:

The competition brief called for 'acoustical excellence for concerts ranging from symphonic music to amplified jazz' (Giovanni, 2006: 118) which required flexible spaces as well as flexible sound control in each musical space provided. The main auditorium as well as the chamber music hall are restrictive venues in that both seating and stages are fixed entities; this is the established norm throughout theatre design. However the black box theatre, located below the main auditorium, offers the flexible arrangement that the other two can not.

4.3.6 Building fabric:

De Portzamparc's Philharmonie is *defined by light rather than mass* (Giovanni, 2006: 122). This is evident in the building's rounded elevations, punctuated by a series of columns that makes the structure seem alternately permeable and unyielding. The thin, steel columns which clad the building's façade and accommodate the roof, in addition act as servicing ducts for the building (Giovanni, 2006: 118). The first, interior layer houses the ventilation and electrical ducts while the second row acts as structural mullions between windows (ill 4.3.9). Johann Wolfgang von Goethe has said the 'architecture is frozen music' (Giovanni, 2006: 122) but de



Illustration 4.3.8 - Reflective panels suspended over the chamber music hall's stage
(Source - Architectural Record, Aug 2006: 121)



Illustration 4.3.9 - Steel column system of the Philharmonie
(Source - http://images.google.co.za/181 accessed 13 February 2008)

Portzamparc has thawed this statement, giving the Philharmonie a fourth dimension. This rhythmic series of columns gives the Philharmonie a *motionless temple appearance until coloured lights are engaged,* making the façade come to life through movement (ill 4.3.10).

4.3.7 Accessibility & Public Engagement:

The two curved forms reaching up allow for a dynamic relationship between the plaza and the lobby area. This lobby level is given over entirely to the public and comprises of a string of connection points leading into the main auditorium as well as housing a restaurant, 'Papila'. This triple volume space, dominated by the public, acts as a successful transition space between the busy boulevard outside and the quieter, more reflective space of the auditorium (ill 4.3.11). This almost allows for the reconditioning of the patrons psyche upon entering the space. The lobby space links three major functions of the facility: the access from underground parking, the main auditorium and the chamber-music hall giving the complex a legible arrangement easily understood by patrons while 'conferring a platonic purity of the parts' (Giovanni, 2006: 122).

4.3.8 Conclusions:

The Luxembourg Philharmonie is one of a series of public cultural centres built by the Luxembourgian government in recent years. *This shows a concerted effort on behalf of the government who sees the need for its city to be a well rounded, diverse hub which offers a variety of interests to the public and at the same time contributes positively to economic growth.* It is a colonnaded monument standing freely in amongst the cluster of conventional square buildings that offers itself as a landmark to all visiting the area



Illustration 4.3.10 - The Philharmonie at lit night showing a kaleidoscope of colour (Source - http://philharmonie.lu/en - Accessed on 14 Feb 2008)



Illustration 4.3.11 - The 'internal street' or lobby which echoes the external ellipse with ramps and stairs accessing the theatre entrances above (Source - Architectural Record, Aug 2006: 122)

(ill 4.3.12). The undulating nature of the terrain on which the Philharmonie sits, helps the relationship between ground and building in that they work in harmony with each other. The building responds topographical with the incorporation of the two curved structures housing the chamber music hall and the access to the parkade below.

The facility responds to the need for human scale within a civic building by the introduction of several seating towers inside the main auditorium, converting the space into a 'town square' (Giovanni, 2006: 122). However, the human scale is substituted with the colossal volume experienced in the lobby which is seen commonly in civic natured facilities.



Illustration 4.3.12 - Philharmonie with the conventional governmental buildings beyond its curved facade
(Source - http://images.google.co.za/142 - Accessed on 14 Feb 2008)

4.4 HOLLAND PERFORMING ARTS CENTRE

Architects: HDR and Polshek Partnership
Location: Omaha, Nebraska
Date completed: October 2005

4.4.1 Background:

In the early 1990s, the Omaha Symphony was limited to the Orpheum Theatre, a historic 1920s proscenium stage which it shared with opera and Broadway style touring companies (Fortmeyer, 2006: 124). At the same time, a leadership gift provided by Richard and Mary Holland was received and it was decided to design and build an Arts Centre, within the centre of the city, which would inevitably host not only the Omaha Symphony but also a range of local and international performers (ill 4.4.1). The principles of such a facility were to include the following (www.omahaperformingarts.org, 14 February 2008):

- A concert hall with exceptional acoustics
- A facility that would draw the community to the arts
- And to achieve a 'building of distinction' that will last for generations

This facility was realised by means of sensational involvement both financially and physically by the community of Omaha (www.omahaperformingarts.org, 14 February 2008).

4.4.2 Siting & Landmark Value:

Located on a tight, prominent downtown Omaha site, the Performing Arts Centre replaced a Swanson's Food plant which was



Illustration 4.4.1 - The juxtaposition of different shapes and materials creates a dynamic facade facing the street and park. The 'lantern' in the background forms a beacon of light for all to see at night (Source - Architectural Record, Aug 2006: 125)

demolished earlier, in an attempt to encourage a growing fine arts district (Fortmeyer, 2006: 124). The Gene Leahy Mall, a linear urban park, runs between the river and the site and aids in establishing a transition zone between the natural and built environments as well as provides a space to sit and relax within a bustling city (ill 4.4.2). This park was developed in part by Lawrence Halprin in the 1970s in an effort to renew the city and reconnect it with the river (Fortmeyer, 2006: 124). However, it is evident that this alone is not successful but with the addition of the performing arts centre, the area is already more active. *Due to the community's involvement in the fundraising of the project, the facility has become a true cultural landmark within the city limits.* In order to develop this landmark facility, the design team consisting of the local architectural firm of HDR in collaboration with Polshek Partnership Architects from New York, visited a variety of performing arts centres as well as concert halls throughout the US and Europe (www.omahaperformingarts.org, 14 February 2008)). A great deal of inspiration was drawn from the legendary Musikverein in Vienna, Austria (ill 4.4.3). The Musikverein is elevated off the ground and gives the visitors a sense of drama and magic of the theatre when approaching the facility. Together with this aspect, the allowance for natural daylight through clerestories was incorporated into the performing arts centre in Omaha.

4.4.3 Spatial and accommodation organisation:

The centre consists of performance spaces which include: the 2,000 seat Peter Kiewitt Concert Hall, the flexible 400 seat Suzanne and Walter Scott Recital Hall as well as a semi enclosed outdoor performance and event garden accommodating up to 1,000 people within the courtyard (www.omahaperformingarts.org, 14 February 2008) (ill 4.4.4 through 4.4.7). HDR and Polshek developed



Illustration 4.4.2 - The green space directly in front of the center serves as a transition zone between the building and river's edge and provides an ever changing view
(Source - Architectural Record, Aug 2006: 124)



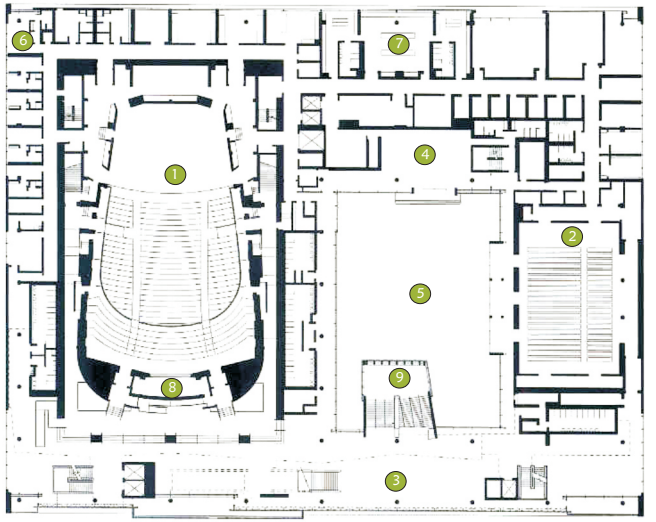
Illustration 4.4.3 - the Musikverein, Vienna AUSTRIA from where a great deal of inspiration was found for the Holland Performing Arts Center
(Source - http://piccasoweb.google.com - Accessed 09 March 2008)

the performance spaces as discrete, rectangular elements and chose to focus more on the interrelation between the building's façade and the natural quality of the outdoors experienced in southeast Nebraska (Fortmeyer, 200: 124). Apart from the lobby space, the ground floor houses the large mechanical facilities as well as the loading dock with auxiliary spaces. A grand staircase links the ground floor lobby area with the lobby level above overlooking the courtyard and the park beyond. Exhibition space, small retail and a café all operate off this lobby space. A series of bridges link the audience to the auditorium from this point (ill 4.4.8). The orchestra level or first floor, accommodates the entrances into the concert and recital halls, the dressing areas, administrational offices and storage places. The concert hall is a classical 'shoe box' configuration, seating half the patrons at orchestra level and the remainder within side tiers wrapping around the volume (ill 4.4.9). Three stage lifts convert the stage area from a flat surface to a multi level platform space to accommodate presentations from a soloist to a full orchestra. The Recital Hall doubles as a rehearsal / banquet space and intimate performance space. The final second floor provides access to recital hall and the remainder of the storage areas. The main auditorium space rises out above this final level and creates a striking dimension when viewed from the park by providing clerestory lighting into the space. This has been referred to as the 'beacon of light' by many of the Omaha residents (www.omahaperformingarts.org, 14 February 2008) (ill 4.4.10).

4.4.4 Acoustics:

Chicago based acoustical consultants, Kirkegaard and Associates, were responsible for the superior treatment in both performance spaces. The narrow shape of the shoe box hall that the architects

1 - concert hall
2 - recital hall
3 - second floor lobby
4 - founder's room
5 - exterior courtyard
6 - conductor's suite
7 - instrument storage
8 - projection booth
9 - grand lobby stair
10 - driveway
11 - ground floor lobby
12 - mechanical plenum
13 - loading dock



Orchestra Level (above) & entry level (below)

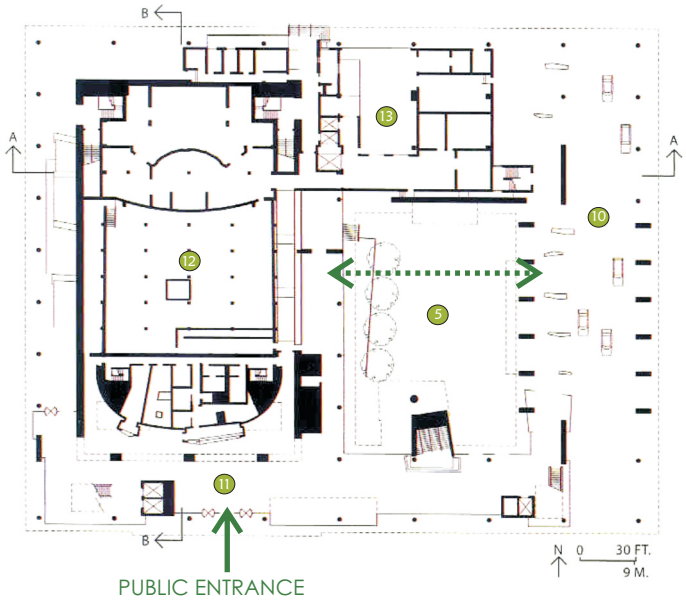
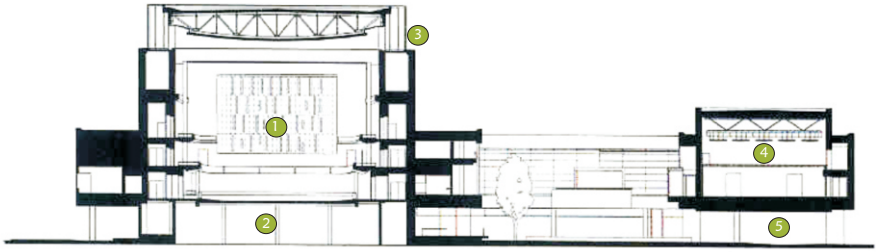
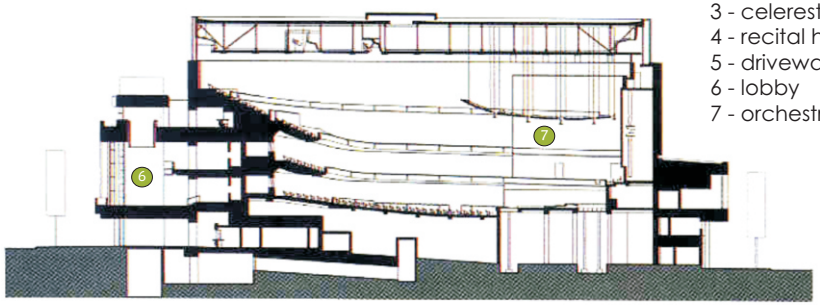


Illustration 4.4.4 and 4.4.5 - Plans of Holland Performing Arts (Source - Architectural Record, Aug 2006: 126)



Section AA through both halls

1 - concert hall
2 - mechanical plenum
3 - celerestory
4 - recital hall
5 - driveway
6 - lobby
7 - orchestra canopy



Section BB through main concert hall

Illustration 4.4.6 and 4.4.7 - Sections through performing arts centre (Source - Architectural Record, Aug 2006: 126)



Illustration 4.4.9 - View of concert hall with tiered balconies wrapping around (Source - Architectural Record, Aug 2006: 128)



Illustration 4.4.8 - Raised walkways link the lobby space to the theatre (Source - Architectural Record, Aug 2006: 127)



Illustration 4.4.10 - The complex at night acts as a beacon of light within the city (Source - http://ist.unomaha.edu - Accessed on14 Feb 2008)

adopted for the concert hall, further allowed clarity and intimacy to the sound, providing the rich reverberation needed (http://hdrinc.com, 14 February 2008). The fact that a concert hall didn't require a theatrical proscenium, wings or a fly space further helped the consultants. Hand crafted plaster wall panels were incorporated for diffusion as well as timber surfaces. The concert hall was *design to accommodate a varied programme of artists, thus acoustical consultants provided a flexible acoustic arrangement that can be modified to suit the different performances.* An adjustable canopy suspends from the ceiling over the stage area which reflects and diffuses sound (ill 4.4.11). If needed, this canopy is raised and fibreglass panels drop out of the ceiling for amplified music performances (Fortmeyer, 2006: 130). The precast concrete ceiling panels enhance bass frequencies and carry the catwalks above the audience. The clerestory, adapted from the Musikverein in Vienna, was the source of problems concerning acoustic control but by creating an air gap between the two glass walls, outside noise was reduced and the interior skin was configured for acoustical reflectance (Fortmeyer, 2006: 130). The recital hall was slightly easier, being a smaller rectangular space without clerestory lighting, with panels and other absorbent materials are incorporated into the space.



Illustration 4.4.11 - Adjustable acoustic canopy suspended over the audience
(Source - http://ist.unomaha.edu - Accessed on14 Feb 2008)

4.4.5 Flexibility:

The facility is capable of hosting a variety of entertainment, but specialises in productions requiring a more acoustical correct environment such as performances by the Omaha Symphony which refers to the Holland Performing Arts as its home (www.omahaperformingsarts.org, 14 February 2008). This also broadens the scope of the ballet and opera, attracting audiences

from all walks of life within Omaha and the rest of the country. Overall, the center offers a large range of flexible venues including the Recital Hall which can also be used as a banquet hall or rehearsal space as well as the outdoor performance space within the courtyard. This flexibility may attract a wider range of productions to the Holland Centre that perhaps need a theatre to adapt to their specific needs and not the other way round.

4.4.6 Building fabric:

There is a direct contrast between the vast façade of glass of the complex and the flowing civic park, the Gene Leahy Mall, across the road. What once was just considered a green space within the downtown district of the city (Fortmeyer, 2006: 124), is now *enlivened by the reflectivity of the performing art centres façade and offers a direct dialogue with the park adjacent to it.* An aluminium track in the floor anchors this wall of glass, while a fin system minimally supports it at ceiling level. HDR and Polshek tried to utilise materials on the exterior that would enhance and complement the natural environment around the centre and these included a zinc rain-screen system, an assortment of metal and copper panels and limestone cladding covering the concrete (Fortmeyer, 2006: 124). The natural textures and colours chosen also help to blend the structure into its context instead of it announcing itself as a man-made object. This 'nature sensitive' contribution sets it apart form the other buildings in the area. The 'floating' zinc clad mass encircles the main façade of glass housing the lobby spaces, defining the edge between street and site and aids in establishing this as the undisputed entrance into the building (ill 4.4.12). This direct south facing façade becomes a 'light box' at night, visible to passersby, encouraging curiosity.



Illustration 4.4.12 - Distinct elemental architecture with glass base, heavy zinc clad mass and clerestory above (Source - Architectural Record, Aug 2006: 125)

4.4.7 Accessibility & Public Engagement:

The ground floor is partially enclosed in 12mm, highly transparent glass which allows for a direct relationship between inside and out and aims to attract street life to the activity within (Fortmeyer, 2006: 124). This space, as well as the covered arrival plaza, creates a *visual connection between the park and the Holland Centre courtyard beyond the lobby which encourages people to enter the building.* This entire area is given over for public interaction, and the courtyard which serves as a transition zone between the parking and lobby, strengthens this cause. The lobby houses ticketing, small scale retail, food areas as well as other patron services (www.omahaperformingarts.org, 14 February 2008). The easy flow between the outside and inside is a result of the transparency of the façade which provides an accessible facility to all people.

4.4.8 Conclusions:

By sacrificing a more flamboyant treatment of the facades, it can be argued that the Holland Centre doesn't have any landmark value; however this might be the opinion of few but to the residents of Omaha, this is a *product of their hard work and dedication to the regeneration of the area* (www.omahaperformingarts.org, 14 February 2008). Some architectural critics might go as far as to say it's an understated landmark in its visible respect for its surroundings through its facades of glass and natural materials. In fact, the Holland Centre is *an anchor to this promising arts district and provides an icon for Omaha* (www.omahaperformingarts.org). The clerestory proves to be a glowing lantern at night thus making it an icon for the city.

The basic arrangement of spaces, both performance and servicing, may be considered divorced from each in order to accommodate the internal courtyard. However, the architects wanted a distinct relationship between the outside and the inside and thus the courtyard was a non-negotiable element. The tight restrictiveness of the site may have also played a crucial role in the arrangement of these spaces. Whatever the case may be, the centre offers a highly interactive environment for its users, by means of the transitional lobby, creating spaces that can be utilised whatever the season (ill 4.4.13).



Illustration 4.4.13 - Transitional lobby space that visually links the building's lobby area and the road edge and to the park and river edge beyond
(Source - Architectural Record, Aug 2006: 125)

4.5 NEW JERSEY PERFORMING ARTS CENTER

Architects: Barton Meyers Associates
Location: Newark, New Jersey, USA
Date completed: October 1997

4.5.1 Background:

Once an active port and industrial city, Newark had become a slum due to the flight of the more affluent people from of the city, leaving the poor and unemployed behind in amidst flourishing crime (Webb, 1998: 10). The New Jersey Performing Arts Centre (NJPAC) opened its doors on the 18th October 1997 as a response to this urban blight (ill 4.5.1). It was often critised during the development stages as a spotlight on the wrong problem. Jack Kemp, the Secretary of Housing and Urban Development, had said 'You ought to be ashamed that you're fighting for an arts centre in Newark! You should be thinking about the homeless, housing and AIDS victims' (Webb, 1998: 11) However, the mayor of Newark believed it would renew the souls of the people and would give them something to 'live for'. The centre thus became a part of a larger urban renewal scheme which included property along the river's edge which is intended for future mixed use development.

Like most theatres today, the NJPAC doesn't have a resident theatre or ballet company and so acts as a receiving house for traveling productions. However, the New Jersey Symphony has made the NJPAC its home since October 1997.

4.5.2 Siting & Landmark Value:

The NJPAC is located within 38.6km of New York City, within a 12

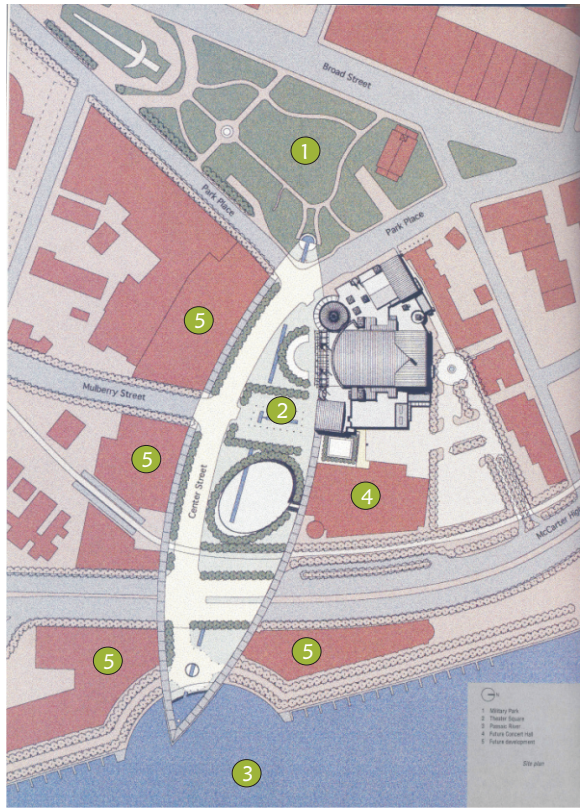


Illustration 4.5.1 - The New Jersey Performing Arts Centre in Newark showing direct relationship between building and street edge with a public plaza included as transition space (Source - Webb, 1998: 70)

acre parcel of mostly empty land bordering on the Passaic River, in downtown Newark (ill 4.5.2). The advantages of such a site was firstly a 1,100 parking garage located beneath the Military Park and secondly, being in close proximity to Penn Station and several other art centres as well as the possibility to bring new life back to the abandoned, industrial waterfront area. Architects Barton Meyers and Associates – who had designed three performing arts centres previously – set about designing a building that responded to its context and that encompassed the ceremony of arrival through its stages and lobbies (Webb, 1998: 17). *The building has a direct relationship with the Military Park across the road as well as with the boulevard running down towards the Passaic River by means of an open space, called Theatre Square, in front of the building.* Thus the corner is expressed with the rotunda and the largest hall, the Prudential Hall, is located just behind Theatre Square so as to interact with the park (ill 4.5.3).

4.5.3 Spatial and accommodation organisation:

The lobbies of each theatre were to have a sense of place and occasion from the beginning, with the largest rotunda acting as a hinge between the two theatres and the two open spaces (Webb, 1998: 19). The 'rotunda' itself is a stylised theatre boasting four tiers of galleries and catwalks encircling the space (ill 4.5.6). These galleries are expressed as opera boxes, projecting out into the space from above. From this large triple volume space, a top lit spinal corridor links the front of house to the back of house and separates the two theatres with the insertion of services such as dressing rooms and loading docks (ill 4.5.4. and 4.5.5). The larger of the two theatres is known as the 'Prudential Hall' which seats 2,700 people, deemed to achieve a greater intimacy and ultimately better acoustics needed



1 - military park
2 - theatre square
3 - passaic river
4 - future concert hall
5 - future development

Illustration 4.5.2 -The overall site plan for the area of Newark set around a planted fin-shaped promenade (Source - Webb, 1998: 50)

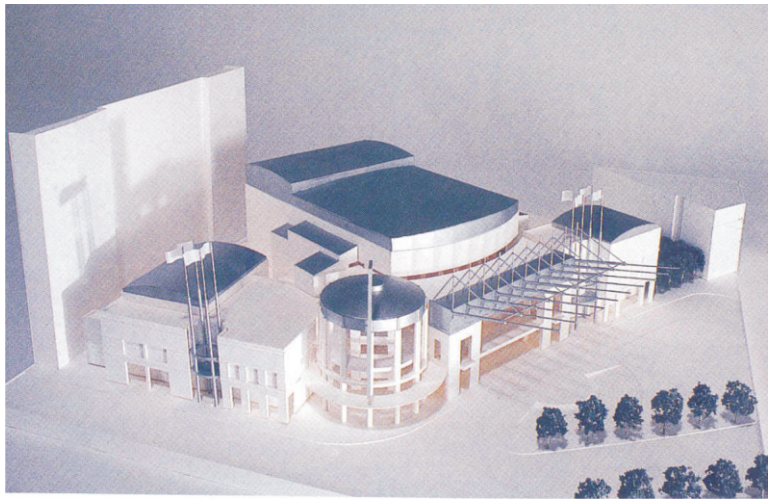


Illustration 4.5.3 - Model of complex showing 'hinge' of the rotunda and subsequent arrangement os spaces (Source - Webb, 1998: 20)

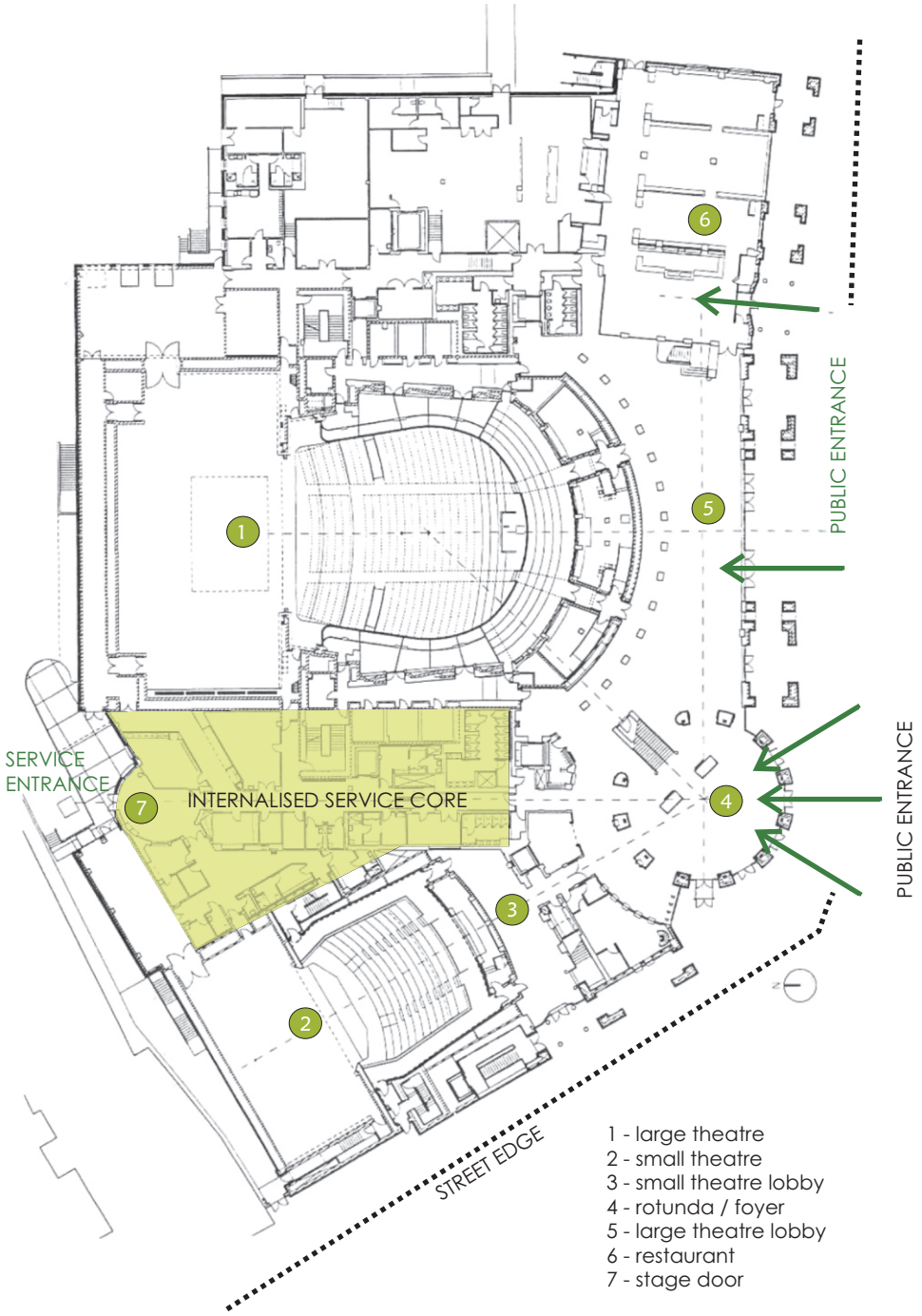


Illustration 4.5.4 - Ground floor level of complex
(Source - Webb, 1998: 51)

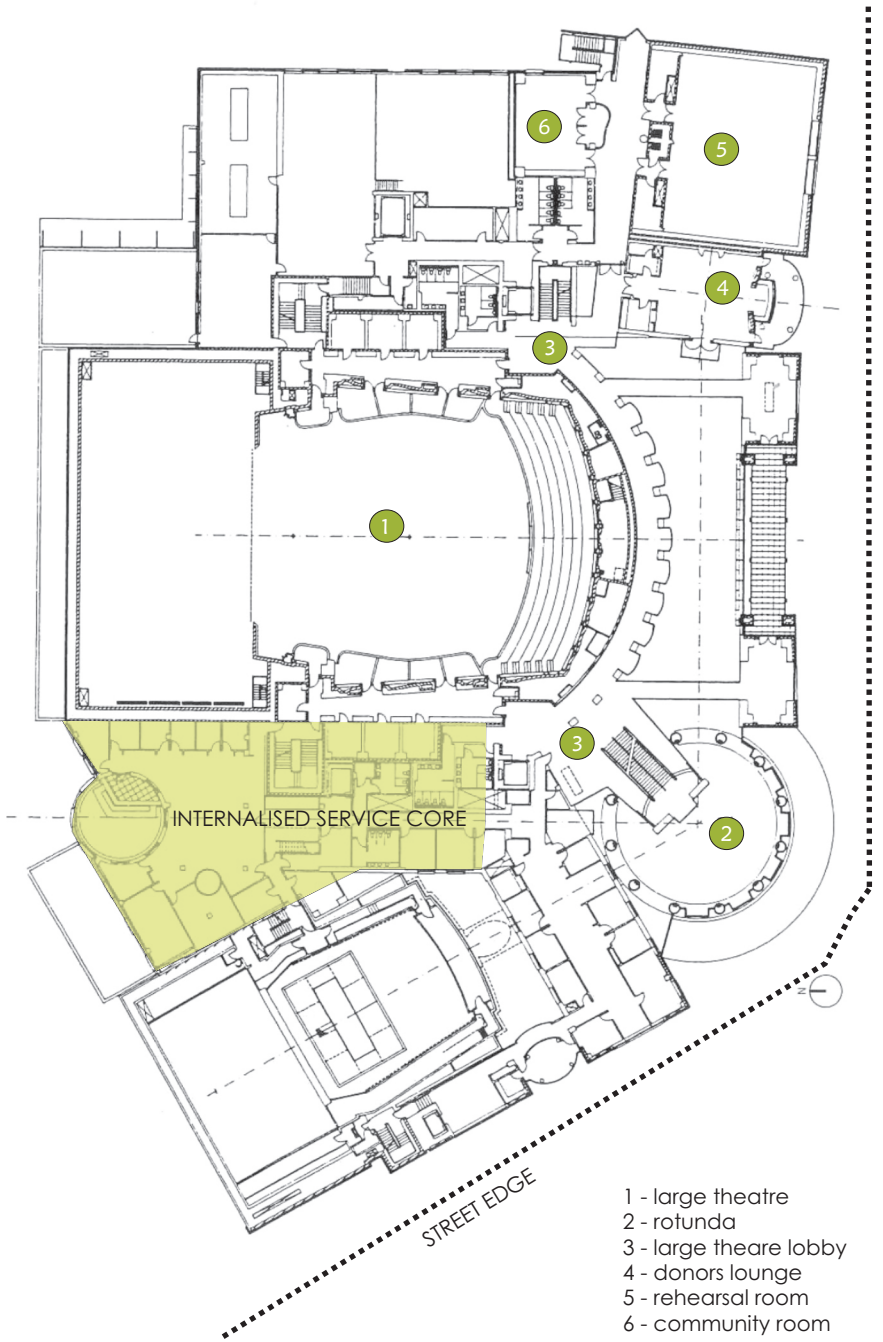


Illustration 4.5.5 - Third floor level of complex
(Source - Webb, 1998: 52)

for opera halls (Webb, 1998: 24). It is an elongated hall with multiple tiers pushing the audience closer to the stage itself whilst creating a 'townscape façade' by wrapping around the sides (ill 4.5.7). Dark tones were employed within this space as not to distract the audience from the stage. Wood was also used due to its association with musical instruments (Webb, 1998: 92). The crowning glory of this space is its refractive glass sphere which is suspended from the ceiling, creating a symbolic sun (ill 4.5.8). This 'glass sun' acts as a transitional and atmospheric device to transform the hall from day to night-time setting (Webb, 1998: 100).



Illustration 4.5.6 - Rotunda's triple volume space, acts as a hinge for the whole development with gallery space encircling it (Source - Webb 1998: 77)



Illustration 4.5.7 - View within the large theatre space showing tiers of balconies wrapping around the space (Source - Webb, 1998: 59)

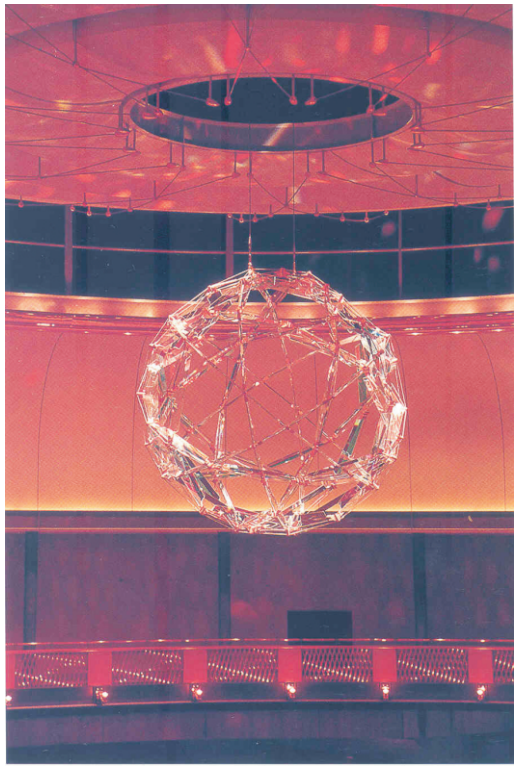


Illustration 4.5.8 - The glass refractive sphere suspended over the large theatre aids the spaces acoustics (Source - Webb, 1998: 101)

The Victoria Hall, seating just over 500 people in parterre and single balconies, lies North West of the spinal corridor and caters for more intimate recitals and theatre productions (ill 4.5.9). It is often called the 'black box' theatre and was painted to match the name, almost resembling a workshop space (Webb, 1998: 102). Both theatres' lobbies, as well as a restaurant, face the plaza and ultimately the boulevard which allows for seamless transition of space by means of glass curtain walling.

4.5.4 Acoustics:

Due to the fact that the facility is located only one mile away from a large railway station and on the flight path of Newark Airport, Artec Consultants Inc found maintaining acoustic standards difficult (Steel, 1996: 150). Thus the outer walls have seven sound insulating layers and each theatre was designed as a box within a box, with its own set of foundations further shielding the theatre against external noise. The acoustics were designed to accommodate 19 different activities from symphonic music to recitals, rock to lectures (Webb, 1998: 40) with a compromised reverberation time between 1.3 and 1.5 seconds to house the range of performances. It was considered fundamental to the design team that the heat and air-conditioning needed for the theatres were to be virtually noiseless so Myers created a system that enabled the ducts to be placed at floor level thus allowing cool or warm air to rise and evacuate at ceiling level (Webb, 1998: 45). Above the stage of the Prudential Hall are eleven movable timber towers which, when arranged correctly, reflect sound from the stage to the audience (ill 4.5.10 and 4.5.11). This allows the hall to be played like a musical instrument, allowing reverberation times between 1.5 and 2.3 seconds depending on the configuration (Webb, 1998: 43). Movable acoustic curtains were



Illustration 4.5.9 - View within the smaller theatre space showing tiers of balconies wrapping around the space
(Source - Webb, 1998: 104)

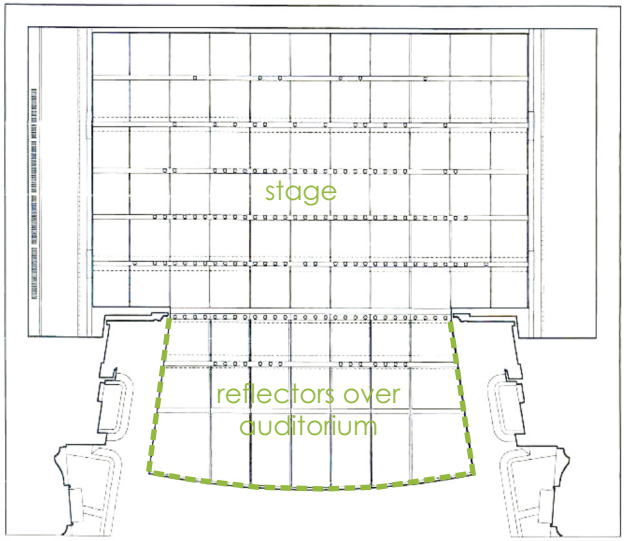


Illustration 4.5.10 - Plan of reflector panels suspended over the stage and auditorium (Source - Webb, 1998: 43)

also employed throughout both the Prudential Hall and the Victoria Theatre as acoustical devices to minimise reflection of sound.

4.5.5 Flexibility:

Unfortunately, the facility doesn't provide flexible seating or arrangements within each theatre. However, the rehearsal room – located on above the restaurant – doubles as a banquet hall and is the most versatile space within the complex (ill 4.5.12). It boasts sprung floors, practise barres and mirrors for ballet as well as provides natural southern light with views to the park. It has become, in more recent years, a multi purpose community room (Webb, 1998: 89).

4.5.6 Building fabric:

The city of Newark was founded in 1666 (Webb, 1988: 64) and remnants of this Victorian city is seen in the scattered red brick buildings still in existence within the city today. Thus Myers insisted on keeping to this tradition and so the NJPAC comprises mostly of red brick with green accent bands, with extensive use of glass curtain walling, and is supported by a granite base giving the performing arts centre the grounding it needs to maintain it as a public facility, which is accessible to everyone. This building therefore echoes the picturesque past of Newark.

.5.7 Accessibility & Public Engagement:

Unlike most theatres and facilities of this nature, the NJPAC opens up to the street, the original design requirement was that *'…the building must express an openness and accessibility to all segments of the population'* (Webb, 1998: 14). This has indeed been achieved. The Theatre Square, bridging the gap between building and road, is a landscaped ellipse that also lends itself to informal performances

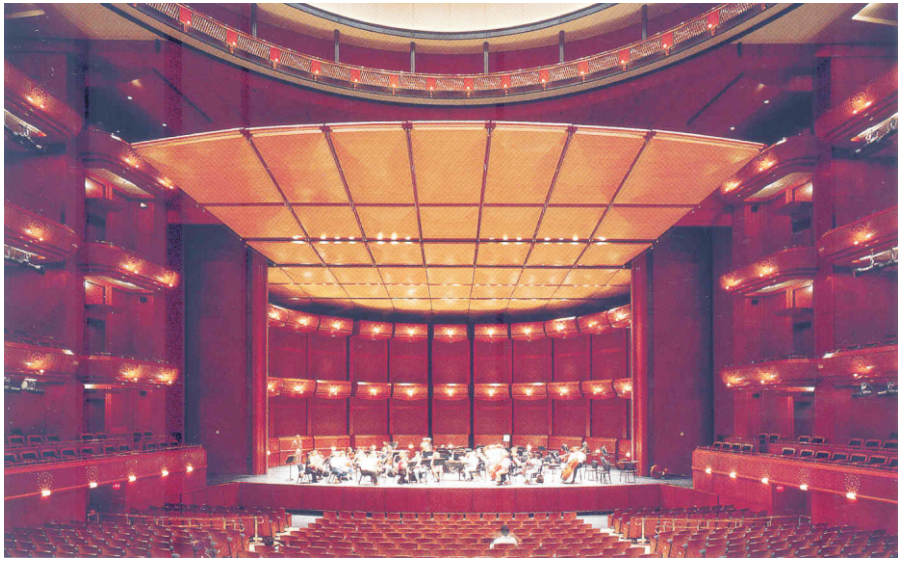


Illustration 4.5.11 - View of the reflector panels in place for a concert (Source - Webb, 1998: 43)



Illustration 4.5.12 - The high volume flexible rehearsal space / banquet hall (Source - Webb, 1998: 89)

(ill 4.5.13). The space also has the ability for restaurant and café tables to spill out thus activating the square. Charles Lee, an American architect who designed theatres in the 1930s and 1940s, once said that 'the shows begin on the sidewalk' (Webb, 1998: 76) and this is evident in the success of the square as well as the use of glass which engages people's interest in the facility.

4.5.8 Conclusions:

This precedent is a *good example of successful transition spaces by means of the public plaza in the south which wraps around the building on two sides becoming an actively vibrant pedestrian edge.* The vast glazed panels and identifiable architectural forms and elements allow the public to engage with the building at different levels, both near and far. A successful attempt at acoustic flexibility is seen in it's retractable reflector panels within the Prudential Hall, allowing for a variety of performance types to be accommodated within one space Critics often said that suburbanites would not venture downtown to make use of this facility however, due to a mayor's vision for this once derelict area, the New Jersey Symphony subscriptions quadrupled in the first year of opening (Webb, 1998: 105). *A 'beacon to the city', the NJPAC represents a refocusing of urban activity at a civic level* whilst still maintaining a pedestrian scale at ground level to support a dynamic integration with buildings adjacent to it. There have been ambitious plans for the area to include: improvement of public transport and to establish an upgraded business district (Webb, 1998: 105), but these improvements won't solve the problems of the city completely (ill 4.5.14). There sole function of the facility is to uplift and enlighten the community and serve as a catalyst for the rebirth of one of America's oldest cities.



Illustration 4.5.13 - Theatre Square acts as a transitional zone between the building and the street edge (Source - Webb, 1998: 76)

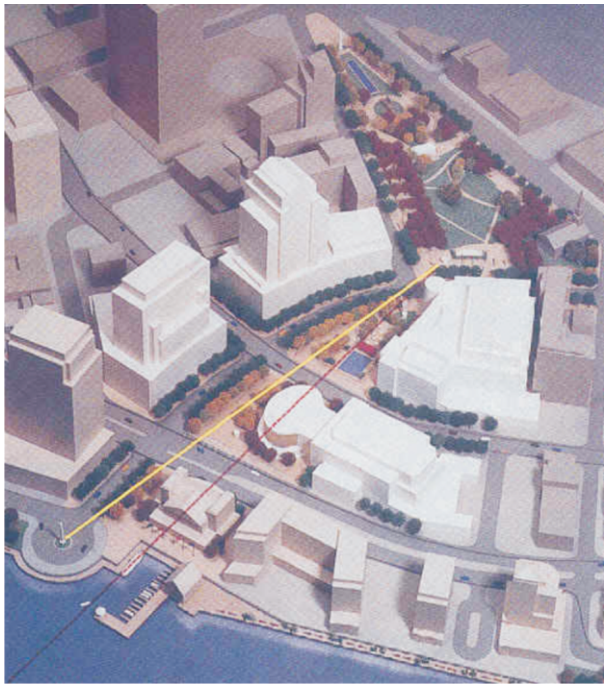


Illustration 4.5.14 - Model showing overall plan for the area with direct link between the theatre and the river's edge (Source - Webb, 1998: 12)

4.6 CONCLUSIONS TOWARDS THE DEVELOPMENT OF A DESIGN BRIEF:

Siting & Landmark Value:

From the examples analysed within this chapter, it is noted that theatres are placed in areas where renewal is needed (Holland and New Jersey Performing Arts Centre specifically) and in some cases, a drastic image change to an area is needed to bring about this renewal, as in the case of Sydney. However sometimes, this change is not warmly received at first, the Sydney Opera House was initially called the 'hunchback of Bennelong Point' (Murray, 2004: xv). A lot of attention was paid to siting of these theatre facilities, in particular its relationship with its edge, be it water or an active boulevard. The Sydney Opera House and the Holland Performing Arts have distinct relationships to their water's edge, the sea and river respectively, allowing facilities to open up onto this edge and welcome people in by means of restaurants and courtyards. Other facilities, like the Luxembourg Philharmonie and the NJPAC, came about as a solution to a derelict downtown area and have a direct connection with the boulevards created along their edge.

All the examples evaluated with exception of the Holland Performing Arts, have gone beyond what a conventional theatre has appeared. Each has used the *civic nature of the building to express a power or a presence that people recognise from afar, an iconic building that doesn't go unnoticed.* The Holland Performing Arts seems to be more preoccupied with its relationship to the area and ultimately the park and river beyond the site limits. This is not to be viewed as purely negative; it shows an understated capability that the building strives to do more within the community than solely being a physical icon. It must be noted however, that a facility of this



Illustration 4.6.1 - The Sydney Opera House is a good example of an active edge as well as an iconic, landmark for a city
(Source - Ziegler, 1973: 64)

nature needs to be positioned in such a way that it is easily visible and accessible, on an active edge being either a boulevard or some form of water (ill 4.6.1).

Spatial and accommodation organisation:

The research has not shown one distinct system of arranging theatres and its auxiliary facilities. Rather, they illustrate the many ways one could go about handling a building of this size and nature as it relates to its context and it's edge. The Sydney Opera House's side by side configuration is practical in it's placement on the site as well as providing a vehicular access road below in order to service the mechanical and lower facilities. However, these theatre's lobbies do not interact with the site edge at all, only opening up to the main street in the south. The Luxembourg Philharmonie opts for an internalised approach, where the theatre is surrounded by the 'public' lobby; again one does not see the interaction of the lobby to the buildings edge. Conversely, the NJPAC and the Holland Performing Arts offers the opposite approach where by means of a transparent façade, the ground level of the building as well as the theatre's lobbies have a *visual connection to the outside edge* of the site. However, one distinct system appears, in that the mechanicals and services are located below the theatre halls / venues in order to create a vertical system for scene changing. This appears to be the norm among theatre designs and one that will be utilised within this dissertation. Sometimes dressing room facilities are located beneath however, this isn't exclusive as in the Holland Performing Arts and the Luxembourg Philharmonie. The incorporation of large volumes is also commonly used within theses examples, notably the NJPAC and the Luxembourg Philharmonie. *Large volumes are experienced within the lobby areas which give the facility a sense of grandeur* and civic pride (ill 4.6.2).



Illustration 4.6.2 - The large triple volume within the rotunda was stylised to have the appearance of a mini theatre with balconies and catwalks (Source - Webb, 1998: 84)

Acoustics:

L.V Jordan, the acoustical engineer on the Sydney Opera House, once wrote 'satisfactory acoustics are based on a number of factors: reverberation time, sound distribution, sound diffusion and the overall dimensions' (Murray, 2004: 21). This can clearly be seen in many theatre designs over the world. Within each example analysed in this chapter, each facility catered for the function they were trying to house be it symphony music, opera or dramatic theatre. Each function comes with its own requirements as to reverberation times and was accommodated accordingly in each precedent case. One thing can be noted to be common in all examples – the *use of sound reflectors and diffusers.* The Sydney Opera House was an extreme case in that convex curves were created out of a series of precast ribs to ensure limited echoes within the space. However, more common forms of acoustic control were found in the use of timber paneling, adjustable and fixed acoustic panels, acoustic curtains and carpets. Notably, in the Luxembourg Philharmonie's and the NJPAC's suspended reflectors just above the stage to ensure initial reflection from the stage to the audience (ill 4.6.3). A system of reflectors and paneling will be utilised within this dissertation, however it must be noted that an acoustic engineer would need to be employed in order for an appropriate system to be designed and implemented.

Flexibility:

It has been found, through the analysis done on these examples, that theatres in general are not proven to be flexible venues due to several reasons, namely: the cost involved in dismantling and setting up the different configurations, the acoustic treatment of those spaces set up rigidly for the audience to receive the best sound

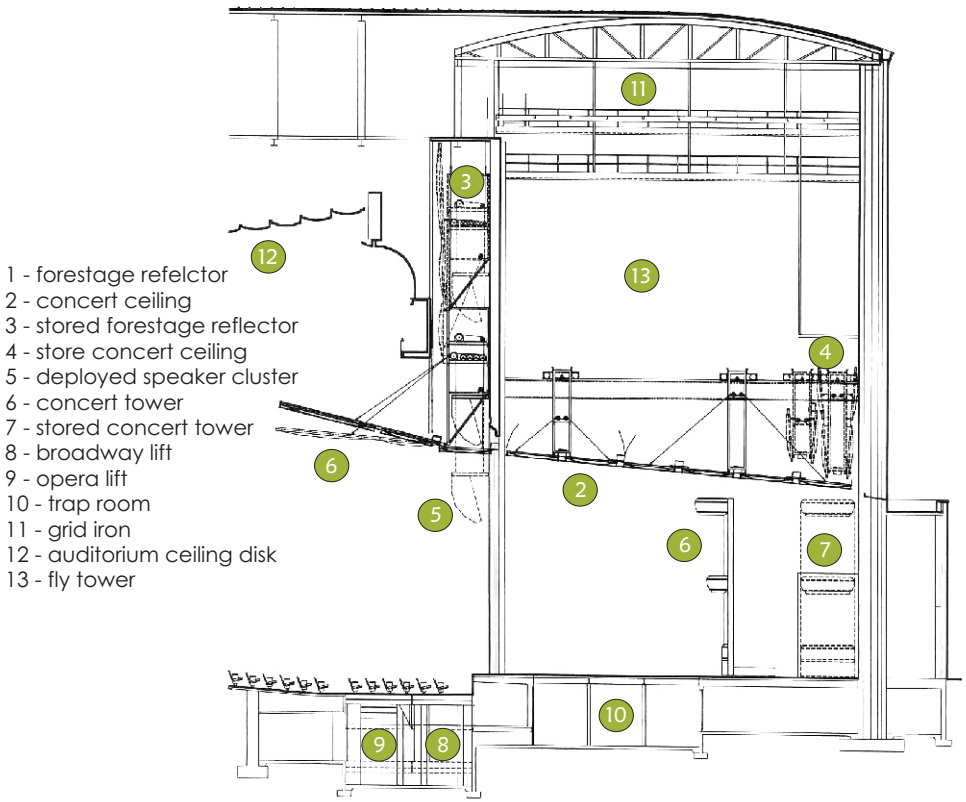


Illustration 4.6.3 - Section through fly tower of large theatre at the NJPAC (Source - Webb, 1998: 42)

possible as well as the restrictive quality of the stage, complete with back stage and sometimes side stages. Therefore, flexible spaces are provided by large multi-purpose facilities such as the rehearsal room / banquet hall and sometimes, in the case of the Luxembourg Philharmonie, a smaller theatre seating roughly 300 people. This is accomplished due to the single span of the space and has been applied similarly into the dissertation by means of two banquet / rehearsal venues.

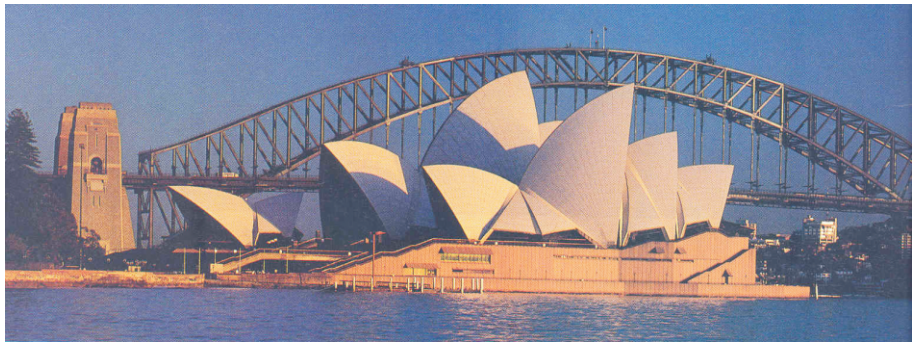


Illustration 4.6.4 - Preoccupation of form is evident in the Sydney Opera House over expressing the internal functions of the theatre (Source - RIBA Journal, Dec 1999: 12)

Building fabric:

Concept versus functionality would seem to be the difference between the examples explored in this chapter. The Sydney Opera House as well as the Luxembourg Philharmonie both were concept driven with distinct images created within a place, *a distinct preoccupation with both light and form and how they interact with one another on a surface* (ill 4.6.4). The NJPAC and the Holland Performing Arts seem to have a more functional approach to the facility, where the prominence is placed on the interaction between people and building at street level than it is with the grand concept. So where does one draw the line? Does one opt for a less remarkable, economically efficient building or rather an impressive icon that requires a little extra effort and funding? 'Risk taking is the stuff great architecture is made of, and it comes with the territory' (Wilson, 1989: 110). A balance between the two, concept and functionality, will be attempted to provide a unique theatre facility for Durban.

Accessibility & Public Engagement:

Within this research, two distinct patterns emerged with the comparison between *transparent facades and solid bases.* Both

the NJPAC and the Holland Performing Arts examples provide a seamless transition between street edge and building by means of glass curtain walling while the Sydney Opera House and the Luxembourg Philharmonie provide a variegated façade that still engages with the public edge but provides the building with a solid base. What has been found in this research however, is that there is a definitely need for interaction between people at ground level within civic buildings in order for the building to be used by the community and not be impenetrable. All the examples chosen, with the exception of the Luxembourg Philharmonie, have developed an *active edge along their boundaries with retail, restaurants or just places to sit or walk* (ill 4.6.5). The Luxembourg's triple volume concourse lobby encompassing the site could be seen as an internal street and so could operate much in the same way, but the building's physical edge doesn't communicate with the boulevard adjacent to it and becomes a sculpture in the landscape. Once again a balance between the two views will be explored within the design portion of the dissertation, as there is a strong need for certain public areas to be transparent and visually inviting, while service and performer areas need privacy from the general public.

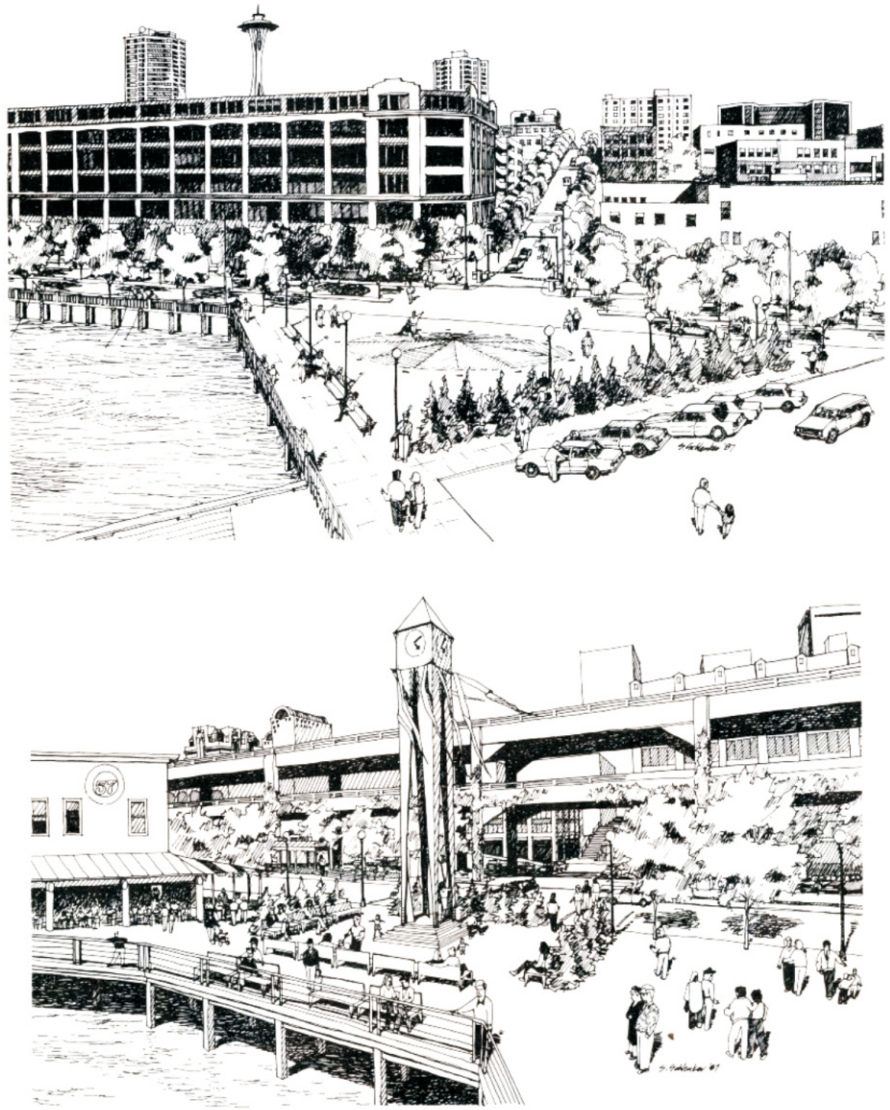


Illustration 4.6.5 - A stimulated, active edge requires engagement of people at the edge of the building by means of restaurants, retail of seating areas (Source - Torre, 1989: 125)

5.1 INTRODUCTION:

Three national case studies were chosen for this chapter: the Playhouse Theatre in Durban, the State Theatre in Pretoria and the Civic Theatre in Johannesburg. The reason for these three examples was the ability to gather first hand information from the users of the building, including the employees working within the facilities, which will ultimately lead to a better understanding of the complex building typology and the relevance within its context.

The Playhouse Theatre is Durban's only theatre large enough to accommodate international productions such as the Bolshoi Ballet etc. It underwent a renovation in the 1980s, in an attempt to convert the existing buildings into a 'state of the art' multi-venue theatre complex (www.playhousecompany.com, 23 February 2008). Therefore with this example, the researcher will explore the theatre's existence and relevance within the city of Durban today as well as the analysing the positive and negatives aspects of the design and planning which is vital to this research topic. The State Theatre, Pretoria and Civic Theatre, Johannesburg (JHB) are other examples that are located within the city limits, the 'heart of downtown', and serves to promote cultural art development and bring people back into the city. They furthermore prove to be a valuable comparison between state-funded versus self-supportive theatre facilities within South Africa.

The area of focus concerning the case studies was determined by the research accumulated in the precedent studies seen in the previous chapter. The criteria that the following examples will be analysed on includes: *reason and response to site choice within a city context, the impact on the community, funding, the internal functioning of the facility and its affiliates, theatre facilities offered within South Africa, the flexibility of such facilities and finally, the engagement with people at street edge.* This information gathered will aid the researcher in refining the brief and schedule of accommodation established by the precedent studies chapter previously, which should aim to be a regional response for South Africa. The analysis will be a combination of interviews with personnel, users of the facilities, published articles in journals and the application of findings from the previous chapter.

5.2 THE PLAYHOUSE THEATRE

Architect: Small, Petit and Robson
Location: Durban CBD
Date Completed: Originally 1935 (conversion 1985)

5.2.1 Background

The original site consisted of a series of cinemas known as the Prince's Theatre built in 1926 in the 17th century French style (Peters (ed), 1983: 1), as well as the Tudor style Playhouse built in 1935 (www.playhousecompany.com). The end of 1976 saw the end of the 50 year lease and in the early 1980s, the complex of buildings underwent an extensive renovation and conversion into what is standing today. It was felt that the Playhouse facilities had become inadequate to deal with the size of modern productions and so it was decided to acquire the Prince's Theatre, two bays of the Albany parkade behind as well as Medwood Court flats in order to enlarge the facilities needed in the Playhouse (Peters (ed), 1983: 1). Both facades of the original Playhouse and the Prince's Theatre were retained and restored to their former glory (Marais, 1983: 43) (ill 5.2.1). It was officially opened as 'the Natal Playhouse' in 1985 and is now considered the province's premier theatre complex (www.warthog.co.za, 23 February 2008).

5.2.2 Site Choice:

Located within the Central Business District (CBD) of the coastal city of Durban, it is *part of the original cultural district including the City Hall and Francis Farewell Square* (ill 5.2.2). However, the theatre's current location is not the one planned for in the early 1960s proposed in the report by planning consultants, William Holford and



Illustration 5.2.1 - Front facade of the Playhouse Theatre showing the orginal Playhouse and Prince's Theatre facades



Illustration 5.2.2 - Aerial view of Playhouse showing the Playhouse Theatre encircled with a direct relationship with city hall across the road to the north of the theatre
(Source - http://google.earth.com - Accessed 12 March 2008)

Roy Kantorowich, to the City Council in 1968. The proposed site was located three streets north of Smith Street and part of a larger cultural plan for the city. One cannot determine which site is considered more suitable as most of the plans proposed before the later report, entitled "Durban 1985', were never realised and were part of a more apartheid planning system. The current site is bounded by Smith and Acutt Streets and Albany Grove and enjoys a direct relationship with the City Hall and its square to the west, both which accommodate various cultural productions and gatherings. The site however restrictive, with three defined edges, leads to a difficult and convoluted arrangement of spaces within.

The site conditions found during the 1980s conversion where that of alluvial and estuarine deposits typically found within the CBD (Unknown, 1983: 23). These were found to be silty and clayey fine sands of medium density which required extensive underpinning of several existing foundations and the insertion of the Franki piling system.

5.2.3 Impact on the Community:

The Playhouse Theatre's main objective is to provide both commercial and 'avant garde' productions to a wide audience in Durban (Raymond Phoenix, Unpublished Interview, 26 February 2008). However, as a state theatre, they have a *responsibility to partially utilise government grants for the education of the community through various initiatives* and cultural art programmes offered to children and adults alike.

5.2.4 Funding:

The Playhouse Theatre is a solely state funded theatre and so receives a subsidy each year. However, with today's constant demand for the upgrading of lighting, sound and services, other financial generators are needed in order for the facility to stay state-of-the-art. The Playhouse Theatre has *three methods which generate funds including: international and local productions scouted by theatre staff, productions created in association with the Playhouse Theatre whereby external companies use the Playhouse facilities and finally through the hiring of the theatre by external companies.* All theatres and their secondary spaces are rentable to the public as well as the Grand Ballroom or 'Alhambra' located on the second floor overlooking Smith Street for weddings, rehearsal dinners and conferences (ill 5.2.3).

During the early 1990s, a bill was passed known as the *'WhiteLetter' in which various theatre troupes and ballet companies, reliant on the stability which the theatre provided, were disbanded.* Currently, the Playhouse Theatre does not have a resident theatre or ballet company, as it did in the past, and many theatre staff members feel that this movement should be reconsidered as it created financial stability for both the performers and the theatre complex.



Illustration 5.2.3 - The Grand Ballroom or Alhambra (Source - http://playhousecompany.com - Accessed 23 Feb 2008)

5.2.5 Spatial Organisation:

Front of House

The Playhouse theatre boasts an opera auditorium seating 1,300 people and a drama theatre seating 500 (Peters (ed), 1983: 1) (ill 5.2.4 to 5.2.6). The opera auditorium lies within the South East quadrant of the facility, and is accessed from both Albany Grove and Smith Street. Due to the physical restriction of this side road, provision for back and side stages were impossible which resulted in a single side stage. According to Raymond Phoenix, the stage manager of the Playhouse, this is a pity as various types of productions available today, such as the 'Lion King', cannot be hosted as the space is limited. The 'Opera' stage operates by five mechanical stage lifts allowing for different configurations of the stage area and scenery to be brought up (ill 5.2.7). The 'Drama' theatre enjoys a direct relationship with Smith Street, with the public being led straight through the entrance to the foyer space. Unlike the Opera stage, the Drama stage has adequately sized back and side stages able to accommodate a variety of productions (ill 5.2.8). Both theatres provide an extensive orchestra pit, which can be stored and additional seating created within the theatre. In must be mentioned that the drama theatre's newly renovated foyer incorporates a coffee bar, encouraging the heavy pedestrian movement up from the street edge, while the Opera auditorium's foyer remains void of activity until people gather for a performance. The foyers do present the additional space needed for small exhibitions when necessary. The theatre makes use of various acoustic controls for sound reflection and diffusion, namely fixed acoustic panels, carpets and seat coverings, drapery, timber panelling and mostly notably the twenty-one acoustic 'sails' present in the opera auditorium which were designed under architect, Dennis Claude's supervision (ill 5.2.9).

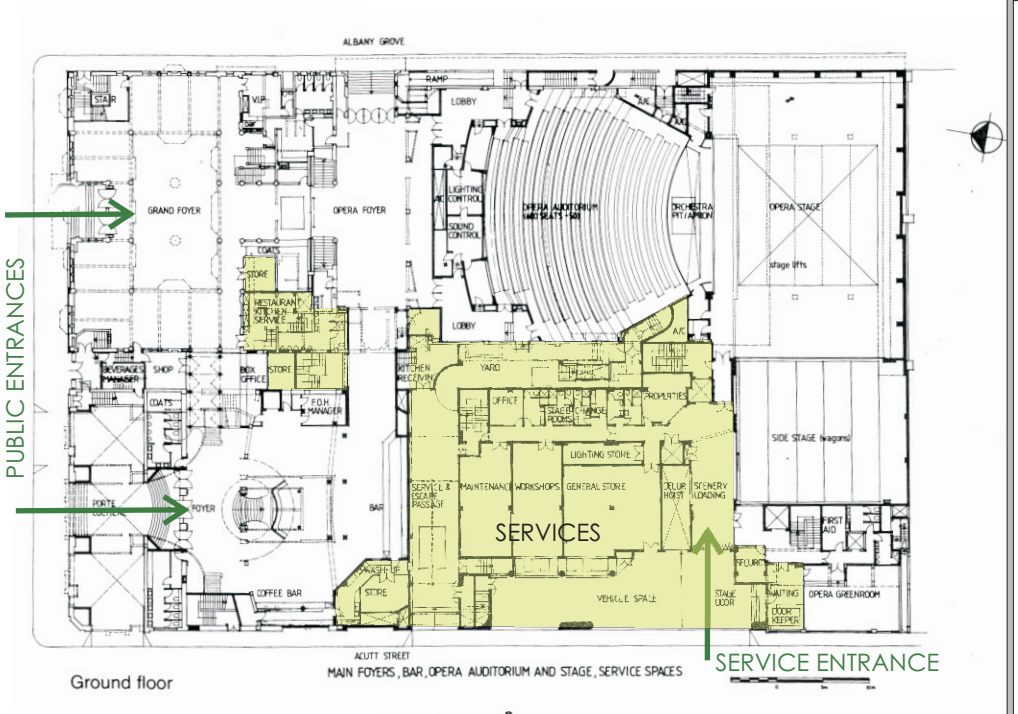


Illustration 5.2.4 - Ground Floor of the Playhouse showing relationship between the two main theatres (Source - NPIA Journal, 1983: 2)

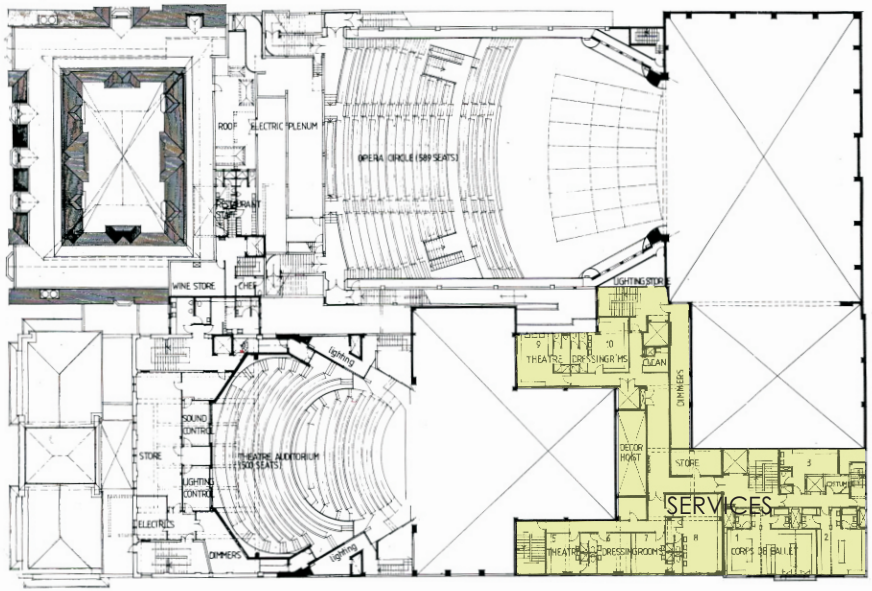


Illustration 5.2.5 - First Floor of the Playhouse (Source - NPIA Journal, 1983: 3)

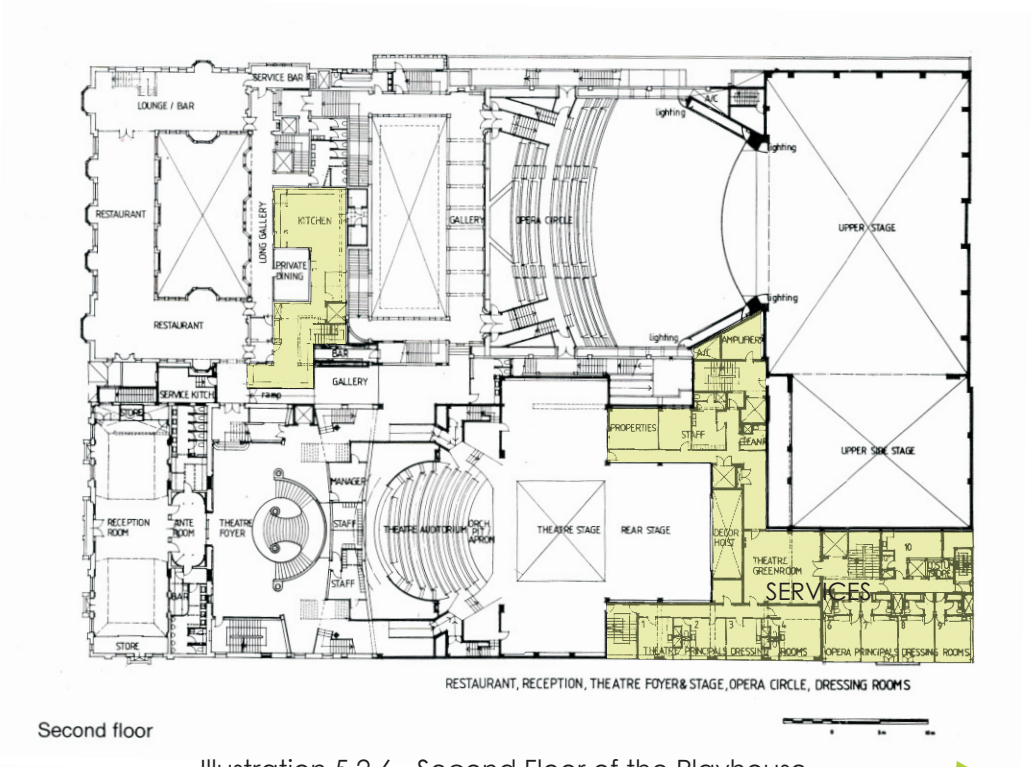


Illustration 5.2.6 - Second Floor of the Playhouse
(Source - NPIA Journal, 1983: 3)

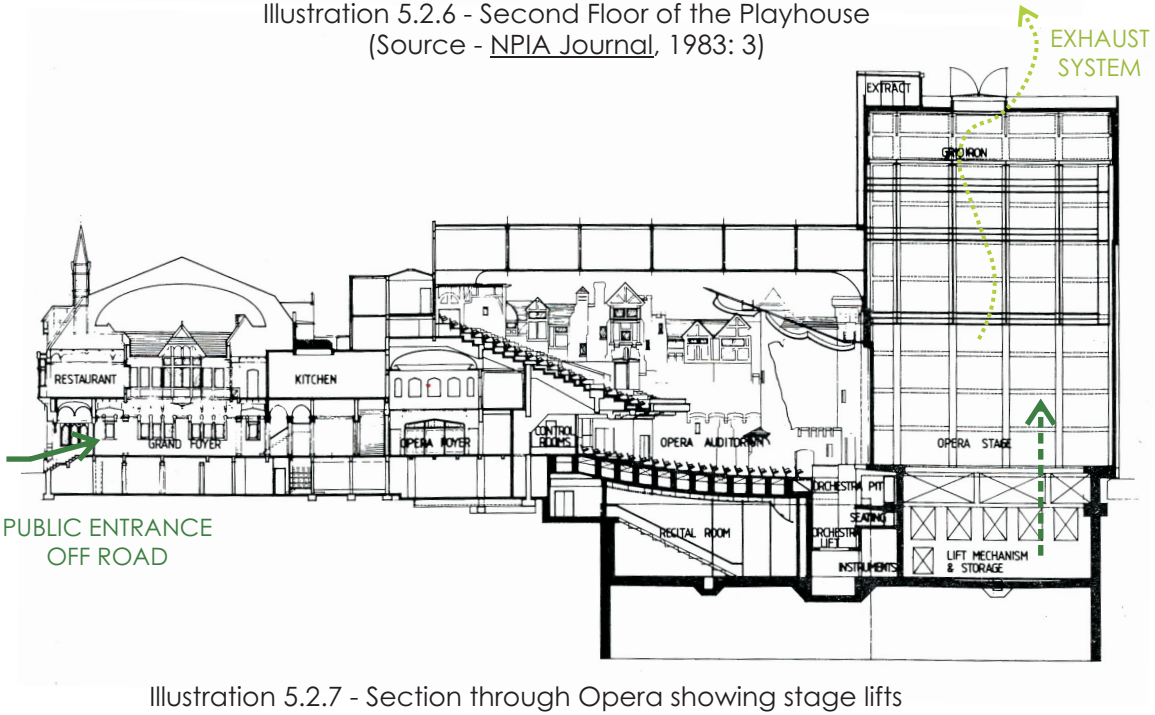


Illustration 5.2.7 - Section through Opera showing stage lifts
(Source - NPIA Journal, 1983: 2)



Illustration 5.2.8 - View of Drama Theatre and stage
(Source - http://playhousecompany.com - Access 23 Feb 2008)



Illustration 5.2.9 - View of Opera Theatre (Source -
http://playhousecompany.com - Accessed 23 Feb 2008)

The general appearance of the Elizabethan design of the auditorium called for an 'Indigo Jones' type cloud machine which finally resulted in what is suspended from the theatre's roof structure and houses the catwalks today (Ferrocement provides solutions for Playhouse reflectors, 1986: 39) (ill 5.2.10).

Back of house

Mechanical services are located on the roof top of the Playhouse including the stage vents which open up to exhaust fumes in case of fire as well as air-conditioning chillers and the like. Workshops and general maintenance stores are located at ground level and accessed off Acutt Street on the western side of the complex. The loading dock and stage door are also located in this area and scenery or props are then carried onto the side stage of the opera stage or hoisted up to the first floor accessing the back stage of the drama stage. Other facilities within the complex include a basement rehearsal / recital room with 300 seats, some 4,5m below the water table and 9m below ground level; and a Studio Theatre, known as 'The Loft', which seats between 150 and 200 people. In recent years the Grand Foyer, just off Smith Street, has been adapted as a daytime facility for musicians struggling to break into the music business to display their talent (Raymond Phoenix, Unpublished Interview, 26 February 2008). Administration offices are housed in a separate building within the city block but do not have direct access into theatre complex itself. However, due to obvious reasons, the stage and design staff have their offices above the theatres.

5.2.6 Flexibility:

Unfortunately, as found in the precedent studies, theatres generally

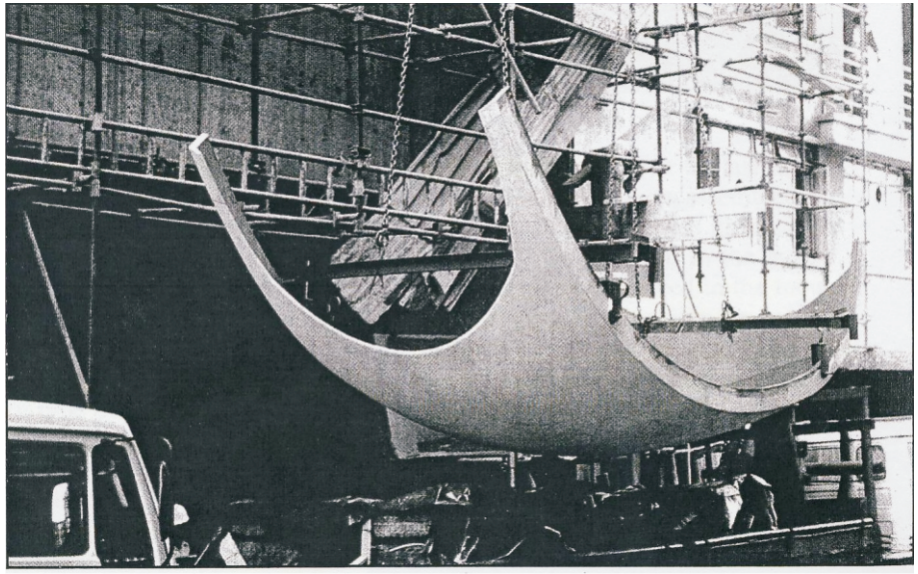


Illustration 5.2.10 - Ferroscement 'sails' installed at the Playhouse reflect sound from the stage directly to the audience (Source - SA Construction World, 1986: 39)



Illustration 5.2.11 - The flexible 'loft' theatre set above the Drama Theatre used to have a flexible seating arrangement however, it is since been fixed to the permanent arrangement seen above (Source - http://playhousecompany.com - Accessed 23 Feb 2008)

are not flexible in terms of seating or stage arrangement. This is true once again in the Playhouse Theatre, as both the Opera auditorium and the Drama theatre have a rigid plan and overall structure. However, the 'Loft' theatre (ill 5.2.11), located above the drama theatre, does allow for different seating arrangements depending on the external companies' needs. It must be noted however, that two productions cannot be held at the same time within the Loft and Drama theatres as sound travels easily between the two. The Grande Foyer is another facility that can easily be adapted to suit different needs, though it is limited by the size of the space as well as the cantilevering balconies above (ill 5.2.12).



Illustration 5.2.12 - The Grand Foyer is another flexible facility encouraging people from the street edge (Source - http://playhousecompany.com - Accessed 23 Feb 2008)

5.2.7 Engagement at Street Edge:

The advantage of the Playhouse Theatre is that it is bounded on three sides by access roads. What was seen as a disadvantage when discussing the planning and arrangement of facilities can now be seen as a positive aspect in the theatre's overall design in that it offers the possibility to engage with the public at ground level. However, this is sadly not the case with the Playhouse. Though it does make a concerted effort through the relationship established between Smith Street and Drama theatre foyer as well as through the Grand Foyer, both Acutt Street and Albany Grove have no relationship at all to the theatre thus making it *a building in isolation.* This lack of engagement with the public at street level causes the Playhouse Theatre to be looked at from afar but not used by the general public…an untouchable?

5.2.8 Conclusions:

Considering the restrictiveness of the site, the Playhouse is an example of successful theatre arrangement with careful thought given to how performance spaces and their services relate to one another. In hindsight however, during the 1980s conversion, the theatre should have acquired the full Albany parkade and established a direct connection from parking to theatre. This would have prevented the lengthy walk from either the Royal or Albany parkades along Acutt Street and Albany Grove which is considered quite dangerous at night. Though *considered an architectural historic building worth preserving, the Playhouse Theatre fails to make use of its prime inner city location when connecting with its street edge.* No provision has been made for the spilling out of restaurant tables as seen in the precedent examples and little attempt has been made to draw the public into the theatre complex. However it must be noted that the Playhouse Theatre has been successful in its themed decoration. Within, a fantasy space has been created that relives the viewer of the harsh reality that exists in today's world and ultimately blurs the boundary between worlds that are real and those that are 'make believe'.

5.3 THE SOUTH AFRICAN STATE THEATRE

Architects: Collaboration between Interplan Incorporated (Hans Botha) & Daneel Smit and Partners (Walter Smit)
Location: Pretoria CBD
Date Completed: 1981

5.3.1 Background

The ground on which the State Theatre stands is one steeped in history. J.D Celliers's market building was built in 1889 on the eastern side of Van der Walt Street and was awarded a 99 year lease (State Theatre Pretoria, 1981: 2). The Celliers building was used for a variety of functions throughout its lifetime, namely: exhibitions, receptions, court hearings and political gatherings and was widely seen as a symbol of power and later discourse (State Theatre Pretoria, 1981: 2). Plans were then developed in the mid 1980s to demolish the Celliers building in order to make way for a city underground car park with provisional gardens above. The land was eventually acquired from the tenant and a portion sold to Volkskas for the same amount the city initially paid for the property. After widespread travel and research, it was acknowledged that a new theatre facility should replace the proposed gardens above the parkade and not be limited to the Old Capitol Theatre (State Theatre Pretoria, 1981: 2) which was thought to be inadequately sized for the city of Pretoria. Only in 1964 did work start in developing a design by Botha and Smit and it took a further 17 years for construction to be completed and the doors opened to the public.

5.3.2 Site Choice:

Located in the heart of Pretoria's CBD, the site takes up a full citblock and is bound on three sides by Prinsloo, Pretorius and Church Streets,



Illustration 5.3.1 - Aerial View of State Theatre (Source - http://google.earth.com - Accessed 12 March 2008)



Illustration 5.3.2 - JG Strijdom Square to the west of the theatre complex allows for breathing space within the city

while the fourth side provides a relationship between JG Strijdom Square and the Volkskas building which still stands today (ill 5.3.1). Pretorius Street is the busiest of the three and serves as the services entrance whilst Church Street has an *active pedestrian market area running along both sides of the road, thus allowing a dynamic interaction at ground level.* The square to the North West of the site provides the necessary *breathing space within the city* (ill 5.3.2). The theatre complex stands amidst various governmental buildings including the Department of Commerce, the South African Reserve Bank and the Public Library situated within Sammy Mark Square. This siting provides easy access to a variety of people living and working within the city centre.

5.3.3 Impact on the Community:

The objective of the State Theatre is twofold. Firstly, from a government standpoint, the State theatre is to develop local art and culture within South Africa, and secondly, the practical realisation that this can only be achieved through employing up to 60% of more commercial works in order to provide for local initiatives (Gert Viljoen, Unpublished Interview, 7 March 2008). *The theatre caters for a variety of ages through different forms of performance including opera, ballet, drama, musicals and concerts.* The facility offers a number of educational programmes, in keeping with its duty to government; these consist of dance and musical education through a school outreach programme held for several weeks during the year.

5.3.4 Funding:

The State Theatre is solely funded by *government grants* given each year to the value of R24 million (Gert Viljoen). However, according to Viljoen, the annual budget of the theatre complex is approximately R43 million per annum. Therefore, other sources of income are needed to generate the rest of the monies needed for the running and maintenance of the building. These are chiefly acquired through tariffs from the parking garage beneath the complex which provides parking to not only the theatre patrons and staff but also to businesses within walking distance of the theatre. Other generators include the rentals of the various facilities and theatres within the complex.

5.3.5 Spatial Organisation:

Front of House:

The complex houses two auditoria, the opera and dramas theatres (ill 5.3.3 and 5.3.4). Two separate facilities were accommodated due to the different acoustic requirements needed for opera and orchestral music as opposed to speech (State Theatre Pretoria, 1981:3). With opera or orchestral music, a reverberation time of 1.8 seconds is deemed satisfactory while in dramatic performances where the audience is required to hear a person's voice, the reverberation time should be only 1.2 seconds. Therefore each venue was customised with unique placement of reflector panels and sound absorbing materials. The Opera House, complete with rear and side stages, allows for a cast of 250 people to be present at once – specifically in the opera 'Aida'. The fly tower accommodates three tiers of catwalks and houses various mechanical services needed for scenery. Overall the auditorium provides seating for over 1,300 people on a raked floor together with the additional gallery space above. No central corridors were designed for the space; instead people enter from the side foyers. This is the same for the

1 - Car acess down to parkade
2 - Foyer Spaces
3 - Store Rooms
4 - Drama Theatre Stage
5 - Offices
6 - Box Office / Ticketing
7 - Loading Dock
8 - Opera Stage Areas
9 - Stage Door
10 - JG Strijdom Square
11 - Orchestra Pit and Store
12 - Cloaks
13 - Restaurant Below
14 - Drama Theatre Auditorium
15 - Dressing Rooms
16 - Canteen
17 - Ballet Rehearsal Space
18 - Drama Rehearsal Space
19 - Choir Rehearsal Space
20 - A/C Plant Room
21 - Opera House Auditorium

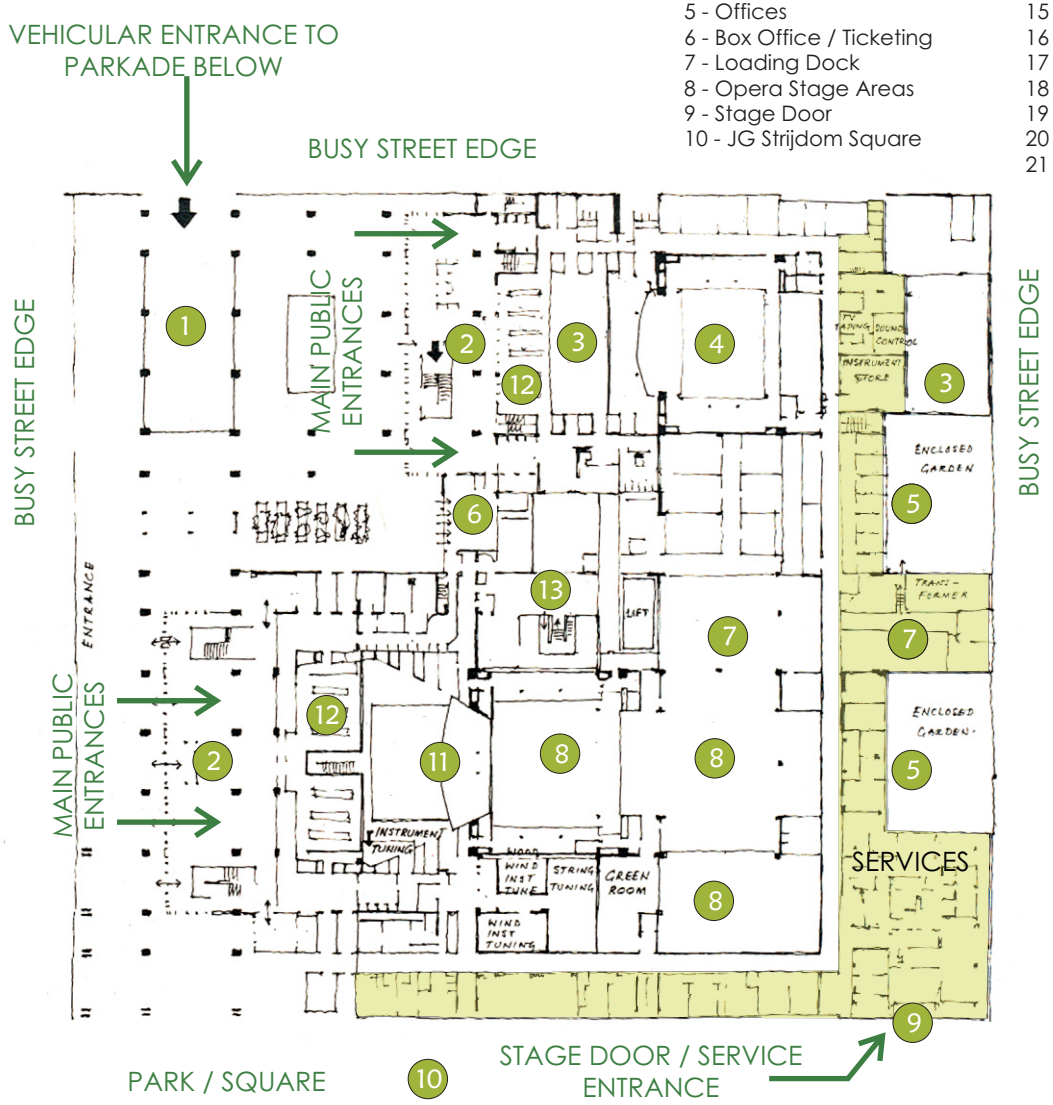


Illustration 5.3.3 - Ground level showing relationship between theatres and service areas (Source - SA Builder, 1981: 30)

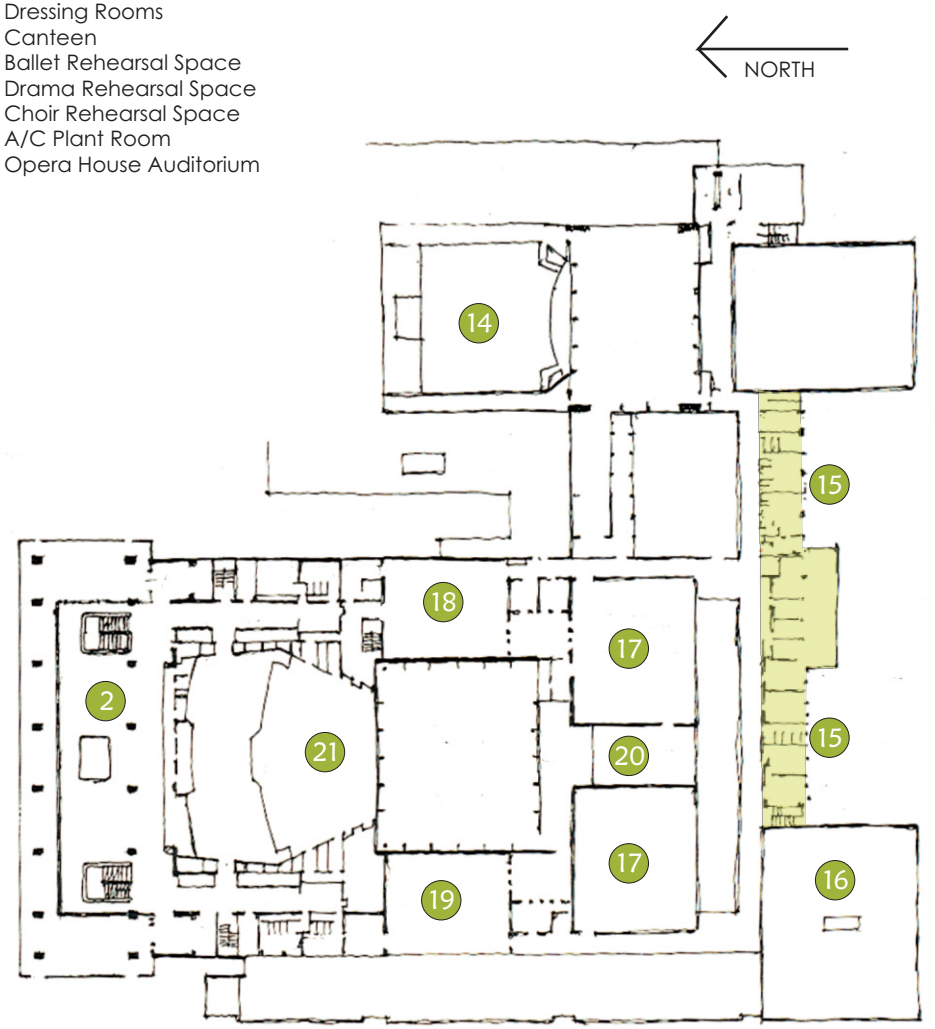


Illustration 5.3.4 - Upper level showing additional facilities (Source - SA Builder, 1981: 30)

Drama Theatre where only some 700 seats are provided with no elevated gallery included. Here, one sees a similar arrangement of space to the Opera House in both the seating and stages. The acoustic treatment of both spaces, though specific to function, still utilise the same techniques: movable acoustic panels, carpets and drapery.

Both the opera and the drama stage boasts five stage lifts, 15m x 15m, which can be operated separately or in any combination and travels three levels down in order retrieve scenery from the workshops or to store the rear and side stage wagons. This also allows for rapid scene changes during a performance. The Opera House also possesses a circular stage lift, stored on a wagon below the stage, which allows for unique variation within performances. The stage lift serves furthermore to stagger the arrangement of choral performers on stage. Both theatres have large orchestra pits, able to accommodate up to 100 people, which can be stored beneath, leaving additional room for extra seating to be brought in. This area is also divided up into three separate parts and allows for a multitude of configurations. Air conditioning is provided through floor ducts located beneath the seats reducing draughts (Unknown, 1981: 6). This allows for air movement up through the auditoria and out through the ceilings, and reduces the external noise experienced by the audience. Other facilities offered by the State Theatre include the Cabaret Theatre, the Momentum Development Theatre and various rehearsal spaces on the fourth floor. The unique relationship with the outdoors is also expressed within the building with a verandah type space just off the dressing rooms and rehearsal spaces (ill 5.3.5). Administrative functions are located throughout the building in segments, with no one complete block of



Illustration 5.3.5 - View of communal areas on the upper levels within the facility where performers are able to enjoy the outdoors before a performance or rehearsal

office space, but consists mainly of reserved space on the uppermost floors for future expansion.

Back of House

The loading dock and service entrance is located off Pretorius Street, in the south, with storage spaces on either side allowing for a continuous movement between each. From here scenery or props are transported either to the building workshops below stage level or otherwise directly onto the side stage of the drama theatre or the back stage of the Opera House. Air conditioning and other mechanical services are situated on the lowest floor, some 15m below ground level, with individual plant rooms on each floor rising from this point.

It must be noted that the success of this theatre is mainly, but not entirely, due to the three level 1,200 space parking garage located beneath the site which serves the theatre itself as well as various businesses around the CBD (ill 5.3.6). This is accessed off Prinsloo and Pretorius Streets with sixteen lift systems conveying people directly from their vehicle to the theatre complex.

1 - parking garage
2 - plant room
3 - auditorium
4 - stage
5 - terrace
6 - foyer spaces
7 - storage
8 - orchestra pit
9 - stage lift system
10 - fly tower
11 - Pretorius Str.
12 - Church St,
13 - Experimental Theatre

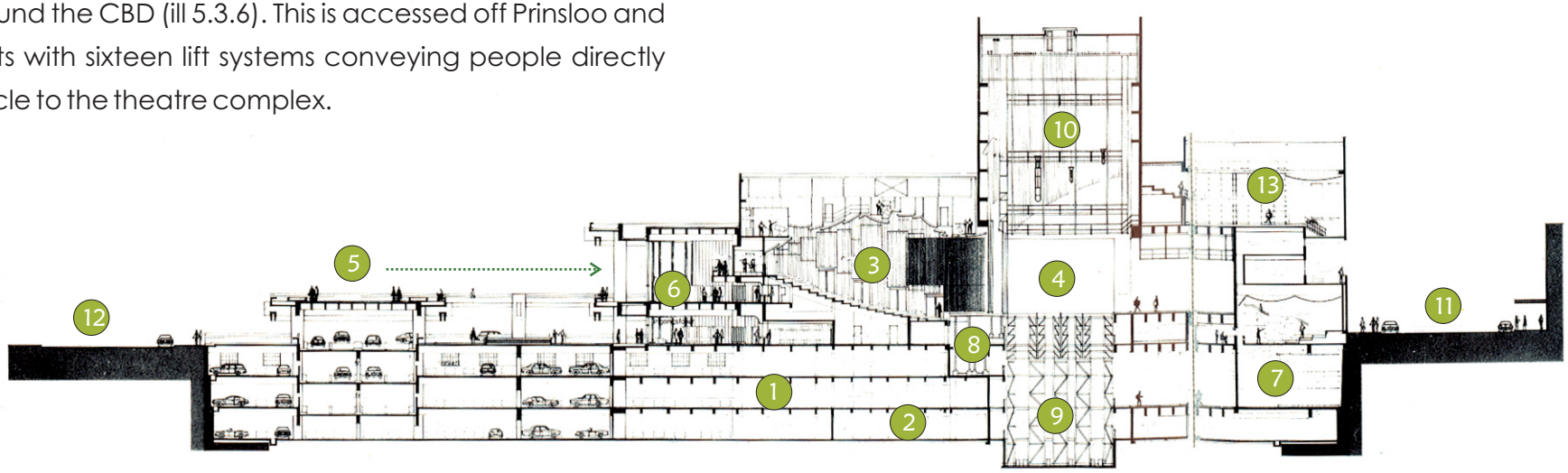


Illustration 5.3.6 - Section through building showing parkade below (Source - Architect and Builder, 1981: 4)

5.2.6 Flexibility:

Like many theatres, both the Opera House and the Drama Theatre, have fixed seating and stage arrangements due to the rigid relationship between front and back of house. The Momentum Development Theatre and the Cabaret Theatre offer a more flexible layout due to the nature of the spaces. The outdoor piazza area allows for informal entertainment by both the pedestrian as well as the theatre performers.

5.2.7 Engagement at Street Edge:

Although an imposing structure combining off shutter concrete panels and special sand blasted aggregate surfaces, the State Theatre incorporates a public piazza into its site boundary (ill 5.3.7). Located in the North East, the piazza accommodates a café / restaurant as well as various access points down into the parkade below, and are correctly orientated so as to receive the best sunlight throughout the morning and be sheltered during the afternoon. This therefore becomes an *active space where people interact and gather throughout the day.* Another successful attempt to engage with public and the street edge is on Church Street in the north (ill 5.3.8). Here both the piazza and the Opera House's foyer opens up onto the market street and invites pedestrians into the space by means of glass curtain walling. This *transparency at ground level is important as people outside can see the activity inside and, at night,* the facility becomes a 'light box' welcoming people inside. The JG Strijdom Square, east of the Opera House, forms a transition zone between the road and the buildings. However, unlike the Volkskas Building, the State Theatre does not connect with the space, almost turning its back to it by means of dressing rooms and offices. This could be because of the level



Illustration 5.3.7 - View of paved piazza from Drama Foyer balcony with ramp down to parking garage with market street in the distance



Illustration 5.3.8 -View of Church Street's market area (Source - http://panoramio.com/photo289113 - Accessed 12 March 2008))

difference between Church and Pretorius Streets as one must ascend a flight of stairs to meet the stage door located on the South Western corner of the complex. However, due to the lack of planting within the square, the large overhangs of the theatre provide a comfortable space to sit (ill 5.3.9).

5.2.8 Conclusions:

It has been found, through the informal interview with Gert Viljoen held on the 7 March 2008, that there is a direct association between the funds granted by the government and the amount of community involvement and education a facility of this nature can sustain. By accepting government funding, the Pretoria State Theatre is required to meet a certain educational quota to the community and therefore several weeks of their annual calendar are consumed by workshops and other forms of learning programmes. This can be seen in a negative light as revenue generated by any extra productions could allow the theatre to update or upgrade the stage lifts and air conditioning within the facility. The successful elements of the State Theatre are the relationships created between the building and the edges surrounding it; the piazza, the market street and the JG Strijdom Square. The facility utilises the space between Pretorius and Church Streets by means of a linear organization pattern linking spaces from back to front of house. With its massive horizontal bands, the facility greatly contrasts with the verticality of the surrounding buildings thus making it a unique landmark within the CBD (ill 5.3.10).



Illustration 5.3.9 - View of the facility from the western JG Strijdom Square showing entrances at ground floor and lobbies above



Illustration 5.3.10 - View of the North Western corner in 1981 (Source - SA Builder, 1981: 23)

5.4 THE JOHANNESBURG CIVIC THEATRE

Architect: Collaboration between Interplan Incorporated (Hans Botha) & Daneel Smit and Partners (Walter Smit)

Location: Braamfontein, JHB

Date Completed: originally 1960 (refurbished and enlarged 1980s and final opening in 1992)

5.4.1 Background

During the 1950s, the State encouraged local authorities to design and build theatres and/or community halls with staging abilities enabling them to be multi-purpose (The renovated Johannesburg Civic Theatre, 1991: 35). Therefore the first phase of the Civic Theatre, which was initially intended to be the same scale as the Pretoria State Theatre, was built between 1960 and 1962 in response to this trend. It was initially supposed to house a concert hall, a drama theatre and an amphitheatre, but in 1979, with the formation of the Performing Arts Council Transvaal (PACT) and the potential location of an additional state theatre only two roads away, funds were withdrawn from the Civic Theatre (The renovated Johannesburg Civic Theatre, 1991: 35) and were then given over to the designing of the new State Theatre to be located in Pretoria. It was decided at this time that instead of additional facilities within the Civic Theatre, the theatre's existing stage would be upgraded as well as storage facilities and foyer / reception areas included (ill 5.4.1). Considering the advances made with technology since the theatre's conception, it was decided to demolish the existing stage and to build a new one in much the same manner as was done in Pretoria (The renovated Johannesburg Civic Theatre, 1991: 35). However, due to budgetary limitations, state of the art mechanical and electrical services could not be provided. The Civic Theatre finally reopened in 1992.

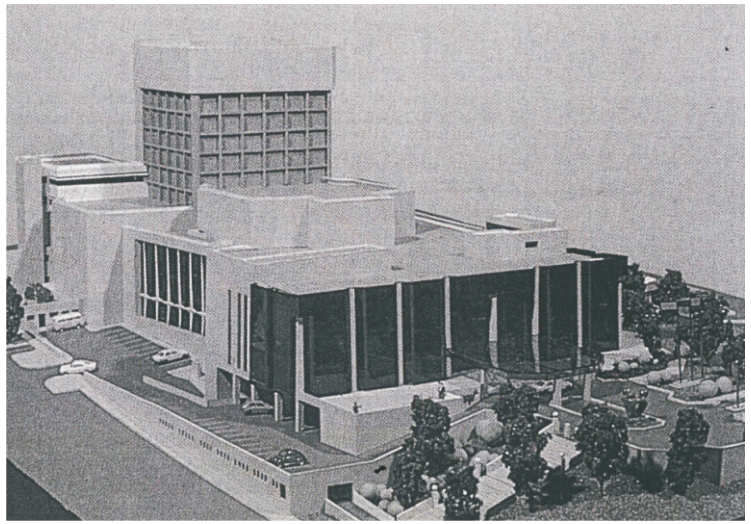


Illustration 5.4.1 - Model of Civic Theatre showing relationship between the building's glazed wind lobby and park (Source - Building, 1991: 35)



Illustration 5.4.2 - Aerial View of Civic Theatre with public park to the south (Source - http://google.earth.com - Accessed 12 March 2008)

5.4.2 Site Choice:

Located in Braamfontein, a district within the CBD of vibrant Johannesburg (JHB) which was a result of the drastically altered demographics. The Civic Theatre is enclosed on all sides by means of three roads; Simmonds Street, Hoof Street and the M9 as well as by the park area in the south (ill 5.4.2). A portion of Simmonds Street was closed off to ease the traffic in and around this area, which is mainly used for access to the parkade and the décor off-loading area. Service areas are accessed off the quieter Hoofd Street as is the underground parkade which is accessed off Simmonds Street. The M9 highway does not provide any direct entrance into the site due to the high speeds of cars using it. Somewhat on the outskirts of the existing CBD, the theatre is within walking distance of University of the Witswatersand and the Metropolitan Centre. It is also relatively close to the JHB Railway Station and the proposed 'Gautrain'.

5.4.3 Impact on the Community:

Unlike a State funded facility, the Johannesburg Civic Theatre's main *objective is to provide pure entertainment to a wide audience.* The selection of productions is *based on what interests the public and not the State* (Simon James, Unpublished Interview, 7 March 2008) Response to local cultural development is not an issue as no funding is received from the government; however, the theatre does prove to have a civic conscience in that it provides facilities, free of charge, to the People's Theatre which caters for the development of arts and drama in children.

5.4.4 Funding:

The Civic Theatre is a non-profit organisation which is self-funded through a variety of different methods. Rentals from the theatre as well as an annual pantomime staged at 'the Civic' provide the facility with the necessary running costs. Tariffs from the parking garage beneath the complex also aid in supporting the facility. As far as maintenance is concerned, the State still owns the site on which the Civic Theatre stands and rents it to them at a token amount per year. It is thus consequently responsible for the maintenance to the exterior facades. Simon James feels that the Civic Theatre is more successful than the State Theatre in terms of bookings as 40 weeks of this current year of 2008 are already reserved, with 10 weeks set aside for the pantomime and the final 2 weeks utilised for general maintenance.

5.4.5 Spatial Organisation:

Front of House

A considerably smaller complex than the previously discussed two, the Civic Theatre offers one large auditorium known as the Nelson Mandela Theatre, which accommodates a variety of productions including opera, ballet and musical theatres. There is also a smaller 'black box' theatre called the Thesson Theatre (ill 5.4.3). The 1980s upgrade saw the auditorium's volume being increased to correct the acoustic qualities of the space, as well as additional spaces for sound and lighting control being incorporated, the improvement of both staff and patron areas as well as the introduction of a two storey basement parking garage (The renovated Johannesburg Civic Theatre, 1991: 36). The auditorium provides seating to nearly 1,000 people on a raked auditorium floor with an elevated gallery above. Sound and lighting control rooms are located on the back wall with the VIP lounge taking up the middle area. Both rear

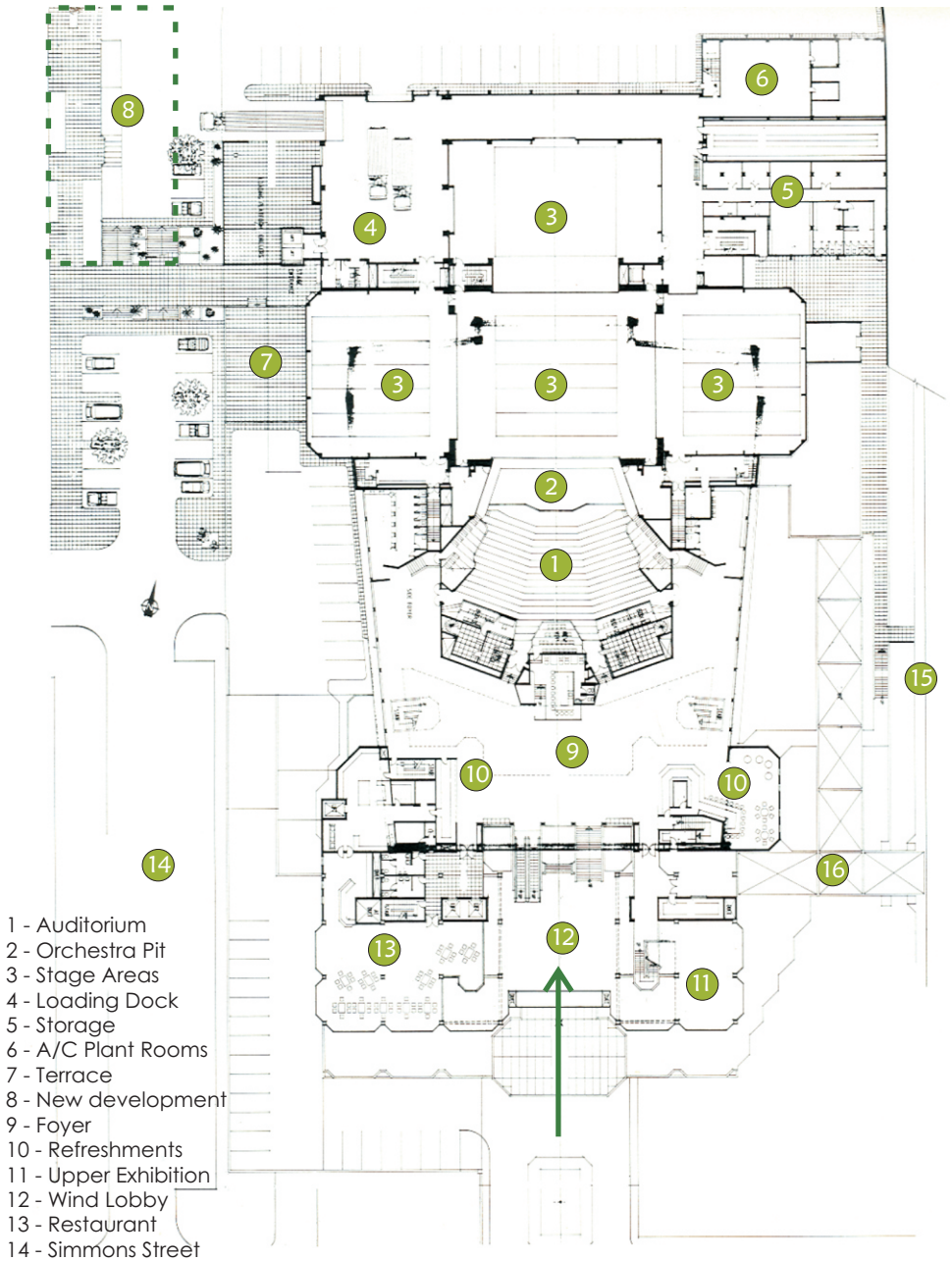


Illustration 5.4.3 - Plan of Main Foyer Area
(Source - Building Products and Services, 1991: 36)

side stages are provided, and together with the main stage have the same dimensions that the State Theatre has, allowing the Civic Theatre to accommodate the same size productions (including 'Aida). Between the main stage and the back stage there is a sound barrier so that the space can be used for assembling scenery during a performance. The fly tower accommodates four galleries and its roof trusses support the roof, the scenery and mechanical equipment. Like the State Theatre, the orchestra pit allows for its removal by movable sections but can hold more musicians than the State.

A large, glazed wind lobby forms the transition zone between the outside and inside and provides entrance into the original foyer which houses the box office, exhibition space and a restaurant seating 100 people. The upper balcony foyer area extends over the ground floor foyer and provides the theatre patron with an outstanding view of the Johannesburg CBD to the south.

Back of House

The service entrance and loading dock are accessed off the quieter Hoofd Road to the north. Again one sees the direct relationship between loading dock, storage and back stage which is needed in theatre design. Air conditioning plant rooms and other services are found adjacent to this area and accessed through the same way. What becomes evident with the Civic Theatre is the thoughtless consideration for orientation of the different spaces, by placing service areas in prime areas that offer north and north eastern light.

The acoustics, even though believed to be expensive at the time, provide suitable audibility for a wide range of performances. The

1980s upgrade saw the raising of the auditorium ceiling so as to provide good clarity important for speech and musical performances (ill 5.4.4). Proscenium reflectors, adjustable acoustic panels as well as removable drapes provide the early lateral reflections and sound diffusion. The facility does not offer facilities such as workshops and rehearsal rooms since it was deemed unnecessary by the PACT in 1986 (The renovated Johannesburg Civic Theatre,1991:36). Administrative facilities are accommodated on the upper floors of the western side of the facility overlooking the piazza created by the shortening of Simmonds Street.

5.4.6 Flexibility:

For logistical reasons, there is no flexible arrangement possible in both theatres as this provided too many options for external producers using the facilities and was labour intensive for the staff of the Civic (Simon James, Unpublished Interview, 7 March 2008).

5.4.7 Engagement at Street Edge:

The raised podium, on which the complex sits as a response to the land typography, encourages people up to the theatre and projects the restaurant forward toward the park. There is a *passive relationship between the park and the facility* due to this level difference but not in a negative way as the gradual slope of the land promotes people to use a transition zone between the busy street and the theatre complex.

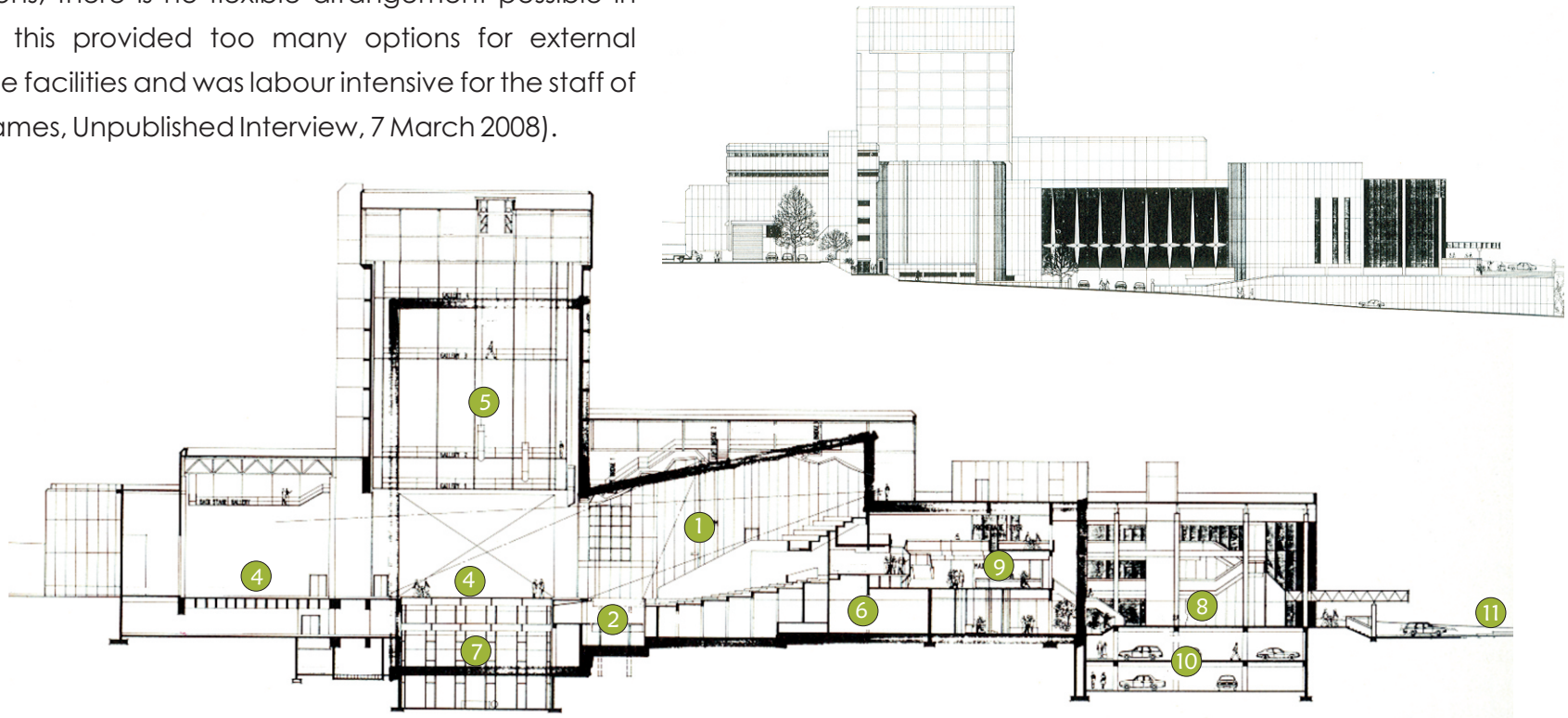


Illustration 5.4.4 - Western Elevation from Simmonds Street (above) and Section through fly tower (below)
(Source - Building Products and Services, 1991: 37)

5.4.8 Conclusions:

The incorporation of the park into the overall scheme greatly enhances the area as well as the public's ability to use the facility. It creates a *breathing space in a city so dominated by vehicles and provides a place for people to gather and interact.* Much like the State Theatre in Pretoria, the arrangement of stages and seating together with acoustic treatment provide the audience with a highly satisfactory theatrical experience. The Civic Theatre provides a *contrasting view to the issue of state versus self funding,* and illustrates a major advantage in the latter, in that the facility is not controlled by government agendas but rather by what the general public wants to experience. Another difference between the State and Civic Theatres are their overall aesthetics. Whilst the State Theatre has an autocratic appearance, reminding one of the past, the Civic Theatre has taken a more Modern, cubist approach that lends itself to the old International style. Even though, the large volumes and stark facades are seem to turn their back on the general public instead of encouraging visual interaction.

It must be mentioned here that the Civic Theatre is the only facility, researched within this dissertation, to have a *resident theatrical company,* specifically the South African Ballet Theatre Company, operating within the facility. The theatre management has recently added two extra rehearsal studios for their specific use, which has greatly reduced the facilities loading dock area. This provides a symbiotic relationship between the ballet company and the theatre as both satisfy the needs of the other. The theatre provides a facility from which the ballet company can rehearse and perform while the ballet company ensures regular productions for the theatre.

5.5 CONCLUSIONS TOWARDS THE DEVELOPMENT OF A DESIGN BRIEF:

5.5.1 Site Choice:

Placement of theatres seems to be, by analysing the three case studies, within the inner city limits of major cities with a strong relationship established with similar civic related buildings around it and part of a constructed urban fabric. A park or piazza is encouraged as it creates a breathing space within the hustle and bustle of the city and promises public interaction. The site should also provide its own parking facility in order for the facility to accommodate patrons and generate funds in order to sustain the theatre. These elements will be provided within the design portion of this dissertation.

5.5.2 Funding:

The debate between state and self-funded facilities is one that could be discussed without an end in sight. It has been decided, by the researcher, that since Durban already provides a state-managed and funded theatre, a self supportive facility should be designed in order to cater for smaller theatre companies. The advantage of a self-funded facility, seen in the Civic Theatre example, is that the Board or Trust which manage the facility have a say as to the type and quality of productions that the facility will host, as well as how much community involvement will be needed in the form of cultural arts education and development.

5.5.3 Spatial Organisation:

Again, the research found a linear pattern forming which links the back and front-of-house functions. Streets with heavy pedestrian activity should serve as entrances into the public realms of the

theatre, its foyers and retail functions, as seen at the State Theatre, whilst service access should be off a quieter street and out of sight from the casual visitor, evident at the both the Civic and Playhouse Theatres. An elevated balcony, seen in all three case studies, allows for additional seating as well as enhanced sightlines. The inclusion of a movable orchestra pit allows for the provision of space for musicians or additional seating if needed. The main stage should be large enough to accommodate the size of productions that theatre is wanting to host, with both back and side stages (being desirable to any theatre development) adequately catered for. It is accepted, through the analysis of South African examples that for larger theatres seating between 700 and 1,200 people, a rigid design and structure is needed for seating and stage facilities. However, the provision for a flexible space is required in order to rent it out as a convention room or banquet hall. Similarly, additional storage and rehearsal rooms are always greatly needed. The same spatial relationships exist within the proposed design of a theatre for Durban's Embankment as they do in the case and precedents studies. Therefore the following will be included: an orchestra pit, an adequately sized stage (complete with side and back stages) to suit a theatre housing 700 people as well as the supporting facilities that are required in order for a theatre to run successfully (see Schedule of Accommodation).

5.5.4 Engagement at Street Edge:

This proved to one of the most vital aspects of the research of theatre buildings. Both the State and Civic Theatres have a strong relationship between the edge of the building and the adjacent piazzas, parks or street edges. Durban's Playhouse Theatre however, lacks in this area as no direct relationship exists to draw the pedestrian from the street into the facility. By pedestrianising this edge, one would open up the facade and encourage people into the building as well as offer a visual stimulation between the in- and outside creating a vibrant facade, visually blurring the boundaries. This will be explored thoroughly within the design portion of the dissertation. Restaurants, foyer space and exhibition areas enable an easy transition between the street edge and the theatre complex and should be utilised at every opportunity. *Active engagement with pedestrians at ground level is preferred and allows for an unrestrictive, 'public' building and not one in total isolation.* This dynamic edge also increases the suspense and anticipation of 'going to the theatre' as one can see the growing crowds within and can look to the prospect of entering a different 'world'.

6.1 INTRODUCTION

From analysing precedent and case studies, interviews and an intensive literature review, certain design approaches have been discovered that are crucial to the design of a performing arts centre. Approaches such as the waterfront context into which this facility will fit as a part of a larger regeneration system are to be considered, as well as how the public will relate and interact with each other and the centre. Through this research, the contextual concerns and theoretical framework will be outlined and a subsequent schedule of accommodation drawn up. This chapter will be structured in two parts, namely brief derivation and schedule of accommodation. The objective of this chapter therefore, is to ascertain certain guidelines from which a design for a performing arts centre can be generated and implemented for Durban's urban waterfront.

6.2 BRIEF DERIVATION

6.2.1 THE CLIENT:

Since existing theatres in Durban are limited to either large, expensive facilities like the Playhouse Theatre, or smaller facilities like the Catalina Theatre at Wilson's Wharf (ill 6.1 & 6.2) seating only 150, a resource is needed to accommodate independent drama and dance companies that are struggling to make ends meet. By linking with the current development of the Yacht Basin along the Victoria Embankment, it will provide the area with a destination of cultural recreation as well as provide stability to Durban's theatrical companies. For the purpose of this dissertation, the client could therefore be any *privately owned theatre or dance company, or collaboration of both, that requires a new 'home base'* from which to operate.



Illustration 6.1 - Ariel View of Wilson's Wharf with the Catalina Theatre encircled showing relationship between it and the waters edge (Source - http://earth.google.com accessed 20 February 2008)



Illustration 6.2 - The Catalina Theatre is located above a bank of restaurants overlooking the small craft harbour to the west of the yacht mole and south of the city

6.2.2 FUNDING / REVENUE GENERATORS:

The intended theatre complex should be considered entirely self-sufficient, in that no aid will be forthcoming from the state. However, in reality, facilities of this nature cannot exist on tickets sales alone. Funding from a number of sponsors will be required including;

- First National Bank's (FNB) Dance Umbrella Initiative
- Business and Arts South Africa (BASA)
- The National Arts Council (NAC)
- National Arts and Culture Lottery Initiative (NACLI)

FNB's Dance Umbrella is a definitive, annual platform for South African contemporary dance which pieces together different performances by the youth and community groups, as well as the efforts of young choreographers and commissioned works by experienced practitioners (http://at.artslink.co.za, 19 February 2008). One of the main objectives of such an initiative is to promote cultural heritage through a dance medium as well as create a stage for new work throughout South Africa.

Business and Arts of South Africa, BASA, was formed in 1997 with President Thabo Mbeki as its founding patron (http://basa.co.za, 19 February 2008). Its main objective is to encourage symbiotic financial and strategic partnerships between the arts and the business sector but, more importantly, to benefit the larger community. With funding from the Department of Arts, Culture, Science and Technology (DACST) a supporting business or arts organisation that has one or more private sponsors can apply to BASA for additional funding for a particular project or occasion.

Formed in 1997, the National Arts Council's main objective is to fund individuals or companies that are creating ventures with nation building in mind (http://nac.org.za, 19 February 2008). This includes projects that assist in nurturing a truly South African identity, to uphold the people's right to artistic expression, that look to readdress any previously unbalanced priorities of the past and present as well as to advance the artistic merit of South Africa's art both locally and internationally.

The National Arts and Culture Lottery Initiative, which combines the BASA, NAC and the Arts and Culture Trust (ACT), is trying to establish that a portion of the lottery funds be distributed to the arts at the same value as is given to sports and welfare. Currently, approximately 20% of funds received from Lotto sales must be allocated to 'good cause' funds to aid the social needs of the country.

However, this is not the only method of funding needed to sustain a theatre facility. Other proposals, highlighted by the precedent studies, include the obvious revenues from *ticket sales as well as parking tariffs, rentals from restaurants and other retail along with the hiring out of different facilities* within the complex. It is important for these schemes to be included as constant upgrading and maintenance to theatres prove quite costly.

6.2.3 FUNCTIONS / USERS:

The main function of a theatre is to *bring about entertainment for the community in which it exists.* Therefore the main users of this building will be theatre patrons from all walks of life, people that appreciate the arts, as well as the performers and production staff that is required for this building to thrive. *Provision for daytime use* is highly probable, so one of the objectives of this facility will also be to promote the arts to a wide range of people that perhaps do not have access to it currently. Therefore both children and adults learning about the arts could use this building. Furthermore, the added retail opportunity provided within the centre will attract the local residents and visitors to the facility. From the research done, it has been discovered that on the theatre front *Durban lacks a medium facility seating roughly between 600 and 900 people.* It has also be found that due to the 'White Letter' (a bill passed during the early 1990s that called for the disbanding of resident theatre companies), *Durban's own independent ballet and theatre companies do not have the stability offered by being part of a larger theatre organisation* and as a result have to rent out the State-funded Playhouse venues which proves costly to such small organisations (Themi Venturas, Unpublished Interview, 26 February 2008). Therefore, for the purpose of this dissertation, a finanically self sustaining theatre, seating roughly 700 people, will be provided. It will serve as a 'home base' to perhaps a single theatre or dance company or to a collaboration of companies needing the security this facility will offer. However, the ability to rent out the facility to touring companies is a possibility to generate added income.

6.2.4 ENVIRONMENTAL REQUIREMENTS:

Due to the unwavering requirement of mechanical ventilation in theatres, air conditioning facilities need to be employed to ensure that the auditorium, which houses large volumes of people, is appropriately ventilated and its temperature kept to an acceptable constant. Rehearsal spaces must also be mechanically ventilated. This response to the performers and audience's comfort needs to be applied to the rest of the building, but, to a lesser degree as in spaces like the dressing rooms. In areas such as the foyers, and restaurants one should, ideally employ natural daylighting and ventilation, though this must be carefully considered. Even when a facility *requires a mechanical ventilation system, consideration to orientation, daylighting and natural ventilation should be considered whenever possible.* Specifically in Durban, special attention to the humid and corrosive environment that exists is required, especially along the Victoria Embankment.

6.2.5 CONSTRUCTION & MATERIALS:

Due to the corrosive conditions of Durban, any steel used would need to be galvanised and other materials such as concrete and aluminium should perform effectively in these circumstances. With regards to the character of a theatre, it has been found that rigid structural systems of the theatre's auditorium and stages should be kept separate from circulation and public gathering spaces because of noise and sound insulation. Other spaces, such as the rehearsal rooms, should be flexibly designed in order for the space to accommodate more than one function. Materials and design strategies should reinforce to the overall design concepts, and should allow for natural ventilation and daylighting whenever possible. Materials must also respond to the context in which the building sits in terms of theme and overall aesthetics associated with a waterfront.

6.2.6 SITE REQUIREMENTS:

From the examination of local and international examples, it has been noted that theatres are generally placed within a city. Sir Nikolas Persvner also indicates that theatres are more accessible within an urban context rather than a rural setting (Persvner, 1976: 67). Thus the siting of a performing arts theatre within the city limits of Durban is advantageous. Roderick Ham believes an *'island site' to be the best possible siting for a theatre, with at least two sides of the facility able to be accessed* (Ham, 1972: 245). Waterfront theorists insist that the urban waterfront (in Durban's case the Embankment) is the ideal location for recreation, entertainment and cultural facilities that would lay the foundations of a tourist district (Marshall, 2001: 78). This includes the incorporation of a theatre facility as seen all over the world, most notably in Sydney, Australia.

- *The theatre should also be sited on a main thoroughfare, for, both pedestrian and vehicular movement is crucial to the facilities existence* as a public place and ultimately links it to back to the city and its surroundings.
- Good orientation is needed for gathering places, such as foyers and retail, though the actual theatre house is a more introverted element / organism requiring strict control of lighting and sound and so the stage and auditorium does not require such good lighting.

6.2.7 LEGIBLE ARCHITECTURAL FORM:

Theatres in their very essence are civic buildings and it is thought that they should be treated as landmarks which provide the city a legible arrangement. Kevin Lynch believes that landmarks are 'isolated objects of peculiar form associated with key locations…to which observers can be rapidly orientated' (Lynch, 1990: 135). Durban's urban waterfront could be considered a landmark within itself however; no clear definition is given to any of the areas that form its edge. There is little identifiable character to the pedestrian path along the Embankment that could make it a network of memorable sequences, but rather pockets of activity which need to be addressed. The surrounding space contributes significantly to a theatre's success in gathering or encouraging people in.

6.2.8 DESIGN OBJECTIVES:

The main objective of this performing arts facility is to provide the community with a facility that is both entertaining as well as community orientated by reclaiming a unique part of the harbour for all to enjoy. It should *redefine Durban's urban waterfront and act as a landmark for the area, giving the city's edge legible meaning.* The facility should also respond to its environment and form a linkage to the city, ultimately responding to the greater urban fabric. Lastly, it should endeavour to be a *'social building'* that address the current problems and reflects the future positions of the community by bringing together people of different backgrounds by a common means of expression.

6.3 THE BRIEF

6.3.1 BUILDING FUNCTIONS:

The principle aim of this facility is to provide a medium sized theatre complex for independent theatre and/or ballet companies to operate from as well as stimulate activity along the Embankment. The following spaces must be catered for:

Theatre spaces: This includes the auditorium for roughly 700 seats and stage areas (comprising of adequately sized main stage, back stage and side stages for a variety of performances) as well as provision for an orchestra pit for approximately 40 people. Flexible rehearsal studios are required for practise and preparation before a production as well as the possibility of renting out to the public.

Theatre support spaces: Facilities such as dressing rooms, change rooms, storage, sound and lighting control rooms, green rooms etc are needed in order for a theatre to operate sufficiently.

Administrative offices: Various offices for administrative and design staff members will be accommodated within this facility. Areas such as meeting rooms, waiting areas and staff lounges will also be provided.

Educational facilities: A community outreach office and supporting functions will be accommodated as well as small scale educational rehearsal venues. These should be linked to the larger rehearsal rooms. It must be noted however, that this facility is not functioning as a school, but rather as a community upliftment facility for people living within the city of Durban and the surrounding areas.

Social amenities: Box office and refreshment/bar areas are included as a service to the theatre patrons. While a restaurant / bar and small scale commercial facilities will act as a concerted endeavour in engaging the community at large as well as providing the facility with day time functions.

Parking: Adequate parking will be provided, specifically one parking for every two audience members (Ham, 1972: 245) which is approximately 350 parkings for this dissertation. The proposal for the Yacht Basin area by the City Architects however has made provision for a total of 1000 parkings (see Appendix B) and this could be incorporated if closely sited.

6.3.2 CONCEPTS:

The goal of the project is to create a unique building that will embody the multi-cultural diversity of people in Durban. It also aims to stimulate the cultural sector of Durban by encouraging the public to experience the arts. Perhaps most importantly, it aspires to promote a more public interaction with the harbour's edge along the Embankment and increase the awareness of this edge. It is also a synthesis of many factors, namely site analysis, client requirements and natural site restrictions (ill 6.3).

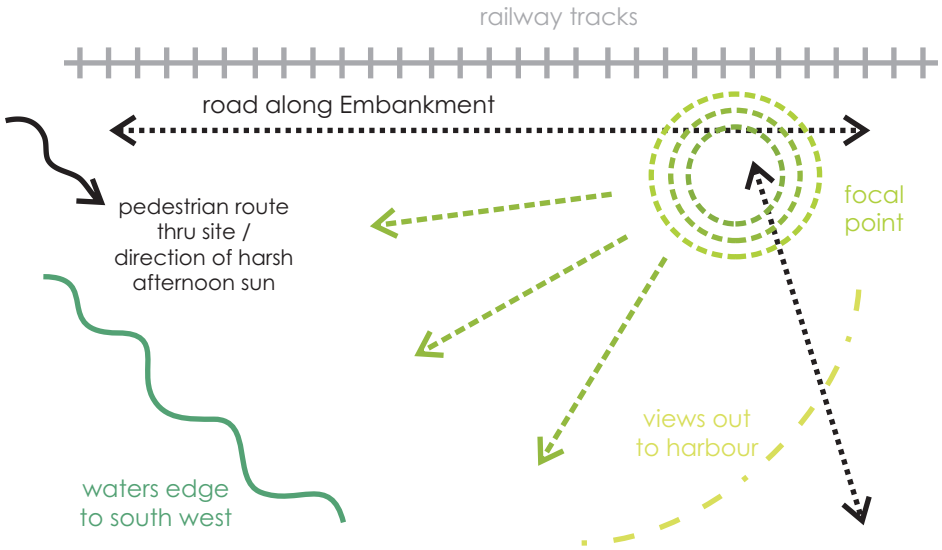


Illustration 6.3 - Ideogram of proposed design

6.3.3 SCHEDULE OF ACCOMMODATION:

The schedule of accommodation was derived from in depth interviews with theatre users and staff members as well as through the intense investigation of both local and international examples of similar facilities. However, due to the nature of theatres, areas are proportionally based on the number of seats within the auditorium as well as a few other criteria such as public facilities important to a theatre's overall survival. The following information was retrieved from Roderick Ham's book entitled 'Theatre Planning':

Orchestra Pit:

A medium sized orchestra consisting of roughly 40 players is considered adequate for ballet and musical productions. Space allowance for orchestra pit is 1m² per player, with some 5m² needed for conductor and piano is present. The pit floor should be adjustable between 2m and 3m and partly under the stage but not exceed 2m back as to interfere with stage lifts.

Theatre Auditorium:

This venue is directionally proportional to volume of the auditorium and the amount of seats the spaces houses. Roughly 0.6m² (including circulation space) is needed per seat. Approximately 3m³ per audience seat gives the right amount of total absorption to provide satisfactory conditions for speech. Music requires 9m³ per seat. The height of the proscenium arch also determines the volume of the auditorium. The minimum height is determined by the sight lines of the highest point in the auditorium.

Control Rooms:

These are generally 3m wide x 2.4m deep for both lighting and sound control rooms located at the rear of the auditorium.

Stages:

The main stage is generally accepted as 15m x 15m with side stages and wings added to each side. Side stages should allow for easy access to dressing and quick change areas. Back stage should be roughly the same size as the main stage as to house stage wagons if the production calls for a quick scene change during the performance. The mechanical stage lifts required a clearance of between 6 and 9m.

Foyer Space:

The foyer is the gathering space for theatre patrons to wait for the performance to begin. It is a space that is used before, during intermission and after the performance and houses bar and concession stands as well as adequate seating. Roughly between 0.65 and 0.84m² per seat is used to calculate the area needed for maximum numbers of patrons at one performance.

Rehearsal Rooms:

At least one venue should be the same dimensions as the main stage plus a metre on the back and sides for circulation and 2-3m in the front for directors etc. The other venue is desirable, and can be smaller to facilitate individual rehearsals. Sprung floors and mirrors on two sides are needed if space is to be used for ballet rehearsals. These should be closely located to the dressing / change area and should be flexible as to rent out as banquet halls and the like.

Dressing / change room areas:

These should be separated according to sex. Single room for soloists, conductors and singers should be 10m² minimum. Communal change rooms should be calculated on the basis of 1,5m² per each

person intended to use the space. A wash hand basin, shower and water closet should be provided for every 4 performers using a space. Corridors between dressing areas and the stage should be a minimum of 2400mm to allow for elaborate head dresses etc. Green Rooms act as common space between the stage and dressing areas for performers and should be a minimum of 20m² for smaller theatres. Green Rooms also serve as a sound lock preventing noise from being transferred from one space to another. These spaces require natural light and ventilation as well as a direct relationship to the outside.

Loading Dock Area:

The dock door should be roughly 12m high and between 2 and 3m wide.

Storage Space:

Scenery and set items (props) are stored in variety of storage spaces. Storage is perhaps the most demanding area that requires the greatest amount of space. The size determinant is based on what type of productions the facility produces as well as if scenery is stored off site (as is typical in today's time) and only brought in for the amount of time the production is in rotation.

Types of Production:

From an early stage, a list of priorities should be made as to establish what types of productions the facility will cater for. The brief calls for a variety of activities to be housed on the same stage and some degree of flexibility is required, however there is a limit to the degree of adaptability. It has therefore been decided that due to the nature of the dissertation and the intended number of seating provided that this theatre will house the following productions:

Drama - the average straight play requires a cast of from 2 to 20.

Large Scale Drama - such as Shakespearean Plays and larger casts with many extras

Musical Theatre - ranges between a one man show up to 200. This facility will be able to house small to medium scale musical productions

Ballet / Musicals / Pantomimes - activities that involve singers, dancers and chorus. The style of theatre, usually requires a proscenium stage form with various scenery sets and props

Schedule of Accommodation

Note: As discussed, the schedule of accommodation was determined by a variety of factors , namely interviews conducted, the analysis of precedent and case studies as well as through the proportional relationship between the number of seats and the size of certain spaces. Roderick Ham's book 'Theatre Planning' (1972) & Neufert's 'Architectural Data' both served to determine certain room sizes.

	Space	Quantity	Size	Total Area	Space Description
Front of House	Foyer	1	450	450	Acts as spill out space for theatre, incorporating bar and refreshment areas. Large volume space based on the calc between no. of seats x 0.65m²
	Box Office	1	20	20	Ticket sales for the facility are conducted here
	Gift Shop	1	50	50	Small souvenirs from the theatre as well as programmes
	Coats	1	25	25	Coat store - somewhat irrelevant in Durban
	Bar / Concession Area	1	80	80	Located within foyer - space to sit during interval etc Small refreshment counters, no kitchen or stores required
	Manager Office	1	25	25	Front of house manager's office
Commercial	Restaurant Area	1	150	150	Small eating area provided within facility as not to detract from other facilities along embankment (max 100 people) as not to compete with other restaurants in the yacht mole
	Kitchen Space	1	90	90	Including store rooms and cleaning area
	Small Scale Retail	3	50	150	'Boutique' shops provided
Large Theatre	Auditorium	1	600	600	Seating provided for 700 people within theatre based on what is deemed lacking within Durban (calculated at 0.6m² x the no. seats with additional gangways etc added)
	Stage Area	4	250	1000	Including main, back and side stages
	Control Room	1	20	20	Sound and light control located at back of auditorium
	Dressing Areas		250	250	Series of communal and single change / dressing rooms for performers for a cast of approx 130 performers
	Green Room	1	50	50	Gathering for performers - acts as a sound lobby as well

	Space	Quantity	Size	Total Area	Space Description
Flexible Venue	Rehearsal Studio Large Venue Small Venue	2	 200 100	300	Ability for ballet practice with sprung floors and mirrors etc included in this flexible 'theatre' space. Also to the used by educational facility within the complex. Similar dimensions used for the larger of the two venues
Educational Facilities	Foyer	1	200	200	Separate entrance and foyer space provided with direct access to smaller theatre
	Smaller Rehearsal Spaces	5	20	100	Smaller rooms used for warm up / practice
	Community Outreach	1	20	20	Office provided for manager of educational facility
	Audition Spaces / Store	2	15	30	Small store room needed
	Kitchenette	1	30	30	Separate facility to restaurant kitchen
Administration	Board Room	1	100	100	Conference facilities for the theatre complex (discussion)
	Senior Staff Offices	2	50	100	Artistic Director and Managing Director of facility
	Staff Offices	3	20	60	Finance, production, marketing and general managers
	Open Plan Offices		100	100	Office cubicles set up within this space
	Waiting Area	1	100	100	Place for public / visitors to be seated
	Common Room	1	50	50	Lounge and kitchenette provided within space
Back of House	Offices	4	15	60	Offices provided for lighting, stage, designer and sound
	Storage Facilities	1	100	100	Scene store (MIN)
	Storage Facilities	4	50	200	General, lighting, wardrobe and materials store rooms (MIN)
	Loading Dock	1	200	200	Space for delivery trucks etc (MIN)
	Hoist	1	20	20	Scene and props hoist to stage or storage areas
	Meter / Transformer Room	1	30	30	Accessed by municipal from road
	Mechanical plenum	1	550	550	Air conditioning as well as stage lift facilities housed
	Refuse Area	1	30	30	Area for general waste of facility to await collection
				5270	**Total area without minor circulation, ablutions & parking**

Schedule Of Accommodation

Ablutions	Males	WHB	10	As per the National Building Regulations (SAB 0400) requirements for a population of personnel over 120 people as well as peak time demand for 1000 people.
		WC	7	
		Urinals	19	
	Females	WHB	13	
		WC	26	
	Paraplegic Facilities	WHB	12	
		WC	12	
		115 sqm	**Total area without including circulation**	

Parkings	Visitors (1 parking per 2 audience)	350	A part of a larger development within the yacht basin which caters for 1000 additional parkings - due to nature of facility, usually operating at night, some of these parkings could be used
	Staff	100	
	5625 sqm	**Total area for parking without including driveways / ramps**	

7.1 INTRODUCTION

Due to the nature of the research topic and the intended focus on urban waterfront development, the site selection has therefore been restricted to Durban's Embankment. In 2002, the City Architects published an 'iTrump' report for the redevelopment of the Yacht Basin along Victoria Embankment (see Appendix B) and this has been accepted as the starting point of change for the area. Apart from this proposed development, another four sites were identified; Wilson's Wharf, the Maritime Museum site as well as two conservation sites between. Two sites have been selected for comparison in this proposed yacht basin scheme, with the third within walking distance on the corner of Stanger Street and Victoria Embankment.

The three sites analysed are as follows (ill 7.1):

1) The Yacht Basin entrance
2) The proposed enlargement of the Yacht Basin pier
3) R-Berth site

These sites will be subjected to certain criteria in order to establish which site is more suitable to the new design of a performing arts centre adjacent to Durban's CBD. Each criterion used, responds in some manner to the overall functioning and appeal of theatre buildings. The criteria are as follows:

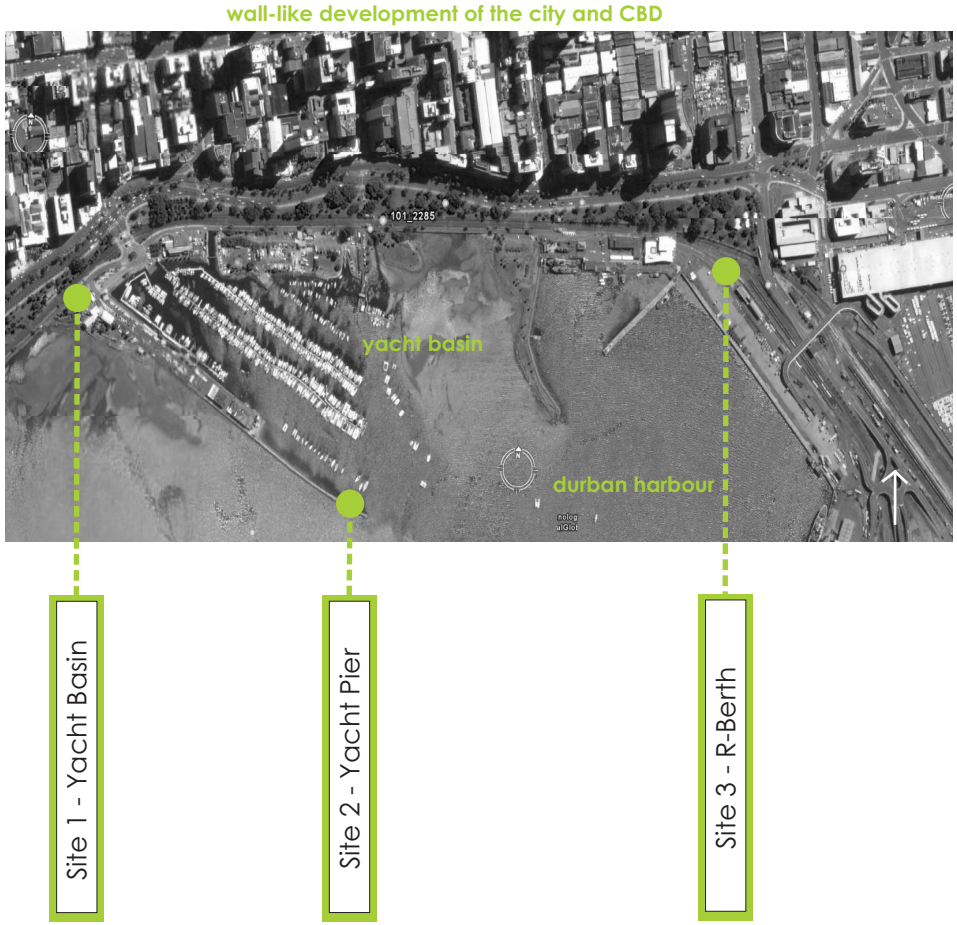


Illustration 7.1 - Aerial View of site area
(Source - http://earth.google.com accessed 20 February 2008)

- Waterfront development opportunities
- Site restrictions and opportunities
- Proximity to CBD which provides linkages
- Accessibility of site
- Habitable Spaces
- Landmark Potential
- Overall assessment / Summary

Waterfront development opportunities: Developing the urban waterfront is crucial to the eventual regeneration of Durban's CBD. Opportunities created along the Embankment, by means of recreational, tourist and cultural facilities, could redevelop the area and act as catalysts for renewal. Creating places to sit and enjoy the view and waterfront context can also benefit a theatre facility, promoting leisure and entertainment. However, the Yacht Basin proposed development along the Embankment will ultimately require the future expansion of the rest of the area (which is earmarked for renewal) to stimulate that district and sustain it in upcoming years, thus creating a continual linear system of activity running along this edge.

Site restrictions and opportunities: Size of site needs to be considered when selecting the appropriate site for a theatre facility. Large enough area to accommodate both the facility and it's parking is important as one can not function without the other. The waterfront provides an additional quandary in that the high water table affects the ability for full basement parking, therefore the site selected should be chosen for the possibility of accommodating the parking on grade or in a semi-basement.

Proximity to CBD/Linkages: A theatre complex can not operate in isolation; it requires a centre from which to operate. As seen in previous chapters, these facilities are generally placed in an inner city context and so sites selected must have a connection to the CBD and facilities of similar civic nature.

Accessibility: Both pedestrian and vehicular access onto the site is critical to the success of a cultural building. The existing railway lines separate the city from the urban waterfront and create a potentially dangerous situation. An existing entrance, directly in front of the Yacht Basin, is the only access point allowed for vehicles to cross these railway lines. Pedestrian access over the railway lines exists at regular intervals, in the form of small stations, though today these are avoided as pedestrians are required to go underground to 'cross' the railway lines. Due to the nature of a theatre, public access and secure parking is essential.

Habitable Spaces: In Durban's context, public areas or gathering spaces should ideally face North-East in order to receive the best orientation. Since a theatre complex is considered public domain, areas such as foyers or restaurants should orientate themselves in this direction. By evaluating each site, orientation and views will be analysed to see what effect they will have on the proposed facility's layout.

Landmark Potential: One aspect of city legibility is the identification of landmark buildings within the urban context. These buildings allow people to orientate themselves within the city. Civic buildings, including theatres, need to be sited in a way that they become landmarks in their own right by being visible to both pedestrians and motorists.

Overall Assessment / Summary: An overall assessment of each site will be made by drawing conclusions from the criteria mentioned above. The final decision on a particular site will be made by the site's ability to respond successfully to each condition which is considered important to the siting of a theatre building.

7.2 SITE 1 - YACHT BASIN ENTRANCE

Waterfront development opportunities: This site has been earmarked for regeneration and redevelopment by the City Architects (see Appendix B, Diag. 5 & 6). However a proposed hotel has been allocated for this site. This has been deemed unnecessary as an additional bed and breakfast hotel (B&B) is proposed within the scheme. The site is currently being used by Royal Natal Yacht Club (ill 7.2.1) which is intended to be consolidated, with the Point Yacht Club (ill 7.2.2), into a central club facility near the corner of the basin. Already a strong tourist and recreational hub along the Embankment, the only aspect the Yacht Basin lacks is a facility dedicated to the diverse 'culture' of Durban. A theatre facility would increasingly draw the public to this space and promote urban renewal.

Site Restrictions: With the enlargement of the Yacht Basin / wharf (see Appendix B), the site is indeed large enough to accommodate the theatre facility as well as it's parking component within a semi basement Additional space, especially to the South-West with the reintroduction of the mangrove swamps, allows a natural landscape to evolve to enhance the facility.

Linkages to CBD: The site is located within relatively close distance to the Playhouse Theatre of Durban as well as the City Hall and other cultural and historic buildings, however one must cross over a busy intersection in order to enter the CBD (ill 7.2.3). Both the Catalina Theatre on Wilson's Wharf and BAT Centre on the Maritime Museum site, are in walking distance from this site providing good interaction between the five areas indentified by the City Architects. It must be mentioned that extensive reconstruction of roads and the incorporation of sidewalks between these facilities is vital to the realisation of a pedestrian-dominated precinct.



Illustration 7.2.1 - Existing Royal Natal Yacht Club premises will be demolished (see Appendix B) marked 1. see ill 7.2.3



Illustration 7.2.1 - Existing Point Yacht Club premises will be retained in City Architects Plan for the Yacht Mole (see Appendix B) marked 2. see ill 7.2.3

Accessibility: Located slightly South-West from the main entrance, the site provides easy access to both motor and pedestrian traffic crossing the busy carriageway and railway, therefore making it ideally positioned in terms of access. Provision within the City Architect's report allows for a semi basement parking beneath this site to provide an additional 700 parking spaces throughout the development. Facilities for taxis and tour buses are also provided.

Habitable spaces: Located on the northern extremity of the harbour, the site is situated east-west, and offers a full range of different orientations. Ample North-East light is attained by the open piazza and access onto Embankment, which is preferable when designing 'people' places. The open space of the harbour to the south offers constant 'gentle' light and views of the harbour suitable for rehearsal spaces. The tall residential flats form a barrier against the harsh afternoon sun, which is considered undesirable, providing shade to the site.

Landmark potential: The site is located in such a way that it is easily visible to both pedestrian and vehicular traffic traveling in both directions along Victoria Embankment. It is also easily noticeable once one has entered the site as it's one of the first sites a person sees.

Overall assessment: In terms of location, the site meets with all the criteria set out at the start of this investigation. It offers easily legibility within the city scape, close proximity to the CBD and other cultural facilities as well as providing a continuing development along the Embankment by forming part of a larger urban renewal scheme. It is easily accessed from a main arterial with favourable north and south orientation enabling it to be recognised by residents and visitors alike.

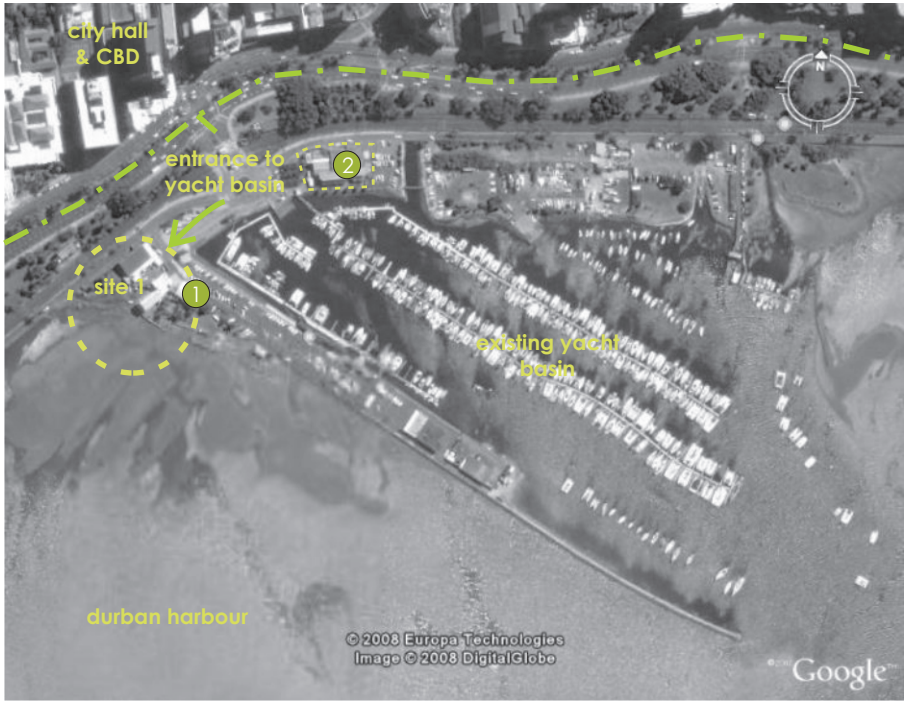


Illustration 7.2.3 - Aerial View of Yacht Basin showing site and existing development (Source - http://google.earth.com - Accessed 21 Feb 2008)

From unfavourable to favourable conditions

	1	2	3	4	5
Waterfront Development					●
Linkages to CBD				●	
Accessibility of site					●
Habitable Spaces				●	
Landmark Potential				●	
Views				●	
Site Restrictions					●

7.3 SITE 2 - YACHT BASIN PENINSULA

Waterfront development opportunities: As with site 1, site 2 is part of a renewal and redevelopment scheme by the City Architects of Durban (see Appendix B). However, unlike site 1, this site is non-existant at the moment as the pier has not been constructed yet. The proposed plan is for the enlargement of the current space and the addition of a lighthouse tavern at its tip. This sort of development, towards to end of the pier, acts as a magnet and draws people into the harbour space, however a small tavern seems insufficient at such a prime location, as only a few patrons will venture down to it. Currently, the only development on this wharf is a series of retail facilities such as the restaurant, Café Fish (ill 7.3.1).

Site Restrictions: Due to the constraints associated with pier architecture, limited space is available for a facility of this size and nature. Parking on grade could not be accommodated, instead the expense of a full basement would need to be taken into account .

Linkages to CBD: Apart from its immediate setting within the larger framework of redevelopment; the site does not offer a direct relationship with the CBD, on the other side of the Victoria Embankment, as it is so far removed from the edge. However, it is still within walking distance of both the Catalina Theatre and BAT Centre adjacent to the yacht basin.

Accessibility: A distinct disadvantage to this site is its removal from the CBD, however the site is still accessible from the main entrance of the yacht basin by vehicles and pedestrians alike (ill 7.3.2). Judging by the fact that theatres utilise parking facilities generally for night-time



Illustration 7.3.1 - View of existing stilted development of Café Fish along the jetty, marked 1. see ill 7.3.2

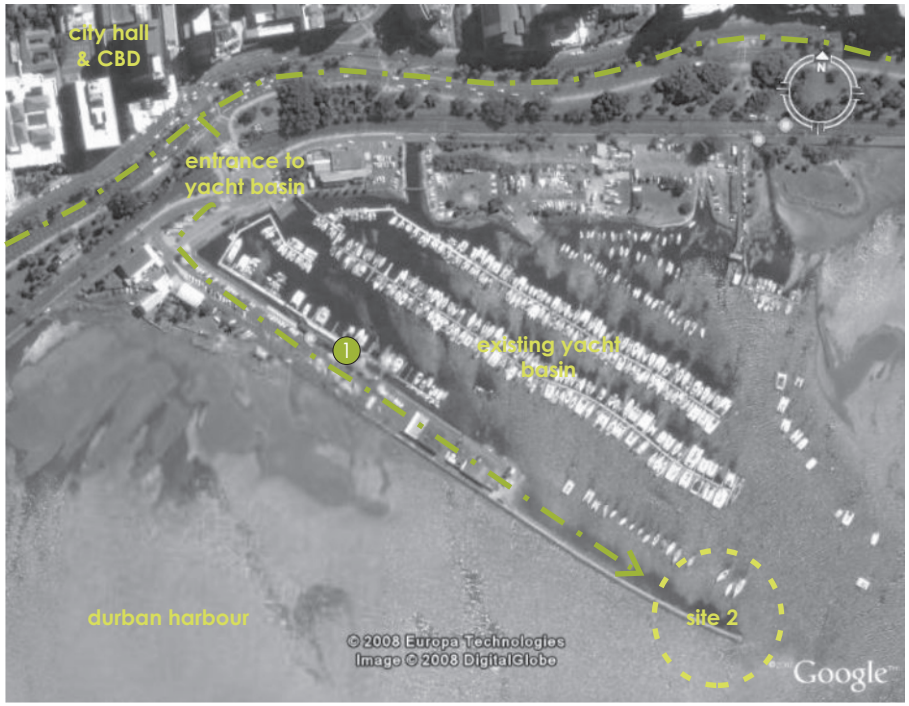


Illustration 7.3.2 - Aerial View of Yacht Basin showing site and existing development (Source - http://google.earth.com - Accessed 21 Feb 2008)

performances, ample parking is provided through the City Architects report. Parking for tour buses are somewhat removed from the site, being located at the apex of the development; however the pier with its planting and views of the harbour provides the setting for a casual stroll by tourists (ill 7.3.3).

Habitable Spaces: Another disadvantage of the site is that it is exposed to winds present in the harbour as well as from unfavourable north and south-western afternoon sun. This positioning provides, on the other hand, a panoramic view of the harbour and the CBD giving the visitor different perspectives of Durban and its urban waterfront.

Landmark potential: The site provides visual links from any location within the harbour making it a prime location for a facility that needs to be visible to all. Conversely, the site is not clearly visible from Victoria Embankment. Compared to the height of the yacht masts a visitor might feel overwhelmed and be bombarded with images in the foreground before finally seeing through to the site and building beyond.

Overall assessment: In terms of waterfront renewal capabilities, landmark value and the panoramic view available, the site meets with the criteria established, but even though it is accessible from the same entrance as site 1; it is somewhat removed from the public's everyday routes as well as from the CBD where the public live and work. This creates a building in isolation that does not relate to its city context. Together with this lack of connection, the exposed site suffers from unfavourable wind and orientation conditions which could be problematic when designing a building fit for human occupancy.



Illustration 7.3.3 - View looking back of CBD and yachts from the parking lot along the wharf of the yacht mole

From unfavourable to favourable conditions

	1	2	3	4	5
Waterfront Development				●	
Linkages to CBD				●	
Accessibility of site				●	
Habitable Spaces			●		
Landmark Potential					●
Views					●
Site Restrictions		●			

7.4 SITE 3 - R-BERTH SITE

Waterfront development opportunities: R-Berth has the ability to be the eastern end point to the theoretical stretch of development or pedestrian boulevard along Victoria Embankment's urban waterfront if plans were initiated by City Architects, however this is not yet the case. This eastern edge of the harbour has long been forgotten and neglected due to its inaccessibility. The introduction of a larger theatre development, with retail and educational facilities included, might rejuvenate the area dominated by harbour operations (ill 7.4.1).

Site Restrictions: The largest site under review, R-Berth offers the ability for on grade parking within close proximity to the theatre itself, thus reducing unnecessary tanking costs. The lack of access, both by vehicles and pedestrians, from the main road is seen as a disadvantage as the site becomes a physical island.

Linkages to CBD: Located on the eastern side of the harbour, on the corner of the busy intersection of Stranger Street. Therefore the site proves to be an excellent location for a theatre development due to its close proximity to the CBD and facilities such as the BAT Centre and the Maritime Museum, forming a linear system of cultural activities along this lost edge. It would also serve to regenerate the inactive node.

Accessibility: An opportunity presents itself in the possibility of a separate entrance off Victoria Embankment to the site, however due to the railway lines, this is virtually impossible. Current access to R-Berth is by means of the harbour operations entrance gate and subsequent back tracking to the site (ill 7.4.2). Pedestrian access also proves to be problem as once again one is met with the public / train interface.

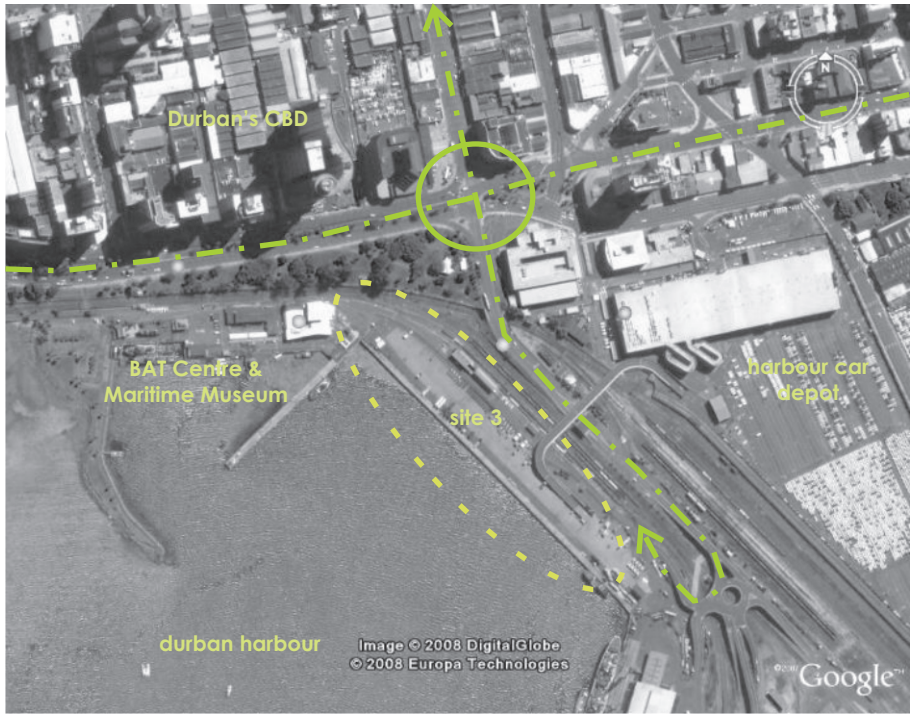


Illustration 7.4.1 - Aerial View of R-Berth showing site and surrounding development (Source - http://google.earth.com - Accessed 21 Feb 2008)



Illustration 7.4.2 - View of R-Berth site from the Roma Revolving restaurant opposite with the Point development to the east

These railways lines have been motivated to be removed with the eventual relocation of the car depot across from Stanger Street (Dave Stromberg, Unpublished Interview, 22 February 2008) however, this is plan has yet to be realised. Due to the size of R-Berth, sufficient space is supplied for parking facilities of theatre patrons.

Habitable spaces: The site lies on a North-west, South-east axis thus providing a favourable North-east orientation needed for public facilities. This also allows for a public piazza or park setting at the corner of Stanger Street and Victoria Embankment acting as a transition zone between the street edge and site. South-west views of the harbour are present however, these are considered challenging consider its orientation toward the direction of approaching cold frontal systems as well as the afternoon sunlight. For a theatre development on this site, one would be inclined to orientate gathering spaces on the side with uninterrupted views of the harbour and the Berea beyond, however due to its directionality, this would allow for unsatisfactory conditions experienced by patrons.

Landmark potential: Being on the corner of a busy intersection within Durban's CBD, the site theoretically offers good legibility within the city context. It is somewhat visible as one drives down Victoria Embankment, but since Stanger Street is a one way road, little visibility is gained from traveling in that direction. Similarly when driving along Victoria Embankment, toward the Point area, one doesn't see the site until one reaches the intersection due to the buildings of the BAT Centre. These conditions, in addition to it being isolated in regards to public accessibility, make it a poor site in terms of landmark value.

Overall assessment: The site presents a series of strong disadvantages to its location; the unfavourable South-west orientation offers views of the harbour and small boats docked in front of BAT Centre, the inaccessibility of vehicles and pedestrians like from the main streets as well as its poor visibility crucial to landmark buildings. Its only advantages are in that it boasts a good relationship with CBD and provides a strong linear opportunity for the redevelopment of Durban's urban waterfront.

From unfavourable to favourable conditions

	1	2	3	4	5
Waterfront Development				●	
Linkages to CBD				●	
Accessibility of site		●			
Habitable Spaces			●		
Landmark Potential			●		
Views	●				
Site Restrictions					●

7.5 SELECTED SITE

Yacht Basin Entrance: By analysing each site according to the criteria set out at the commencing of this chapter, certain contrasting elements have been established. The research has shown that the Yacht Basin entrance site is the most suitable for this type of development. This is due to its satisfactory orientation needed for 'people' places, its ease of access by pedestrians and vehicles alike, the large space available for accommodating both the facility as well as it's parking, its legibility within the city context and the overall rejuvenation potential that the development hopes to achieve along the Embankment. This theatre facility would ultimately *hope to increase activity in the area and within the yacht basin precinct, especially at night when yachting is at a minimum.* The site's close linkages to the CBD and the Playhouse Theatre, as well as to the Catalina Theatre and BAT Centre could lead to the close interaction of various facilities which would complement each other. It is the hope of the research that this development would eventually act as a catalyst for change within the city of Durban.

Chapter 8 - Conclusions & Recommendations

8.1 INTRODUCTION

The research engaged with this document has been relevant in the suggestion of an appropriate response to the design of a performing arts centre on Durban's urban waterfront. This chapter therefore is a review of the main aspects that should contribute towards the brief and ultimately the design of a performing arts theatre along the Embankment. The main aspects are as follows:

- Waterfront regeneration
- The relationship between the funding and the community
- Theatre planning and its spatial relationships
- Engagement with the public & the importance of the street edge

Both precedent and case studies, discussed in chapters four and five, have largely informed the design of a performing arts centre or theatre in Durban and will be reviewed briefly within this chapter and recommendations made subsequently.

8.2 WATERFRONT REGENERATION

In most port cities, a tension exists between the built form of the city and its urban waterfront. Most harbours are still in use, therefore this urban edge between the city and water remains industrial and the true potential of the waterfront is lost. This is not the case in Durban as the TNPA has given over the stretch of land along the northern extremity of the harbour (along Victoria Embankment, now known as Margaret Mncadi Avenue) back to the city and one can see a marked effort to rejuvenate the area in facilities such as Wilson's Wharf and Café Fish. Unfortunately, the Maritime Museum site is less successful and has become a lost space that seems to attract crime and overall unsatisfactory social conditions. However, to reach its full potential, more activity and development is needed to stimulate the area and entice the public back to this edge and into the city. The City Architects have since developed a plan for the overall Embankment area, though the Yacht Mole precinct is the only area to have benefitted so far from this vision and plans are already in place for its redevelopment. As discussed in chapter 3, it has been found that in order to activate this edge, a range of tourist, recreation and cultural facilities needed to be added to the existing fabric. With the introduction of a Performing Arts Centre, incorporating social and retail amenities for both theatre patrons and the public at large, the *area of the Yacht Mole can be rejuvenated and ultimately act as a catalyst for further regeneration of the entire waterfront as well as inner city.* The challenge with Durban's urban waterfront is that the structures built along this edge need to address both the rigid city 'wall-like' development and the softer water's edge of the bay.

8.3 RELATIONSHIP BETWEEN FACILITY FUNDING & THE COMMUNITY

As discussed largely in chapter six as well as with regard to the case studies in chapter five, the issue of funding and how this ultimately affects both the public along with artistic community within a city is a strong motivation within the design process. The comparison between state-funded versus self-sustaining facilities is one that has been widely debated. Each with its own advantages and disadvantages, it has been argued throughout this document that a facility that supports itself and is independent from government funding is more suitable for this dissertation. Combined with the ability to choose what will be performed, produced and hosted as well as having no state obligations to fill certain requirements set out by the government, the facility would be able to respond directly to the needs and desires of the artistic community of Durban and beyond. The community should have a say in what the facility offers within its repertoire in order for the resource to be truly community based. Educational services, often seen in theatres across the world, are critical to the facility being integrated into the community by means of helping out and instilling a love of learning and expressing oneself through a theatre medium. *The re-introduction of theatre and dance companies, housed within the facility, allows for both entities to experience the stability that this industry lacks.*

Extra financial generators to be included in the design consist of the following: additional parking spaces that could possibly be used by employees and theatre patrons alike, an array of restaurants and bars housed within the facility as well as a small retail component.

8.4 THEATRE PLANNING & ITS SPATIAL RELATIONSHIPS

Within the design of a theatre, numerous precise requirements are needed in order for a facility of this nature to succeed; these have been discussed at length in chapter seven. Perhaps the most important of these aspects is the acoustic treatment of the auditorium as well as the sight lines generated by its seating arrangement. Due to the large volumes needed within the auditorium, an assortment of reflectors and absorption panels needs to be incorporated into the space, the amount or quantity can be determined by an acoustical engineer if one is appointed. Special attention needs to be paid to the definition between front and back-of-house. While the public experiences front-of-house spaces such as the lobby and it's strategically placed refreshment points; the back-of-house encompasses service areas essential to the workings of a theatre for example kitchens, storage and loading zones. Through analysis of the precedent and case studies in chapters four and five respectively, it has been found that these should optimally been kept separate at all times so as to avoid contact between visitors and service people. Separate entrances for public and services are therefore required.

There is an increasing awareness of how a theatrical facility relates to the city, its people as well as to the immediate street edge. Careful thought needs to be paid to how the lobby areas are treated as this is the first space the public experiences and is often glazed and so seen from the road and by neighbouring buildings. Therefore this public face or 'mask' of the building needs to be treated with some dignity and splendour.

8.5 ENGAGEMENT WITH PUBLIC & IMPORTANCE OF STREET EDGE

Another aspect to consider within the design of a performing arts centre is the treatment of the roads and walkways linking the Yacht Mole to Wilson's Wharf and to the BAT Centre on the Maritime Museum site. Road widening, repaving of pedestrian walkways and the incorporation of additional street lighting and furniture are ways to enhance the waterfront. The introduction of a public plaza or square will provide a space where people can sit and interact as well as provide a transition space between the street edge and the building itself. A Performing Arts Centre, and theatres in general, are facilities that have a distinctive public image. They need to be able to encourage people to use the space while not being daunted by its scale or large proportions. It is therefore evident that one must carefully consider the effect of a building on the public senses and respond appropriately to create a building that is both accessible and expresses a sense of civic grandeur without being having an overbearing presence.

8.6 CONCLUDING REMARKS

Throughout this dissertation document various aspects of theatre design have been explored. The different components needed for a successful theatre and their relative sizes, the spatial relationship between each space as well as their technical specifications have been discussed in chapter three and subsequently applied to the design. Within this same chapter, the concept of 'what is waterfront architecture' was explored. It was established that a theatre facility was suitably placed at this edge by the views of various theorists as well as by the precedent studies examined in chapter four. Here the theatre acts as a transitional element between land and water and speaks to two diverse edges, one man-made and one natural.

Chapter three also established that a community building, such as a theatre or Performing Arts Centre, encourages future growth of an area or city whilst promoting interaction with the general public. The proposed design aims to act as a catalyst for the rejuvenation of the entire Yacht Basin whilst still providing connections to the rest of the development by means of visual references and physical pathways.

Finally, the most important factor to remember when designing a civic space, especially a theatre or a Performing Arts Centre, is that in its essence it is *a building for the people and should be designed not only to relate directly to the community of Durban but also to the city in which it is situated.* By considering the above mentioned aspects intrinsically linked to theatre design, a suitable architectural response will be determined for a facility that will ultimately boost the regeneration of the urban waterfront of Durban.

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Appendix A- Area Analysis

	JHB Civic	PTA State	Playhouse	NJPAC	Holland PAC	Luxembourg	Sydney	Average
COMPONENTS	m²	m²	m²	m²	m²	m²	m²	m²
Large Auditorium	630	700	820	2300	740	570	1000	965
- Main Stage	525	620	600	400	243	150	430	424
- Side Stages	380 x 2	320 x 2	270 x 1	200 x 2	N/A	N/A	(inc above)	292 x 2
- Back Stage	430	540	N/A	400	N/A	N/A	(inc above)	456
- Foyer (inc. bars)	900	900	980	3000	380	1000	900	1150
- Orchestra Pit	75	75	100	120	N/A	700 (organ)	Unknown	92.5
Small Auditorium	N/A	500	700	500	N/A	125	200	405
- Main Stage	N/A	430	370	460	N/A	40	350	330
- Side Stages	N/A	200 x 2	300 x 2	N/A	N/A	N/A	(inc above)	250 x 2
- Back Stage	N/A	300	370	N/A	N/A	N/A	(inc above)	335
- Foyer (inc. bars)	N/A	670	(Included)	(included)	N/A	(included)	800	735
- Orchestra Pit	N/A	60	40	N/A	N/A	N/A	Unknown	50
Dressing Areas	N/A	1120	750	500	390	340	290	565
Restaurant Area	280	Unknown	300	130	N/A	Unknown	230	235
Kitchen Area (inc. store)	150	Unknown	80	370	N/A	Unknown	130	183
Loading Dock	350	400	320	278	200	Unknown	550	350
Rehearsal (multiple)	N/A	1640 (4)	450 (2)	278	430	390	510 (2)	600
Storage	300	300	480	280	260	Unknown	600	380
A/C Plant Rooms	140	Unknown	Unknown	Unknown	630	80	440	322.5
Cloak Room	120	400	180	67	N/A	N/A	30	160

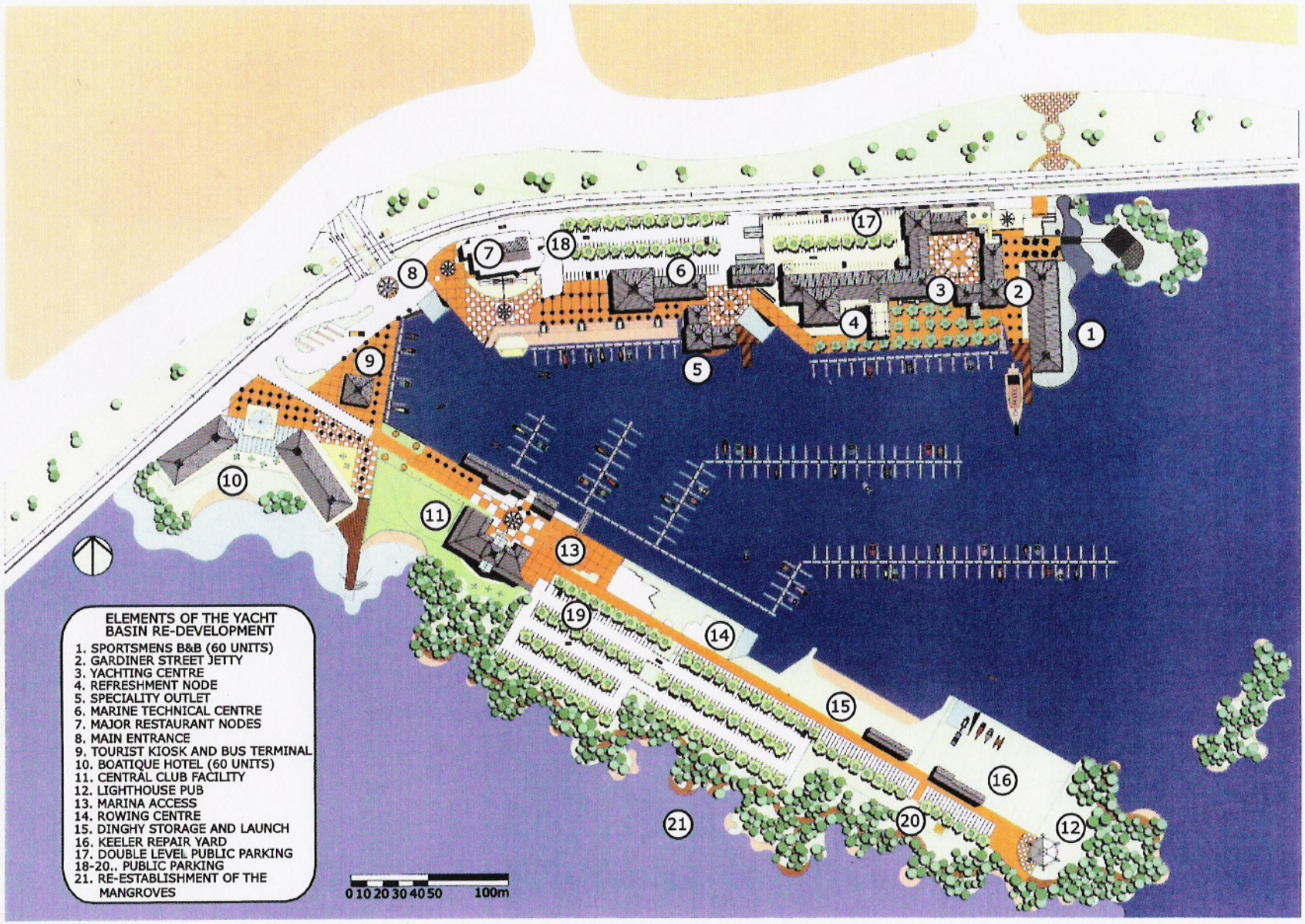
Appendix A- Area Analysis

	JHB Civic	PTA State	Playhouse	NJPAC	Holland PAC	Luxembourg	Sydney	Average
Proscenium Opening (width)	16m	18m	19m	20m	N/A	N/A	Unknown	18.25m

Please note that these areas are for comparative study only, and are based on the number of people catered for within a particular facility. These are considered proportional and therefore similar proportions will be applied to this dissertation

Appendix B- Area Analysis

The following report and proposal for the Yacht Basin precinct of Durban's Embankment was obtained from the City Architects (Urban Design Department) during the interview, with Nadas van Heerden, held on 25 February 2008. It was approved in 2002 and smaller upgrades are currently being implemented.

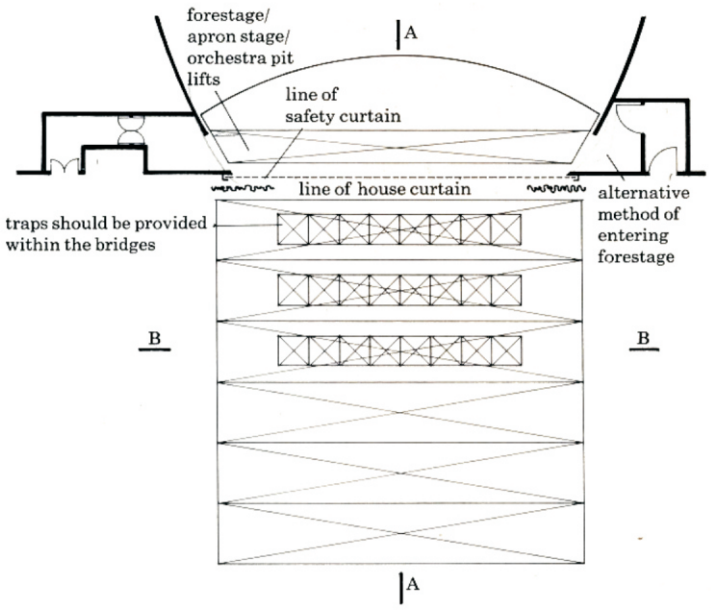


DIAG. 5: ADVANCED VISION

URBAN DESIGN AND DEVELOPMENT FRAMEWORK PLAN FOR THE VICTORIA EMBANKMENT YACHT BASIN - DURBAN

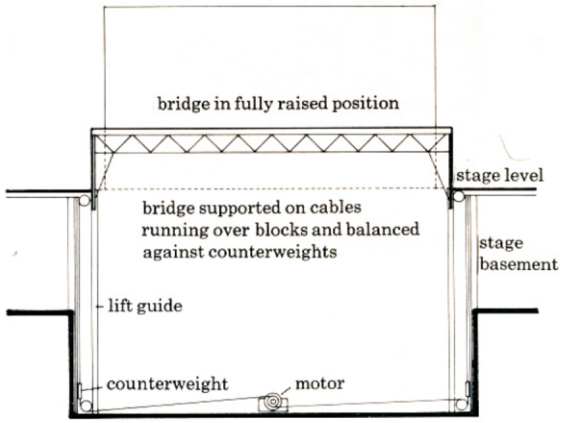
Appendix C - Additional Information for Theatres

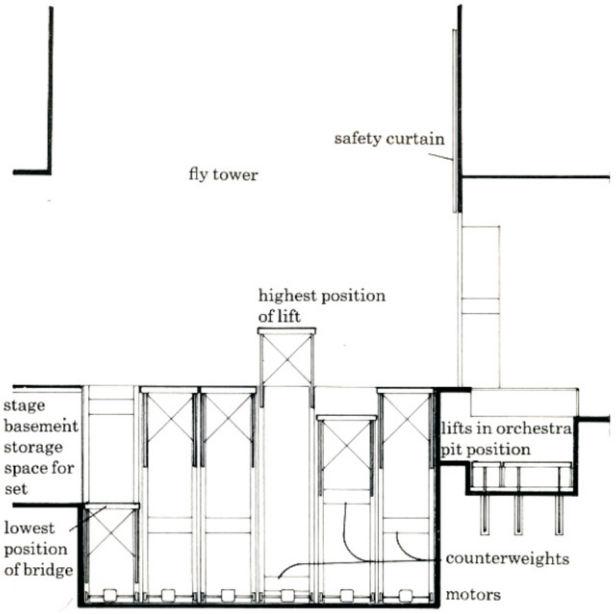
Note: The following information is taken from Roderick Ham's book 'Theatre Planning' (1972) and is pertinent to the design of theatre buildings.



Plan of stage with a system of bridges.

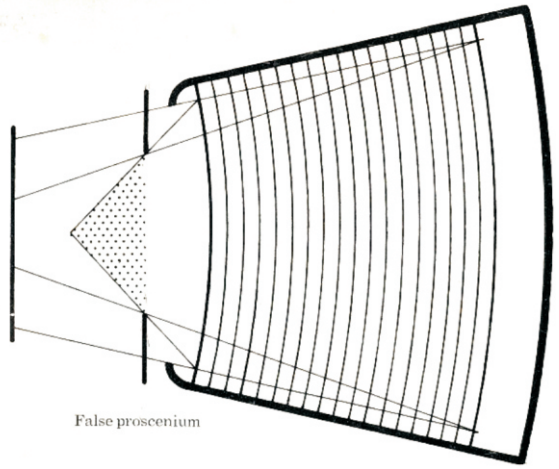
Diagram showing stage lifts with a system of bridges (Ham 1972: 87)





No. 9:20 *Section* AA.

Diagram showing stage lifts operating individually (Ham 1972: 86)



No. 3:8

Diagram of false proscenium showing limited sight lines(Ham 1972: 34)

Appendix C - Additional Information for Theatres

Note: The following information is taken from Roderick Ham's book 'Theatre Planning' (1972) and is pertinent to the design of theatre buildings.

Table showing dimensions for seating (Ham 1972: 55)

Table 1 Distance of seats from gangways

Minimum seatway (measured between perpendiculars) E (mm)	Maximum distance of seat from gangway (510 mm seats) F (mm)	Maximum number of 510 mm wide seats per row	
		Gangway both sides	Gangway one side
305	3060	14	7
330	3570	16	8
355	4080	18	9
380	4590	20	10
405	5100	22	11

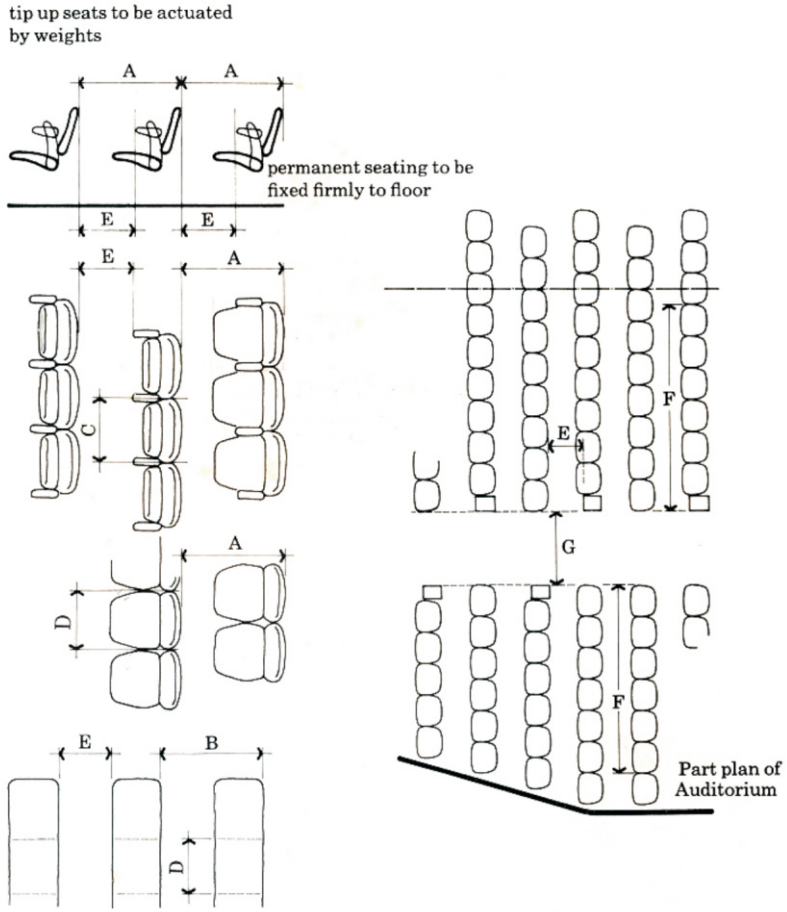
Table 1 shows the distance of seats from gangways. It should be noted that the width of individual seats is taken as 510 mm. The standard dimension at present is 1 ft 8 in (508 mm). While manufacturers' dimensions cannot be anticipated, 510 mm appears to be a sensible metric size. Dimensions given here may, therefore, be used for preliminary planning purposes, but exact sizes of seats must be checked with manufacturers.

55

Plans—Seating with Arms

Seating without Arms

Seating without Backs



No. 7:1 *Auditorium Seating* *No. 7:2*

Diagram of seating arrangements & dimensions (Ham 1972: 56)

Minimum dimensions:

A	Back-to-back distance between rows of seats with backs: 760 mm (minimum)
B	Back-to-back distance between rows of seats without backs 610 mm (minimum)
C	Width of seats with arms 510 mm (minimum)
D	Width of seat without arms 460 mm (minimum)
E	Unobstructed vertical space between rows (seatway) 305 mm. See table 1.
F	For normal maximum distance of seat from gangway see table 1. But rows with more than twenty-two seats could be possible, provided that the audience was not imperilled.
G	Minimum width of gangway 1070 mm.

Appendix C - Additional Information for Theatres

Note: The following information is taken from Roderick Ham's book 'Theatre Planning' (1972) and is pertinent to the design of theatre buildings.

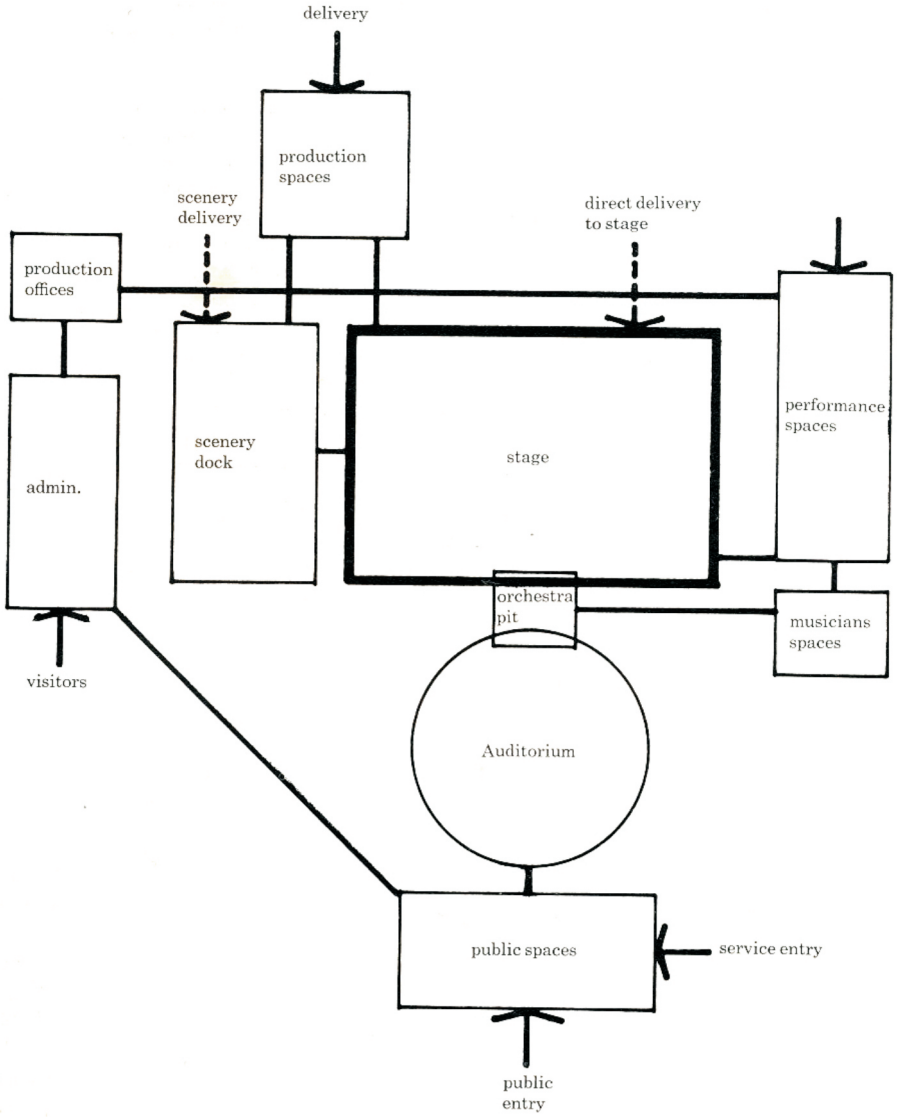
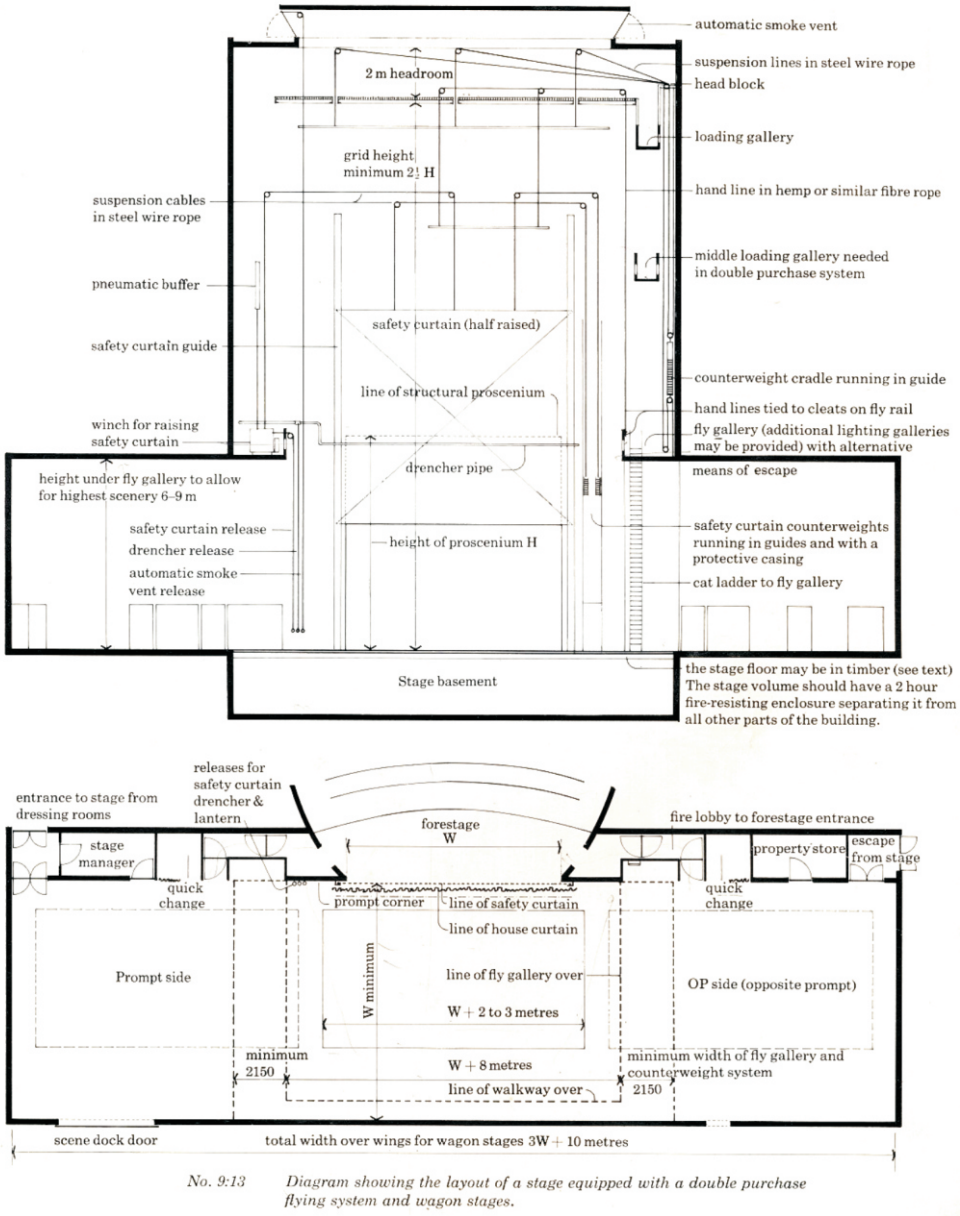


Diagram showing relationship of functions (Ham 1972: 246)

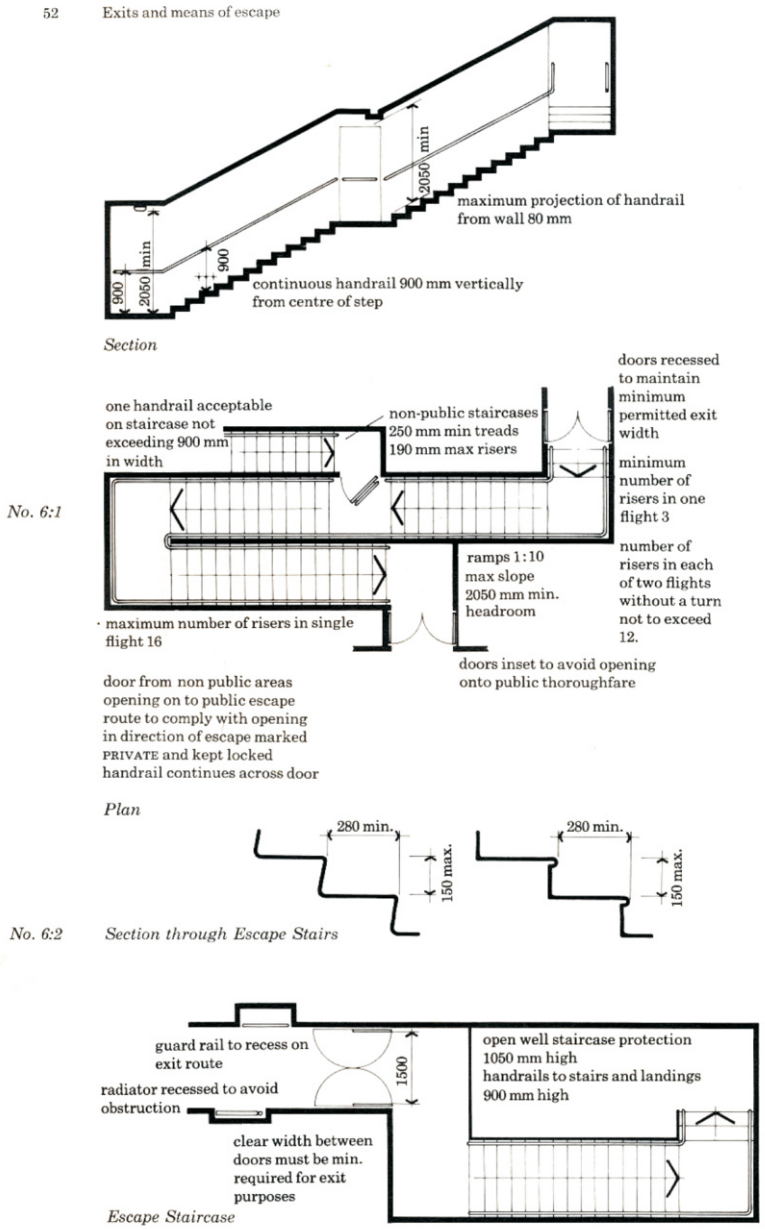


No. 9:13 Diagram showing the layout of a stage equipped with a double purchase flying system and wagon stages.

Diagram of stages and fly tower and the relationship between each (Ham 1972: 77)

Appendix C - Additional Information for Theatres

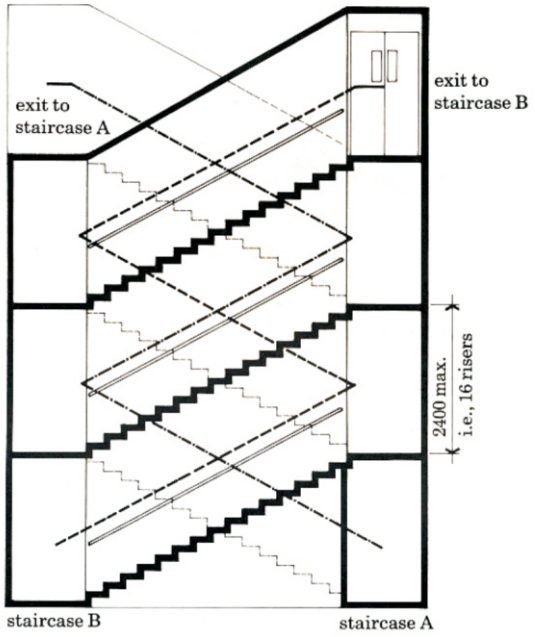
Note: The following information is taken from Roderick Ham's book 'Theatre Planning' (1972) and is pertinent to the design of theatre buildings.



No. 6:1

No. 6:2 *Section through Escape Stairs*

Diagram showing exits and means of escape (Ham 1972: 52)

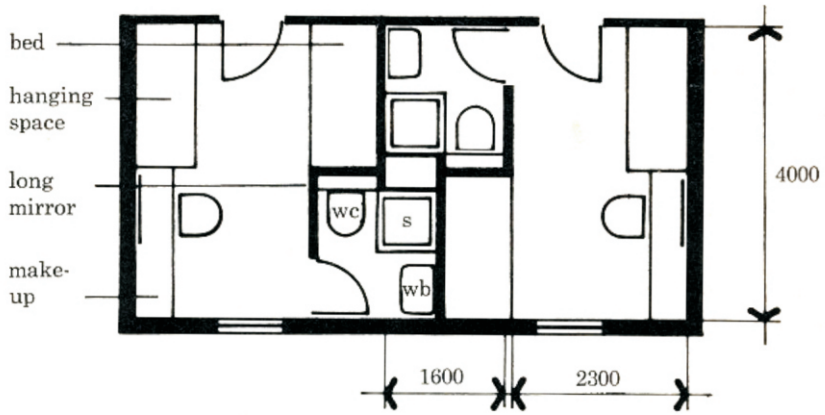


No. 6:3 *Scissors escape stairs* are an economic planning device which makes it possible to get two completely independent, fire separated staircases into one tower by using the maximum number of 16 permitted risers in each flight.

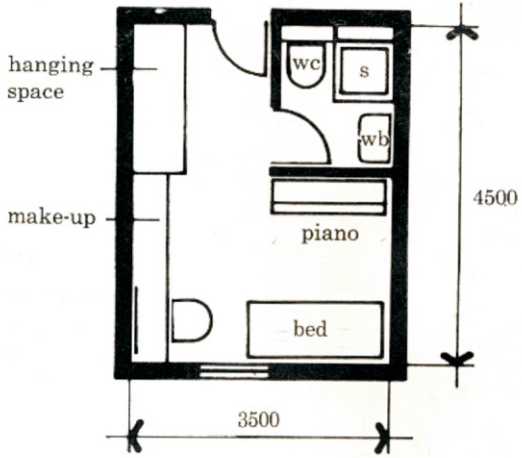
Diagram of escape staircase (Ham 1972: 53)

Appendix C - Additional Information for Theatres

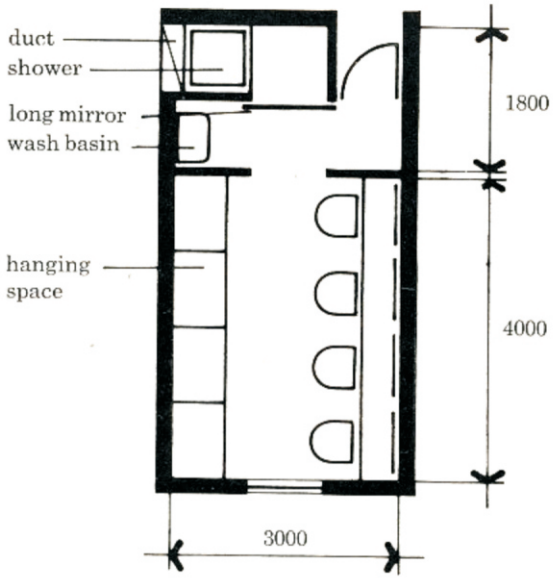
Note: The following information is taken from Roderick Ham's book 'Theatre Planning' (1972) and is pertinent to the design of theatre buildings.



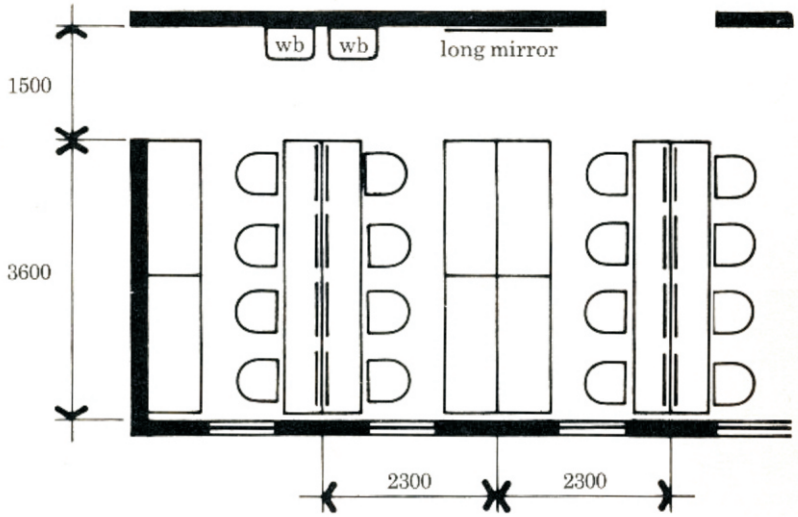
No. 15:3 *Single dressing rooms. Area 14·4 m².*



Single dressing room with provision for piano. Area 15·7 m².



Dressing room for 4 performers Area 17·4 m².



No. 15:4 *Communal dressing room. Area 8·3 m² each bay.*

Plans of dressing and change room areas for single and communal spaces (Ham 1972: 182 / 183)

Appendix C - Additional Information for Theatres

Note: The following information is taken from Roderick Ham's book 'Theatre Planning' (1972) and is pertinent to the design of theatre buildings.

Ballet dressing rooms

Type of performer	*Number*	*Occupancy of room*	*Remarks*
Male principals	3	single	Should be at stage level and it is desirable for them to have their own showers and lavatories. These star dressing rooms should be planned to allow for visitors and dressers.
Female principals	4	single	
Soloists (male and female)	24	up to 4	These rooms should if possible be at stage level. They would be allocated according to the size of the cast and would more usually have 2 or 3 occupants.
Male corps de ballet	25	shared	The numbers will depend on the kind of company and the size of the stage.
Female corps de ballet	25	shared	
Children	20		Children must be chaperoned, accommodated separately from the rest of the cast and must have their own lavatory accommodation.

Changing rooms for opera and ballet

Type of performer	*Number*	*Occupancy of room*	*Remarks*
Conductors (visiting)	2	single	The room should be large enough to accommodate an ensemble of 6 musicians for rehearsal. These rooms are for use during performances and rehearsals. A resident conductor would have separate accommodation.
Orchestra leader	1	single	
Section leaders	6	shared 2 – 4	
Musicians	120		The sexes should be segregated but as the proportions vary large rooms should be capable of sub-division.

Variety, musicals, spectacles: dressing rooms

Type of performer	*Number*	*Occupancy of room*	*Remarks*
Principals	4	single	Should be adaptable for 2 occupants.
Minor principals	30	up to 6 per room	Capacities of rooms can be varied to take a maximum of 3, 4, 5 or 6 performers. As many as possible of the principals' and minor principals' rooms should be at stage level.
Chorus, etc.	60	shared up to 20	The size of cast will vary with the size of the production but this should be sufficient for the average maximum.
Children	variable	they may be accommodated in one of the chorus rooms.	Regulations for child performers require that they be separately accommodated and properly supervised.

Variety, musicals, spectacles: changing rooms

Type of performer	*Number*	*Occupancy of room*	*Remarks*
Conductor	1	single	The room should be large enough to hold auditions.
Musicians	30	shared	Divisible for male and female musicians, e.g. 5 rooms to take a maximum of 6 each.

Drama dressing rooms

Type of performer	*Number*	*Occupancy of room*	*Remarks*
Principals	2 – 6	single or occasionally two.	The principals and as many minor principals as possible should be at stage level. The allocation of dressing rooms will vary continually according to the scale of the production and they will only be fully occupied for large shows.
Minor principals	16 – 20	shared 2, 3, 4, 5 or 6.	
Supporting cast	20 – 40	shared in rooms holding up to 15.	

Tables showing the quantity of dressing rooms needed as per specific function of theatre facility (Ham 1972: 177 / 178)

Appendix C - Additional Information for Theatres

Note: The following information is taken from Roderick Ham's book 'Theatre Planning' (1972) and is pertinent to the design of theatre buildings.

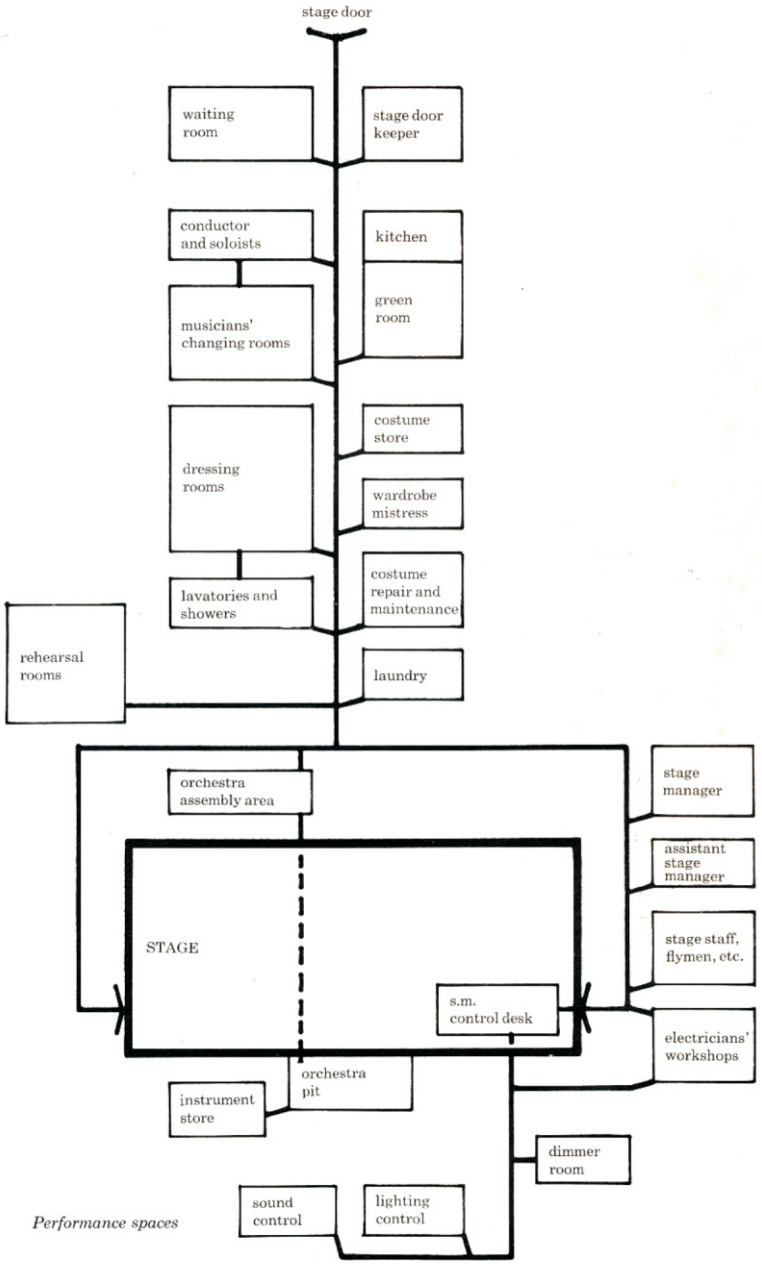


Diagram showing relationship between performance spaces (Ham 1972: 197)

Appendix D- Final Drawings

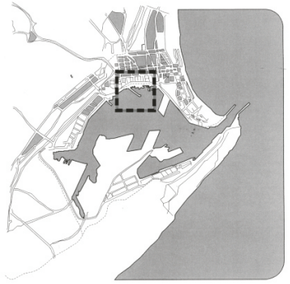
The following drawings are the final primer, plans, sections and elevations.

A Performing Arts Center For Durban's Embankment

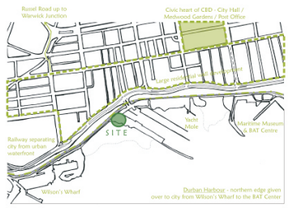
Primer - urban analysis / mapping

Lauren Haiden - M.Arch 2008

North



LOCALITY PLAN



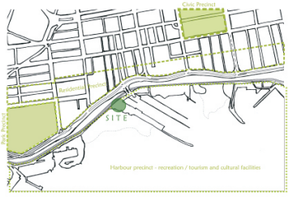
CONTEXT



CENTRAL NODE



CONNECTIONS



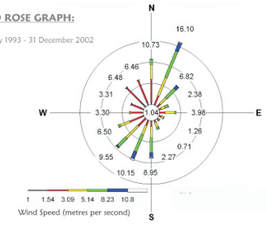
PRECINTS



ATTRACTION

WIND ROSE GRAPH:

Durban:
1 January 1993 - 31 December 2002



THE CLIENT:

Since existing theatres available in Durban are limited to either large, expensive facilities like the Playhouse Theatre or smaller facilities like the Catalina Theatre that only seats 150, a resource is needed to accommodate independent drama and dance companies that are struggling to make ends meet. By linking to the current development of the yacht basin along the Embankment, it will provide the area with a source of cultural recreation as well as provide stability to Durban's theatrical companies. For the purpose of this dissertation, the client could therefore be any **privately owned theatre or dance company**, or collaboration of both, that requires a new 'home base' from which to operate.

PROBLEMS IN AREA:

- **Access** is limited to site due to railway lines which separate the city's CBD from its urban waterfront edge
- **Lack of integration** to the city
- **High density** evident within CBD, along western harbour edge and toward beachfront
- Low density at urban waterfront edge leaving it **under utilised**
- Large residential **'wall' development** to the north
- Safety along the Embankment edge is a concern as little facilities are available at **nighttime**
- **Undefined** edge at the southern tip of the city
  Poor provision for pedestrians along this edge
- **Lack of social gathering space** at night as well as to accommodate the diverse variety of people of Durban

OBJECTIVES:

- **Safe environment** for all to enjoy, both during the day and at night
- Mixed use development that is open to the public
- **Foster cultural diversity** through a facility devoted to the cultural arts
- Create a **sense of place** at this urban edge through public spaces – squares / piazzas
- Provision for **adequate parking facilities** to meet demand
- Create social **gathering spaces** dominated by pedestrians

NEEDS & REQUIREMENTS:

- **Integration of embankment** back into the city through facility and further waterfront development along this edge
- Provision for **pedestrian walkways** and gathering spaces
- Create a vibrant community space
- **Eyes of the street** – night and day activity along edge
- Provide **visual and physical linkages** between Wilson's Wharf and the Maritime Museum site

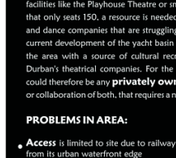
VISION:

- Stimulate urban and **cultural diversity**
- Pedestrian **accessible**
- Encourage the **interaction of people** along the embankment through recreational, tourist and cultural resources
- Create a **24 hour facility** that enables 'eyes on the street'

SITE REQUIREMENTS FOR FACILITY:

- Located on a **main thoroughfare** for easy pedestrian and vehicular access
  Two sides need to be accessed
- Provision of street furniture in social spaces
- Adequate **planting** to public areas
- Create **intermediate breather spaces** along the yacht basin as well as pedestrian friendly walkways – extending towards both the Maritime Museum site and Wilson's Wharf
- Building that responds to **context, theme and nature** of surrounding buildings
- **Optimise the views** available to both the city and harbour
- Encourage **surveillance** at entrance of yacht mole
- Institute **traffic calming measures**
  Create a legible architectural form - easily identifiable as a landmark - and a network of memorable places
  A **social building** that address the current problems and reflects the future positions of the community by bringing together people of different backgrounds by a common means of expression

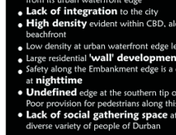
PHYSICAL BARRIERS



Northern boundary: A

High 'wall type' development of residential blocks form a definite boundary opposite the site and the city's urban waterfront
No relationship between 2 sides - heights are inconsistent (see section)
Mixed / vibrant activity on this edge - this is what lacks on the urban waterfront edge

ACTIVE BOUNDARY - DEFINES NORTHERN SITE OF EMBANKMENT



B

Railway lines acts as the element that divides the city from its urban waterfront edge
Active route used by harbour operations today - potential relocation of the car depot would eliminate this need
Dangerous interface between pedestrians and vehicles



C

Royal Natal Yacht Club:

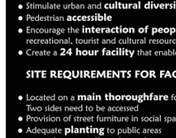
Proposed demolition of existing facility and relocation to a new building (to be included with Point Yacht Club in new club facility)
Blocks views directly to the south, offering no relationship to surrounds
Blank facade - no relationship with existing gym building or space around



D

Point Yacht Club:

Shares entrance with existing gym facility & Royal Natal Yacht Club, though somewhat dominates entrance
Proposed consolidation of club facilities into new building
Somewhat blocks the morning eastern sun
Blank facade - no relationship with other buildings nor any sort of pedestrian boulevard linking parts



E

The New Fish Café:

Building and parking lot form barrier between entrance and wharf edge - no inviting or pedestrian friendly exits at rear of building
Building focused on marina edge
Turns back on south western side while opening up towards water

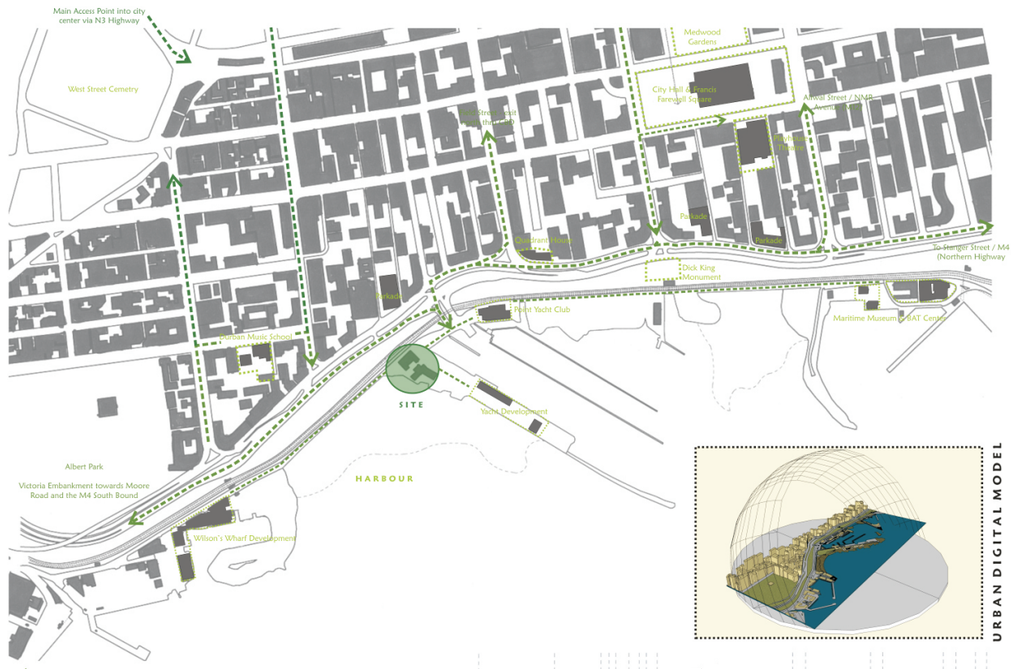


F

Southern boundary:

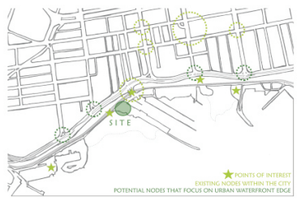
Harbour views doesn't affect the site or area negatively
Sandbanks are evident at low tide
Open southern space provide inviting views

PASSIVE BOUNDARY



URBAN DIGITAL MODEL

PLAN OF DURBAN'S CBD & ITS URBAN WATERFRONT - ANALYSIS OF LINKAGES FROM THE SITE AS WELL AS MAIN ARTERIOLES



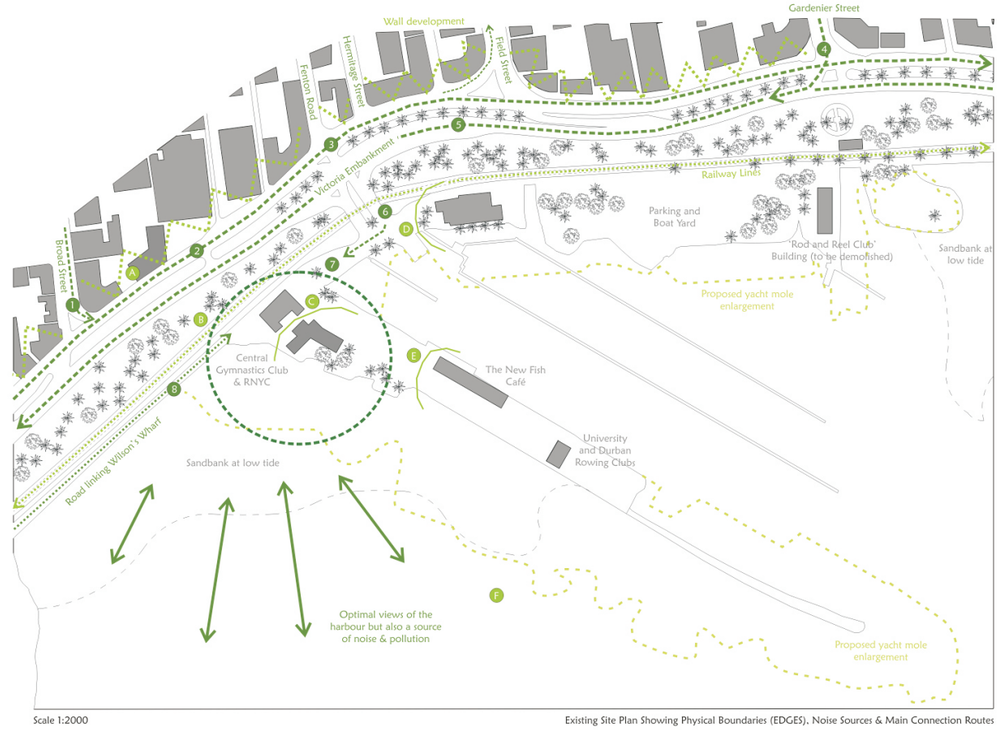
NODES & FOCAL POINTS



PUBLIC SPACES w/pedestrian links



GREEN OPEN SPACE



Scale 1:2000

Existing Site Plan Showing Physical Boundaries (EDGES), Noise Sources & Main Connection Routes





1 View Down Broad Street towards Embankment



2 View up Victoria Embankment towards intersection



3 Intersection of Fenton Road and Victoria Embankment



4 View down Gardenier Street towards intersection



5 View of intersection from east along Victoria Embankment



6 Entrance to Yacht Mole with harbour edge beyond



7 View towards existing gym & royal natal yacht club building



8 View of museum and yacht club building from west

iTRUMP - VICTORIA EMBANKMENT WATERFRONT URBAN DESIGN & DEVELOPMENT FRAMEWORK FOR THE YACHT BASIN PRECINCT: APRIL 2002

eTHEKWINI MUNICIPALITY – commenced with **upgrading programme** including a public park at the Maritime Museum, **road widening for pedestrians** and vehicles and new lighting

Aims – permeability / legibility within the city / variety / richness & robustness

Natural Landscaping – introduction of **mangroves**, which used to be prolific on the shores of the Bay in the past, along the waterfront edge

Development Objectives:

- To establish a **diverse waterfront development** with maximum public access and involvement
- To **introduce a viable commercial development opportunity**
- To revive and **improve positive linkages** between the Yacht Basin and inner city
- To **combat the 'isolation'** of the waterfront by creating an active edge

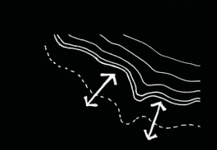
Advanced Vision for Yacht Basin:

- Improvement of **access** to area
- Development of a **cohesive waterfront fabric with variety and a robust and diverse public realm**
- **Reconfiguration of sporting clubs** into one facility
- Land-water interface used for working, recreational and living
- **Broaden the focus of activities** to go beyond selective water sports

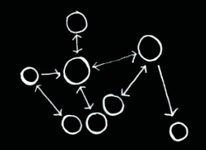
Built Form:
Developments should be maximum **three storeys** high with some parts built over a **semi-basement,** higher buildings on special consent with valid reasoning. The redevelopment of this edge will see approximately **1000 parkings** introduced to the area.

A series of **level changes enhances the feeling of 'going down to the water'.** The inclusion of a number of **public squares or plazas,** complete with street furniture, will act as a wind shelter along the edge. **A variety of mixed use facilities** ,such as; small hotels, restaurant and refreshment nodes, boating clubs as well as consolidated marina amenities allows for a **diverse place** that ill act as a catalyst for change along the Embankment.

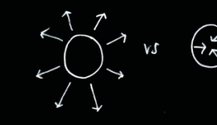
CONCEPTUAL DIAGRAMS



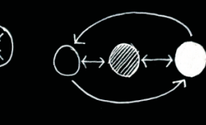
Identifying Lost Space - finding forgotten or neglected spaces within the city context as well as on site and re-activating them to create spaces fit for human habitation



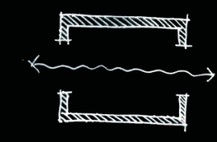
Clustering of activities - either around a central point or social gathering space, here the interlink between each is often more complex than a single direction



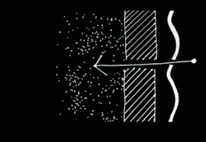
Extroverted versus introverted -the expression of the 'blind box' in relation to the function and how this translates into a transparent organism that is a social building - this is expressed through solid vs. void and heavy vs. light



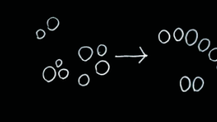
Light versus darkness / shade - considering the two extremes as well as a grey area in between, in terms of human expression and translated into an architectural expressing



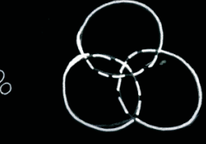
Circulation as a form generator - this acts as a transition zone between back and front of house as well as between different functions within the facility



Transitional Spaces - the ability of moving from the public realm to the private realm experiencing a series of subtle changes while obtaining a feeling of ownership and hierarchy - this is expressed as well through sheltered vs. exposed



Ordering disorder - the formalizing and structuring of elements into a coherent whole which is legible within the macro and micro context



Blurring boundaries - where different functions meet on common ground as well as creating transition zones between rigid functions for social interaction - also the issues of masking and dark vs. light are pivotal

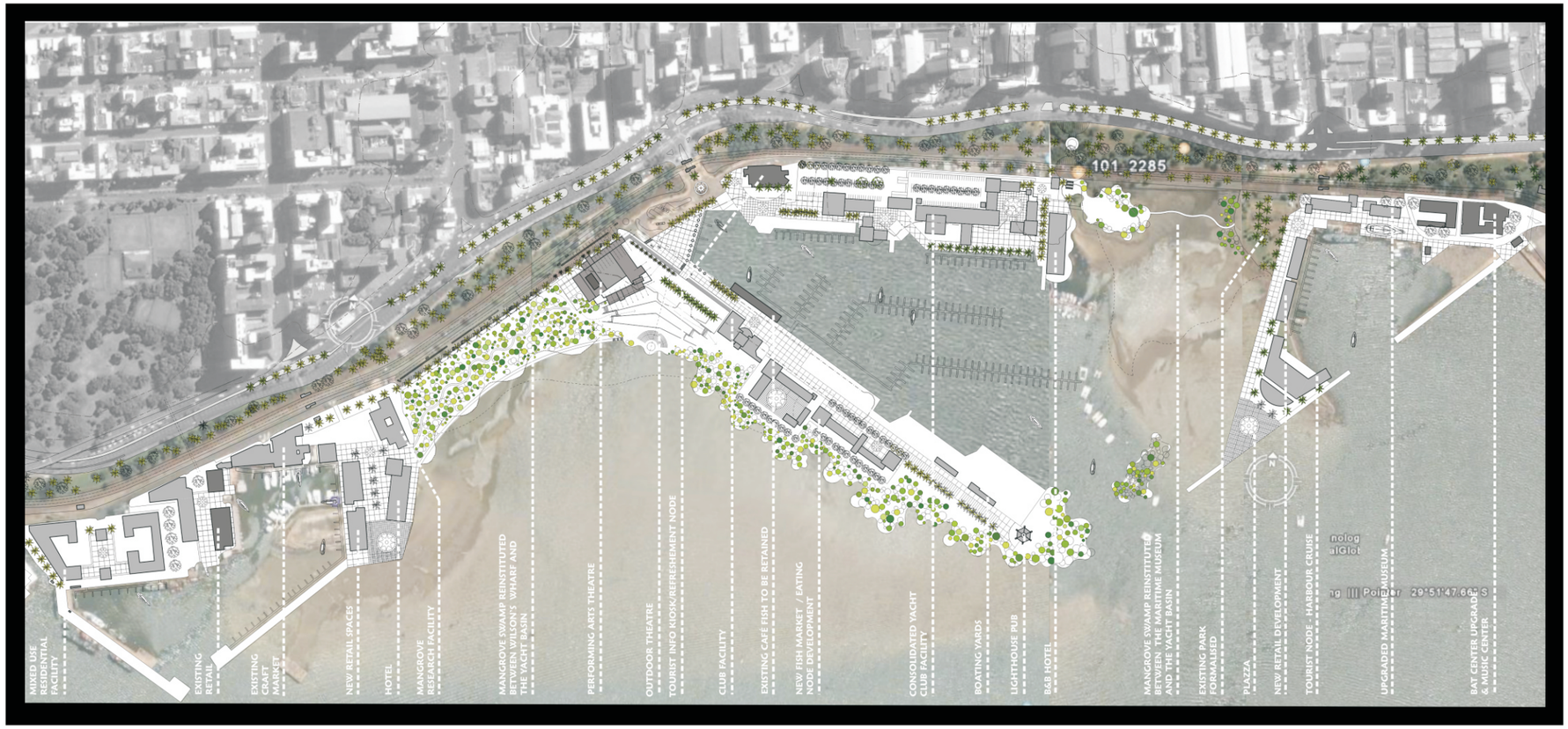
VIEWS APPROACHING THE EMBANKMENT

A Performing Arts Center For Durban's Embankment

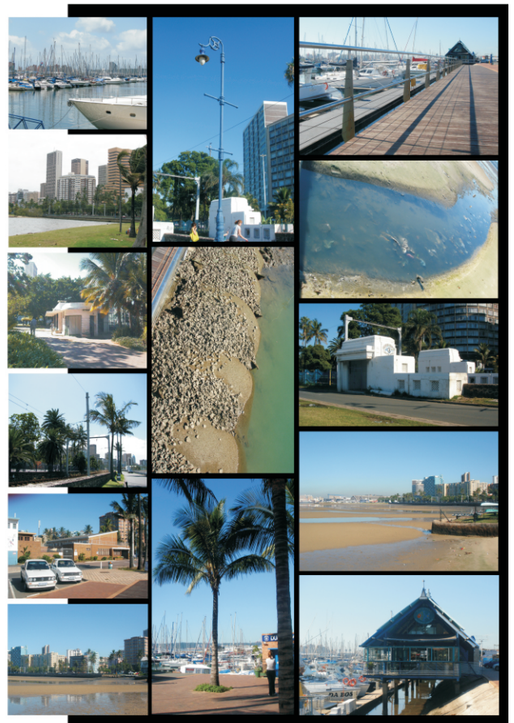
Primer - urban design plan & imagery

Lauren Haiden - M.Arch 2008

North



HARBOUR & EMBANKMENT IMAGERY, ELEMENTS & ARCHITECTURE



PRIMARY CONFIGURATION DIAGRAMS



FOOTPRINT STUDY 1:

- Strong **pedestrian route** thru site
- **Services** block including stage, stores and dressing areas act a barrier to the railway lines and the wall development
- **Outdoor theatre** terminates the foyer axis
- **Promenade** from kiosk to mangroves over site
- Foyer acts as **transition zone** between road and waters edge
- Side space given entirely over to public as a **park**
- **Nodal points actively stimulate** the park and path

FOOTPRINT STUDY 2:

- Strong **pedestrian route** thru site
- Form responds to radial geometry established by wharf paving etc
- **Services** block consisting of the dressing areas act a barrier to the railway lines and the wall development
- Hinge - acts as transition zone and separates functions
- Side space given entirely over to public at a **park**
- **Promenade** from kiosk to mangroves over site and terminates at outdoor theatre
- **Look out points** established at higher levels towards views of city, small craft

FOOTPRINT STUDY 3:

- Stage **turns its back on city** itself and doesn't address the corner of the site
- Space at corner becomes **additional 'lost' space** for the city
- **Nodal points** feed off the auditorium housing restaurant, retail and the like
- Foyer acts as **transition zone** between road and waters edge as well as between theatre and auxiliary facilities
- **Plaza** somewhat insignificant
- Outdoor theatre terminates

FOOTPRINT STUDY 4:

- Auditorium and foyer spaces address the corner - opening out with views to both the city and small craft harbour
- **Nodal points** housing retail and restaurant functions offer views out towards harbour and **activate the path** thru site
- Two individual buildings - allow **flexibility** at various times of the day with transition zone inbetween
- Outdoor theatre terminates axis from information kiosk
- Plaza to the north and north east allows breathing space along edge
- **Park passively activated** by users rather than functions

THEORETICAL FRAMEWORK

1 – Ordering Disorder

- Undefined spaces are prevalent in Durban which in turn forms parking lots or places that gather waste. These **'anti-spaces'** create voids within the city fabric and present a lack of unity.
- Cities are **now dominated by highways, thoroughfares and parking lots** due to the automobile, therefore allowing cities to loose much of its cultural meaning and purpose – streets are plainly arteriales for cars!
- Using **Trancik's three urban design theories** – figure ground study, linage theory and place theory – one might establish a means to combat this urban affliction.

'A place is a space which has a distinct character. Since ancient times the genius loci, of **spirit of the place**, has been recognized as the concrete reality man has to face and come to terms with in his daily life. Architecture means to visualize the **genius loci** and the task of the architect is to create meaningful places where he helps man to dwell' (Trancik, 1986: 114)

- Open spaces act as **movement channels** between buildings as well as allow for the integration of functions and activities while buildings define the edge and give a sense of enclosure

Craig-Smith & Fagence argue that urban waterfronts boast the opportunity for social improvement and regeneration through rehabilitating the area's image (Craig-Smith & Fagence, 1995: 137). Marshall goes further by saying that **'the waterfront is an expression of our culture'** (Marshall, 2001: 4) and allows us the expression of hope for urban vitality through recreational and economic ventures. This edge exists in Durban as a space of urban redundancy and needs to be reconnected with the city proper by recreating its image.

2 – Tragic Awareness

- The **awareness of space** as an experience is the fundamental concept that fuses together and forms the interrelationship between form and space. This alertness allows the visitor to connect with the full spectrum of senses and feelings created by the architect within a space – 'genius loci' or spirit of place
- Architectural form, materials, texture, modulation of light and shade, colour – all **introduce to a space a distinctive spirit**

'…one of the prime purposes of architecture is to **heighten the drama of living.** Therefore, architecture must provide differentiated spaces for different activities, and it must articulate them in such a way that the emotional content of the particular act of living which takes place in them is reinforced' (Bacon, 1967: 19)

- Nietzsche argues that a **man is drawn to tragedy** – whereby they are more interested in pain and suffering of others. This is clearly understood by Roman gladiatorial battles when the people turned out in their droves to witness the spectacle.
- In this regard art, theatre and the performing arts act as a way of expressing both these ideas of pain and suffering as well as pleasure and joy.

'Tragedy induces a **state of intoxication** in which we are not passive spectators…but participators, even if to some extent shielded ones, in the very mixture of ecstatic pain-cum-pleasure that, in its undifferentiated state, constitutes reality' (Nitezsche, 1993: xxiv).

3 – Blurring Boundaries

- People's need for stimulation is intrinsically linked to a **vibrant street edge.** The street provides the opportunities for contact between the public at different levels as well as being a source of inspiration to the monotonous world dominated by the automobile.
- Gehl believes there is a distinct connection between street life, the events accommodated on the street and the numbers of peoples present (Gehl, 2000: 23) where if the right activities and people are assembled, they would **stimulate each other** ultimately creating a self reinforcing process!

"Visual expression contributes to giving a feeling of a sense of place an through this inspired people to be in the space" – George Cullen (Gehl, 2000: 183)

- The concept of 'intermediary spaces' - **transition** - be they squares, plazas, pedestrian streets or resting areas which act as a breather room between buildings. These devices are conceived as **places for social interaction.** A place fused with activity, during both and night, which draws people in and brings the street to life through the public's interaction.
- Gehl feels that **flexible boundaries**, or transitional spaces, are needed which function as connecting links between the public realm of the street and the building and should therefore be inviting (Gehl, 2000: 115) as to encourage people to cross over.
- Hertzberger insists that the **'threshold'** holds the key for these spaces – emphasizing a well defined relationship between public, semi public, semi private and private spaces (Hertzberger, 1991: 32)

"Make of each place, a bunch of places of each house and each city, for a house is a tiny city, a city a huge house" – Aldo Van Eyck (Hertzberger, 1991: 193)

- **Connection to earth** – Alexander felt that one should connect one's building to the ground by means of a series of paths, terraces and steps around its edges to interweave it to its surroundings and avoid being a structure is isolation…unconnected to its place (Alexander, 1979: 787)

QUALITATIVE & ANALYTICAL PRECEDENTS



Command Company, Canada, Japan - Architectural Review 12.07 pg. 72
Architect - Ryuichi Sasaki & Junzo Ito
Clear definition of **public and private space** by use of **internal courtyard** as the defining element within the design (transition)
Transparent ground level allows for the visual and physical connection of the public to the building
Glazed box with **fragmented elements** on the facade - expression of light, form and space
Vertical system of scene changing used as well as in placing the foyer space on the first



Bridge of Dos Lagos Development, Corona California - Architectural Record 02.08 pg. 79 (Left)
Architect - Manrovia (Norberto Nardi)
Fragmentation of the scenery as well as of the bridge itself incorporating distinct 'light wells' or cut outs into the framed structure
Timber lathes give the structure **added texture** and enlivens the meander for the user
Object in the landscape - feeling of **enclosed security** though one still feels **connected** to their surroundings

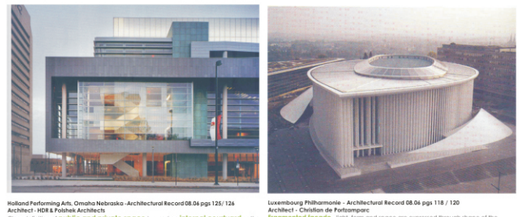


Stickland Ferris Residence, North Caroline - Architectural Record 01.08 pg. 152 (Left)
Object in the landscape - feeling of **enclosed security** though one still feels **connected** to their surroundings by means of large open, transparent facades allowing one to experience the outdoors whilst be sheltered
Ground level is **slightly raised off the ground** - giving a feeling of **ownership** and privacy whilst enabling one to look out over the landscape
Steel **frames the views**





Kampf Architekten: Eibsee - Architectural Review 10.07 pgs. 94,95
Architecture **rooted to ground** by means of pedestrian entrance and vehicular access at the ends of the facility - the whole facility is set into the hillside, with **the roof landscaped** to be enjoyed by the hotel like structures of the building as well as through the **terraced gardens** - giving different degrees privacy and accessibility to the complex



Holland Performing Arts, Omaha Nebraska - Architectural Record 08.06 pgs 125/ 126
Architect - HDR & Polshek Architects
Clear definition of **public and private space** by used an **internal courtyard** as the defining element within the design (transition)
Transparent ground level allows for the visual and physical connection of the public to the building
Glazed box with **fragmented elements** on the facade - expression of light, form and space
Vertical system of scene changing used as well as in placing the foyer space on the first

Luxembourg Philharmonie - Architectural Record 08.06 pgs 118 / 120
Architect - Christian de Portzamparc
Fragmented facade - light, form and space are expressed through shape of the building by means of a series of fins
Located in a **forgotten part of the city** - lost space is redeveloped and area is rejuvenated
Rises up from the earth shows its **connection** to its site and space (rooted in history - surrounded by governmental buildings - becomes an object in the landscape - **civic landmark**
Internal street (lobby space) forms structuring element of facility and wraps around the theatre and its services
Compact design within with attention given to its outer skin - doesn't look like a traditional theatre building with exposed fly tower





Newark Performing Arts Centre - Webb: 1998: 44, 01 & 70
Clear definition of **public and private space**
Clear definition between hard landscape of house by means of a spiral element separating the 2 theatres and performing arenas
Transparent ground level allows for the visual and physical connection of the public to the building (Glass box)
Very **accessible** building - connects to the public at ground level as well as being a **civic landmark** in the city
Vertical system of scene changing used as well as in placing the foyer space on the first
Fly **boulevard** reaching down towards the waterside



Sydney Opera House, Australia - Murray 2004 - 7 & 123
Architect - Jorn Utzon
Redevelopment of the Circular Quay area - in order to **regenerate the area** and additional promenade incorporated
Strong connection to earth - by means of the solid base that opens out onto vibrant harbour edge filled with people and activity (not a dead space anymore)
Side by arrangement of theatres upon a solid base - **practical arrangement** since both services and foyers can be combined with a vertical scene / performer system established again
Directional building - towards to harbour edge both at ground level and at first
Feeling of **rising up to the occasion** to building from edge by means of steps / platform off the street with parking and drop off catered fro below

URBAN DESIGN PROPOSAL FOR DURBAN'S EMBANKMENT SCALE 1:2500



Tempe Arts Centre, Tempe Arizona - Architectural Review 01.08 pg. 109 (Right)
Architect - Barton Myers Associates
Strong **relationship to the ground** by means of public plazza and water features, walls of grazing almost suspended over the water connects to the ground and **frames the view** of the artificial lake / **axial foyer space** acts as structuring element and forms a sort of **"great living room"**



Gradthor Museum - Architectural Record 11.07 pg. 101
Architect - Kazuhiro Ishii Kazuyo Sejima Architects
Clear definition of **public and private space** by use of **internal courtyard** as the defining element within the design (transition)
Transparent ground level allows for the visual and physical connection of the public to the building
Glazed box with **fragmented elements** on the facade - expression of light, form and space
Vertical system of scene changing used as well as in placing the foyer space on the first

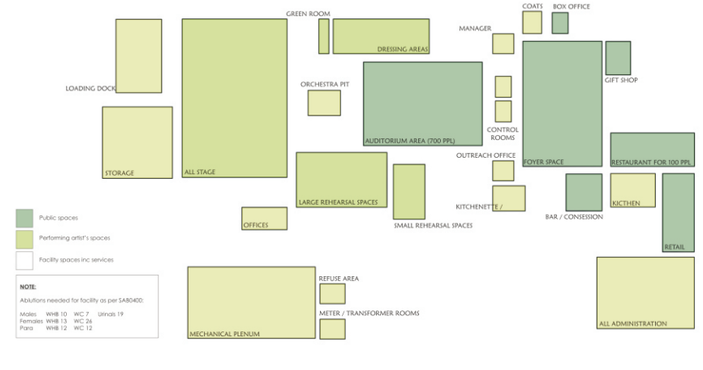


Cook/ San Diego California - Architectural Record 12.07 pg. 135
Architect - Rob Wellington
Strong interaction of ground level by means of furniture, lighting and ground facades allowing a visual connection to be established between the interior and exterior spaces
Londscaped gardens below with seating, walkways and sculpture give the space definition with distinct areas to **different degrees of repose**



42 Center for Theatre and Dance, Massachusetts
Architect - Diller Scofidio + Renfro (January 08) p 110
Clear definition of public space at a building covering its transparency - **blurring the inner-civic boundaries**
Strong interaction of ground level by means of furniture, lighting and sculpture, inviting people into the facility, **to shelter and sanctuary**
Londscaped gardens below with seating, walkways and sculpture give the space definition with distinct areas to **different degrees of repose**
Ground level is **slightly raised off the ground** - giving a feeling of **ownership** and privacy whilst enabling one to look out over the landscape
Steel **frames the views** of the surrounding historic **transparency** of the lower level, allow the public to engage with the building of the **accessibility**

SCHEDULE OF ACCOMMODATION



A Performing Arts Center For Durban's Embankment

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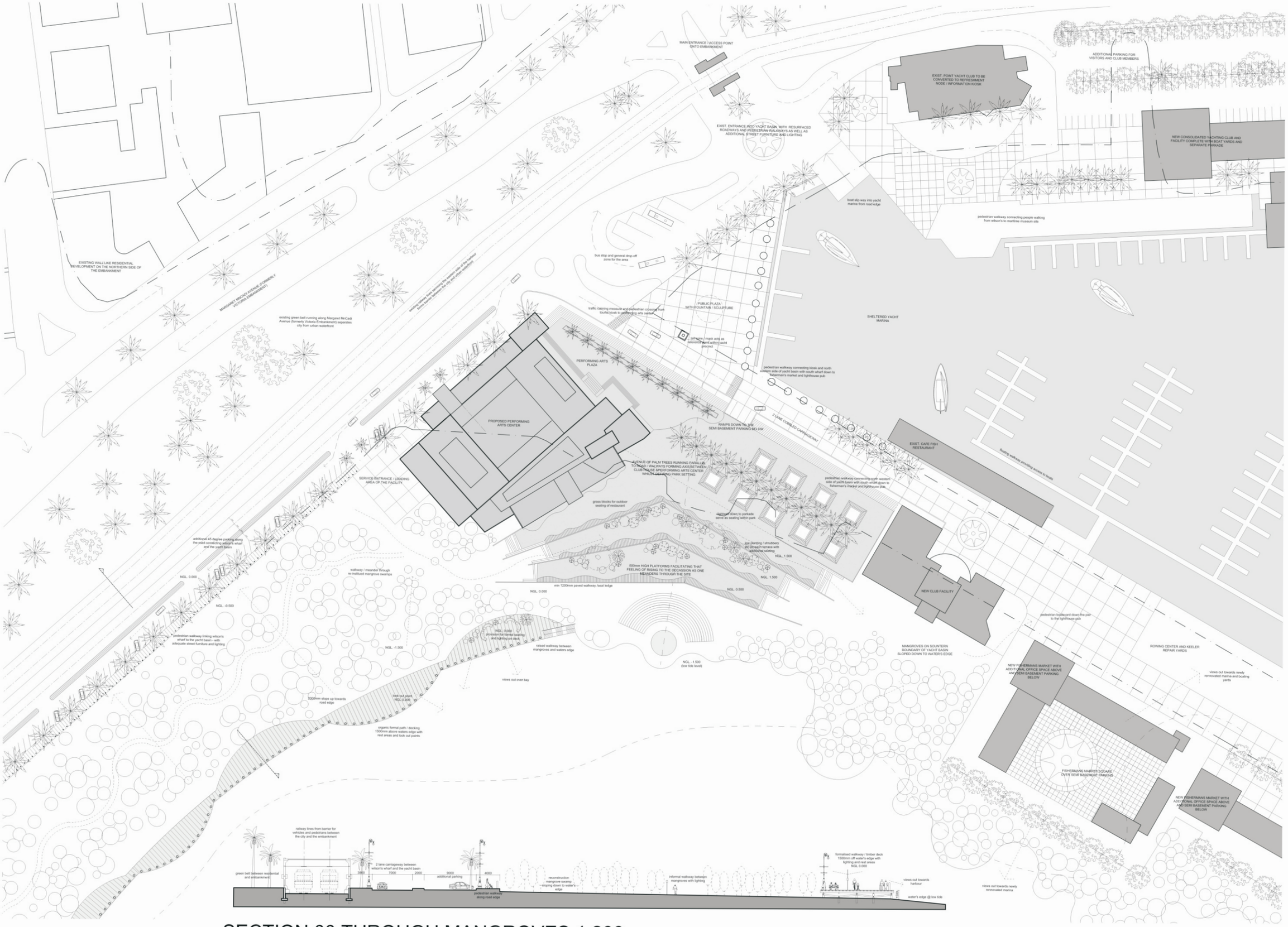
Overall Site Plan - Scale 1:500

North



SECTION 00 THROUGH MANGROVES 1:200

North

A Performing Arts Center For Durban's Embankment

Semi Basement Plan - Scale 1:200

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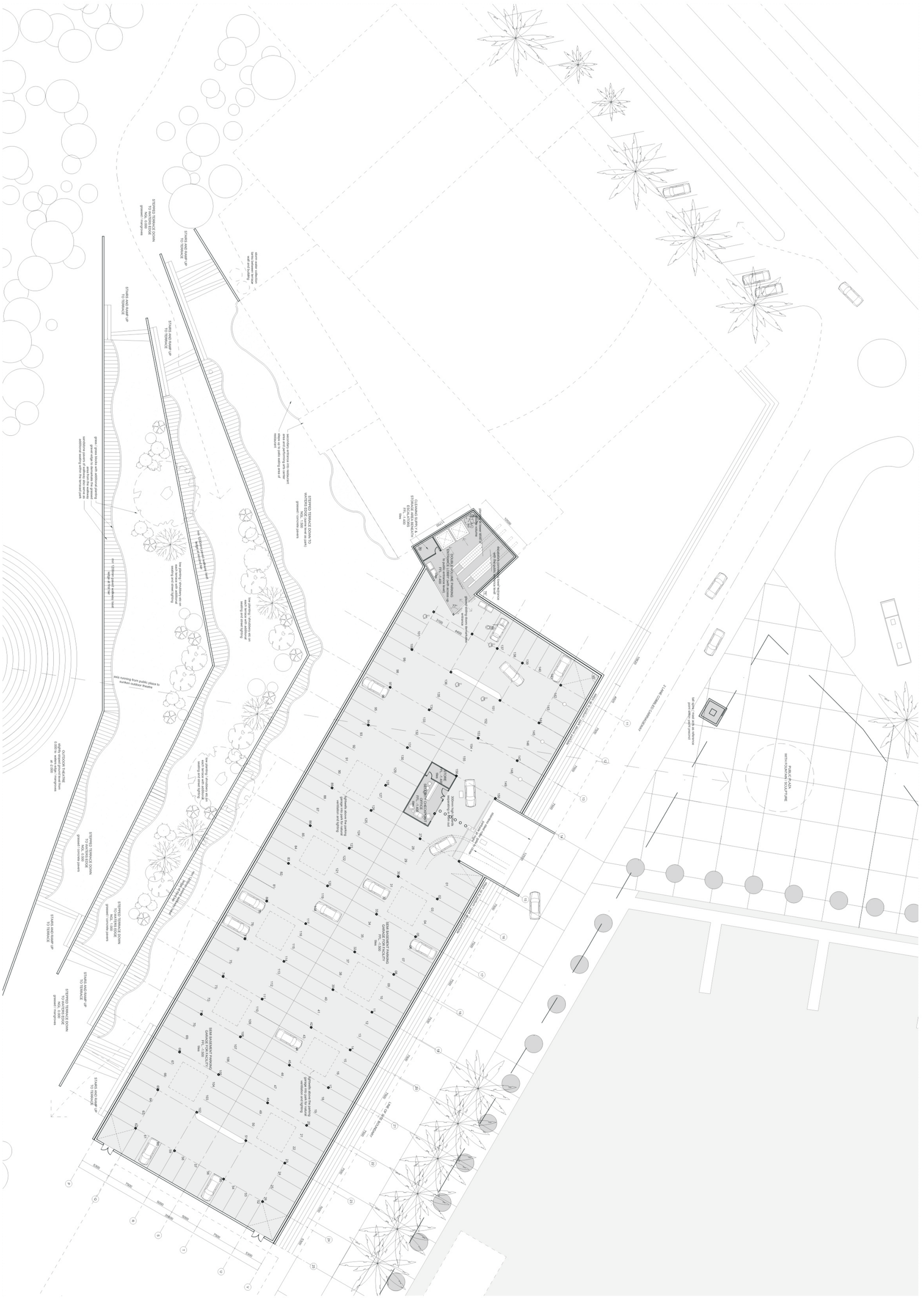

North

A Performing Arts Center For Durban's Embankment

Lower Ground Plan - Scale 1:100

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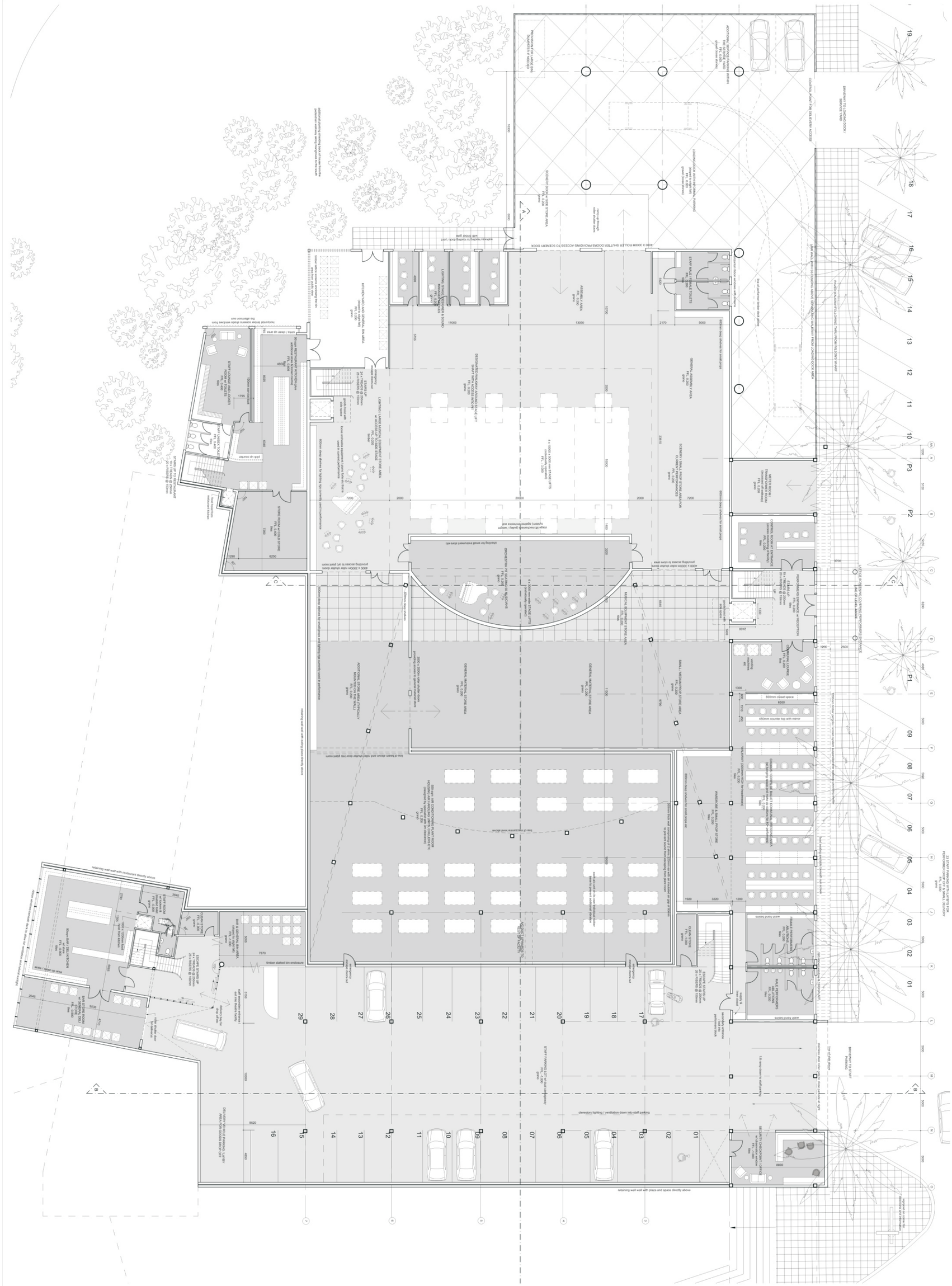
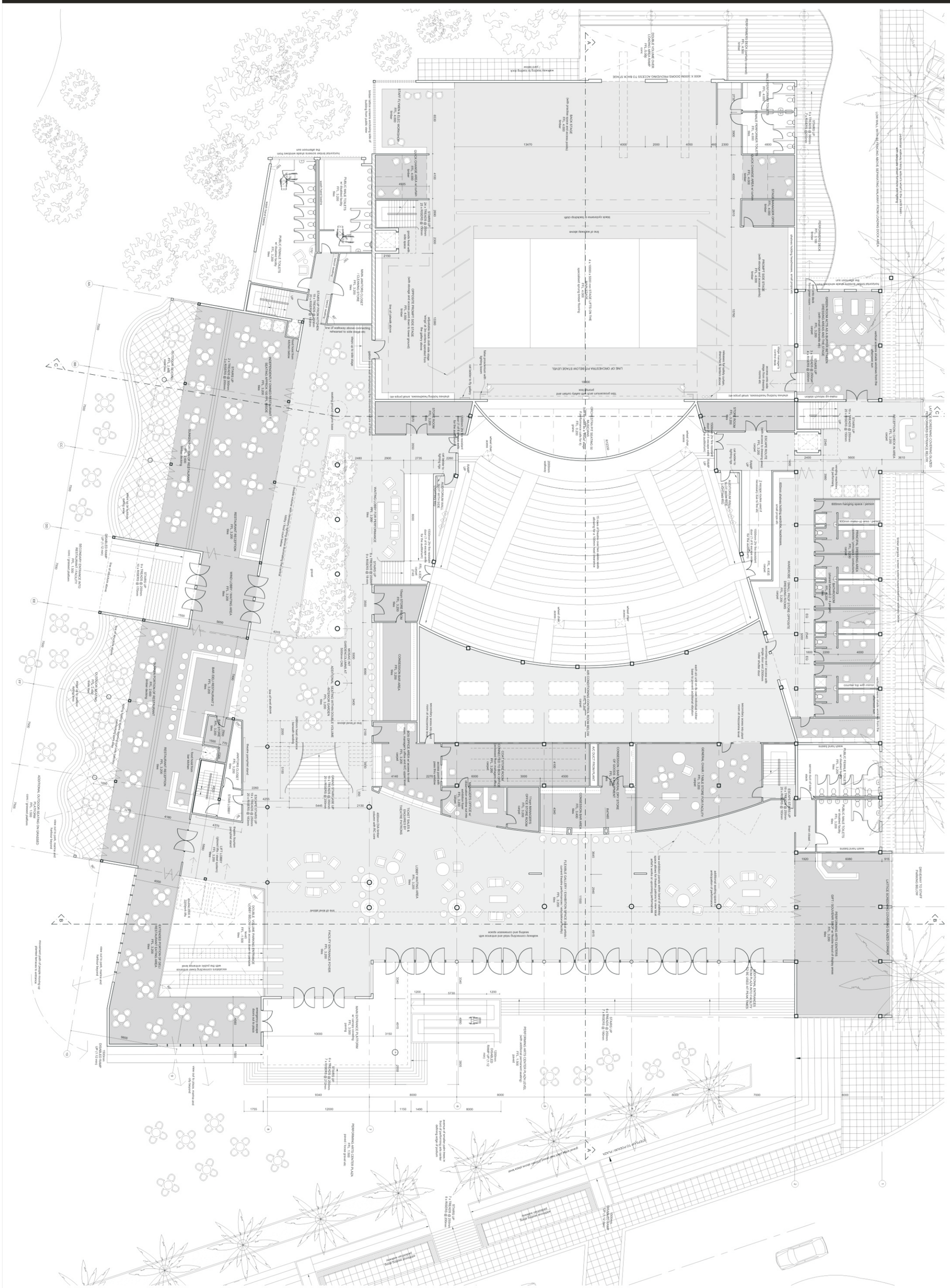

STAFF LOUNGE AND LOCKER AREA
STAFF TOILETS
KITCHEN AND GENERAL BIN AREA
LIGHTING / SOUND STORE
ASSEMBLY AREA
STAFF FEMALE / FEMALE TOILETS
LOADING DOCK AREA
LOADING DOCK STORE AREA
DRIVEWAY TO LOADING DOCK / SERVICE YARD
CONTROL POINT FOR DELIVERY ACCESS
ADDITIONAL SERVICES PARKING WITHIN THE SERVICE YARD
PROCESSION FOR LIGHTS AND SOUND DESIGN
LOADING DOCK STORE AREA
LOADING DOCK AREA
6000 X 3000M ROLLER SHUTTER DOORS PROVIDING ACCESS TO SCENERY DOOR
sliding / swing door open
LOW WALL WITH RAILING ABOVE SEPARATING DRIVEWAY FROM LOADING DOCK AREA
RAISED WALKWAY FOLLOWING THRU FROM WELDERS WHARF
LIGHTING STORE AREA
SCENERY LOADING DOCK STORE AREA
LIGHTING / SOUND STORE
SCENERY STORE AREA
GENERAL MATERIALS STORE AREA
ADDITIONAL STORE AREA FINALLY MOUNTED ON THE SMALL PROSCENIUM
ORCHESTRA PIT
ORCHESTRA PIT LIFT
4 x 3000mm wide SPACE LIFTS
MEDICAL EQUIPMENT STORE AREA
SMALL MEDIUM STORE AREA
GENERAL MATERIALS STORE AREA
GENERAL MATERIALS STORE AREA
GENERAL / FINAL WOOD STORE AREA FOR CURRENT PERFORMANCES
4 x 10000 x 5000 mm STAGE LIFTS
LIGHTING / LARGE MUSICAL EQUIPMENT STORE AREA
SCENERY LOADING DOCK STORE AREA
METERS ROOM / TRANSFORMER ROOM
CONTROL ROOM AT ENTRANCE
RECEPTION
PERFORMERS ENTRANCE at RECEPTION
CONTROL LOUNGE
WORKSHOP / WORKSHOP (for maintenance)
CHORUS / CONCERT BALLET / ORCHESTRAL REHEARSAL AREA
WARDROBE & SMALL PROP STORE
MALE PERFORMERS CHANGE ROOMS
FEMALE PERFORMERS CHANGE ROOMS
CLEAN STORE
ESCAPE STAIRS UP 21 TREADS @ 250mm 21 TREADS @ 150mm
ESCAPE STAIRS UP 21 TREADS @ 250mm
SECURITY CHECKPOINT / OFFICE
STAFF PARKING FOR 21 STAFF MEMBERS AND 5 PERFORMERS CARS
DRIVEWAY TO STAFF PARKING
DRIVEWAY TO RESTAURANT AREA FOR DELIVERIES
STAIRS UP TO RESTAURANT 21 TREADS @ 150mm
STAIRS UP TO RESTAURANT 21 TREADS @ 150mm
STAIRS UP TO RESTAURANT 21 TREADS @ 150mm
STAFF ROOM with kitchen & toilets
STAFF LOUNGE AND LOCKER AREA, TOILETS
STAFF LARGE TOILETS
STORE ROOM COLD STORE
SHOP / DELI KITCHEN
SHOP / DELI GENERAL STORE
SHOP / DELI GENERAL STORE
STAFF ROOM with kitchen & toilets
CLEAN STORE
BAR & GENERAL BIN AREA
ESCAPE STAIRS UP 21 TREADS @ 250mm
timber slatted bin enclosure
retaining wall with restaurant directly above
retaining wall with planting pots directly above
retaining wall with planting pots directly above
retaining wall with planting pots

North

A Performing Arts Center For Durban's Embankment

Upper Ground Plan - Scale 1:100

Lauren Haiden - M.Arch 2008

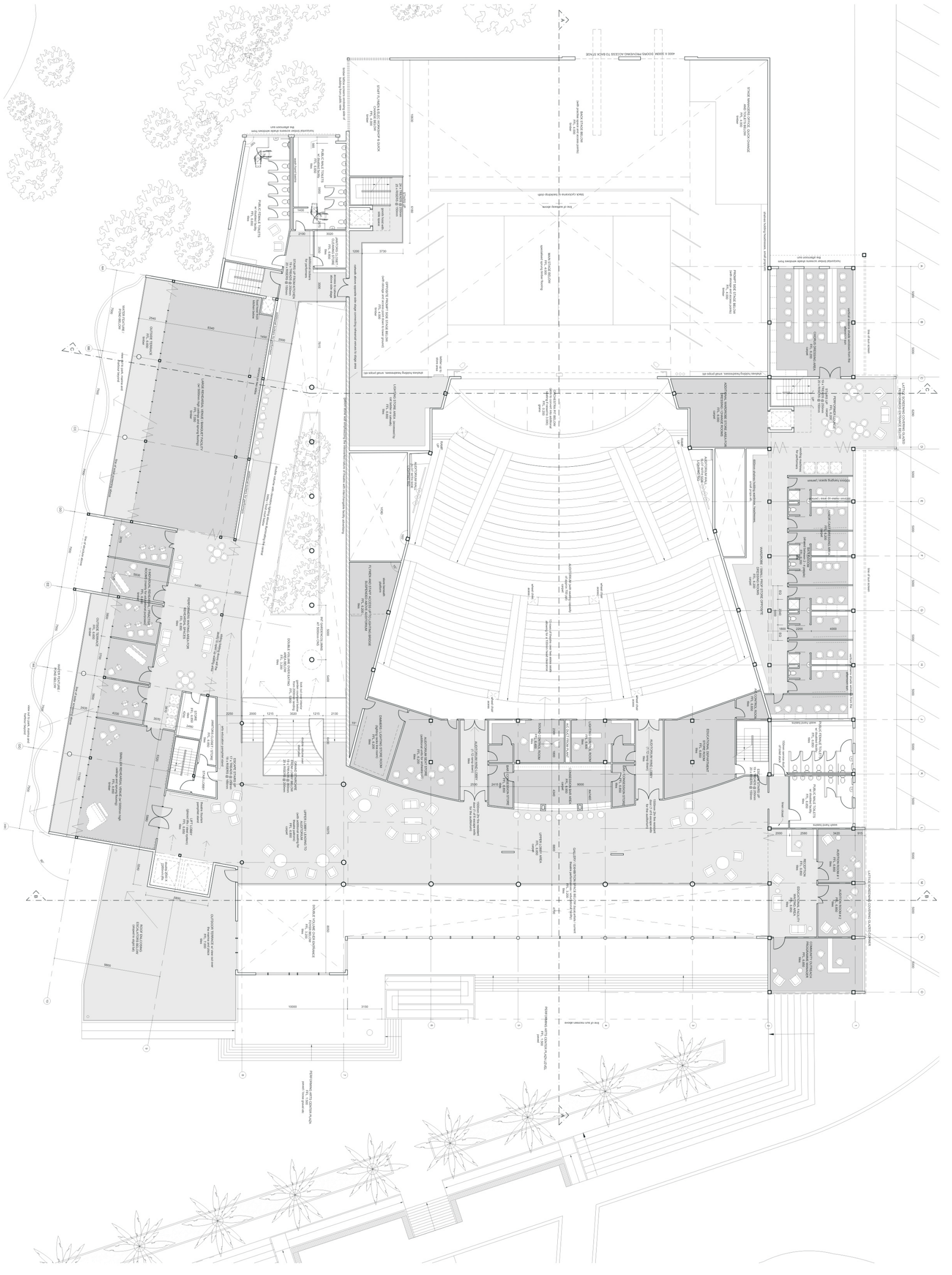

4000 X 3000W DOORS MOVEDNG ACCESS TO BACK STAGE
DOUBLE VOLUME OVER
LOWER FOYER
PERFORMERS DECK (partially loaded)
MALE PERFORMERS TOILETS
FEMALE PERFORMERS TOILETS
LADIES CHANGE AREA w/ showers
STAFF CHANGE/OFFICE
STAFF CHANGE/OFFICE
WORKSHOP
STAFF ENTRANCE
OFFICE / COUNTER AREA
PUBLIC FEMALE TOILETS
PUBLIC MALE TOILETS
MAIN JANITORS CLOSET / CLEANERS STORE
PUBLIC ENTRANCE FOYER
OPPOSITE PROMPT SIDE STAGE
PROMPT SIDE STAGE
GREEN ROOM ACTS AS RUFFET BETWEEN
STAGE
LINE OF ORCHESTRA PIT BELOW STAGE LEVEL
ORCHESTRA PIT SEATING (to be removed when pit is not in use)
STORE ROOM
RECEPTION / CREW IN AREA
UPPER AUDITORIUM FOYER
LOWER AUDITORIUM FOYER
AUDITORIUM WALL
AUDITORIUM
WAITING LOBBY
PERFORMANCE
STORE
CONCESSION AREA
MOSAIC ART
ADDITIONAL SEATING WITHIN DOUBLE VOLUME
AIR CONDITIONING EQUIPMENT ROOM
COAT STORE / CLOAK ROOM
OFFICE MANAGERS
OFFICE
TICKET SALES & ENQUIRIES BY THEATRE PATRONS
GENERAL DRAMA STORE FOR FACILITY
LOBBY WAITING AREA
FLEXIBLE GALLERY / EXHIBITION SPACE
GIFT SOUVENIR SHOP
SCENERY STORE
WORKSHOP
PRINCIPAL DRESSING AREA
DRESSING ROOMS
WARDROBE
WARDROBE DRESSING ROOMS
BAR / RESTAURANT 2
RESTAURANT RECEPTION
WAITER LOBBY / WAITING AREA
RESTAURANT / CAFE FACILITY
RESTAURANT PATRONS TOILETS
ADDITIONAL OUTDOOR SEATING ON GRASSED AREA
ENTRANCE FOYER
FACILITY ENTRANCE FOYER
EXTENDED PORTION OF RESTAURANT / CAFE AREA
BOARDWALK
MAIN ENTRANCE PLATFORM
PERFORMANCE ENTRANCE PLAZA
PERFORMANCE ENTRANCE PLAZA
RETAINING WALL
RETAINING WALL
RETAINING WALL

North

A Performing Arts Center For Durban's Embankment

First Floor Plan - Scale 1:100

Lauren Haiden - M.Arch 2008



North

A Performing Arts Center For Durban's Embankment

Second Floor Plan - Scale 1:100

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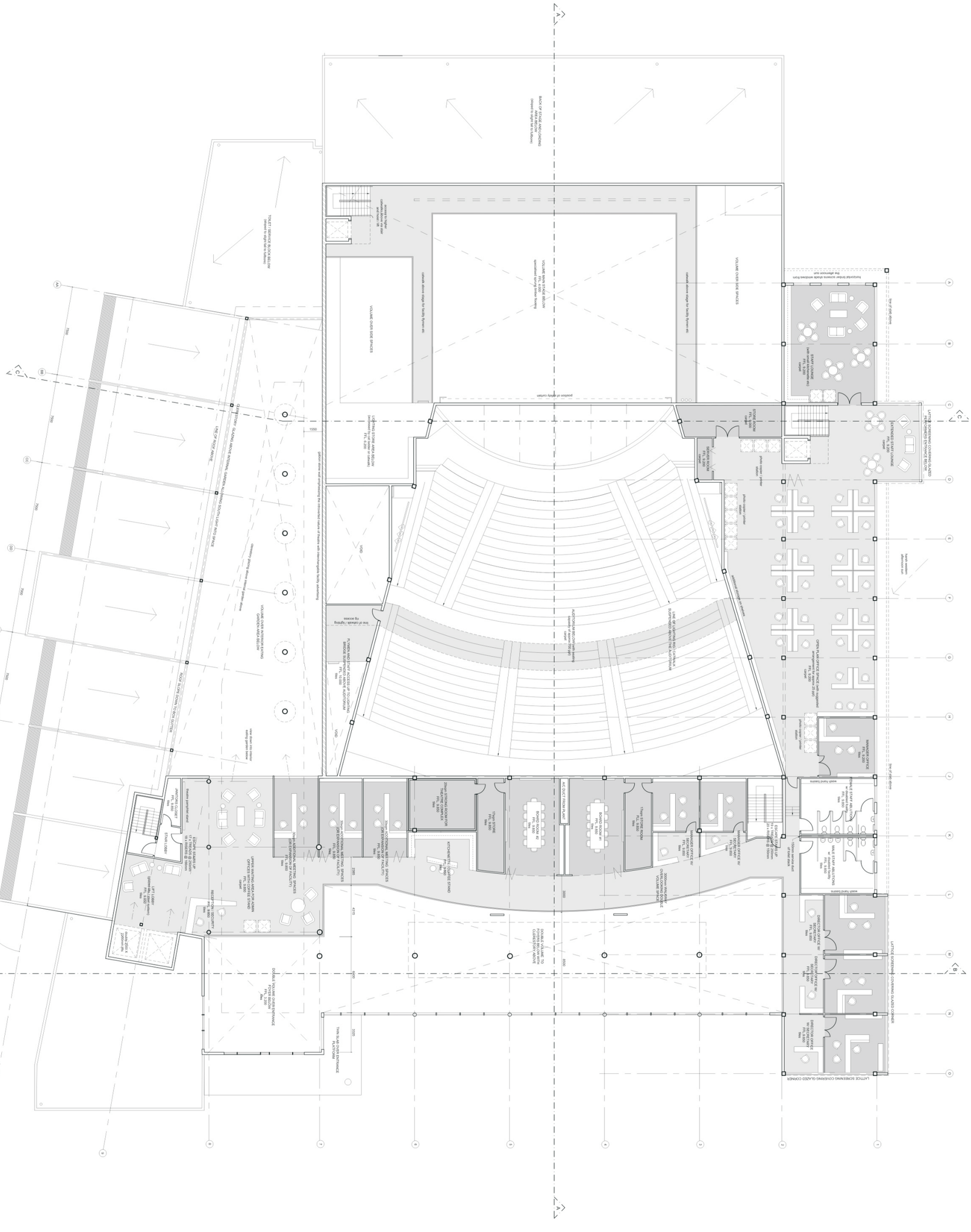
ROOF OF AUDITORIUM COVERED WITH ACOUSTIC TILES (sloped to edge as shown)
TIERED AUDITORIUM SEATING FOR 1500 PEOPLE
VOLUME OVER SIDE SPACES
VOLUME OVER SIDE SPACES
VOLUME OVER INTERIOR SEATING GARDEN AREA BELOW
ROOF SLOPE DOWN TO ROOF GUTTER
OPEN TO ROOF BELOW
OPEN TO ROOF BELOW
OPEN TO ROOF BELOW

A Performing Arts Center For Durban's Embankment

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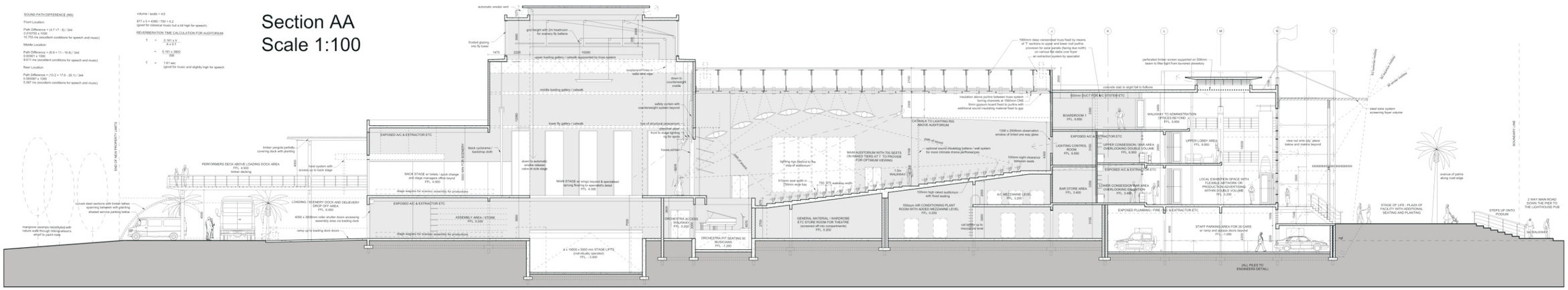
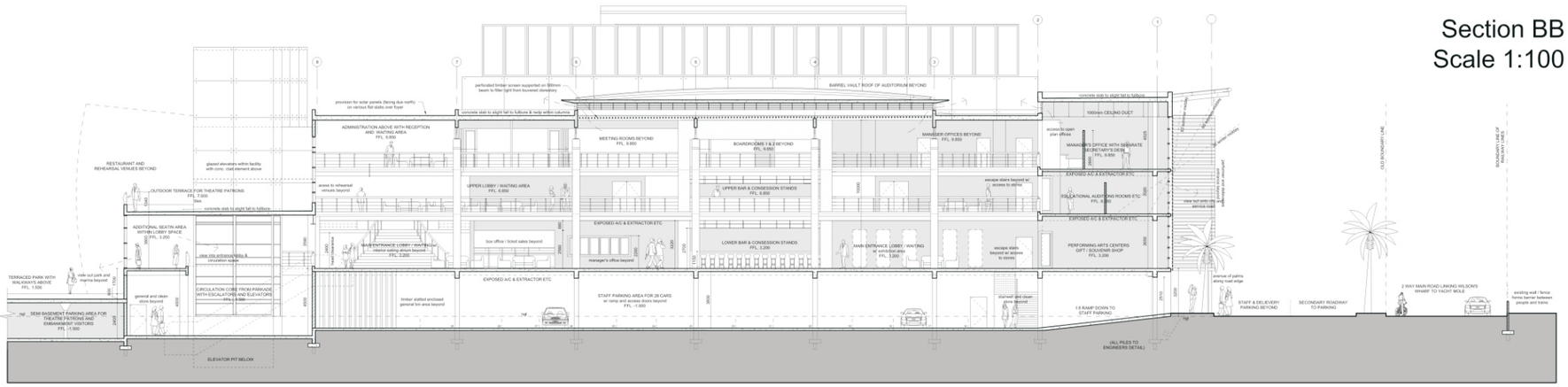
Sections - Scale 1:100

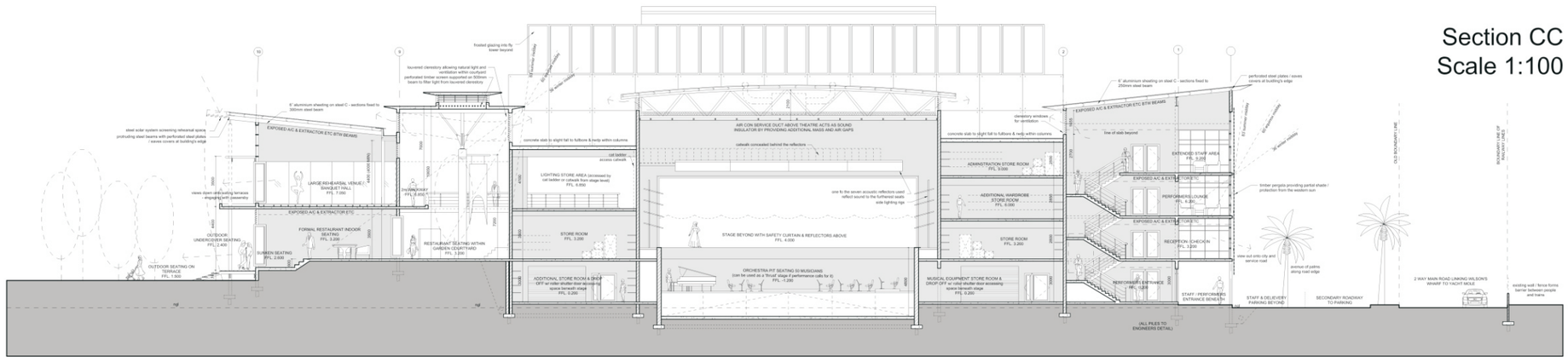
Section AA
Scale 1:100



Section BB
Scale 1:100



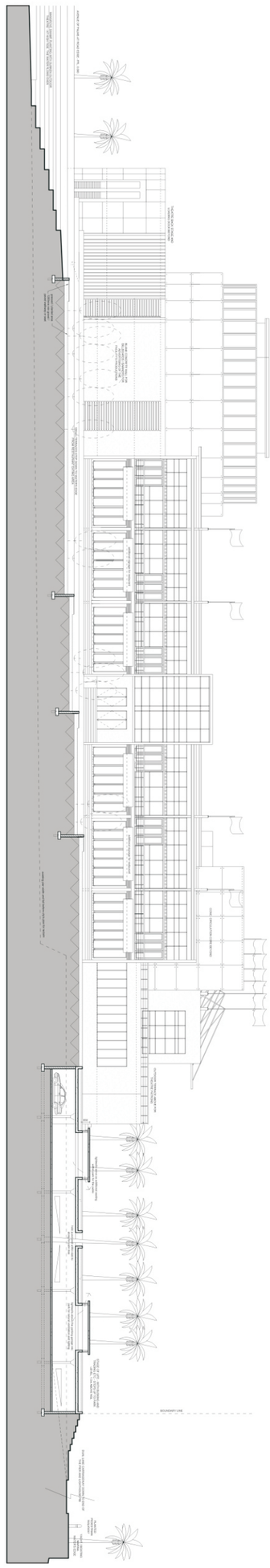
Section CC
Scale 1:100



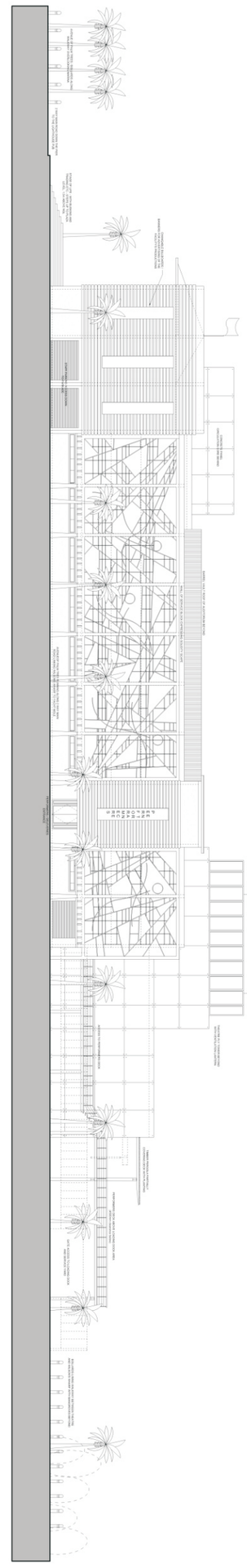
A Performing Arts Center For Durban's Embankment

Elevations - Scale 1:150

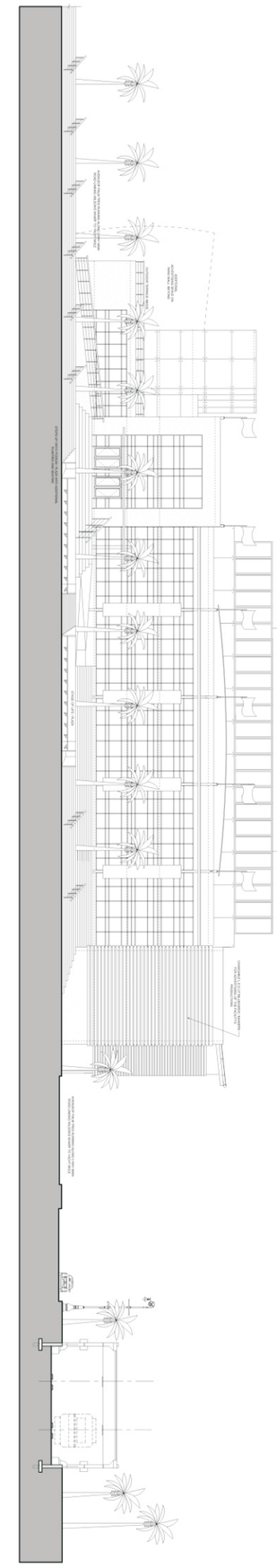
Lauren Haiden - M.Arch 2008



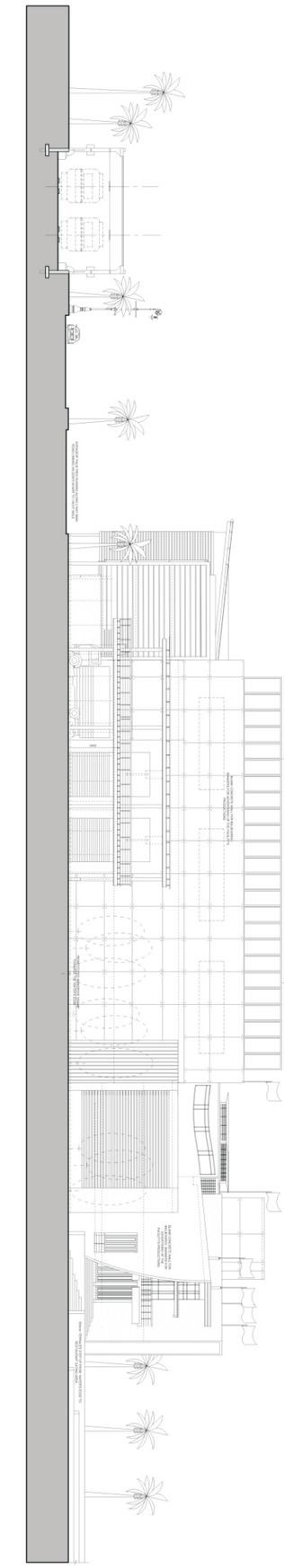
South East Elevation



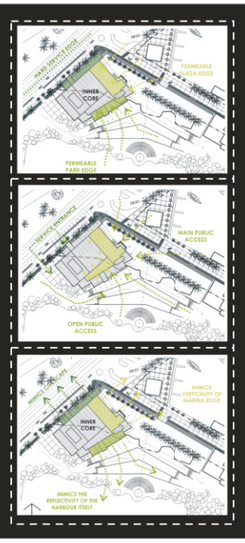
North West Elevation



North East Elevation



South West Elevation



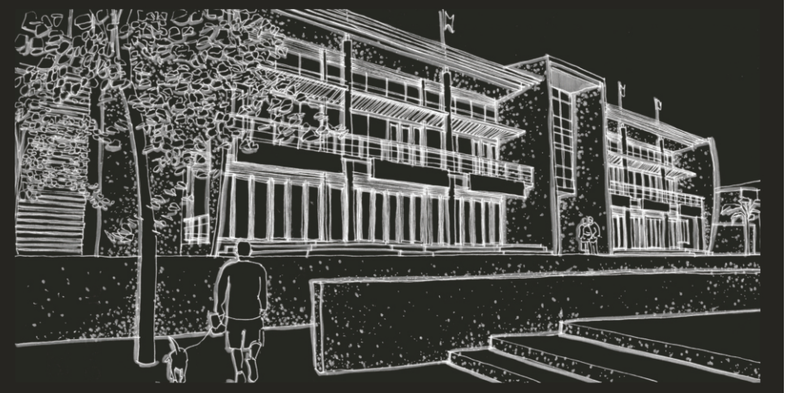
PERMEABILITY:
The building comprises of the 'inner core' and is surrounded by three 'clip on' elements - each with its own degree of permeability. These elements enliven the buildings edges and allow for people to move through the space to the theatre at the heart of the facility.

ACCESS & CIRCULATION:
The foyer and internal eating court (indicated within image) are directional spaces and facilitate movement to the auditorium and other the public amenities within. They also signify the transition from the purely public realm to the semi-private realm. Access is granted on two sides, whilst the remaining two sides are reserved for theatre personnel.

CONCEPT OF MASKING:
Each facade mimics the environment that it faces - namely the city scape, marina and harbour proper. Each aims to reflect certain aspects unique to these spaces in the hope for the building to blend in with its surrounds. As one does in theatre, the concept of masking ones true identity is prevalent by the way these elements mask the heart of the facility...the theatre proper.



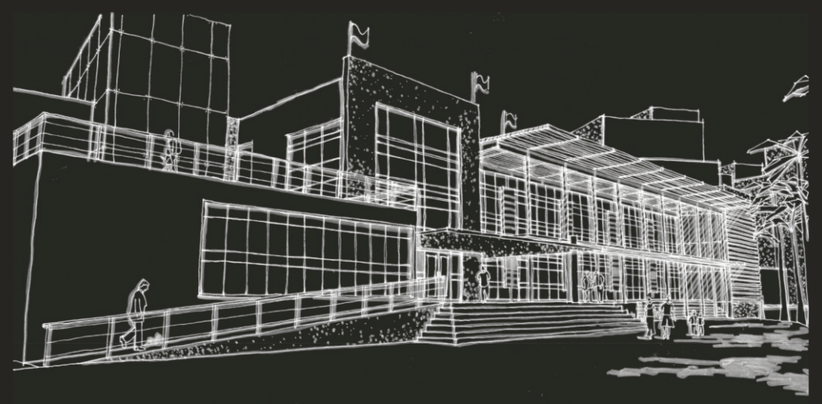
Perspective 1 - Interior View of Foyer Space



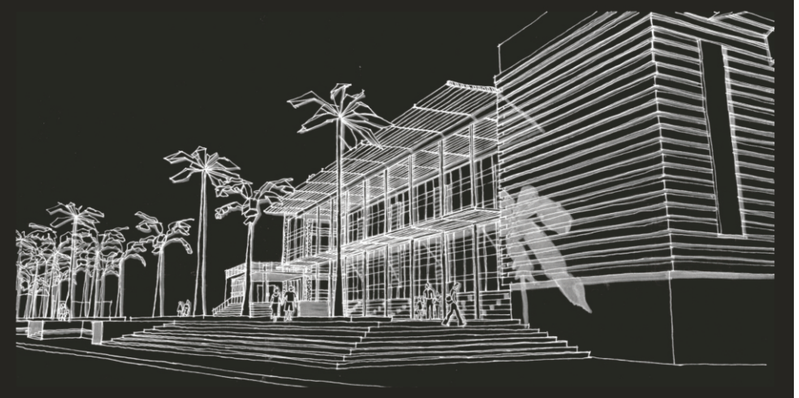
Perspective 2 - Southern View of walkway up to Restaurant



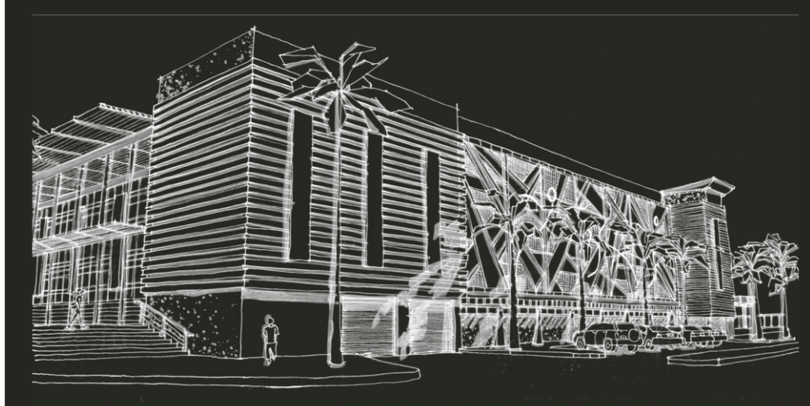
Perspective 3 - Eastern View of Restaurant



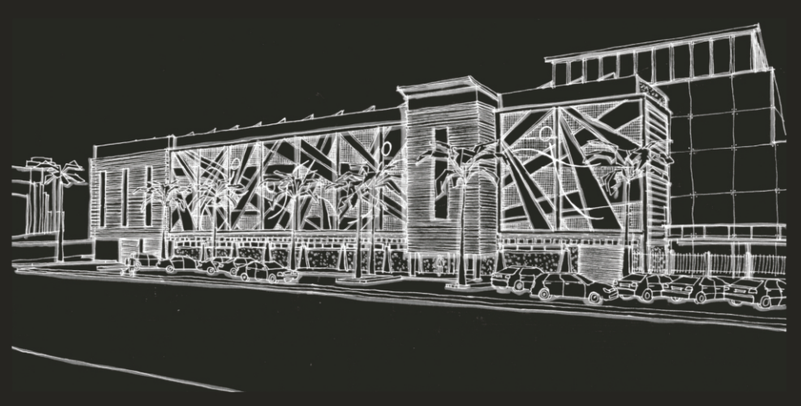
Perspective 4 - North Eastern View of Plaza



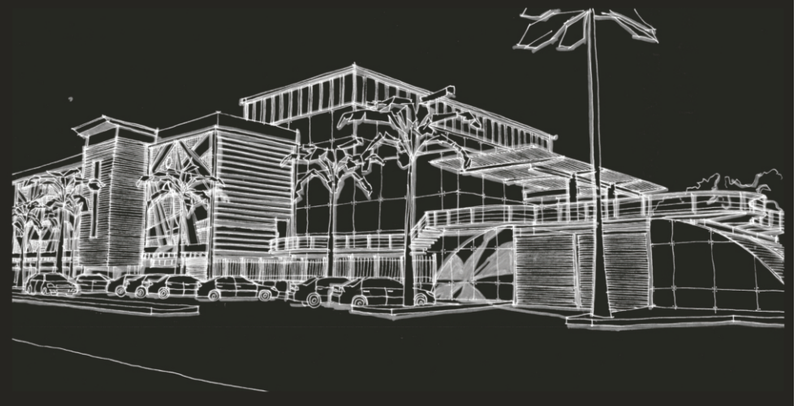
Perspective 5 - Northern Corner with View of Plaza



Perspective 6 - Northern Corner of Site

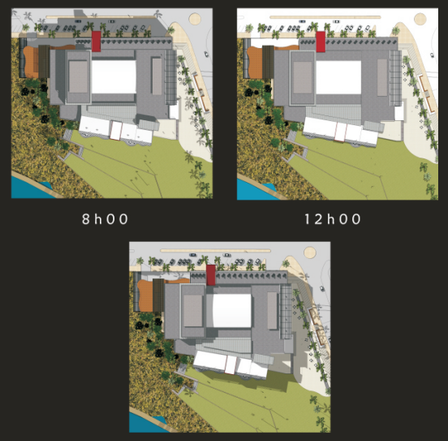


Perspective 7 - North Western Performers Entrance



Perspective 8 - North West Service Yard

Images of Sun Forecast - Summer Soltice (21 December)



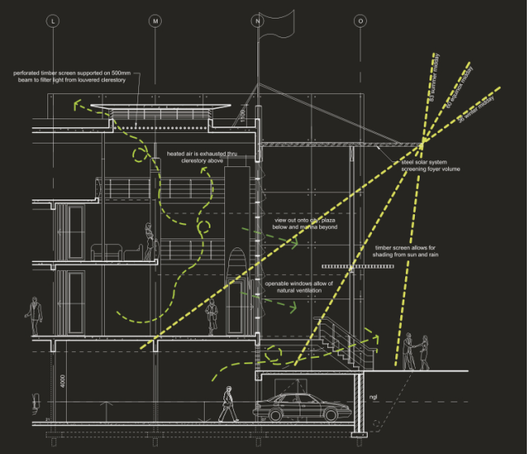
Images of Sun Forecast - Equinox (23 April / September)



Images of Sun Forecast - Winter Soltice (21 June)



Study of Sun & Wind Movement through Main Foyer Space





Aerial 1 - Eastern Corner with City Scape beyond



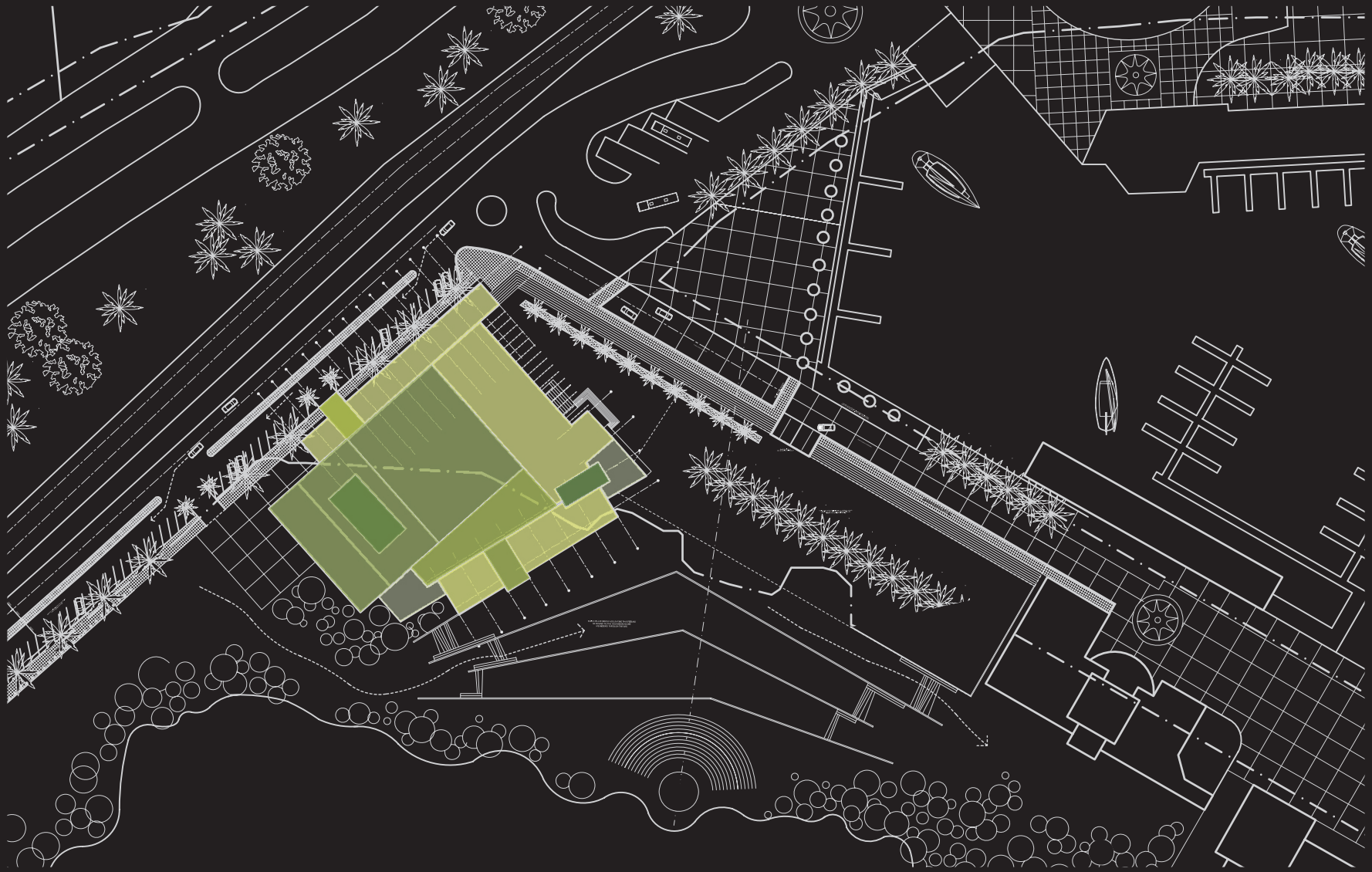
Aerial 2 - Northern Corner with Wilson's Wharf beyond



Aerial 3 - Western Corner with Yacht Basin beyond

Appendix E- Design Report

The following report expresses the lessons learnt and applied within the design of a Performing Arts Centre for Durban's Embankment.



DESIGN REPORT

The Design of a Centre of the Performing Arts:

Catalyst for the Rejuvenation of Durban's Embankment

Lauren Haiden (M.Arch 2008)

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Introduction

The proposed new design of a performing arts center located at Durban's Embankment, sets about to create a building to bridge the gap between the public and the performing arts by providing a more accessible environment. The design has been a result of the findings from the prior research and has established the base from which decisions regarding the design process were made.

With the imposition of the railway lines some years ago, the embankment has been cut off from the Central Business District (CBD) of the city, becoming isolated and unused by the people that live or work there. Only in recent years have plans been implemented by the City Architects in the hopes of regenerating this area and reintegrating it back into the heart of the city.

Through the research, it has been found that theatre has been important to the expression of most South Africans during both pre and post Apartheid eras. With regard to theatre and the performing arts today, Durban offers two extremes in theatre facilities. Larger venues available consist solely of the Playhouse Theatre on Smith Street, boasting 4 theatres within its complex, the largest holding 1,300 seats. State funded, the Playhouse is inaccessible to small theatre companies barely making ends meet. On the other end of the spectrum; smaller theatres such as the Sneddon Theatre on the campus of the University of Kwa-Zulu Natal, the Catalina Theatre on Wilson's Wharf and the KwaSuka Theatre in Greyville cater to smaller theatre troupes / productions and offer between 150 and 400 seats. These latter buildings are privately owned and leased to theatre troupes who fight to break even when having to pay rental fees each month. Together with these various overheads, as well as the inadequate seating these facilities provide, troupes are required to generate a large number of smaller scaled productions and scarcely fill the house. Therefore a gap exists within this market consisting of a facility covering the 'middle ground', owned and managed by private theatre companies, which houses between 600 and 850. This would provide Durban's smaller theatre companies financial and professional stability in that one facility could produce fewer shows to 'sold out' theatre houses, as well as provide a more accessible facility that has the ability to not only regenerate an area but to also reconnect the Embankment to the City proper.

The design of a performing arts theatre involves the following aspects: public accessibility, the relationship of spaces between back-of-house and front-of-house, servicing, connection to its environment as well as act as a catalyst for the rejuvenation of Durban's urban waterfront. Other characteristics such as transitional spaces and the idea of lost space are site specific. These aspects will be highlighted within this report.

Client and the Brief:

It has been found that due to the 'white letter' (a bill passed during the early 1990s that called for the disbanding of resident theatre companies), that Durban's own independent dance and theatre companies do not have the stability offered by being part of a larger theatre complex and are as a result rent out the State-funded Playhouse venues, which proves costly to such small organisations (Themi Venturas, Unpublished Interview, 26 February 2008). Since existing theatres available in Durban are limited to either large, expensive facilities like the Playhouse Theatre or smaller facilities like the Catalina Theatre at Wilson's Wharf that only seats 150, a resource is needed to accommodate independent drama and dance companies that are struggling to make ends meet. By linking to the current development of the yacht basin along the Embankment, it will provide the area with a source of cultural recreation as well as provide stability to Durban's theatrical companies. For the purpose of this design, the client would therefore be any privately owned theatre or dance company, or collaboration of both, that requires a new 'home base' from which to operate. However, the ability to rent out the facility to touring companies is a possibility to generate additional income.

Funding and Revenue Generators:

The intended performing arts theatre should be considered entirely self sufficient, in that no aid will be forthcoming from the state. However, in reality, facilities of this nature cannot exist on tickets sales alone. Funding from a number of sponsors will be required including;

- First National Bank's (FNB) Dance Umbrella Initiative
- The Business and Arts South Africa (BASA)
- The National Arts Council (NAC)
- National Arts and Culture Lottery Initiative (NACLI)

However, this is not the only method of funding needed to sustain a theatre facility. Other proposals include the obvious revenues from ticket sales as well as parking tariffs received from supplied parking garages, sales or rentals from in house restaurants and other retail facilities along with the hiring out of different rehearsal or banquet rooms within the complex. It is important for these avenues to be accommodated, since constant upgrading and maintenance to theatres prove quite costly.

Users & Function of the Building:

The main function of a theatre is to bring about entertainment for the community in which it exists. Therefore the main users of this building will in fact be theatre patrons, people that appreciate the arts, as well as both the in-house and visiting performers and production staff that is required for this building to thrive. Provision for daytime use is highly probable, so this facility will also promote the arts to a wide range of people that perhaps do not have access to it currently through various educational facilities and exhibitions. Therefore both children and adults, learning about the arts would be able to utilise this building. Furthermore, the added retail component provided within the centre, restaurants and the like, will attract the local residents and visitors to the facility and the area in general.

Site Requirements:

From local and international examples, it has been noted that theatres are generally placed within a city. Sir Nikolas Persvner also indicates that theatres are more accessible within urban context rather than a rural setting (Persvner, 1976: 67). Thus the siting of a performing arts theatre within the city limits of Durban is advantageous. Roderick Ham believes an 'island site' to be the best possible siting for a theatre, with at least two sides of the facility able to be accessed (Ham, 1972: 245). Waterfront theorists insist that the urban waterfront, the Durban's case it's Embankment, is the ideal location for recreation, entertainment and cultural facilities that would lay the foundations of a tourist district (Marshall, 2001: 78). This includes the incorporation of a theatre facility as seen all over the world, most notably in Sydney, Australia. The theatre should also be sited on a main thoroughfare, for both pedestrian and vehicular movement is crucial to the facilities existence as a public place and ultimately links it to back to the city and its surroundings. Good orientation is needed for gathering places, such as foyers and retail, though the actual theatre house is a more introverted element / organism requiring strict control of lighting and sound and so the stage and auditorium does not require such good natural daylighting.

Schedule of Accommodation:

The schedule of accommodation was derived from in depth interviews with theatre users and staff members as well as through the intense investigation of both local and international examples of similar facilities. However, due to the nature of theatres, areas are proportionally based on the number of seats within the auditorium as well as a few other criteria such as theatre support spaces, public facilities, educational facilities and administration spaces important to a theatre's overall survival. The following pages show the incorporated schedule of accommodation within the design of a performing arts theatre for Durban's Embankment.

Schedule of Accommodation

Note: As discussed, the schedule of accommodation was determined by a variety of factors , namely interviews conducted, the analysis of precedent and case studies as well as through the proportional relationship between the number of seats and the size of certain spaces.

	Space	Quantity	Size	Total Area	Space Description
Front of House	Foyer (upper / lower)	2	400 700	1100	Acts as spill out space for theatre, incorporating bar and refreshment areas. Large volume space based on the calc between no. of seats x 0.65m²
	Box Office	1	30	30	Ticket sales for the facility are conducted here
	Gift Shop	1	120	120	Small souvenirs from the theatre as well as programmes
	Coats	1	50	50	Coat store - somewhat irrelevant in Durban
	Bar / Concession Area	1	100	100	Located within foyer - space to sit during interval etc Small refreshment counters, no kitchen or stores required
	Manager Office	1	25	25	Front of house manager's office
Commercial	Restaurant Area	2	180	380	Two eating areas provided within facility for use before or after performances, or by the general public visiting Durban's Embankment
	Kitchen Space	2	80 ea	160	Excluding store rooms and cleaning areas
	Store Rooms	2	50	100	Cold and dry stores provided
Large Theatre	Auditorium	1	700	700	Seating provided for 700 people within theatre based on what is deemed lacking within Durban (including orchestra pit in front of auditorium)
	Stage Area	4	250	1000	Including main, back and side stages
	Control Room	2	20 ea	40	Sound and light control located at back of auditorium
	Dressing Areas	multiple		460	Series of communal and single change / dressing rooms for performers for a cast of approx 130 performers
	Green Room	1	70	70	Gathering for performers - acts as a sound lobby as well

	Space	Quantity	Size	Total Area	Space Description
Flexible Venue	Rehearsal Studio Large Venue Small Venue	2	 200 80	280	Ability for ballet practice with sprung floors and mirrors etc included in this flexible 'theatre' space. Also to the used by educational facility within the complex. Similar dimensions used for the larger of the two venues
Educational Facilities	Foyer	1	120	120	Foyer / performer space provided outside rehearsal spaces with various amenities
	Smaller Rehearsal Spaces	5	20	100	Smaller rooms used for warm up / practice
	Community Outreach	1	40	40	Office provided for director of educational facility
	Audition Spaces	2	20	40	Small audition spaces needed
	Store1		40	40	Store room provided for education department
Administration	Board Room	2	40 ea	80	Conference facilities for the theatre complex (discussion)
	Senior Staff Offices	3	-	75	Artistic Director and Managing Director of facility
	Staff Offices	3	-	50	Finance, production, marketing and general managers
	Open Plan Offices		190	190	Office cubicles set up within this space
	Waiting Area	1	100	100	Place for public / visitors to be seated
	Common Room	1	70	70	Lounge and kitchenette provided within space
Back of House	Offices	4	15	60	Offices provided for lighting, stage, designer and sound
	Storage Facilities	1	100	100	Scene store (MIN)
	Storage Facilities	4	50	200	General, lighting, wardrobe and materials store rooms (MIN)
	Loading Dock	1	200	200	Space for delivery trucks etc (MIN)
	Hoist	1	20	20	Scene and props hoist to stage or storage areas
	Meter / Transformer Room	1	30	30	Accessed by municipal from road
	Mechanical plenum	1	550	550	Air conditioning as well as stage lift facilities housed
	Refuse Area	1	30	30	Area for general waste of facility to await collection
				6510	**Total area without circulation, ablutions & parking**

Schedule Of Accommodation

Ablutions	Males	WHB	10	As per the National Building Regulations (SAB 0400) requirements for a population of personnel over 120 people as well as peak time demand for 1000 people.
		WC	7	
		Urinals	19	
	Females	WHB	13	
		WC	26	
	Paraplegic Facilities	WHB	12	
		WC	12	
			115 sqm	**Total area without including circulation**

Parkings	Visitors (1 parking per 2 audience)	350	Apart of a larger development within the yacht basin which caters for 1000 additional parkings - due to nature of facility, usually operating at night, some of these parkings could be used
	Staff	100	
		5625 sqm	**Total area for parking without including driveways / ramps**

Note: 185 parkings are provided for within the facility's semi basements, the remainder can be found around the yacht basin

GENERAL:

Due to the nature of the research topic and the intended focus on urban waterfront development, the site selection has therefore been restricted to Durban's Embankment. In 2002, the City Architects published an 'iTrump' report for the redevelopment of the Yacht Basin along Victoria Embankment and this has been accepted as the starting point of change for the area (Appendix B). Apart from this proposed development, another four sites were identified; Wilson's Wharf, the Maritime Museum site as well as two conservation sites located inbetween. Two sites have been selected for comparison in this proposed yacht basin scheme, with the third within walking distance on the corner of Stanger Street and Victoria Embankment (see ill 1).

The following criteria, through research of both case and precedent studies, were found to be vital when selecting a site suited to both a performing arts theatre as well as the waterfront regeneration of Durban's Embankment. The include the following:

- Waterfront development opportunities
- Site restrictions and opportunities
- Proximity to CBD which provides linkages
- Accessibility of Site
- Habitable Spaces
- Landmark Potential
- Overall assessment / Summary



Illustration 1 - Aerial View of site area
(Source - http://earth.google.com accessed 20 February 2008)

SITE 1 - YACHT BASIN ENTRANCE:

In terms of location, the site meets with all the criteria set out at the start of this investigation (ill 2). It offers easily legibility within the city scape by it's location at the entrance of the yacht basin, proving to have the potential to be a satisfactory landmark for the Embankment. The site also provides easy accessibility, both vehicular and pedestrian, to the intended facility by means of the major arteriole, Victoria Embankment (now Margaret MnCadi Avenue). Close proximity to the CBD and other cultural facilities allows for linkages back to existing cultural facilities such as the Playhouse Theatre, the Catalina Theatre at Wilson's Wharf and BAT Center, although the presence of the railway lines will also prove problematic.

The site is currently being used by the Royal Natal Yacht Club, however this amenity will be consolidated along with the Point Yacht Club within the City Architect's plan to form a larger club facility on the existing boating yard sites. None of the existing buildings have any cultural significance to the area, therefore could be demolished to make way for the new development. With the introduction of a cultural facility at Site 1, a continuing development along the Embankment will be provided and will form part of the larger urban renewal scheme. The site boasts favourable north and south orientation needed for not only public gathering spaces but also for rehearsal venues situated within the complex. The tall 'wall-like' development that exists to the north of the site, aids somewhat in shielding it from the harsh afternoon sun.

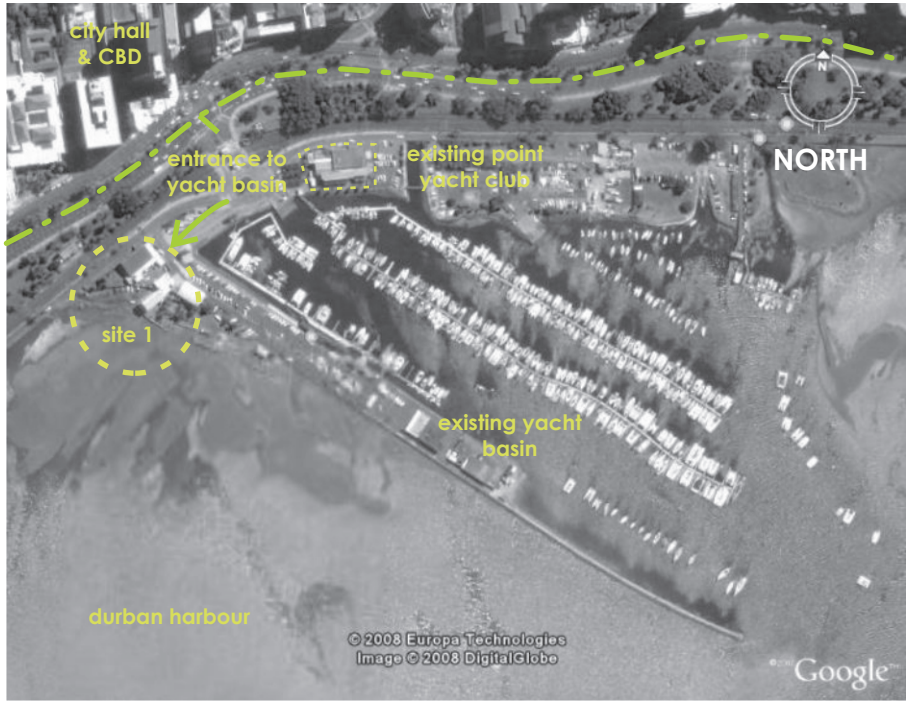


Illustration 2 - Aerial View of Yacht Basin showing site and existing development (Source - http://google.earth.com - Accessed 21 Feb 2008)

From unfavourable to favourable conditions

	1	2	3	4	5
Waterfront Development					●
Linkages to CBD				●	
Accessibility of site					●
Habitable Spaces				●	
Landmark Potential				●	
Views				●	
Site Restrictions					●

SITE 2 - YACHT BASIN PIER:

Currently used by the Durban Rowing Club and Caprice UKZN Sailing Club, the site is derelict and inaccessible to the general public by means of fences and other barricades .

In terms of waterfront renewal capabilities, landmark value and the panoramic view available, the site meets with certain criteria established (ill 3), but even though it is accessible from the same entrance as site 1; it is somewhat removed from the public's everyday routes as well as from the CBD where the public live and work and this could be seen as problematic. This creates a building in isolation that does not relate to its city context. Together with this lack of connection to the city and the rest of the Embankment, the exposed site suffers from unfavourable wind conditions which could be problematic when designing a building fit for human occupancy. Despite this, the site offers a fantastic panoramic of the harbour, its operations and the city itself. However, though opportunistic, the site lies exposed to the harsh afternoon sun setting in the west, without the sheltering 'wall-like' development that site 1 boasts.

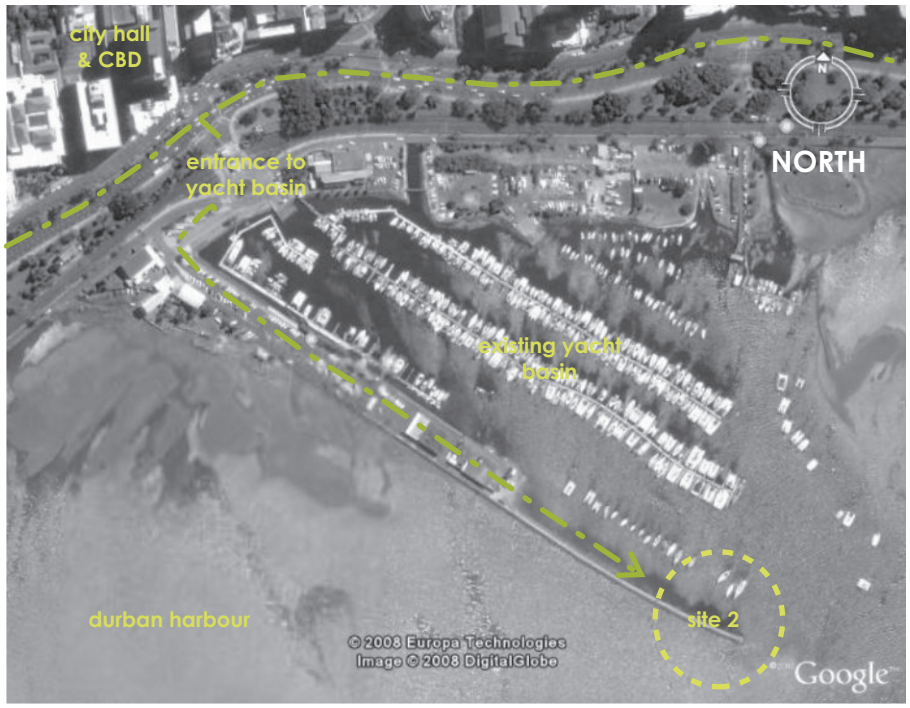


Illustration 3 - Aerial View of Yacht Basin showing site and existing development (Source - http://google.earth.com - Accessed 21 Feb 2008)

From unfavourable to favourable conditions

	1	2	3	4	5
Waterfront Development				●	
Linkages to CBD				●	
Accessibility of site				●	
Habitable Spaces			●		
Landmark Potential					●
Views					●
Site Restrictions		●			

SITE 3 - R-BERTH:

Currently used for harbour operations, however, with the future expansion of the harbour to both Richard's Bay and to a portion of the current Durban International Airport, this area could become redundant and be incorporated into the continuation of the Embankment's regeneration through additional public facilities and pedestrian boulevards.

The site presents a series of strong disadvantages to its location; the South-west orientation offers views of the harbour and small boats docked in front of BAT Centre but proves unfavourable when considering the orientation of public gathering spaces. The inaccessibility of vehicles and pedestrians alike from the main streets are also primary concerns as well as its poor visibility crucial to landmark buildings. The railway lines prove to be the main problem as access is obtained by entering via the harbour access point and 'backtracking' to the site. It's only advantages are in that it boasts a good relationship with CBD as well as the Point area and provides a strong linear opportunity for the redevelopment of Durban's urban waterfront.

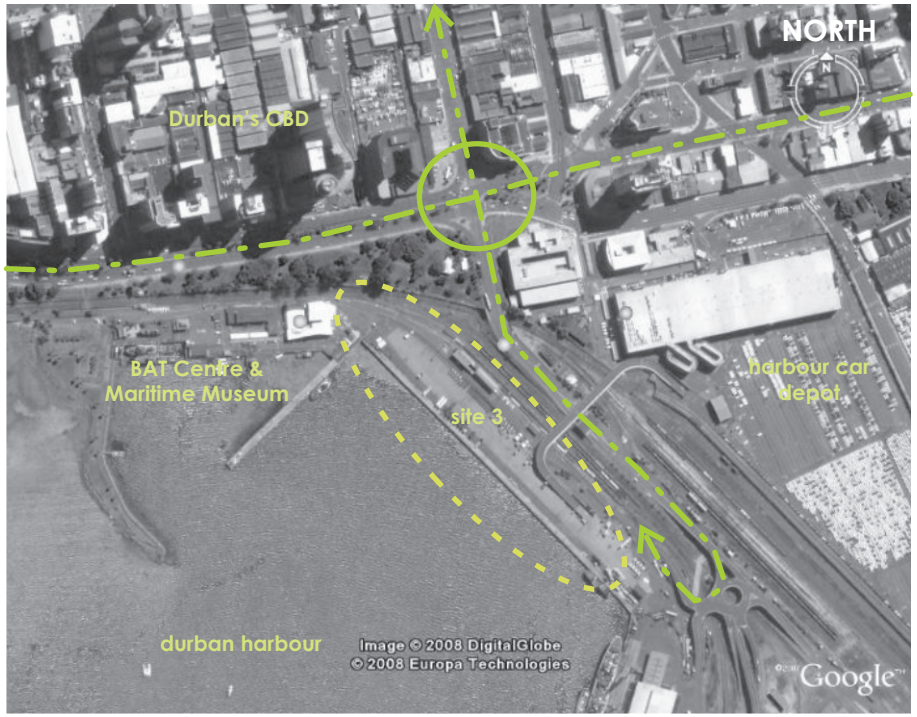


Illustration 4 - Aerial View of R-Berth showing site and surrounding development (Source - http://google.earth.com - Accessed 21 Feb 2008)

From unfavourable to favourable conditions

	1	2	3	4	5
Waterfront Development				●	
Linkages to CBD				●	
Accessibility of site		●			
Habitable Spaces			●		
Landmark Potential			●		
Views	●				
Site Restrictions					●

SELECTED SITE

Yacht Basin Entrance: By analysing each site according to the criteria set out, certain contrasting elements have been established. The research has shown that the yacht basin entrance site is the most suitable for this type of development. This is due to its satisfactory orientation needed for 'people' places, its ease of access by pedestrians and vehicles alike, the large space available for accommodating both the facility as well as it's parking, its legibility within the city context and the overall rejuvenation potential that the development hopes to achieve along the Embankment. This theatre facility would ultimately hope to increase human activity in the area and within the yacht basin precinct, especially at night when yachting is at a minimum. The site's close linkages to the CBD and the Playhouse Theatre, as well as to the Catalina Theatre and BAT Centre could lead to the close interaction of various facilities which would, in time, complement each other. It is the hope of the research that this development would eventually act as a catalyst for change within the city of Durban.



View of site



View from site to yacht basin entrance



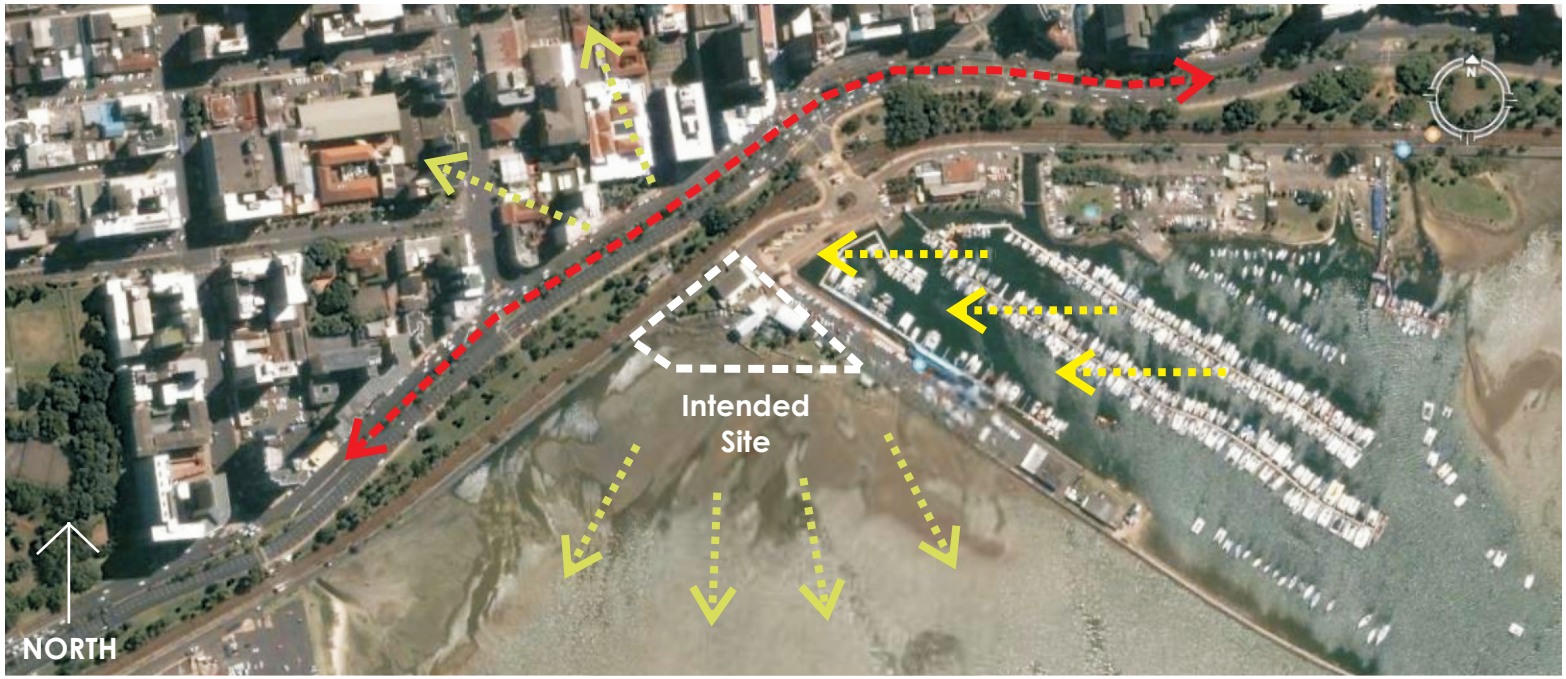
View of 'wall development beyond basin

Illustration 5 - 7 - Images of the site, the entrance into the yacht basin and surrounding city context that effect the choice of site

SITE ANALYSIS:

The analysis of the site consisted of the following: accessibility, noise, visibility and the existing urban framework (ill 8). Much like the rest of the Embankment, the land is relatively flat, thus affording no level change except for the 2m drop from land edge to water. Located on a noisy arteriole, the site is clearly visible to both sides of the road thus making it legible and clearly accessible via the yacht basin entrance. Noise from harbour operations is minimal and would not interfere with performances within the theatre or outdoors. The site offers good views out over the harbour and marina as well as back into the city itself. The site fits into the larger urban framework established by the City Architects as well as close enough to the city CBD as to make use of it's existing amenities. It also affords a close relationship with both the BAT Center as well as the Catalina Theatre at Wilson's Wharf. See illustration 9 for proposed urban framework.

Illustration 8 - Site in relation to its context and environmental factors - red represents the main arteriole providing access to site, yellow represents the noise from general boating, while green represents existing views





A - Existing retail & craft market to be retained & upgraded
B - Future vehicular access point (after removal of railway lines)
C - Existing vehicular access point
D - Point Yacht Club building retained - converted to refreshment node
E - Future vehicular access point
F - Upgrade of current Maritime Museum
G - Upgrade of BAT Center

1 - Mixed Use / Residential Development
2 - Pedestrian bridge marks start of boulevard
3 - Enlargement of marina & additional hotel
4 - Mangrove Research Center (with Semi Basement)
5 - Introduction of tram line (people mover across embankment)
6 - Reintroduced Mangrove Swamps with boulevard continuing through
7 - INTENDED SITE for performing arts theatre (with Semi Basement)
8 Fish market (with Semi Basement) - retain Café Fish
9 - Lighthouse
10 - Consolidated Yachting Facility
11 - Pedestrian Underpass
12 - B&B Hotel facility
13 - Reintroduced Mangrove Swamps with boulevard continuing through
14 - Defined Park / picnic space
15 - Harbour Cruises docking area
16 - Current harbour operations - possible future transport node with boulevard continuing from Albert Park, past the future ocean terminal through to the Point

Illustration 9- Diagram of Victoria Embankment with initial overall design proposal for the area

DESIGN INTENTION:

The author's main concern when designing facilities aimed at redeveloping Durban's urban waterfront, was to create nodal spaces infused with activity (see the urban framework where three distinct nodes have been created to facilitate people interaction). In conjunction with this outline, other broad intentions were as follows:

- To integrate the waterfront back into the CBD via possible physical and visual links
- To establish a unique waterfront setting for all the enjoy
- To tie into the City's existing plan for the yacht basin in a creative and innovative way
- To establish a series of activity nodes - namely, the Maritime Museum, Yacht Basin and Wilson's Wharf with mangrove conservation sites between
- To respond to the varying scales of the developed city edge and the lower lying bay area whilst creating opportunity for vistas and views between structures

DESIGN GENERATORS:

ACCESS

The site is bounded to the north by the impenetrable railway line servicing the car depot. Victoria Embankment (now known as Margaret MnCadi Ave) also hinders free pedestrian movement between the city and bay area. Vehicular and pedestrian access is currently restricted to the main entrance into the yacht basin off this carriageway, safely over the railway lines.

PEDESTRIAN ACCESS

The railway lines prove to be a dangerous zone for pedestrians, thus a low fence and stone wall exists to prevent access being obtained to the bay. This also encourages a poor visual link between the city and the Embankment. Talks are in progress with harbour officials to eliminate these railway lines with the possible relocation of the car depot to Richard's Bay harbour, however, these will not be realised for quite some time. If the railway lines are eventually removed, or perhaps raised, better access would be attainable for pedestrians onto the urban waterfront at ground level. At the moment, access is possible via the main entrance. Currently there are two pedestrian routes, running east / west along the waterfront, one to the north of the railway lines within the green belt as well as another similarly running between Wilson's Wharf and the Maritime Museum site. However, the latter is dominated by cars and thus doesn't provide a suitable environment for pedestrians; this has been address within this dissertation and design.

VEHICULAR ACCESS

Two vehicular access points exist between the city and the Embankment. The main entrance, off Victoria Embankment, and a secondary entrance off Maydon Road to the west of the precinct. The latter entrance is mainly used as a service lane for deliveries etc to the Hulletts terminal and other industrial type facilities, but does provide access onto the road linking Wilson's Wharf with the Maritime Museum site. The eventual removal of the railway lines in the future would allow for additional access points to be included, provided that they do not disrupt existing vehicular traffic.

PARKING

Due to the nature of the Embankment and the number of public attractions existing today, sufficient parking has always been problematic. Thus with the proposed upgrade of the entire Embankment, complete with additional public facilities, extra parking needs to be provided for in order to comfortably cater to the influx of people and interest. This, seen in the urban framework, will be in the form of semi-basements beneath various facilities.

WATERFRONT EDGE

The most important aspect of the site that greatly influenced the design was the transition between the land and the bay. This aspect is unique to the urban waterfront and provides opportunities for views, interaction and reflection. Thus it had to be treated in such a way that the landscape gradually dips down to meet the water's edge whilst providing opportunities to look out towards the southern extreme of the harbour. A sunken informal outdoor theatre is also included as the harbour provides a suitable backdrop to any performance. Reintroduced mangrove swamps will also be evident at this transition.

PARK, PLAZA AND MANGROVES:

Within the proposed site as well as the entire Embankment, elements such as parks, plazas and conservation sites exist as breathing or break away spaces for the public. These also form interactive nodes of activity or reflection, providing views out into the harbour or back into the city.

THE PARK

The park is flanked on either side by built form, namely the proposed club facility and the design dissertation. It aims to provide breathing space between these facilities. It is raised 1500mm above natural road level and provides a platform for people to experience the 'theatre of life' as well as views out towards the harbour and yacht marina. It also terraces back down to the water's edge on the Southern side of the site, allowing for physical contact with the bay.

THE PLAZA

Contrasting with the green belt of the park and terraces, the plaza is seen as a hard urban square. The design dissertation's plaza, located to the North East of the site and raised 1500mm above road level, provides a link across the road to the proposed square of the yacht basin complete with fountain and information stands. It acts as a breathing space for the area, as well as spill out space during peak times, and facilitates the transition of the public between the public and private realms.

MANGROVES

The proposed introduction of mangrove swamps / conservation sites between Wilson's Wharf, the Yacht Basin and the Maritime Museum site (see ill 9 - the proposed urban framework) breaks the Embankment up into three distinct activity nodes with the possibility of formal and informal walks through the low lying vegetation. This creates a distinctly unique environment not seen elsewhere in the city. Also by dismissing the possibility of built form within these spaces, better visual links are attained to the southern extreme of the harbour.

WATERFRONT REGENERATION:

It has been identified as a neglected space within the city, but Durban's Victoria Embankment has the potential to become a vibrant edge contributing positively to the CBD. It is the hope for this design and urban framework to recreate this active edge by reintroducing a cluster of positive spaces (ill 10), focused on the pedestrian, to form an unique waterfront environment. The larger urban framework seen previously in illustration 9, shows the effort made to cluster activity within the three major nodes - Wilson's Wharf, the Yacht Basin as well as the Maritime Museum site - offering a range of stimuli, including goods, foods, people and harbour vessels to the visitor. When focused on the site specifically, the objective was to enliven the edges around the building that would positively reinforce the overall effect of clustering. Thus public spaces, with retail components, were located at major junctions on the periphery of the building as to facilitate this enlivening of the edge as well as pedestrian movement through the site.

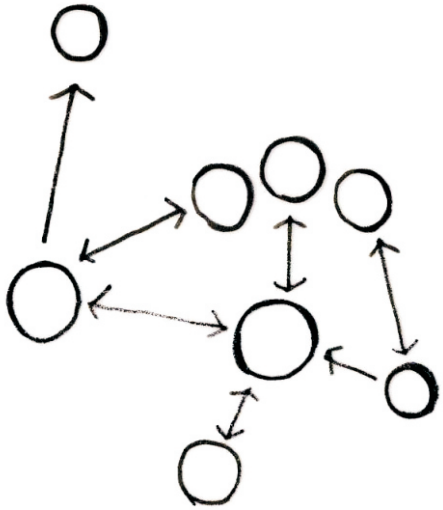


Illustration 10 - Diagram of concept - clustering activity - along the Embankment to create a continuous activity for pedestrians to enliven the edge

FINDING LOST SPACE:

The Embankment currently is considered to be 'lost space', but by establishing an active nucleus, by means of a civic / cultural node that reflects the nature, interests and cultural values of the public, the edge can be revitalised. Whilst looking at the site particularly, one notices the vertical movement of tidal water as it ebbs and flows from high to low tide (ill 11). At low tide, a band of land is left over, forgotten and lost. The space thus becomes land that cannot be utilised, therefore a gradual step down to the water's edge, via terraces, could be introduced that can be accessed at different times of the day by means of paths and low walls. The land is allowed to be 'lost' at high tide and rediscovered at low tide.

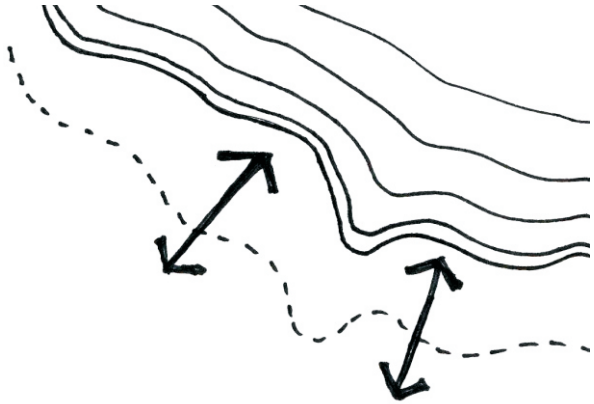


Illustration 11 - Diagram of concept - finding lost space - shows how at low tide, land is left over with no purpose whilst at high tide, it is lost and inaccessible

ORDERING DISORDER:

Currently, the Embankment offers a mismatched array of facilities that do not relate to its larger city context, but only that of the harbour and its various imagery and elements. The intended performing arts facility aims to formalise and restructure its different elements into a coherent whole, to form an unique dialogue with the each surrounding context of the city, the yacht basin and the harbour itself. This individuality is expressed differently through each facade to mimic either the structured, rigidness of the city scape, the changeable, reflective quality of harbour and finally the verticality of the yacht imagery translated into the entrance.

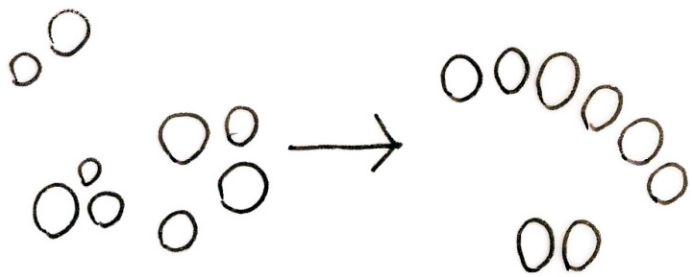
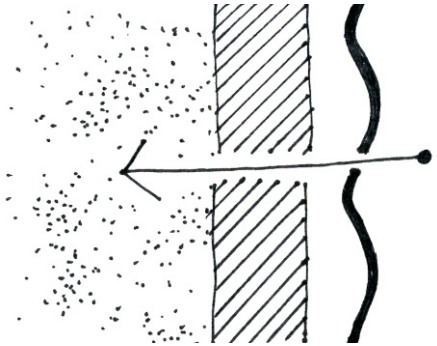


Illustration 12 - Diagram of concept that formalises the elements of each facade to mimic the individual environment.

TRANSITIONAL SPACES:

Within the facility, 'transition' space is expressed both vertically as well as horizontally. The open plaza, is raised above the road edge, and forms the transition zone between the entrance and the bus / drop off zone across the road. The public park, located above the semi-basement parking, acts similarly by creating a reflective, breathing space for pedestrians between buildings whilst the terraced pathways allow for the gradual descending to the water's edge in the south. Horizontally, the various side buildings, incorporating public activities, form the transition zones between the busy street edges and the quieter, introverted theatre and auditorium space which they enclose.



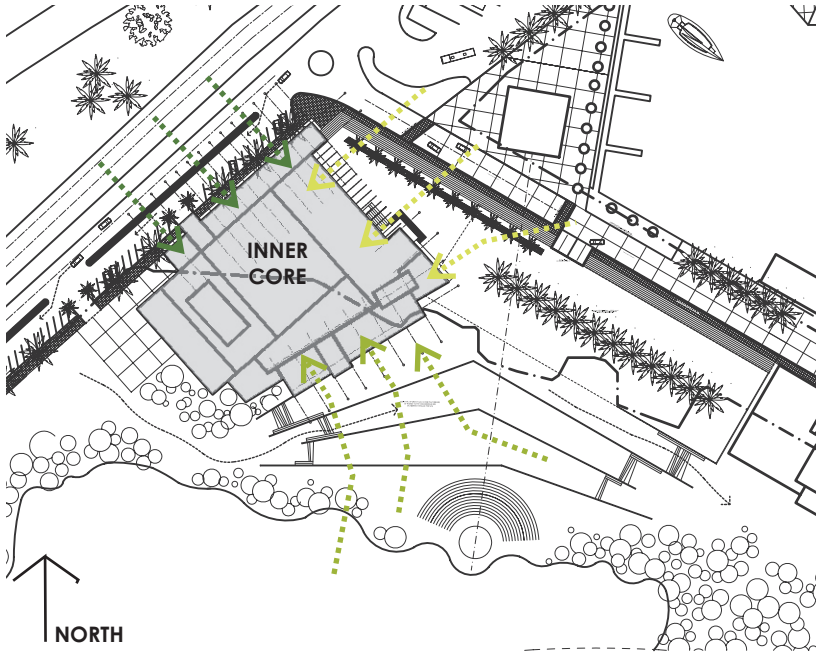


Illustration 13 & 14 - Plan of facility (above) showing transitional spaces and diagram of concept (left) showing idea of moving through different, unique areas

EDGES BETWEEN PUBLIC / PRIVATE:

What is currently lacking within the Embankment, as well as on the existing site, is the treatment of its edges. Majority of the spaces are fenced in, not allowing the public to penetrate, thus creating inaccessible areas that do not encourage people to venture towards, nor contribute positively to the entire Embankment. What is needed is the stimulation of these edges, both public and private, forming active spaces ripe for human interaction. The plaza and park facilitate this as well as the public spaces housed within the edges of the facility, namely the restaurant and foyer spaces (ill 15). These become flexible boundaries which break the harsh edge between building and the surrounding land, blurring the boundaries between (ill 16) and connecting it back to its site context.

AWARENESS OF SPACE:

The sense of 'rising to the occasion' is expressed by the vertical transitional spaces of the plaza and park located in the North East as well as the terraced pathways in the South West. These also separate the public from the semi-public zones which create a more legible environment. Whilst the theatre itself is an introverted box, the public spaces surrounding are extroverted and need public interaction for them to be successful (ill 17). Great glazed volumes are seen in the lobby, foyer and eating areas within the facility. These express the grandeur of a civic building whilst allowing people to experience both the interior as well as the exterior environment simultaneously, which is much sort after within this typical context. It was the intention of the author that the theatre patron would experience a 'building excitement' as they venture from their parked vehicles to the theatre facility proper, ultimately preparing them for the unique world that is theatre.

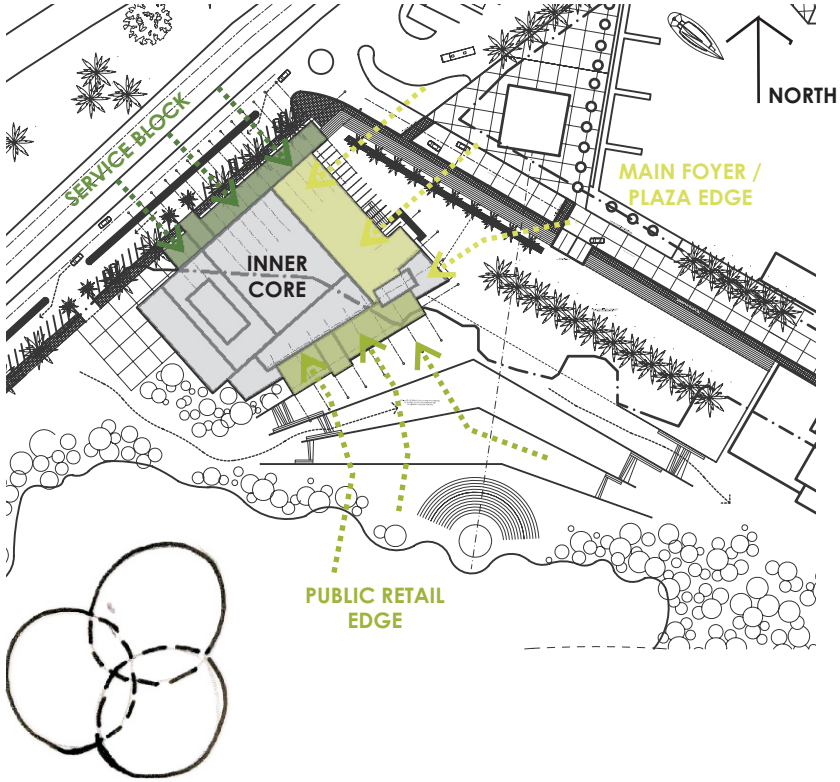


Illustration 15 & 16 - Plan of facility (above) showing differentation of edges and diagram of concept (above left) showing idea of blurring the boundaries between public and private

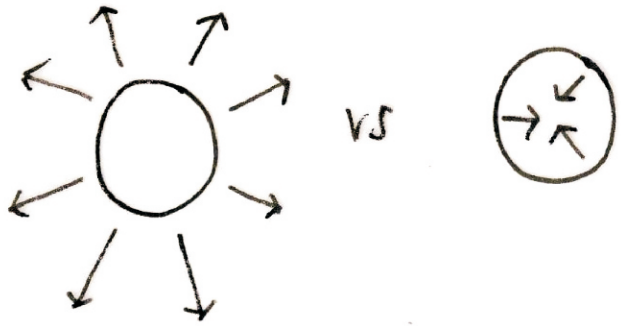


Illustration 17 - Diagram of concept that formalises the elements of each facade to mimic the individual environment.

THE CONCEPT OF MASKING:

A secondary concept expressed throughout the facility is one of masking or mimicking one's environment, as is evident within the disciplines of dance and drama where performers take on the persona that is set out for each individual production. Within the facility, three distinct zones are expressed differently as each faces an unique context - the city scape, the yacht basin and the greater harbour / bay area (ill 18). Each facadal treatment reflects the certain qualities of each context for example, whilst the city scape is rigid and structured, the harbour edge is quieter and more reflective, constantly changing as the tide sweeps in and out. Taking the concept further, the theatre and auditorium space can be translated as the inner core - the reflection of one's true self, which is not portrayed often to a wider audience. The side elements are what we as people show to the world, to mimic and blend ourselves into a certain environment. This dramatic portrayal can also be translated into the manipulation of light and dark, by means of screens and such, on the facade as well as within the building itself (ill 19).

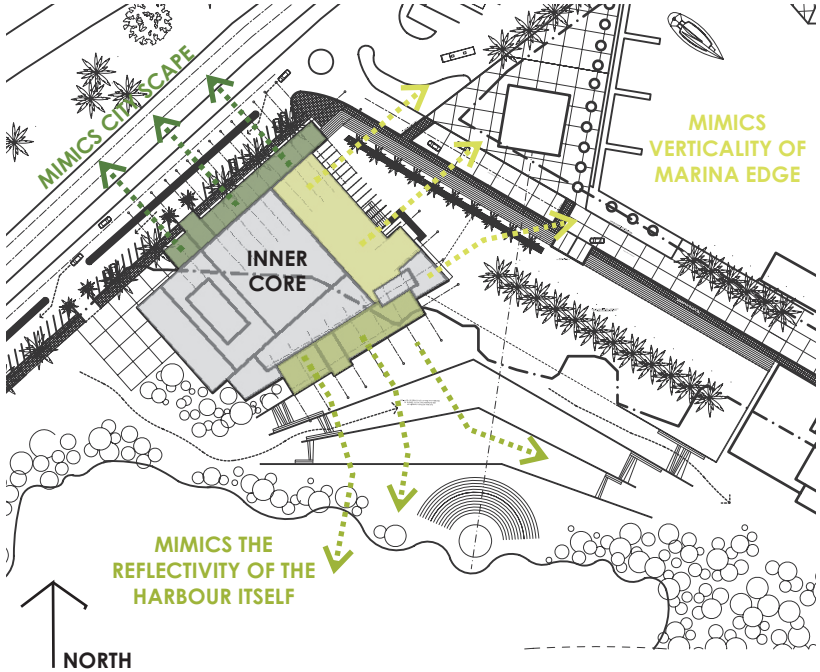


Illustration 18 - Plan of facility (above) showing differentation of edges and

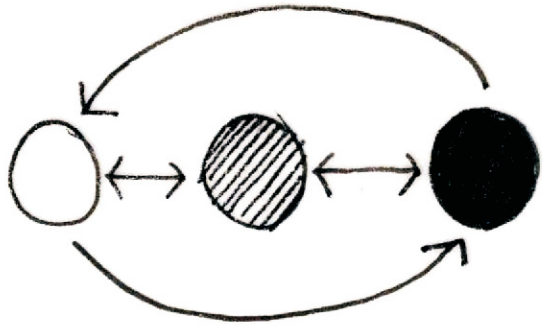


Illustration 19 - Diagram of concept expressing idea of masking light and dark within the building and on the facade

FRONT OF HOUSE:

The theatre patron enters the building in a variety of ways:

- From Victoria Embankment by vehicle
- From the drop off zone located on the North East side
- From the semi-basement parking located adjacent to the entrance
- From the promenade / boardwalk running down the pier

The main entrance of the facility faces the public plaza, where a variety of informal events could take place, and the drop off zone located across the road / boardwalk. It is located at the corner of building, and site, and has direct visual linkages with the main vehicular and pedestrian entrance onto the Embankment as well as views down the promenade / boardwalk. The entrance position is highly visible from all points within the yacht basin due to being raised a further 1500mm off plaza level. The entire length of this facade has the ability to open up during peak times, allowing theatre patrons to spill out from the main lobby and box office of the facility.

Access from the parking garage is up through the building by means of vertical circulation, bringing the patron to the same point as one entering at plaza level. From this lobby, one has access to the restaurant food court, other theatre amenities such as the gift shop etc and to the theatre auditorium itself by means of two lower entrances as well as the upper level entrances accessed via a generous 'Baroque' inspired staircase. Two stretcher lifts are provided within this lobby for universal access, to the left of the entrance, and allows for access to the main and upper lobby, as well as to the administration above.

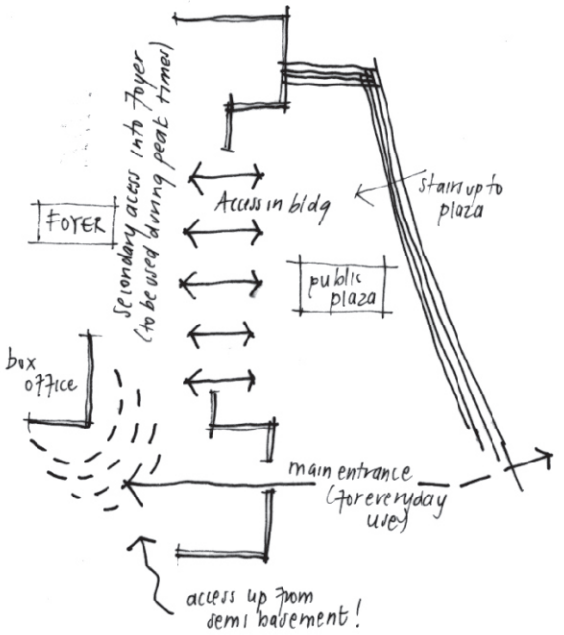


Illustration 20 - Diagram of main entrance off plaza

MAIN LOBBY / FOYER

Within this main foyer / lobby space, theatre patrons have access to a formal exhibition space, two restaurants, two bars / concession stands, ablutions, gift and book shop, the box office and theatre mangers office. Additional seating is provided for within the lobby space and allows for views out on the plaza, marina and harbour beyond. Similarly, the upper lobby provides views out as well as views down to the exhibition below by means of the triple volume space. Additional access points into the theatre auditorium and ablutions are provided on this level as well as the educational outreach programme offices and audition rooms.

Both the North Eastern and South Eastern foyers are directional spaces, directing theatre patrons to the various amenities, and have top lit clerestory windows allowing for preferential North light to penetrate the space. They also allow for hot air to be expelled from the space, keeping it cool and naturally ventilated (ill 20).

AUDITORIUM

The theatre auditorium is positioned within the heart of the center and is accessed from all sides by six entrances, four of which by the public, whilst the other two are reserved for performers and theatre personnel (ill 21).

RESTAURANTS

The restaurants are located within a narrow strip along the South Eastern side of the building in order to obtain the best views out into the harbour as well as being accessible onto the terrace park stepping down to the water's edge and the pedestrian walkway past. They also provide for a direct relationship with two of the auditorium's public entrances. Both restaurants boast interior and exterior seating, depending on the weather, patrons can choose which environment they would prefer.

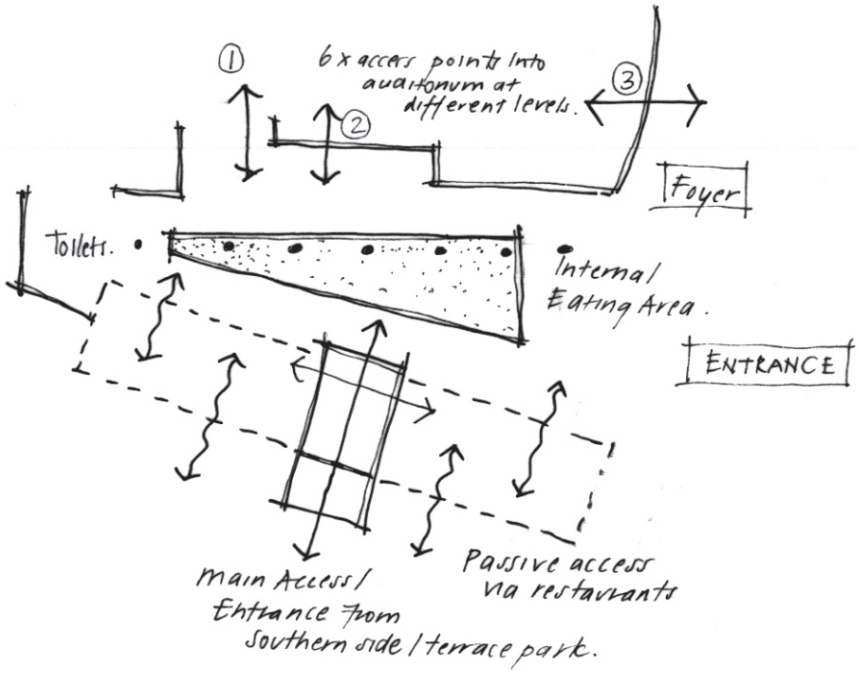


Illustration 21 - Diagram of auditorium / restaurant access points

BACK OF HOUSE

It has been seen that a distinct separation between front-of-house and back-of-house needs to exist in order to maintain the separation between the public and services. Back-of-house consists of the main stage and its auxiliary spaces, dressing areas and the various storage facilities that are prevalent in the running of a theatre complex.

ACCESS

Servicing to this part of the building happens at ground level on the South Western side of the building. A large loading area, allows for trucks and other service deliveries to be dropped off and loaded through one of two roller shutter doors beneath stage level. The stage is at 4000mm above ground level, therefore allowing associated workshops, stores and other facilities to be housed beneath giving direct access to the loading area. Adjustable stage lifts and various hoists allow for access up to the stage level as well as to the dressing rooms and administration at the upper levels. Lighting, sound and stage manger's offices are located just within the assemble area to allow for adequate supervision and surveillance with additional ablutions for theatre personnel.

PLANNING

The dressing rooms are located to the North Western side of the building with direct access through to the green room onto the Northern side stage (ill 22). They occupy three levels looking out onto the street and city beyond, with the various rooms reserved for both chorus performers and soloists, with the upper most floor housing additional administration open plan offices. Prop and wardrobe stores are located adjacent to these functions at ground level. A separate performers entrance exists off this side road with additional parking and drop off areas.

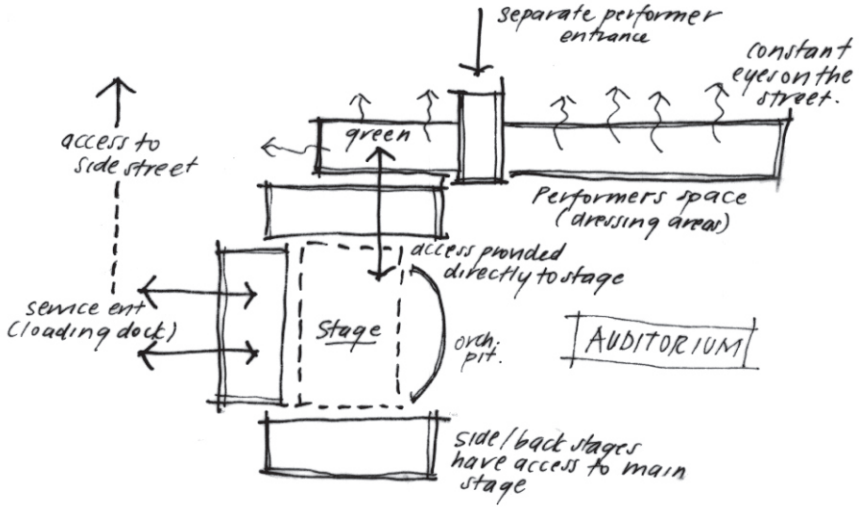


Illustration 22 - Diagram of back of house facilities

BUILDING FORM:

The building form comprises of a fully centralised, climatically controlled theatre and auditorium space. This forms the building's 'inner core', a compact design relying on subsidiary facilities to enliven it's edges (ill 23). Surrounding this internalised form are three naturally ventilated 'clip on' spaces which house public amenities making the facility highly accessible from it's edges. These buildings also act as sound buffers for the theatre and auditorium space as well as facilitate movement through the site. Pedestrian and vehicular movement, past and through the site, also generated the overall form of the facility. Where possible, the public facilities, namely the foyer and lobby spaces, have been placed with favourable North East orientation. Whilst the restaurant and rehearsal facilities are given priority over the South Eastern views and preferable indirect South light needed for the latter functions.

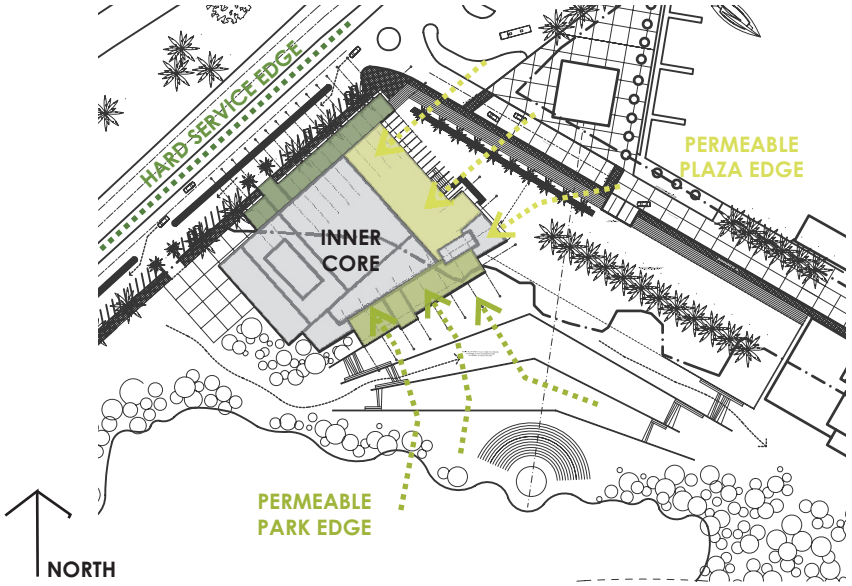


Illustration 23 - Plan of facility showing permeable and hard edges of the building form

CIRCULATION AND ACCESS:

Circulation within the facility is organised to operate off the large public spaces of the lobby and internal eating spaces (ill 24). Both these spaces are double volume spaces which allow for easy movement to various points within the building, principally being the auditorium and public amenities. This zone also serves as a transition zone between the public and private. Public access is primarily through the plaza and foyer, however access is also possible through the restaurant on the South East. Services are kept to the North West with a service entrance for loading dock, general deliveries and theatre personnel.

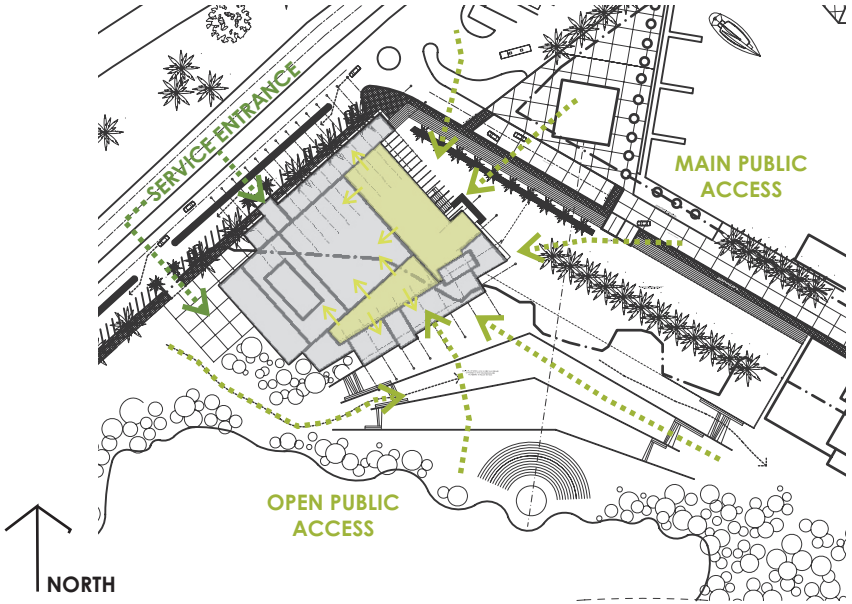


Illustration 24 - Plan of facility showing access and circulation

ORIENTATION:

The general orientation of the facility is that of North East / South West. The building is situated towards the North Western extreme of the site, allowing for the public outdoor park and the plaza spaces to receive favourable North East and Southern exposure. Due to the nature of a theatre, no specific orientation was deemed necessary and therefore the theatre's auxiliary spaces were given preference whilst the loading dock is located to the South Western part of the site (ill 25). Other services, namely store and dressing areas, were located on the North Western edge of the building and thought was given to adequate shading etc. Offices and public spaces, such as the entrance foyer, lobby and gallery spaces make use of the preferable North Eastern orientation as well as views out towards both the city and the marina. The rehearsal spaces need indirect South light therefore these spaces as well as the restaurants were located in the South East overlooking the terraced park.

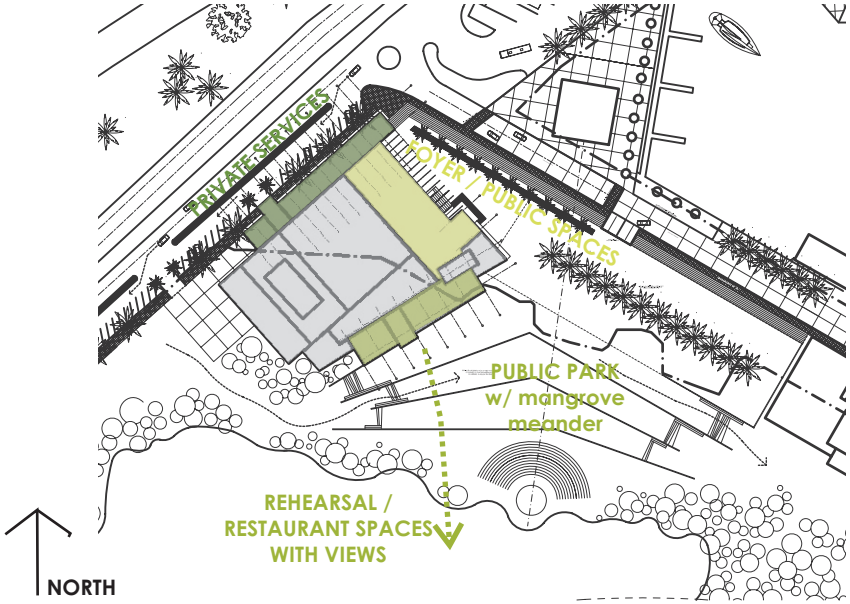
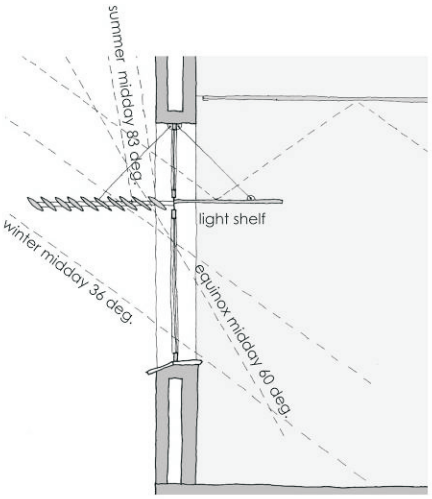


Illustration 25 - Plan of facility showing space orientation - public spaces located in the North and South East whilst service spaces in the North West and West.

SHADING & ILLUMINATION:

Wherever appropriate, solar shading devices have been included so as to shade the building from the harsher afternoon sun, but to still allow for winter penetration and the inclusion of light shelves (ill 26). This allows for maximum natural daylighting to occur within public spaces and thus reducing the need for artificial lighting. Horizontal louvers have been implemented so as to shade the large expanses of glazing. Theatre illumination is performance specific and lighting rigs will be set up so as to accommodate for each individual production. General ambient lighting will be introduced to the auditorium as is standard practise. Task lighting will occur in the office spaces as



Controlled usage of natural daylighting

Illustration 26 - Example of appropriate shading devices as well as the inclusion of light shelves

well as dressing rooms, however due to the narrow column grid, natural daylighting will allow for adequate light to penetrate the spaces throughout the day. The South Eastern facade of the restaurant and rehearsal spaces will be heavily glazed so as to allow for indirect light to filter through the space, whilst the clerestory lighting, located above the circulation spaces, will allow internalised spaces to be naturally lit and ventilated from above. The main entrance facade, facing North East is also glazed, however a solar canopy extends over part of the plaza so as to shield the facade when the sun is high in the sky.

VENTILATION:

Ventilation must be designed to produce the correct air movement and the desired temperature at peak times. The theatre and auditorium spaces are traditionally artificially ventilated by means of standard air conditioning. This is due to the vast number of people present at one time within the space. Air is pumped up through floor vents beneath the auditorium seating from the plant room located below. The air is circulated and then extracted up and out by means of return vents within the ceiling void of the auditorium. Draughts should be avoided at all times and the system employed must operate at a very low noise level as not to interfere with the acoustics. Preferably a mechanical engineer should be involved in this design and should work in conjunction with the architect.

Ventilation within the auditorium should fulfil the following conditions (Ham, 1972:236):

- The input must not create draughts
- The air should be distributed evenly without zones of stagnant air
- The temperature should be at a constant over the entire zone of occupancy
- Surfaces that radiate heat or cold should be avoided
- Ventilation systems should function at acceptable noise levels (no more than 20dB in theatres housing more than 500 people)

With this stated, air-conditioning is kept primarily to these highly trafficked spaces whilst the facility's auxiliary spaces provide for natural ventilation by means of high operable windows, evident in the dressing areas. Fully permeable facades, present in the sliding, folding doors / walls of the restaurant also contribute to the natural flow of air. The clerestory above the circulation zones also serves as to ventilate the internal spaces, namely the eating areas and lobbies, and exhaust the hotter air out of the building.

Dressing rooms also have openable windows to allow for preferable natural ventilation.

FORM DERIVATION & STRUCTURE:

The form of the building was derived through a number of factors. Firstly, the internalised 'blind box' theatre was a structure that did not require any particular orientation, though its auxillary functions needed to be able to attract and encourage pedestrians into the facility. Services and public amenities needed to be kept strictly separate and was resolved by incorporating two entrances, to the back-of-house and front-of-house. To establish the distinction between public, semi-public and private realms, a raised plaza / park was created to give a feeling of 'rising to the occasion' whilst giving ownership to each space. The public plaza, located in the North East, responds to the bus stop / drop off zone across the road way. The park space, above the semi-basement parking, allows for adequate breathing room between buildings as well as facilitating one to see through from the marina to Wilson's Wharf and visa versa.

A concrete column and beam structure is used as the structural system for the services and rehearsal space blocks. This allows the auxiliary spaces to be independent from the central theatre area which boasts larger, interrupted spans. It also allows for a variety of facade treatments to be incorporated. Materials used within the facility consist mainly of concrete, brick, glass, steel and timber in various forms.

ACOUSTIC CONTROL:

The acoustics of a space will effect every production the theatre presents, therefore special attention needs to be had in order to obtain the correct acoustical treatment. With many theatre facilities these days, it is possible for an acoustic compromise to be reached for multi-use venues that produce both musicals as well as drama productions.

The rake of the seating is as important to acoustics as it is for general sight lines. When sound passes at a low angle of incidence over an audience, it is strongly attenuated because of the highly absorptive materials used within the auditorium. Additional reflective surfaces at ceiling level makes it possible for a shallow rake (roughly 7° within the design dissertation) instead of the steepness of classical Greek theatre that required a minimum of 35°.

REVERBERATION

Reverberation improves the acoustic conditions within the space provided it is neither too much nor too little. For music and musical productions, seen in the dissertation, longer reverberation times are preferred and normally range between 1 and 2 seconds. This is normally good enough for musicals and acceptable or not unduly bad for speech. Reverberation is directly proportional to the volume of the auditorium and inversely proportional to the amount of absorptive materials within the space. The more people within the auditorium, the greater the volume or ceiling height within needs to be as is similar with music compared with speech. Within the auditorium, a mixture of hard, reflective and soft, absorbing materials is needed to obtain the optimum reverberation time.

GENERAL REVERBERATION TIME CALCULATION FOR AUDITORIUM

$$T = \frac{0.161 \times V}{A}$$

$$= \frac{0.161 \times 3900}{2250 \times 0.2}$$ (coefficient of audience in upholstered seats @ 250 c/s)

T = 1.39 sec

(good for both music and speech)

REFLECTORS

When the auditorium is large, and the distance between stage and back row exceeds 15m, ceiling reflectors can be introduced to 'spread' the sound. These are focused more to the back most rows of seating and allow one to hear the speaker clearly. Materials of these reflectors should generally be non porous and smooth.

ADDITIONAL CALCULATIONS FOR AUDITORIUM

- Volume /seat = m^3

877 x 5 = 4385 / 700 = 6.2

(good for classical music but a bit high for speech though adequate)

- Sound Path Difference (ms)

= Reflected Path - Direct Path / 344

Front Location

Path Difference = (4.7 + 7 - 8) / 344

= 0.10755 x 1000

= 10.755ms (excellent conditions for speech / music)

Middle Location

Path Difference = (8.9 + 11 - 16.8) / 344

= 0.00901 x 1000

= 9.011ms (excellent conditions for speech / music)

Rear Location

Path Difference = (13.2 + 17.6 - 29.1) / 344

= 0.005087 x 1000

= 5.087ms (excellent conditions for speech / music)

PARKING AREA:

Due to the nature of theatre, the facility is mainly operable at night while the other marina amenities like the yacht club usually operate during the daytime. Parking for the building is provided within a semi-basement located on the site as well as by means of various parking lots within the overall Yacht Basin scheme. The reason for the semi basement is mainly due to the water table present on the site however, it also creates a raised podium on which the park is situated, defining the edge between cars and pedestrians. The structure is naturally ventilated on the North Eastern side and provides direct access into the facility at the lower ground level. The parkade can also be rented out as to create additional revenue for the facility.

SERVICES:

Electrical and air-conditioning plant rooms are located on the lower ground floor and accessed from the service side of the building. Theatre air-conditioning enters through ducts located beneath the seating and is exhausts via vents within the ceiling void. Other air-conditioning ducts etc are left exposed throughout offices and lobby spaces.

WASTE SERVICES:

Waste refuse is collected and stored within the bin area located at lower ground level on the South West side near the loading dock. It is disposed of through the service yard also in the South West.

Conclusions

- The design of a new performing arts theatre situated on Durban's Embankment called for an evaluation of public space, public access and permeability of civic space along the waterfront edge.
- The building needed to be a landmark facility, accessible to all and not a distinct few, as it was in the past.
- It needed to connect with its context, respond positively towards the water's edge as well as be a catalyst for regeneration along the Embankment.
- Each facade needed to relate to its own unique context - city scape, harbour edge and yachting marina.
- The facility, though essentially introverted, needed extroverted amenities to enliven the surrounding space and allow for pedestrian movement through both the site and the building.
- Public plazas, parks and terraced landscaping were used to reconnect the building to the land while providing ownership to the spaces.
- These spaces formed the transition zones between the vibrant street edge and the quieter theatre spaces.
- The facility needed to be apart of a larger urban framework in order to create an active Embankment edge, regenerated to promote pedestrian movement and interaction.

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UNPUBLISHED INTERVIEWS:

- Dave Stromberg, director of Port Planning for Transnet Projects (Transnet National Port Authority), Durban - 22 February 2008
- Themi Venturas, creative director of the Catalina Theatre at Wilson's Wharf, Durban - 26 February 2008

Appendix F- Simulated Office Project Report

The following report and drawings were part of a simulated office project based on the design of a Performing Arts Centre for Durban's Embankement.

Simulated Office Project 2008

Technical Report

For the proposed Design of a Centre of the Performing Arts on Victoria Embankment, Durban for the Fantastic Flying Fish Dance Company

Prepared by:

Lauren Ann Haiden

Student No: 203507015

SOP Course: 2008

A Report submitted to the School of Architecture, Housing and Planning – University of KwaZulu-Natal, Howard College Campus, in partial fulfilment towards the degree of Master of Architecture.

October 2008

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Appendix A - Technical Documentation Drawings

Introduction

This report takes heed of various technical considerations regarding the design of buildings as well as the subsequent professional guidance required in a project to enable for its inevitable construction. This report should be read in conjunction with the technical drawings attached in Appendix A.

Due to program difficulties, the involvement of a UKZN student quantity surveyor to deal with feasibility and material costing was impossible.

1.1 Introduction:

The structural resolution of the building has been carefully considered and ordinarily would require a structural engineer to work quite closely with the architect. The structural engineer would prepare full construction drawings and would clarify all sizes, specifications and such concerning the building's structural framework.

The components mentioned below are recommended by the architect, though subject to change after input by the projects structural engineer.

1.2 System:

The building has been designed mostly using a typical concrete frame with brick infill system, with a basic 85mm brick gauge. Other parts incorporate off shutter concrete. Two different roof systems were used, namely a flat concrete slab with parapets as well as a lightweight sheeting on steel trusses.

1.3 Foundations:

The building is built on the edge of Victoria Embankment, adjacent to the waters edge, on a piece of reclaimed land. Therefore unstable soils are present. This, in conjunction with four (4) storey height and nature of a theatre, pile foundations were recommended. These would have to be designed by a structural engineer in collaboration with a geo-technical engineer for an accurate assessment on the conditions of the soils.

1.4 Concrete Ground Beams:

Reinforced concrete ground beams run between each pile cap to strengthen the overall system. In certain places, additional retaining walls will be constructed above.

1.5 Columns, Slabs and Beams:

230 x 230mm reinforced concrete columns have been utilised on a general 7500 x 10000mm grid (though variations do occur and these are noted on plans). This size allows for the integration of the column into the 230mm brickwork, so when plastered, the wall will be flush

A series of 300/400mm reinforced concrete columns exist as a purely decorative function within the courtyard as well as on the balconies. Certain examples house 100mm DIA RWDPs within for rainwater drainage.

A traditional system of 150/200mm reinforced concrete slabs in conjunction with either upstand or downstand beams, have been utilised within this building. These beams, with structural steel, are designed to span between each column and house the various air-conditioning and service ducts needed for the facility. All semi-basement slabs are to be

1500mm below natural ground level. Ground slabs are to have 25mm saw cut expansion joints at 4500mm max centers (all tiling should be lined up to these joints to minimise cracking of the tiles when settling occurs. All ground slabs are to be laid on waterproof sheeting and poisoned and compacted fill.

1.6 Retaining Walls:

Generally the building has been designed as not to require costly cut and fill but with the introduction of the raised terraces up from the natural ground level, a series of retaining walls was needed in certain places. These retaining walls comprise of 340mm core walls, filled with concrete, with DERBIGUM SP4 waterproofing and agricultural drains, all of which must be to engineer's specification.

1.7 Walls:

The exterior walls are concrete (where stipulated) or 230mm brickwork. The outer face of the inner skin should be bagged and waterproofed with brixeal. This will give protection from general water ingress.

All internal walls are to be115mm single skin plaster brick (unless otherwise stimulated).

1.8 Roof:

A combination of flat, concrete roofs and lightweight sheet roofs supported with steel trusses have been used throughout this building.

The flat roof system comprises of 200mm thick reinforced concrete slab with 300mm upstand beams / parapets as well as a 50mm isoboard insulation layer and a 100 - 60mm thick screed to slight falls to a 100mm DIA rainwater down pipe (RWDP). The screed is covered by a waterproofing layer with precast concrete pavers. Access is granted onto most flat roofs as they accommodate the various solar panels to be used as alternative power sources. The sheet roof system is supported by 300mm steel trusses / rafters with a 50mm layer of isoboard insulation. 1,8mm thick aluminium roof sheeting to be used (see drawings) with maritime grade paint finish to prevent the corrosion associated with the harbour area. Roof sheeting to be fixed to purlins with steel roof sheeting fixing screws with neo-prene washers between the sheeting and screws.

1.9 Glazing:

The installation of all glazing to conform with NN2 - **Part N of the SABS 0400** and the thickness of such pains in accordance with SABS 0137. For high wind speeds, seen often on the Esplanade, an engineer would need to be consulted for optimum design.

1.9 Conclusions:

The overall structural system chosen is that of concrete panels and beams with an infill of either brickwork or glazing (curtain walling / shop fronts) that defines the edges of the building. A system of slabs and downstand / upstand beams accommodate the spans between the columns. Even so, a structural engineer will be needed to achieve a more comprehensive solution of the structure.

2.1 Introduction:

This chapter deals with the requirements needed to be considered, regarding fire safety, when designing a public building. The following requirements are attained from the South African National Building Regulations - SABS 0400 (Part T). In order to determine how this building will comply with the fire safety regulations, it was important to identify what occupancy classification the building will fall under.

- Theatre and Performance Spaces - A2 (Theatrical and indoor sport)
- Semi Basement Parking - J4 (Parking Garage)

2.2 Requirements:

The building is designed to comply with **Part T of the SABS 0400.** Specific requirements include the following:

- 1 fire hose reel every 500m2 with a maximum reach of 30m, in accordance with TT 34.1
- 1 fire hydrant every 1000m2, in accordance with TT 35.2
- 1 portable 9kg fire extinguisher for every 200m2, in accordance with TT 37.4 and TT 37.5

Specific to theatre design, certain requirements need to be adhered to based on the number of seats the auditorium holds. These include the following:

- 6 x 1500mm 2hour fire resistant escape routes out of the auditorium

Other components that need to comply with these regulations and other consideration include:

- All emergency exits must open outwards
- The use of vertical ducts should be limited as this can assist fire to spread to upper levels
- A fully functional wet pipe sprinkler system and complete fire stand pipe is to be installed in foyers, auditorium and on all stages
- Adequate signage indicating all fire equipment should be clearly shown and demarcated to comply with the National occupational health and safety act.
- A sprinkler system is advised for high trafficked areas.

2.3 Conclusion:

Further consultant with a fire officer or fire consultant is important and will insure the building complies with all fire safety regulations.

3.1 Introduction:

This chapter outlines the various services needed for the intended building. Consultation with electrical and civil engineers is crucial to the success of the building as they clarify what services will be required.

3.2 Drainage:

A standard system that links the buildings sewer lines directly to the municipal sewer connection (as seen on the site plan) has been employed. The system provides for an occupancy of 1000 individuals at peak time and conforms with table 7 (part a), **Part P of the SABS 0400.** Other requirements such as appropriate gradients, minimum sizes of waste pipes and the provision of rodding eyes, floor drains and gullies have been accommodated for

3.3 Stormwater Disposal:

The building aims to conform to the rules outlines within **Part R of the SABS 0400** and include the following:

.

- Channels, rain water downpipes, roof gutters and below-ground stormwater drains in accordance with RR2
- Sizing of gutters in accordance with RR3.1 Table 1
- The number of and sizing of various downpipes in accordance with RR3.2 Table 1
- Access to stormwater drains provided every 40m in accordance with RR4

NOTE: All roof run-off will be stored in appropriately sized water tanks for the irrigation of the gardens / landscaping within the site (see site plan for location). Any overflow shall link with the municipal storm water system.

3.4 Refuse Disposal:

This building employs the standard system of the disposal of refuse by municipal workers. Refuse is stored in allocated bin / refuse areas and this conforms with **Part U1 and U2 of the SABS 0400.**

3.5 Water Supply:

The mechanical engineer would also be in charge of the implementation and installation of all potable and non-potable water systems as is required throughout the building. Back flow prevention devices, filtration units and flow control devices shall be investigated and accommodated for.

3.6 Lifts:

Appropriate size and type of lifts are to be specified by a mechanical engineer, however space for two stretcher lifts have been accommodated for within the design.

3,7 Escalators:

Appropriate size and type of escalators are to be specified by a mechanical engineer, and space has been allocated for them linking the semi basement parking to the entrance foyer and reception / box office.

3.8 Electrical:

All electrical work (conduits and cabling) to be designed in conjunction with an electrical engineer and are to comply with the SABS 0142 (the code of practise for the wiring of premises) as well as the SABS 0114 (the code for interior artificial lighting). Provision should be made for telephonic, computer, internet and LAN installations.

3.9 Conclusions:

Consultation with an electrical engineer is paramount to produce electrical drawings for the design - regarding lighting and appropriately placed power points. These are to be coordinated with the architectural drawings.

4.1 Introduction:

Within this building, the air conditioning system is the main reason for the employment of a mechanical engineer. This system would be designed in conjunction with the architects and housed within various plant rooms and will transport cooled air throughout certain areas via service ducts and voids hung from the ceilings, sometimes left exposed.

4.2 Air Conditioning:

The following should comply with **Part TT43 of the SABS 0400**. The theatre and its auxiliary spaces require a specialised system to provide a constant movement of cooler air due to the quantities of individuals who generate heat within these spaces. Ducts beneath seats allow cool air into the space whilst return ducts at ceiling level allow for warmer air to be exhausted from the area.

An HVAC system has been employed throughout the facility due to its nature and the amount of people expected to be accommodated for at one time. However opportunity for natural ventilation of all the spaces, except for the theatre stage and auditorium, is possible via openable windows and clerestory openings at roof level. The Air Conditioning (A/C) system would rely on a mechanical engineer for the design of an appropriate system - this would include the position of various units including the multiple air handling units, a rotary heat exchange system, a computerised building management system as well as relief air system using economy cycles.

4.3 Conclusion:

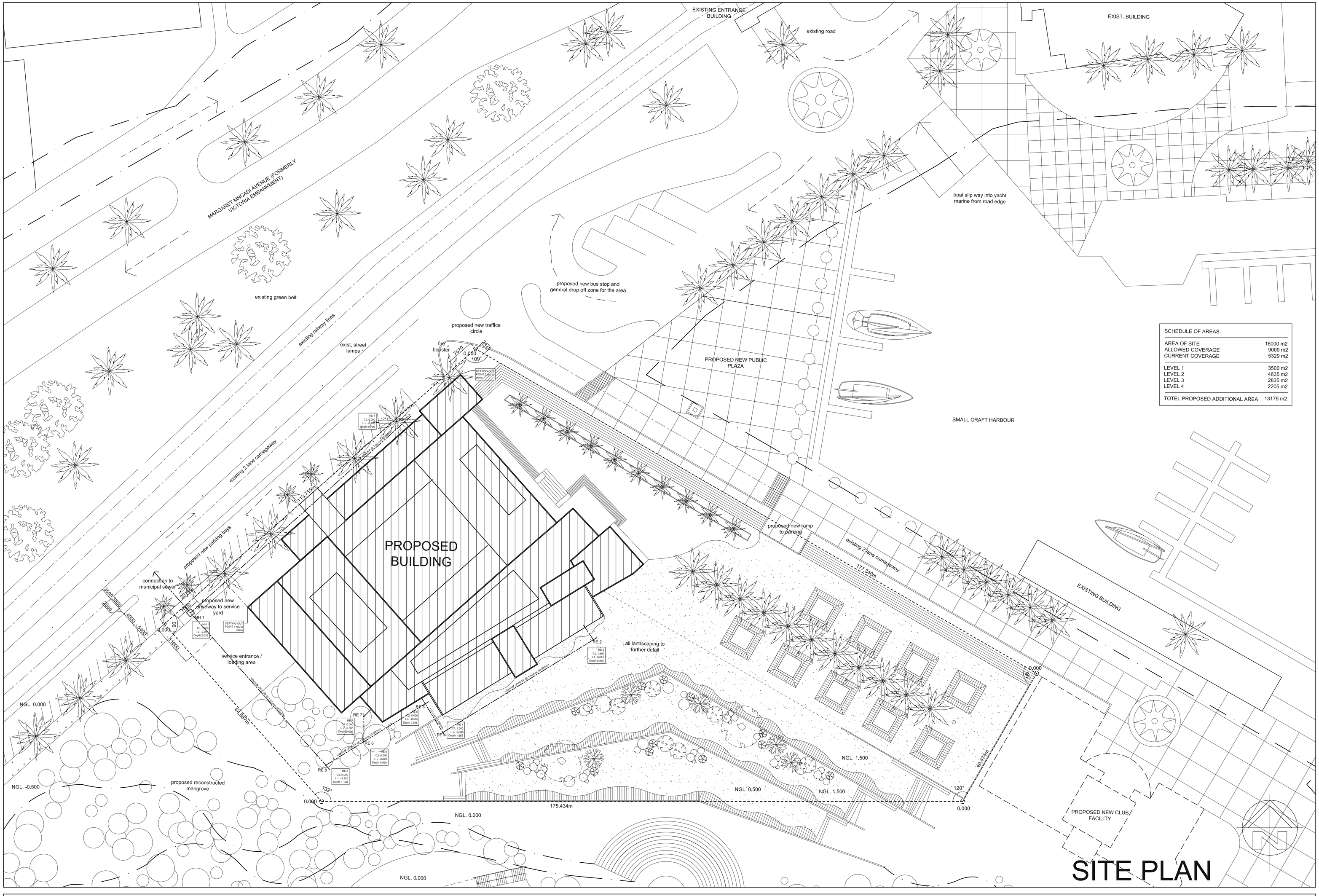
Whilst designing a suitable system appropriate for the building, passive cooling and heating systems need to be considered, with help from a mechanical engineer. These would lower the reliance on the HVAC system as well as lower overall running costs.

Conclusions

This report has generally outlined which structural systems and services will be employed within this building. The report has also briefly outlined the responsibilities within the professional team and the interaction of such people, including the architect, mechanical and structural engineers, throughout the design and construction process.

As principal agent, it is the architect's responsibility to be involved and to coordinate each professional and work process with some sort of understanding within each field and each construction phase

- South African Bureau of Standards (1990) Code of Practise for the Application of the National Building Regulations. Pretoria: South African Bureau of Standards



SCHEDULE OF AREAS:	
AREA OF SITE	18000 m2
ALLOWED COVERAGE	9000 m2
CURRENT COVERAGE	5329 m2
LEVEL 1	3500 m2
LEVEL 2	4635 m2
LEVEL 3	2835 m2
LEVEL 4	2205 m2
TOTEL PROPOSED ADDITIONAL AREA	13175 m2

Notes
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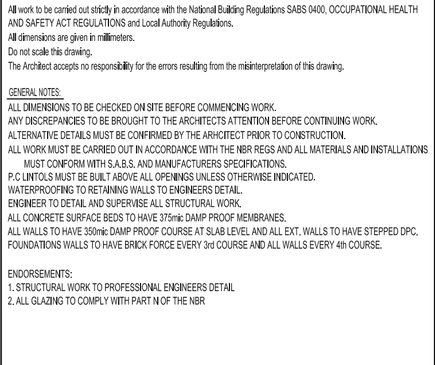
ALL WORK MUST BE CARRIED OUT IN ACCORDANCE WITH THE NBR REGS AND ALL MATERIALS AND INSTALLATIONS MUST CONFORM WITH S.A.B.S. AND MANUFACTURERS SPECIFICATIONS.
P.C LINTOLS MUST BE BUILT ABOVE ALL OPENINGS UNLESS OTHERWISE INDICATED.
WATERPROOFING TO RETAINING WALLS TO ENGINEERS DETAIL
ENGINEER TO DETAIL AND SUPERVISE ALL STRUCTURAL WORK.
ALL CONCRETE SURFACE BEDS TO HAVE 375mic DAMP PROOF MEMBRANES.
ALL WALLS TO HAVE 350mic DAMP PROOF COURSE AT SLAB LEVEL AND ALL EXT. WALLS TO HAVE STEPPED DPC.
FOUNDATIONS WALLS TO HAVE BRICK FORCE EVERY 3rd COURSE AND ALL WALLS EVERY 4th COURSE.

ENDORSEMENTS:
1. STRUCTURAL WORK TO PROFESSIONAL ENGINEERS DETAIL
2. ALL GLAZING TO COMPLY WITH PART N OF THE NBR



KEY PLAN OF AREA

● revisions	● date	● amendments
REVISIONS		

● project	PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT
● location	ERF No. 109 YACHT BASIN VICTORIA EMBANKMENT, DURBAN
● client	FANTASTIC FLYING FISH DANCE COMPANY

1. 50mm ISOBOARD INSULATION FITTED BETWEEN PURLINS WITH STRAINING WIRES FOR SUPPORT.
2. KLIP-LOK 406 ALUMINIUM PROFILE ROLLED ROOF SHEETING IN CONTINUOUS LENGTHS, FORMED WITH 0,7mm ALUMINIUM MILL FINISH, FIXED TO PURLINS WITH KL65 CLIPS AS PER MNFR'S SPECIFICATION. ALL EXPOSED UNDERSIDES OF THE ROOF SHEETING TO BE PAINTED WITH BITUMOUS ALUMINIUM PAINT PRIOR TO INSTALLATION.
3. 150 x 75 x 20 x 2,5 GMS LIP CHANNEL PURLIN FIXED TO S/S RAFTER AT APPROPRIATE CENTERS ACCORDING TO ENGINEERS DETAIL.
4. 300 x 150 x 25 UNIVERSAL RAFTER, PREDRILLED AS INDICATED TO ENG DETAIL AT 7500mm CNS
5. GLASS REINFORCED PLASTIC RIDGE FLASHING TRIM TO BE FIXED TO PURLINS / CHANNELS
6. ALUMINIUM AEROFOILS BY SPECIALIST - NOTE A PVC INSULATING TAPE TO BE USED TO AVOID ELECTROLITIC CORROSION BETWEEN ALUMINIUM AND GALV. MILD STEEL
7. 400mm DIA REINFORCED CONCRETE COLUMN TO ENGINEERS DETAIL WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL.
8. TIMBER PERGOLA - 144 x 38 TIMBER SECTIONS (PAR) IN 2000mm LENGTHS FIXED TO TIMBER BATTENS TO BE TREATED AND VARNISHED.
9. 65 x 220 TIMBER BATTENS FIXED TO RC COLUMN TO BE TREATED AND VARNISHED.
10. PROPRIETARY ANODISED ALUMINIUM WINDOW SYSTEM REF. TO SCHEDULE.
11. GMS BALUSTRADE 1100mm HIGH - 100mm DIA GMS HW HAND RAIL FIXED TO STANCHIONS WITH 16 DIA ROUND BAR AT 150mm CENTERS - CUSTOM FORMED GMS PLATES AT 1300mm CENTERS TO FURTHER DETAIL WITH STEEL CABLES
12. 100 TO 80mm SCREED TO SLIGHT FALL TO RAINWATER OUTLET WITH FILLETS ON ALL INTERNAL ANGLES.
13. 500 x 230 RC DOWNSTAND BEAM TO ENGINEERS DETAIL
14. RC BEAMS AND CANTILEVERS WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL FOR FILLET AND DRIP POSITIONS REFER TO ENGINEERS DETAIL DRAWINGS.
15. 450 x 450 PRECAST CONCRETE PAVERS.
16. PILES AND PILE CAPS TO ENGINEERS DETAIL.
17. 65 x 225 TIMBER FLOOR BOARDS FIXED TO TIMBER JOISTS TO BE TREATED AND VARNISHED
18. 4mm BITUTHENE WATERPROOFING LAYER LAID ON SCREED AND BENEATH PAVERS
19. COMPACTED FILL IN ACCORDANCE WITH ENGINEERS SPECIFICATION, SOIL POISONED IN ACCORDANCE WITH SANS CODE OF PRACTISE
20. 600 x 600 SLATE TILES ON 60mm SCREED REF. TO FINISHES SCHEDULE.
21. 250 MICRON DPM WITH MINIMUM 200mm SIDE AND END LAPS.
22. 175mm GROUND SLAB TO ENGINEERS DETAIL.
23. 600 x 1200 x 9mm WHITE EMBOSSED VINYL CLAD GYPSUM PLASTERBOARD CEILING ON DONN OR OTHER EQUAL AND APPROVED CONCEALED SUSPENSION SYSTEM INCLUDING WHITE MAIN AND CROSS Ts INCLUDING ALL NECESSARY HANGERS, GRIDS ETC, PERIMETER TRIM TO BE TRULOK SHADOWLINE SECURED TO WALL AT 450mm CENTERS
24. DOORS AS PER SCHEDULE
25. DRIP FORMED WITH EX 38 x 38 SAP SHAPED BRANDER
26. 150mm REINFORCED CONCRETE SLAB WITH UPSTAND BEAM TO ENGINEERS DETAIL
27. 12mm PLASTER APPLIED TO SLAB SOFFIT. SLAB TO BE PREPARED TO PREVENT PLASTER DELAMINATION.
28. 50mm ALLOWANCE FROM T.O.C MADE FOR FLOOR FINISHES, SCREED DEPTH TO VARY IN ACCORDANCE WITH FINISH - REF. TO SCHEDULE
29. 50 x 150 TIMBER JOISTS FIXED TO SPRUNG TIMBER FLOORING AT 500mm CENTERS - SUPPORTED TO MILD STEEL JOIST HANGER AT WALL
30. 2 LAYERS OF THINK PINK SOUND ABSORBING INSULATION LAID BETWEEN SCREED AND TIMBER JOISTS
31. 22 x 96mm PAR T&G STRIP TIMBER FLOORING FIXED TO JOISTS - BUTT JOINTS TO BE STAGGERED
32. 38 x 100mm TIMBER STRUTS FIXED BETWEEN TIMBER JOISTS
33. 1500 x 3000 INDIVIDUAL MIRRORS FIXED TO WALL ACCORDING TO SCEDULE
34. 230mm BRICK EXTERNAL SKIN WALL WITH RAKED POLISHED POINTING, RAKE EVERY 4TH PERP END ABOVE DPC
35. 12mm EXTERNAL CEMENT PLASTER APPLIED TO SIKA LATEX WATERPROOF SLURRY APPLIED TO EXTERNAL BRICK FACE PRIOR TO PLASTERING ALL TO MNFR'S RECOMMENDATION
36. 203 x 203 UNIVERSAL COLUMN, PREDRILLED AND BOLTED TO THE FLOOR SLAB WITH THREADED BAR EMBEDDED INTO CONCRETE SLAB, TO ENGINEERS DETAIL
37. GMS FLASHING BENT TO PROFILE
38. 100 x 100 x 8 GMS CLEATS FIXED TO RC CONC. AND SUPPORTING CHANNELS
39. 100mm ALUMINIUM CHANNELS AT 750mm CENTERS TO FORM BOX GUTTER
40. FIBRE GLASS GUTTER, GIRTH 750mm, FIXED BETWEEN ROOF SHEETING AND END PURLIN
41. 200mm THICK REINFORCED CONCRETE SLAB TO SLIGHT FALL TO ENGINEERS DETAIL
42. PERFORATED TIMBER LATHES (SCREEN) SUPPORTED ON 500mm RC BEAM TO FILTER LIGHT AND AIR FROM CLERESTORY
43. PURPOSE MADE GMS 'TREE' SUPPORT - 95mm DIA HOLLOW STEEL SECTIONS WELDED TO CUSTOM MADE 35mm THICK HOT ROLLED STEEL PLATE AND BOLTED TO 200mm CONC. COLUMN
44. 400mm DIA RC COLUMN, PREDRILLED AND BOLTED TO PILE CAP TO ENGINEERS DETAIL, TO BE PLASTERED, PAINTED AND FIXED WITH CUSTOM MADE TIMBER BENCHES TO FURTHER DETAIL
45. 340mm PLASTER BRICK CAVITY WALL, OUTER FACE OF INNER SKIN TO BE BAGGED AND WATERPROOFED WITH BRIXEAL. TIES, BRICKFORCE AND REINFORCING ABOUT OPENINGS ALL TO TO ENGINEERS DETAIL
46. 200 x 200 BUTTERFLY WALL TIE EVERY 3 COURSES
47. DERBIGUM WATERPROOFING SYSTEM COMPRISING OF: ONE LAYER DERBIGUM SP 4mm THICK APPLIED TO PRIMED SURFACE FULLY SEALED TO CONCRETE SLAB, SIDE WALLS AND PARPETS MIN 75mm SIDE LAPS 100mm END LAPS TO BE SEALED TOGETHER BY TORCHED ON FUSION, TREATMENT TO BE FINISHED WITH TWO (2) COATS OF BITUMOUS ALUMINIUM PAINT. ALL IN ACCORDANCE WITH MNFR'S SPECIFICATION.
48. 50mm ISOBOARD LAID OVER CONCRETE SLAB AND COVERED WITH SCREED
49. 100 TO 60mm SCREED TO FALLS TO 100mm DIA RAINWATER DOWNPIPE OUTLET WITH FILLETS ON ALL INTERNAL ANGLES (1:80 falls)
50. 300mm RC DOWNSTAND BEAM TO ENGINEERS DETAIL
51. 200mm REINFORCED CONCRETE SLAB TO ENGINEERS DETAIL
52. 150mm REINFORCED CONCRETE FLOOR SLAB TO ENG DETAIL, WITH 60mm SCREED AND TILES REFER TO FINISHES SCHEDULE
53. 100mm DIA WHITE RWDP SECURED BETWEEN BRICK SKINS BY EXTENDED HOLDER BATS AT MAX 2,0m CENTERS AND CONNECTED TO MUNICIPAL STORM WATER
54. AGRICULTURAL DRAIN CONSISTING OF A 110mm DIA SLOTTED PVC PIPE WITH 300mm CROSS SECTION STONE SURROUND PROTECTED WITH BIDIM GEOFABRICK, RIVER SAND IN 300mm WIDE TRENCH ABOVE DRAIN
55. GROUND BEAMS AND FOUNDATIONS IN ACCORDANCE TO ENGINEERS DETAIL AND SPECIFICATION
56. 340mm RETAINING WALL WITH TWO (2) SKINS OF BRICKWORK AND REINFORCED CONCRETE TO ENGINEERS DETAIL.
57. 375 micron STEPPED DPC AT FLOOR, WINDOW HEAD, AND BELOW FLAT SLAB
58. 12mm EXTERNAL GRADE PLYWOOD CEILING TO BE PREFITTED, THEN FINISHED WITH PLASCON WATERBASED CLEAR VARNISH TO MNFR'S SPECIFICATIONS
59. 6mm THICK HOT ROLLED RECTANGULAR TUBE WELDED TO PLATES AND BOLTED TO RC COLUMN
60. 200mm GMS CHANNELS FIXED BETWEEN FLANGES OF RAFTER TO ENGINEERS DETAIL
61. 12mm INTERNAL CEMENT PLASTER WITH GMS VALMATEX REF B200 PLASTER STOP TO FORM JOINTS AT JUNCTIONS WITH COLUMNS. PRIMED WITH PLASCON UC 56 PRIMER AND FINISHED TWO (2) COATS OF WALL & ALL
62. AIR CONDITIONER / EXTRACTOR UNIT WITHIN DUCT TO SPECIALIST DETAIL
63. FULLBORE OUTLET TO 100mm DIA RWDP
64. 450 x 450mm PRECAST CONC. PAVERS
65. CUSTOM FORMED ALUMINIUM FLASHING ON FULL MORTAR BED AND SECURED BENEATH TILES
66. ALUMINIUM SUB STRUCTURE TO FURTHER DETAIL
67. 20mm THICK FIBRE CEMENT CLOSER FIXED TO 500mm RAFTER
68. 25 x 25mm FURRING CHANNELS SPANNING BETWEEN PURLINS
69. HARDWOOD TIMBER SUB FRAME

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Student Number - 203507015

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● drawing	SITE PLAN		
● scale	1:500	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 100		

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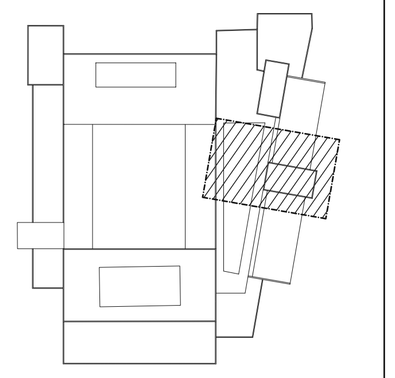

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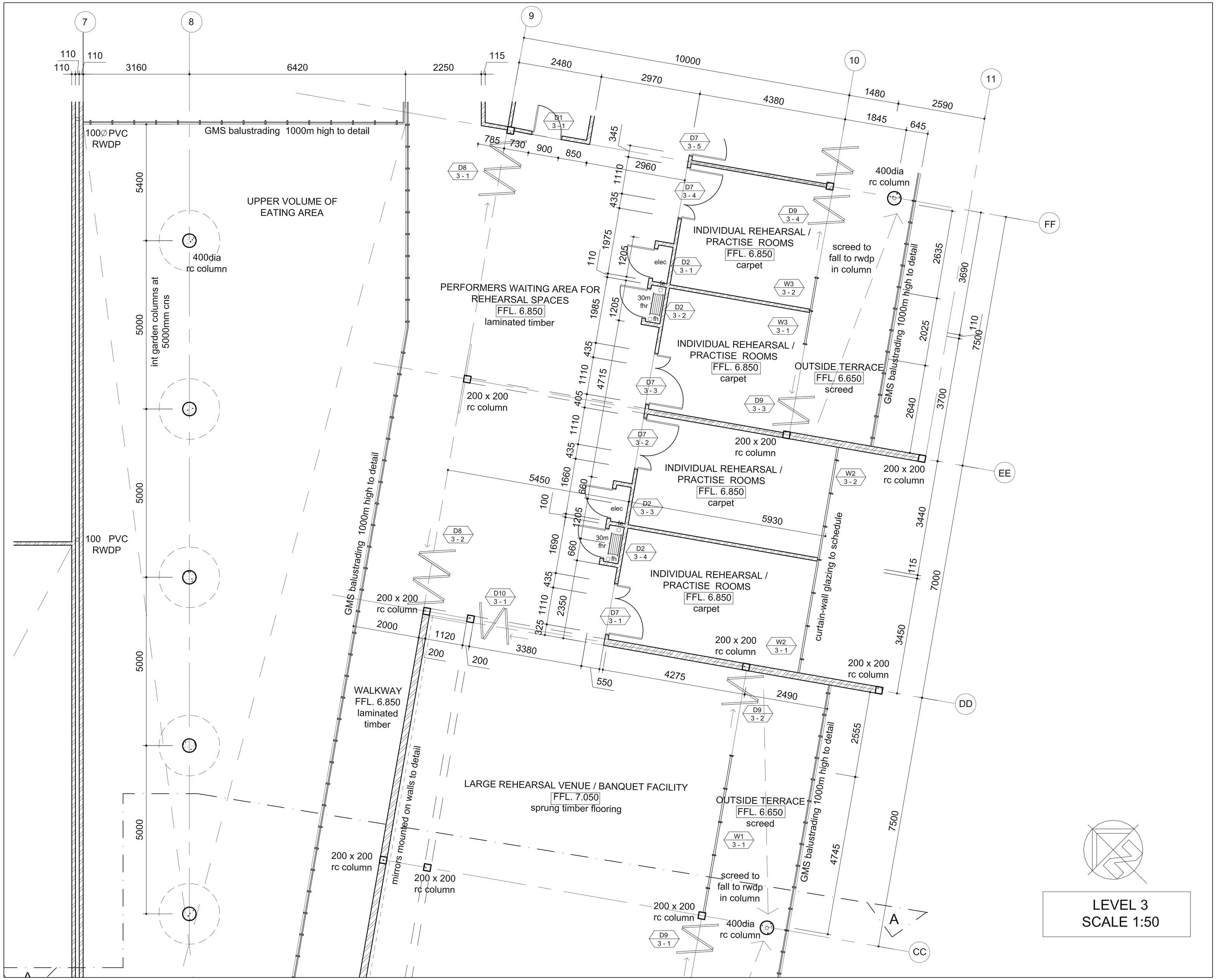
● drawing: LEVEL 2

● scale	1:50	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 101		

LEVEL 2
SCALE 1:50



LEVEL 3
SCALE 1:50

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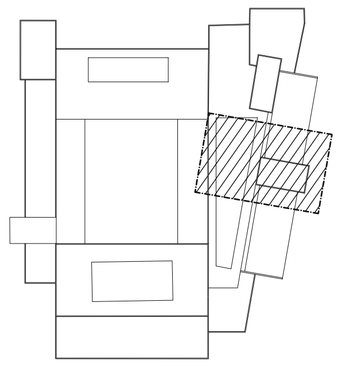


KEY PLAN OF AREA

● revisions	● date	● amendments

REVISIONS

● project: PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT

● location: ERF No. 109
YACHT BASIN
VICTORIA EMBANKMENT, DURBAN

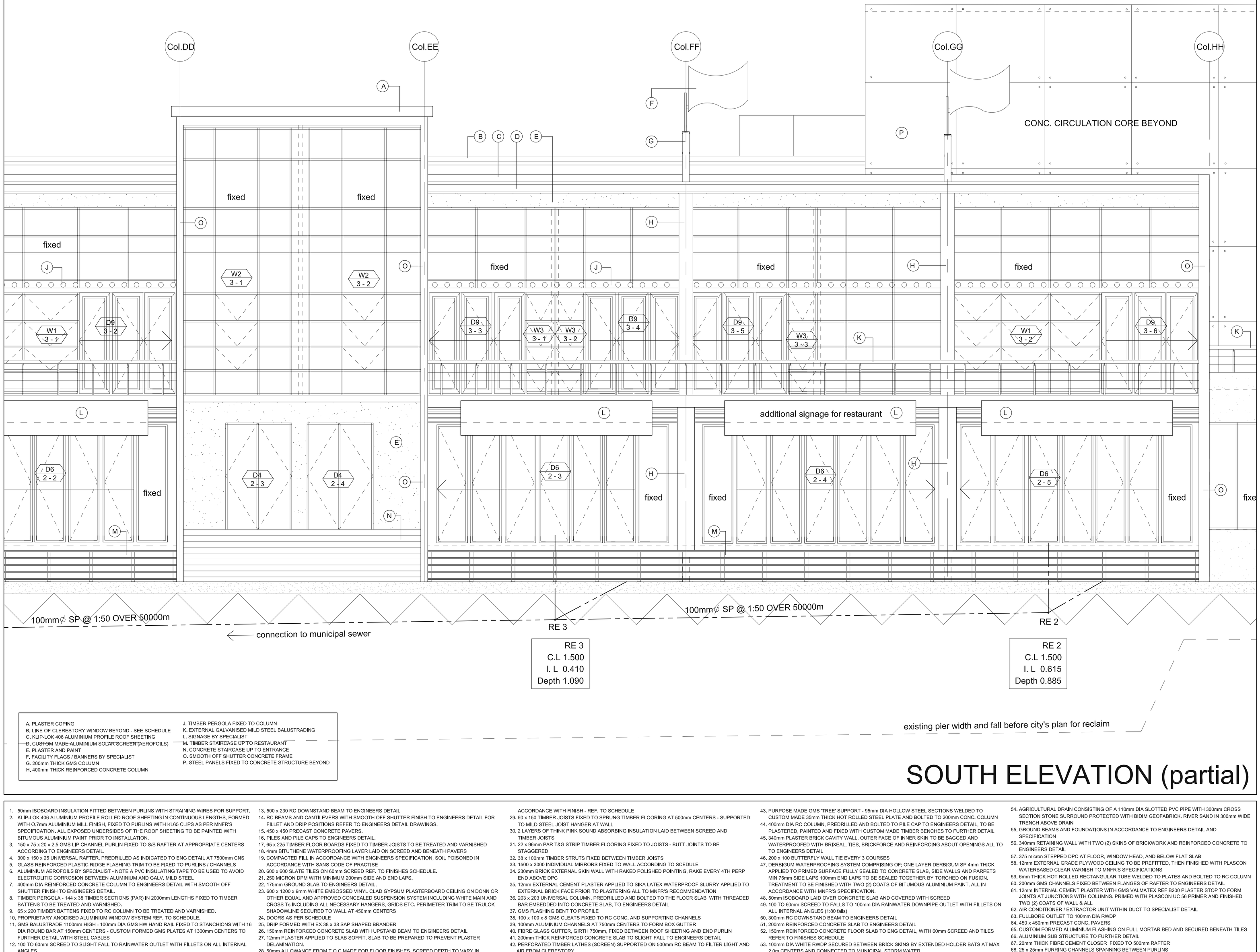
● client: FANTASTIC FLYING FISH DANCE COMPANY

Lauren Haiden
University of Kwa-Zulu Natal
School of Architecture, Housing and Planning
Student Number - 203507015

- all work to be done in accordance with the sabs 0400
- figured dimensions to be taken in preference to scaled dimensions
- report any discrepancies direct to the architect before commencing work
- this drawing is copyright and remains with the architect

● drawing: LEVEL 3

● scale	1:50	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 102		



RE 3
C.L 1.500
I. L 0.410
Depth 1.090

RE 2
C.L 1.500
I. L 0.615
Depth 0.885

A. PLASTER COPING
B. LINE OF CLERESTORY WINDOW BEYOND - SEE SCHEDULE
C. KLIP-LOK 406 ALUMINIUM PROFILE ROOF SHEETING
D. CUSTOM MADE ALUMINIUM SOLAR SCREEN (AEROFOILS)
E. PLASTER AND PAINT
F. FACILITY FLAGS / BANNERS BY SPECIALIST
G. 200mm THICK GMS COLUMN
H. 400mm THICK REINFORCED CONCRETE COLUMN
J. TIMBER PERGOLA FIXED TO COLUMN
K. EXTERNAL GALVANISED MILD STEEL BALUSTRADING
L. SIGNAGE BY SPECIALIST
M. TIMBER STAIRCASE UP TO RESTAURANT
N. CONCRETE STAIRCASE UP TO ENTRANCE
O. SMOOTH OFF SHUTTER CONCRETE FRAME
P. STEEL PANELS FIXED TO CONCRETE STRUCTURE BEYOND

SOUTH ELEVATION (partial)

1. 50mm ISOBOARD INSULATION FITTED BETWEEN PURLINS WITH STRAINING WIRES FOR SUPPORT.
2. KLIP-LOK 406 ALUMINIUM PROFILE ROLLED ROOF SHEETING IN CONTINUOUS LENGTHS, FORMED WITH 0,7mm ALUMINIUM MILL FINISH, FIXED TO PURLINS WITH KL65 CLIPS AS PER MNFR'S SPECIFICATION. ALL EXPOSED UNDERSIDES OF THE ROOF SHEETING TO BE PAINTED WITH BITUMOUS ALUMINIUM PAINT PRIOR TO INSTALLATION.
3. 150 x 75 x 20 x 2,5 GMS LIP CHANNEL PURLIN FIXED TO S/S RAFTER AT APPROPRIATE CENTERS ACCORDING TO ENGINEERS DETAIL.
4. 300 x 150 x 25 UNIVERSAL RAFTER, PREDRILLED AS INDICATED TO ENG DETAIL AT 7500mm CNS
5. GLASS REINFORCED PLASTIC RIDGE FLASHING TRIM TO BE FIXED TO PURLINS / CHANNELS
6. ALUMINIUM AEROFOILS BY SPECIALIST - NOTE A PVC INSULATING TAPE TO BE USED TO AVOID ELECTROLITIC CORROSION BETWEEN ALUMINIUM AND GALV. MILD STEEL
7. 400mm DIA REINFORCED CONCRETE COLUMN TO ENGINEERS DETAIL WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL.
8. TIMBER PERGOLA - 144 x 38 TIMBER SECTIONS (PAR) IN 2000mm LENGTHS FIXED TO TIMBER BATTENS TO BE TREATED AND VARNISHED.
9. 65 x 220 TIMBER BATTENS FIXED TO RC COLUMN TO BE TREATED AND VARNISHED.
10. PROPRIETARY ANODISED ALUMINIUM WINDOW SYSTEM REF. TO SCHEDULE.
11. GMS BALUSTRADE 1100mm HIGH - 100mm DIA GMS HW HAND RAIL FIXED TO STANCHIONS WITH 16 DIA ROUND BAR AT 150mm CENTERS - CUSTOM FORMED GMS PLATES AT 1300mm CENTERS TO FURTHER DETAIL WITH STEEL CABLES
12. 100 TO 60mm SCREED TO SLIGHT FALL TO RAINWATER OUTLET WITH FILLETS ON ALL INTERNAL ANGLES.
13. 500 x 230 RC DOWNSTAND BEAM TO ENGINEERS DETAIL
14. RC BEAMS AND CANTILEVERS WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL FOR FILLET AND DRIP POSITIONS REFER TO ENGINEERS DETAIL DRAWINGS.
15. 450 x 450 PRECAST CONCRETE PAVERS.
16. PILES AND PILE CAPS TO ENGINEERS DETAIL.
17. 65 x 225 TIMBER FLOOR BOARDS FIXED TO TIMBER JOISTS TO BE TREATED AND VARNISHED
18. 4mm BITUTHENE WATERPROOFING LAYER LAID ON SCREED AND BENEATH PAVERS
19. COMPACTED FILL IN ACCORDANCE WITH ENGINEERS SPECIFICATION, SOIL POISONED IN ACCORDANCE WITH SANS CODE OF PRACTISE
20. 600 x 600 SLATE TILES ON 60mm SCREED REF. TO FINISHES SCHEDULE.
21. 250 MICRON DPM WITH MINIMUM 200mm SIDE AND END LAPS.
22. 175mm GROUND SLAB TO ENGINEERS DETAIL.
23. 600 x 1200 x 9mm WHITE EMBOSSED VINYL CLAD GYPSUM PLASTERBOARD CEILING ON DONN OR OTHER EQUAL AND APPROVED CONCEALED SUSPENSION SYSTEM INCLUDING WHITE MAIN AND CROSS Ts INCLUDING ALL NECESSARY HANGERS, GRIDS ETC. PERIMETER TRIM TO BE TRULOK SHADOWLINE SECURED TO WALL AT 450mm CENTERS
24. DOORS AS PER SCHEDULE
25. DRIP FORMED WITH EX 38 x 38 SAP SHAPED BRANDER
26. 150mm REINFORCED CONCRETE SLAB WITH UPSTAND BEAM TO ENGINEERS DETAIL
27. 12mm PLASTER APPLIED TO SLAB SOFFIT. SLAB TO BE PREPARED TO PREVENT PLASTER DELAMINATION.
28. 50mm ALLOWANCE FROM T.O.C MADE FOR FLOOR FINISHES. SCREED DEPTH TO VARY IN ACCORDANCE WITH FINISH - REF. TO SCHEDULE
29. 50 x 150 TIMBER JOISTS FIXED TO SPRUNG TIMBER FLOORING AT 500mm CENTERS - SUPPORTED TO MILD STEEL JOIST HANGER AT WALL
30. 2 LAYERS OF THINK PINK SOUND ABSORBING INSULATION LAID BETWEEN SCREED AND TIMBER JOISTS
31. 22 x 96mm PAR T&G STRIP TIMBER FLOORING FIXED TO JOISTS - BUTT JOINTS TO BE STAGGERED
32. 38 x 100mm TIMBER STRUTS FIXED BETWEEN TIMBER JOISTS
33. 1500 x 3000 INDIVIDUAL MIRRORS FIXED TO WALL ACCORDING TO SCEDULE
34. 230mm BRICK EXTERNAL SKIN WALL WITH RAKED POLISHED POINTING, RAKE EVERY 4TH PERP END ABOVE DPC
35. 12mm EXTERNAL CEMENT PLASTER APPLIED TO SIKA LATEX WATERPROOF SLURRY APPLIED TO EXTERNAL BRICK FACE PRIOR TO PLASTERING ALL TO MNFR'S RECOMMENDATION
36. 203 x 203 UNIVERSAL COLUMN, PREDRILLED AND BOLTED TO THE FLOOR SLAB WITH THREADED BAR EMBEDDED INTO CONCRETE SLAB, TO ENGINEERS DETAIL
37. GMS FLASHING BENT TO PROFILE
38. 100 x 100 x 8 GMS CLEATS FIXED TO RC CONC. AND SUPPORTING CHANNELS
39. 100mm ALUMINIUM CHANNELS AT 750mm CENTERS TO FORM BOX GUTTER
40. FIBRE GLASS GUTTER, GIRTH 750mm, FIXED BETWEEN ROOF SHEETING AND END PURLIN
41. 200mm THICK REINFORCED CONCRETE SLAB TO SLIGHT FALL TO ENGINEERS DETAIL
42. PERFORATED TIMBER LATHES (SCREEN) SUPPORTED ON 500mm RC BEAM TO FILTER LIGHT AND AIR FROM CLERESTORY
43. PURPOSE MADE GMS 'TREE' SUPPORT - 95mm DIA HOLLOW STEEL SECTIONS WELDED TO CUSTOM MADE 35mm THICK HOT ROLLED STEEL PLATE AND BOLTED TO 200mm CONC. COLUMN
44. 400mm DIA RC COLUMN, PREDRILLED AND BOLTED TO PILE CAP TO ENGINEERS DETAIL, TO BE PLASTERED, PAINTED AND FIXED WITH CUSTOM MADE TIMBER BENCHES TO FURTHER DETAIL
45. 340mm PLASTER BRICK CAVITY WALL, OUTER FACE OF INNER SKIN TO BE BAGGED AND WATERPROOFED WITH BRIXEAL, TIES, BRICKFORCE AND REINFORCING ABOUT OPENINGS ALL TO TO ENGINEERS DETAIL
46. 200 x 100 BUTTERFLY WALL TIE EVERY 3 COURSES
47. DERBIGUM WATERPROOFING SYSTEM COMPRISING OF; ONE LAYER DERBIGUM SP 4mm THICK APPLIED TO PRIMED SURFACE FULLY SEALED TO CONCRETE SLAB, SIDE WALLS AND PARPETS MIN 75mm SIDE LAPS 100mm END LAPS TO BE SEALED TOGETHER BY TORCHED ON FUSION. TREATMENT TO BE FINISHED WITH TWO (2) COATS OF BITUMOUS ALUMINIUM PAINT, ALL IN ACCORDANCE WITH MNFR'S SPECIFICATION.
48. 50mm ISOBOARD LAID OVER CONCRETE SLAB AND COVERED WITH SCREED
49. 100 TO 60mm SCREED TO FALLS TO 100mm DIA RAINWATER DOWNPIPE OUTLET WITH FILLETS ON ALL INTERNAL ANGLES (1:80 falls)
50. 300mm RC DOWNSTAND BEAM TO ENGINEERS DETAIL
51. 200mm REINFORCED CONCRETE SLAB TO ENGINEERS DETAIL
52. 150mm REINFORCED CONCRETE FLOOR SLAB TO ENG DETAIL, WITH 60mm SCREED AND TILES REFER TO FINISHES SCHEDULE
53. 100mm DIA WHITE RWDP SECURED BETWEEN BRICK SKINS BY EXTENDED HOLDER BATS AT MAX 2,0m CENTERS AND CONNECTED TO MUNICIPAL STORM WATER
54. AGRICULTURAL DRAIN CONSISTING OF A 110mm DIA SLOTTED PVC PIPE WITH 300mm CROSS SECTION STONE SURROUND PROTECTED WITH BIDIM GEOFABRICK, RIVER SAND IN 300mm WIDE TRENCH ABOVE DRAIN
55. GROUND BEAMS AND FOUNDATIONS IN ACCORDANCE TO ENGINEERS DETAIL AND SPECIFICATION
56. 340mm RETAINING WALL WITH TWO (2) SKINS OF BRICKWORK AND REINFORCED CONCRETE TO ENGINEERS DETAIL
57. 375 micron STEPPED DPC AT FLOOR, WINDOW HEAD, AND BELOW FLAT SLAB
58. 12mm EXTERNAL GRADE PLYWOOD CEILING TO BE PREFITTED, THEN FINISHED WITH PLASCON WATERBASED CLEAR VARNISH TO MNFR'S SPECIFICATIONS
59. 6mm THICK HOT ROLLED RECTANGULAR TUBE WELDED TO PLATES AND BOLTED TO RC COLUMN
60. 200mm GMS CHANNELS FIXED BETWEEN FLANGES OF RAFTER TO ENGINEERS DETAIL
61. 12mm INTERNAL CEMENT PLASTER WITH GMS VALMATEX REF B200 PLASTER STOP TO FORM JOINTS AT JUNCTIONS WITH COLUMNS. PRIMED WITH PLASCON UC 56 PRIMER AND FINISHED TWO (2) COATS OF WALL & ALL
62. AIR CONDITIONER / EXTRACTOR UNIT WITHIN DUCT TO SPECIALIST DETAIL
63. FULLBORE OUTLET TO 100mm DIA RWDP
64. 450 x 450mm PRECAST CONC. PAVERS
65. CUSTOM FORMED ALUMINIUM FLASHING ON FULL MORTAR BED AND SECURED BENEATH TILES
66. ALUMINIUM SUB STRUCTURE TO FURTHER DETAIL
67. 20mm THICK FIBRE CEMENT CLOSER FIXED TO 500mm RAFTER
68. 25 x 25mm FURRING CHANNELS SPANNING BETWEEN PURLINS
69. HARDWOOD TIMBER SUB FRAME

Notes:
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P.C LINTOLS MUST BE BUILT ABOVE ALL OPENINGS UNLESS OTHERWISE INDICATED.
WATERPROOFING TO RETAINING WALLS TO ENGINEERS DETAIL.
ENGINEER TO DETAIL AND SUPERVISE ALL STRUCTURAL WORK.
ALL CONCRETE SURFACE BEDS TO HAVE 375mic DAMP PROOF MEMBRANES.
ALL WALLS TO HAVE 350mic DAMP PROOF COURSE AT SLAB LEVEL AND ALL EXT. WALLS TO HAVE STEPPED DPC.
FOUNDATIONS WALLS TO HAVE BRICK FORCE EVERY 3rd COURSE AND ALL WALLS EVERY 4th COURSE.

ENDORSEMENTS:
1. STRUCTURAL WORK TO PROFESSIONAL ENGINEERS DETAIL
2. ALL GLAZING TO COMPLY WITH PART N OF THE NBR

revisions	date	amendments
REVISIONS		

project	PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT
location	ERF No. 109 YACHT BASIN VICTORIA EMBANKMENT, DURBAN
client	FANTASTIC FLYING FISH DANCE COMPANY

Lauren Haiden
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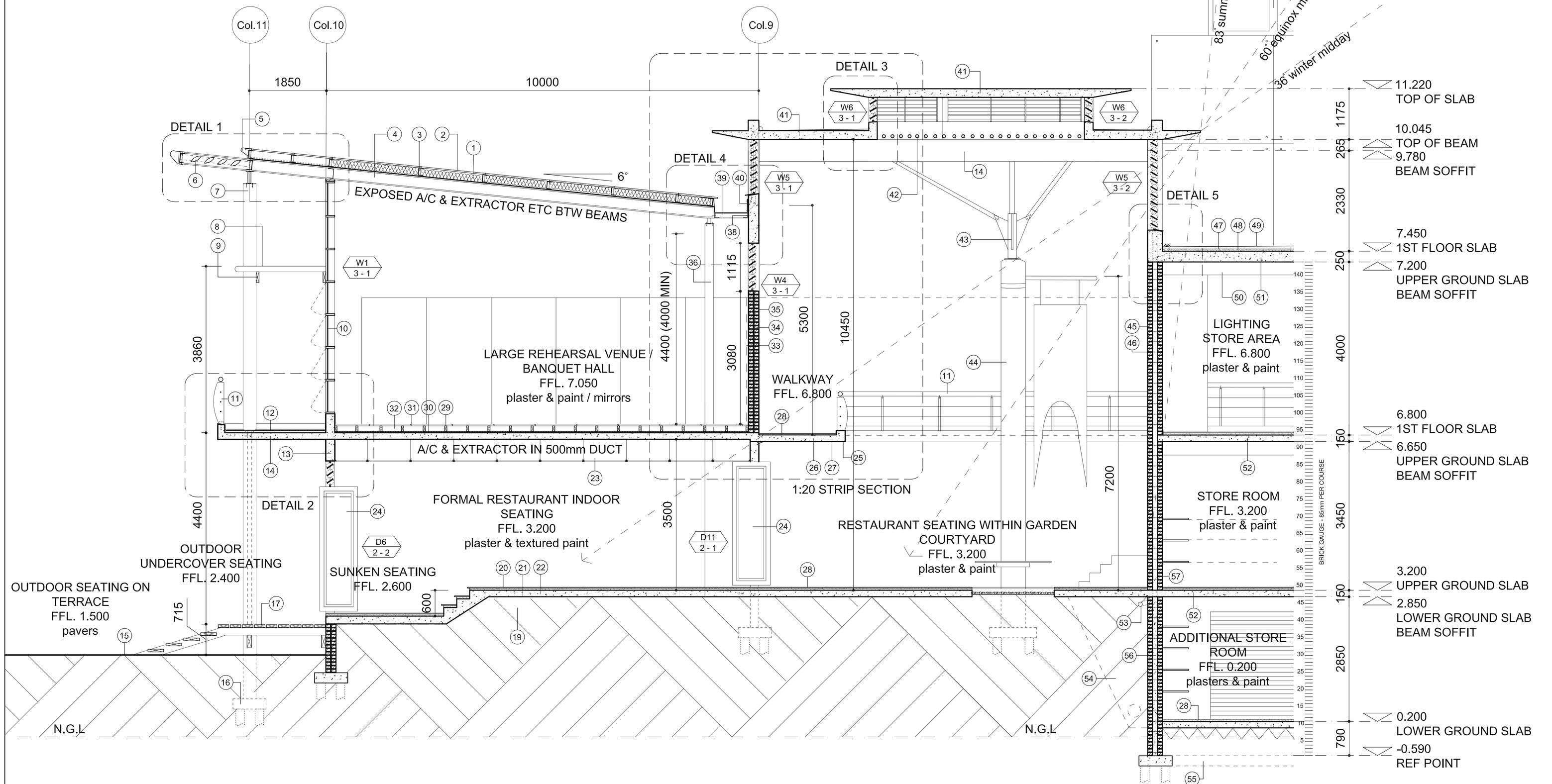
drawing	SOUTH ELEVATION		
scale	1:50	date	2008.10.29
drawn by	LH	checked by	DB
project no.	2008/01	revision	0
dwg no.	W 300		



SECTION AA 1:50

1. 50mm ISOBOARD INSULATION FITTED BETWEEN PURLINS WITH STRAINING WIRES FOR SUPPORT.
2. KLIP-LOK 406 ALUMINIUM PROFILE ROLLED ROOF SHEETING IN CONTINUOUS LENGTHS, FORMED WITH 0,7mm ALUMINIUM MILL FINISH, FIXED TO PURLINS WITH KL65 CLIPS AS PER MNFR'S SPECIFICATION. ALL EXPOSED UNDERSIDES OF THE ROOF SHEETING TO BE PAINTED WITH BITUMOUS ALUMINIUM PAINT PRIOR TO INSTALLATION.
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5. GLASS REINFORCED PLASTIC RIDGE FLASHING TRIM TO BE FIXED TO PURLINS / CHANNELS
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12. 100 TO 60mm SCREED TO SLIGHT FALL TO RAINWATER OUTLET WITH FILLETS ON ALL INTERNAL ANGLES.
13. 500 x 230 RC DOWNSTAND BEAM TO ENGINEERS DETAIL
14. RC BEAMS AND CANTILEVERS WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL FOR FILLET AND DRIP POSITIONS REFER TO ENGINEERS DETAIL DRAWINGS.
15. 450 x 450 PRECAST CONCRETE PAVERS.
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18. 4mm BITUTHENE WATERPROOFING LAYER LAID ON SCREED AND BENEATH PAVERS
19. COMPACTED FILL IN ACCORDANCE WITH ENGINEERS SPECIFICATION, SOIL POISONED IN ACCORDANCE WITH SANS CODE OF PRACTISE
20. 600 x 600 SLATE TILES ON 60mm SCREED REF. TO FINISHES SCHEDULE.
21. 250 MICRON DPM WITH MINIMUM 200mm SIDE AND END LAPS.
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34. 230mm BRICK EXTERNAL SKIN WALL WITH RAKED POLISHED POINTING, RAKE EVERY 4TH PERP END ABOVE DPC
35. 12mm EXTERNAL CEMENT PLASTER APPLIED TO SIKA LATEX WATERPROOF SLURRY APPLIED TO EXTERNAL BRICK FACE PRIOR TO PLASTERING ALL TO MNFR'S RECOMMENDATION
36. 203 x 203 UNIVERSAL COLUMN, PREDRILLED AND BOLTED TO THE FLOOR SLAB WITH THREADED BAR EMBEDDED INTO CONCRETE SLAB, TO ENGINEERS DETAIL
37. GMS FLASHING BENT TO PROFILE
38. 100 x 100 x 8 GMS CLEATS FIXED TO RC CONC. AND SUPPORTING CHANNELS
39. 100mm ALUMINIUM CHANNELS AT 750mm CENTERS TO FORM BOX GUTTER
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44. 400mm DIA RC COLUMN, PREDRILLED AND BOLTED TO PILE CAP TO ENGINEERS DETAIL, TO BE PLASTERED. PAINTED AND FIXED WITH CUSTOM MADE TIMBER BENCHES TO FURTHER DETAIL
45. 340mm PLASTER BRICK CAVITY WALL, OUTER FACE OF INNER SKIN TO BE BAGGED AND WATERPROOFED WITH BRIXEAL. TIES, BRICKFORCE AND REINFORCING ABOUT OPENINGS ALL TO TO ENGINEERS DETAIL
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48. 50mm ISOBOARD LAID OVER CONCRETE SLAB AND COVERED WITH SCREED
49. 100 TO 60mm SCREED TO FALLS TO 100mm DIA RAINWATER DOWNPIPE OUTLET WITH FILLETS ON ALL INTERNAL ANGLES (180 falls)
50. 300mm RC DOWNSTAND BEAM TO ENGINEERS DETAIL
51. 200mm REINFORCED CONCRETE SLAB TO ENGINEERS DETAIL
52. 150mm REINFORCED CONCRETE FLOOR SLAB TO ENG DETAIL, WITH 60mm SCREED AND TILES REFER TO FINISHES SCHEDULE
53. 100mm DIA WHITE RWDP SECURED BETWEEN BRICK SKINS BY EXTENDED HOLDER BATS AT MAX 2,0m CENTERS AND CONNECTED TO MUNICIPAL STORM WATER
54. AGRICULTURAL DRAIN CONSISTING OF A 110mm DIA SLOTTED PVC PIPE WITH 300mm CROSS SECTION STONE SURROUND PROTECTED WITH BIDIM GEOFABRICK, RIVER SAND IN 300mm WIDE TRENCH ABOVE DRAIN
55. GROUND BEAMS AND FOUNDATIONS IN ACCORDANCE TO ENGINEERS DETAIL AND SPECIFICATION
56. 340mm RETAINING WALL WITH TWO (2) SKINS OF BRICKWORK AND REINFORCED CONCRETE TO ENGINEERS DETAIL
57. 375 micron STEPPED DPC AT FLOOR, WINDOW HEAD, AND BELOW FLAT SLAB
58. 12mm EXTERNAL GRADE PLYWOOD CEILING TO BE PREFITTED, THEN FINISHED WITH PLASCON WATERBASED CLEAR VARNISH TO MNFR'S SPECIFICATIONS
59. 6mm THICK HOT ROLLED RECTANGULAR TUBE WELDED TO PLATES AND BOLTED TO RC COLUMN
60. 200mm GMS CHANNELS FIXED BETWEEN FLANGES OF RAFTER TO ENGINEERS DETAIL
61. 12mm INTERNAL CEMENT PLASTER WITH GMS VALMATEX REF B200 PLASTER STOP TO FORM JOINTS AT JUNCTIONS WITH COLUMNS, PRIMED WITH PLASCON UC 56 PRIMER AND FINISHED TWO (2) COATS OF WALL & ALL
62. AIR CONDITIONER / EXTRACTOR UNIT WITHIN DUCT TO SPECIALIST DETAIL
63. FULLBORE OUTLET TO 100mm DIA RWDP
64. 450 x 450mm PRECAST CONC. PAVERS
65. CUSTOM FORMED ALUMINIUM FLASHING ON FULL MORTAR BED AND SECURED BENEATH TILES
66. ALUMINIUM SUB STRUCTURE TO FURTHER DETAIL
67. 20mm THICK FIBRE CEMENT CLOSER FIXED TO 500mm RAFTER
68. 25 x 25mm FURRING CHANNELS SPANNING BETWEEN PURLINS
69. HARDWOOD TIMBER SUB FRAME

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P.C LINTOLS MUST BE BUILT ABOVE ALL OPENINGS UNLESS OTHERWISE INDICATED.
WATERPROOFING TO RETAINING WALLS TO ENGINEERS DETAIL.
ENGINEER TO DETAIL AND SUPERVISE ALL STRUCTURAL WORK.
ALL CONCRETE SURFACE BEDS TO HAVE 375mic DAMP PROOF MEMBRANES.
ALL WALLS TO HAVE 350mic DAMP PROOF COURSE AT SLAB LEVEL AND ALL EXT. WALLS TO HAVE STEPPED DPC.
FOUNDATIONS WALLS TO HAVE BRICK FORCE EVERY 3rd COURSE AND ALL WALLS EVERY 4th COURSE.

ENDORSEMENTS:
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● revisions	● date	● amendments
REVISIONS		

● project	PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT
● location	ERF No. 109 YACHT BASIN VICTORIA EMBANKMENT, DURBAN
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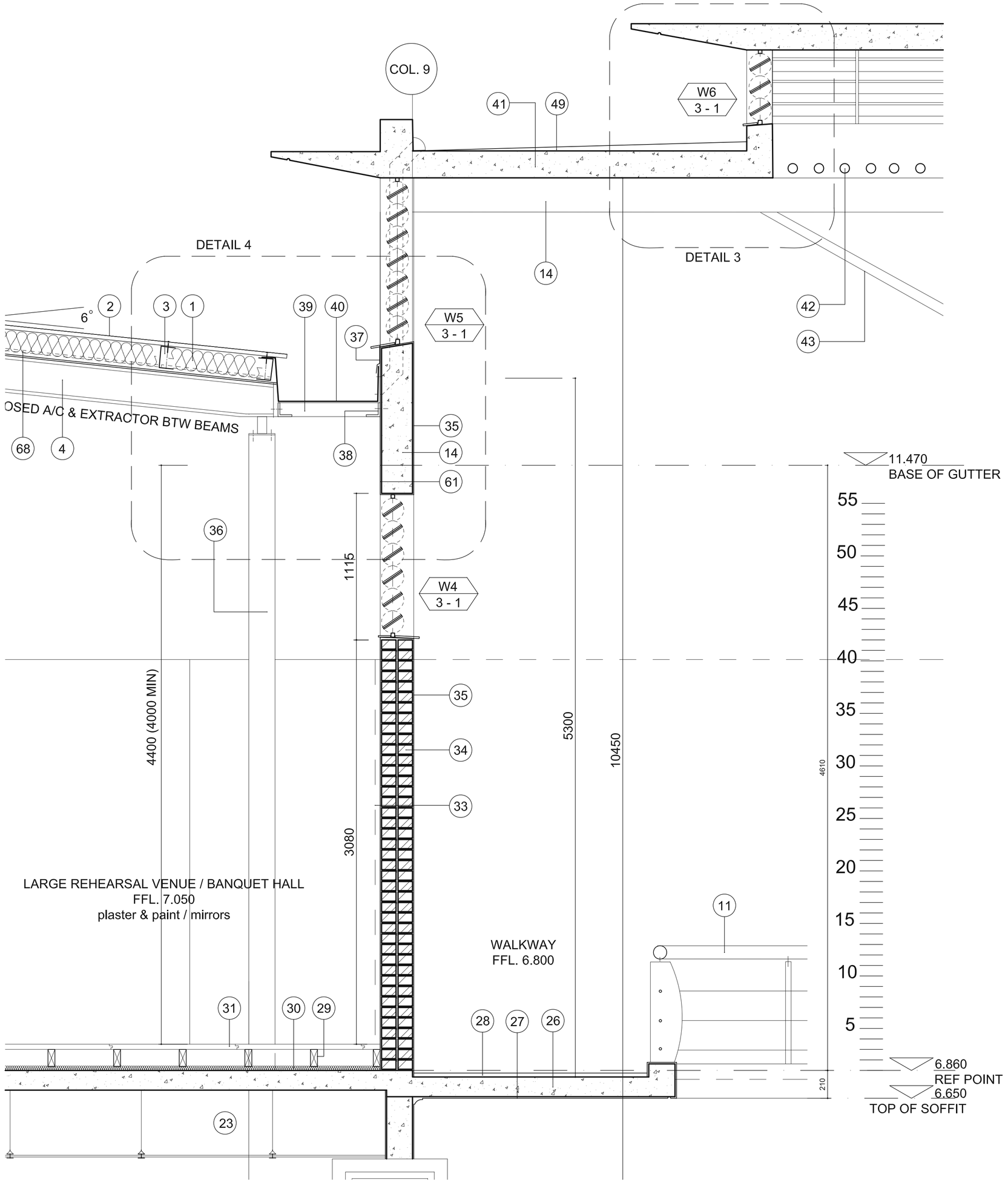
● drawing
SECTION AA

● scale	1:50	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 400		



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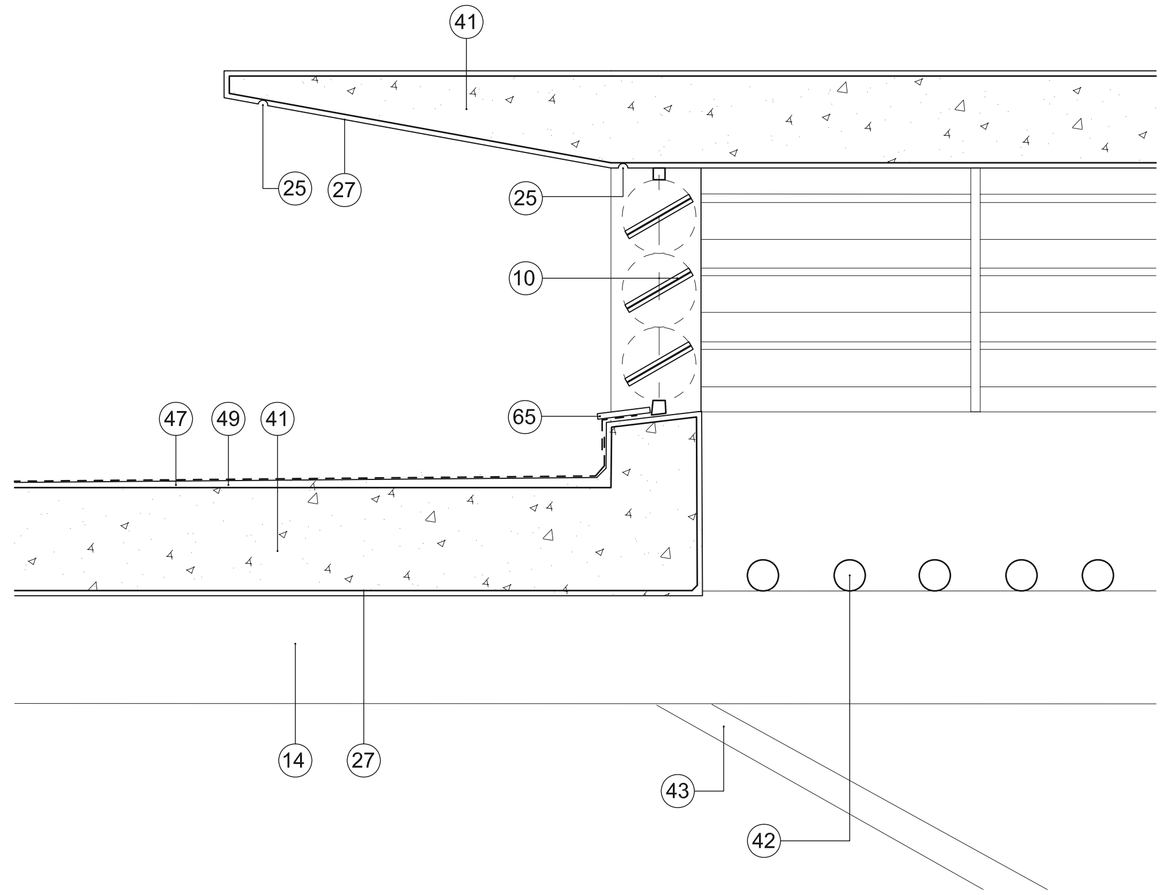
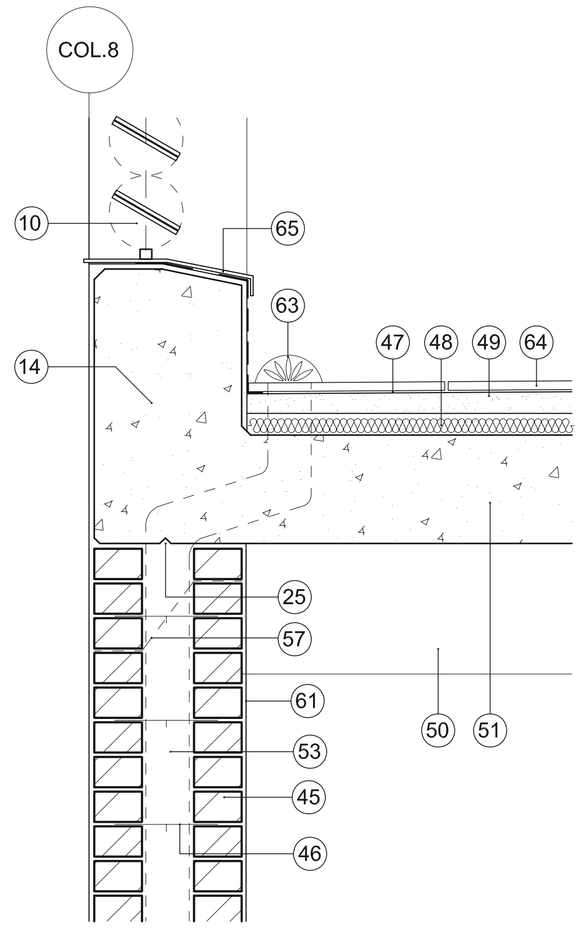


DETAIL 3



DETAIL 5

Notes:
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P.C.LINTOLS MUST BE BUILT ABOVE ALL OPENINGS UNLESS OTHERWISE INDICATED.
WATERPROOFING TO RETAINING WALLS TO ENGINEERS DETAIL.
ENGINEER TO DETAIL AND SUPERVISE ALL STRUCTURAL WORK.
ALL CONCRETE SURFACE BEDS TO HAVE 375mic DAMP PROOF MEMBRANES.
ALL WALLS TO HAVE 350mic DAMP PROOF COURSE AT SLAB LEVEL AND ALL EXT. WALLS TO HAVE STEPPED DPC.
FOUNDATIONS WALLS TO HAVE BRICK FORCE EVERY 3rd COURSE AND ALL WALLS EVERY 4th COURSE.

ENDORSEMENTS:
1. STRUCTURAL WORK TO PROFESSIONAL ENGINEERS DETAIL
2. ALL GLAZING TO COMPLY WITH PART N OF THE NBR

● revisions	● date	● amendments
REVISIONS		

● project	PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT
● location	ERF No. 109 YACHT BASIN VICTORIA EMBANKMENT, DURBAN
● client	FANTASTIC FLYING FISH DANCE COMPANY

1. 50mm ISOBOARD INSULATION FITTED BETWEEN PURLINS WITH STRAINING WIRES FOR SUPPORT.
2. KLIP-LOK 406 ALUMINIUM PROFILE ROLLED ROOF SHEETING IN CONTINUOUS LENGTHS, FORMED WITH 0.7mm ALUMINIUM MILL FINISH, FIXED TO PURLINS WITH KL65 CLIPS AS PER MNFR'S SPECIFICATION. ALL EXPOSED UNDERSIDES OF THE ROOF SHEETING TO BE PAINTED WITH BITUMOUS ALUMINIUM PAINT PRIOR TO INSTALLATION.
3. 150 x 75 x 20 x 2.5 GMS LIP CHANNEL PURLIN FIXED TO S/S RAFTER AT APPROPRIATE CENTERS ACCORDING TO ENGINEERS DETAIL.
4. 300 x 150 x 25 UNIVERSAL RAFTER, PREDRILLED AS INDICATED TO ENG DETAIL AT 7500mm CNS
5. GLASS REINFORCED PLASTIC RIDGE FLASHING TRIM TO BE FIXED TO PURLINS / CHANNELS
6. ALUMINIUM AEROFOILS BY SPECIALIST - NOTE A PVC INSULATING TAPE TO BE USED TO AVOID ELECTROLITIC CORROSION BETWEEN ALUMINIUM AND GALV. MILD STEEL
7. 400mm DIA REINFORCED CONCRETE COLUMN TO ENGINEERS DETAIL WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL.
8. TIMBER PERGOLA - 144 x 38 TIMBER SECTIONS (PAR) IN 2000mm LENGTHS FIXED TO TIMBER BATTENS TO BE TREATED AND VARNISHED.
9. 65 x 220 TIMBER BATTENS FIXED TO RC COLUMN TO BE TREATED AND VARNISHED.
10. PROPRIETARY ANODISED ALUMINIUM WINDOW SYSTEM REF. TO SCHEDULE.
11. GMS BALUSTRADE 1100mm HIGH - 100mm DIA GMS HW HAND RAIL FIXED TO STANCHIONS WITH 16 DIA ROUND BAR AT 150mm CENTERS - CUSTOM FORMED GMS PLATES AT 1300mm CENTERS TO FURTHER DETAIL WITH STEEL CABLES
12. 100 TO 60mm SCREED TO SLIGHT FALL TO RAINWATER OUTLET WITH FILLETS ON ALL INTERNAL ANGLES.
13. 500 x 230 RC DOWNSTAND BEAM TO ENGINEERS DETAIL
14. RC BEAMS AND CANTILEVERS WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL FOR FILLET AND DRIP POSITIONS REFER TO ENGINEERS DETAIL DRAWINGS.
15. 450 x 450 PRECAST CONCRETE PAVERS.
16. PILES AND PILE CAPS TO ENGINEERS DETAIL.
17. 65 x 225 TIMBER FLOOR BOARDS FIXED TO TIMBER JOISTS TO BE TREATED AND VARNISHED
18. 4mm BITUTHENE WATERPROOFING LAYER LAID ON SCREED AND BENEATH PAVERS
19. COMPACTED FILL IN ACCORDANCE WITH ENGINEERS SPECIFICATION, SOIL POISONED IN ACCORDANCE WITH SANS CODE OF PRACTISE
20. 600 x 600 SLATE TILES ON 60mm SCREED REF. TO FINISHES SCHEDULE.
21. 250 MICRON DPM WITH MINIMUM 200mm SIDE AND END LAPS.
22. 175mm GROUND SLAB TO ENGINEERS DETAIL.
23. 600 x 1200 x 9mm WHITE EMBOSSED VINYL CLAD GYPSUM PLASTERBOARD CEILING ON DONN OR OTHER EQUAL AND APPROVED CONCEALED SUSPENSION SYSTEM INCLUDING WHITE MAIN AND CROSS Ts INCLUDING ALL NECESSARY HANGERS, GRIDS ETC. PERIMETER TRIM TO BE TRULOK SHADOWLINE SECURED TO WALL AT 450mm CENTERS
24. DOORS AS PER SCHEDULE
25. DRIP FORMED WITH EX.38 x 38 SAP SHAPED BRANDER
26. 150mm REINFORCED CONCRETE SLAB WITH UPSTAND BEAM TO ENGINEERS DETAIL
27. 12mm PLASTER APPLIED TO SLAB SOFFIT. SLAB TO BE PREPARED TO PREVENT PLASTER DELAMINATION.
28. 50mm ALLOWANCE FROM T.O.C MADE FOR FLOOR FINISHES, SCREED DEPTH TO VARY IN ACCORDANCE WITH FINISH - REF. TO SCHEDULE
29. 50 x 150 TIMBER JOISTS FIXED TO SPRUNG TIMBER FLOORING AT 500mm CENTERS - SUPPORTED TO MILD STEEL JOIST HANGER AT WALL
30. 2 LAYERS OF THINK PINK SOUND ABSORBING INSULATION LAID BETWEEN SCREED AND TIMBER JOISTS
31. 22 x 96mm PAR T&G STRIP TIMBER FLOORING FIXED TO JOISTS - BUTT JOINTS TO BE STAGGERED
32. 38 x 100mm TIMBER STRUTS FIXED BETWEEN TIMBER JOISTS
33. 1500 x 3000 INDIVIDUAL MIRRORS FIXED TO WALL ACCORDING TO SCEDULE
34. 230mm BRICK EXTERNAL SKIN WALL WITH RAKED POLISHED POINTING, RAKE EVERY 4TH PERP END ABOVE DPC
35. 12mm EXTERNAL CEMENT PLASTER APPLIED TO SIKA LATEX WATERPROOF SLURRY APPLIED TO EXTERNAL BRICK FACE PRIOR TO PLASTERING ALL TO MNFR'S RECOMMENDATION
36. 203 x 203 UNIVERSAL COLUMN, PREDRILLED AND BOLTED TO THE FLOOR SLAB WITH THREADED BAR EMBEDDED INTO CONCRETE SLAB, TO ENGINEERS DETAIL
37. GMS FLASHING BENT TO PROFILE
38. 100 x 100 x 8 GMS CLEATS FIXED TO RC CONC. AND SUPPORTING CHANNELS
39. 100mm ALUMINIUM CHANNELS AT 750mm CENTERS TO FORM BOX GUTTER
40. FIBRE GLASS GUTTER, GIRTH 750mm, FIXED BETWEEN ROOF SHEETING AND END PURLIN
41. 200mm THICK REINFORCED CONCRETE SLAB TO SLIGHT FALL TO ENGINEERS DETAIL
42. PERFORATED TIMBER LATHES (SCREEN) SUPPORTED ON 500mm RC BEAM TO FILTER LIGHT AND AIR FROM CLERESTORY
43. PURPOSE MADE GMS 'TREE' SUPPORT - 95mm DIA HOLLOW STEEL SECTIONS WELDED TO CUSTOM MADE 35mm THICK HOT ROLLED STEEL PLATE AND BOLTED TO 200mm CONC. COLUMN
44. 400mm DIA RC COLUMN, PREDRILLED AND BOLTED TO PILE CAP TO ENGINEERS DETAIL, TO BE PLASTERED, PAINTED AND FIXED WITH CUSTOM MADE TIMBER BENCHES TO FURTHER DETAIL
45. 340mm PLASTER BRICK CAVITY WALL, OUTER FACE OF INNER SKIN TO BE BAGGED AND WATERPROOFED WITH BRIXEAL, TIES, BRICKFORCE AND REINFORCING ABOUT OPENINGS ALL TO TO ENGINEERS DETAIL
46. 200 x 100 BUTTERFLY WALL TIE EVERY 3 COURSES
47. DERBIGUM WATERPROOFING SYSTEM COMPRISING OF: ONE LAYER DERBIGUM SP 4mm THICK APPLIED TO PRIMED SURFACE FULLY SEALED TO CONCRETE SLAB, SIDE WALLS AND PARPETS MIN 75mm SIDE LAPS 100mm END LAPS TO BE SEALED TOGETHER BY TORCHED ON FUSION. TREATMENT TO BE FINISHED WITH TWO (2) COATS OF BITUMOUS ALUMINIUM PAINT. ALL IN ACCORDANCE WITH MNFR'S SPECIFICATION.
48. 50mm ISOBOARD LAID OVER CONCRETE SLAB AND COVERED WITH SCREED
49. 100 TO 60mm SCREED TO FALLS TO 100mm DIA RAINWATER DOWNPIPE OUTLET WITH FILLETS ON ALL INTERNAL ANGLES (1:80 falls)
50. 300mm RC DOWNSTAND BEAM TO ENGINEERS DETAIL
51. 200mm REINFORCED CONCRETE SLAB TO ENGINEERS DETAIL
52. 150mm REINFORCED CONCRETE FLOOR SLAB TO ENG DETAIL, WITH 60mm SCREED AND TILES REFER TO FINISHES SCHEDULE
53. 100mm DIA WHITE RWDP SECURED BETWEEN BRICK SKINS BY EXTENDED HOLDER BATS AT MAX 2.0m CENTERS AND CONNECTED TO MUNICIPAL STORM WATER
54. AGRICULTURAL DRAIN CONSISTING OF A 110mm DIA SLOTTED PVC PIPE WITH 300mm CROSS SECTION STONE SURROUND PROTECTED WITH BIDIM GEOFABRICK, RIVER SAND IN 300mm WIDE TRENCH ABOVE DRAIN
55. GROUND BEAMS AND FOUNDATIONS IN ACCORDANCE TO ENGINEERS DETAIL AND SPECIFICATION
56. 340mm RETAINING WALL WITH TWO (2) SKINS OF BRICKWORK AND REINFORCED CONCRETE TO ENGINEERS DETAIL
57. 375 micron STEPPED DPC AT FLOOR, WINDOW HEAD, AND BELOW FLAT SLAB
58. 12mm EXTERNAL GRADE PLYWOOD CEILING TO BE PREFITTED, THEN FINISHED WITH PLASCON WATERBASED CLEAR VARNISH TO MNFR'S SPECIFICATIONS
59. 6mm THICK HOT ROLLED RECTANGULAR TUBE WELDED TO PLATES AND BOLTED TO RC COLUMN
60. 200mm GMS CHANNELS FIXED BETWEEN FLANGES OF RAFTER TO ENGINEERS DETAIL
61. 12mm INTERNAL CEMENT PLASTER WITH GMS VALMATEX REF B200 PLASTER STOP TO FORM JOINTS AT JUNCTIONS WITH COLUMNS. PRIMED WITH PLASCON UC 56 PRIMER AND FINISHED TWO (2) COATS OF WALL & ALL
62. AIR CONDITIONER / EXTRACTOR UNIT WITHIN DUCT TO SPECIALIST DETAIL
63. FULLBORE OUTLET TO 100mm DIA RWDP
64. 450 x 450mm PRECAST CONC. PAVERS
65. CUSTOM FORMED ALUMINIUM FLASHING ON FULL MORTAR BED AND SECURED BENEATH TILES
66. ALUMINIUM SUB STRUCTURE TO FURTHER DETAIL
67. 20mm THICK FIBRE CEMENT CLOSER FIXED TO 500mm RAFTER
68. 25 x 25mm FURRING CHANNELS SPANNING BETWEEN PURLINS
69. HARDWOOD TIMBER SUB FRAME

Lauren Haiden
University of Kwa-Zulu Natal
School of Architecture, Housing and Planning
Student Number - 203507015

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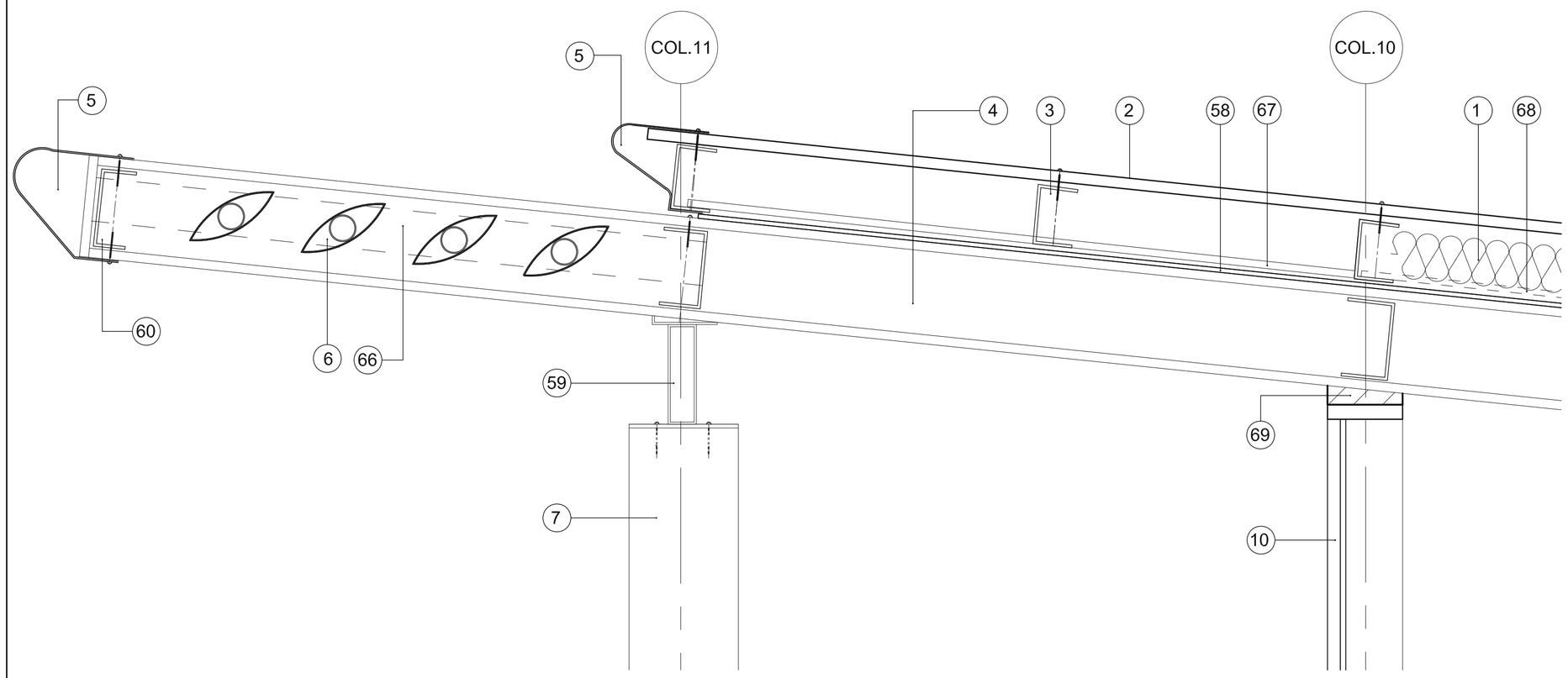
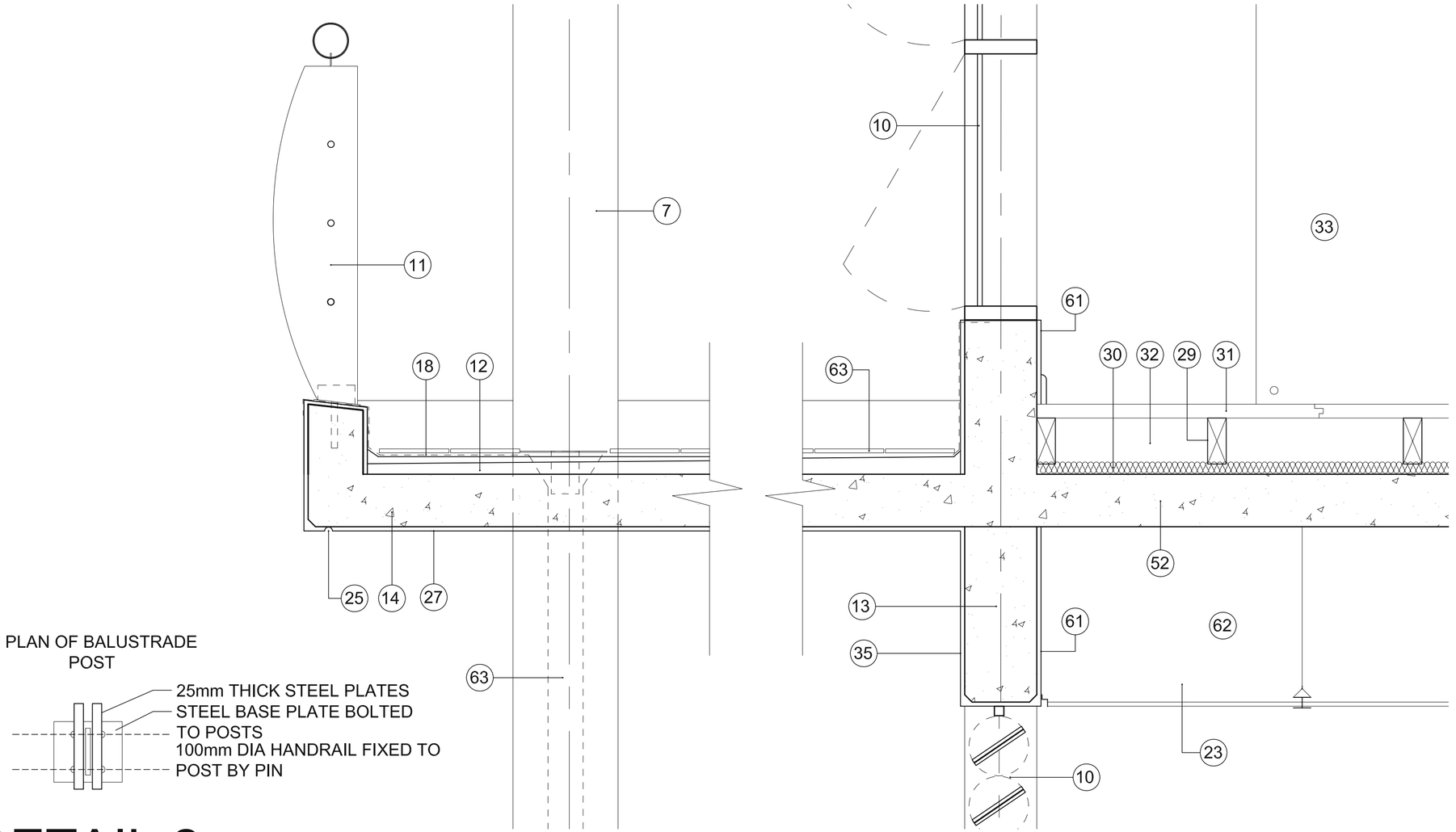
- figured dimensions to be taken in preference to scaled dimensions
- report any discrepancies direct to the architect before commencing work
- this drawing is copyright and remains with the architect

● drawing	STRIP SECTION & DETAILS		
● scale	1:20 / 1:10	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 401		

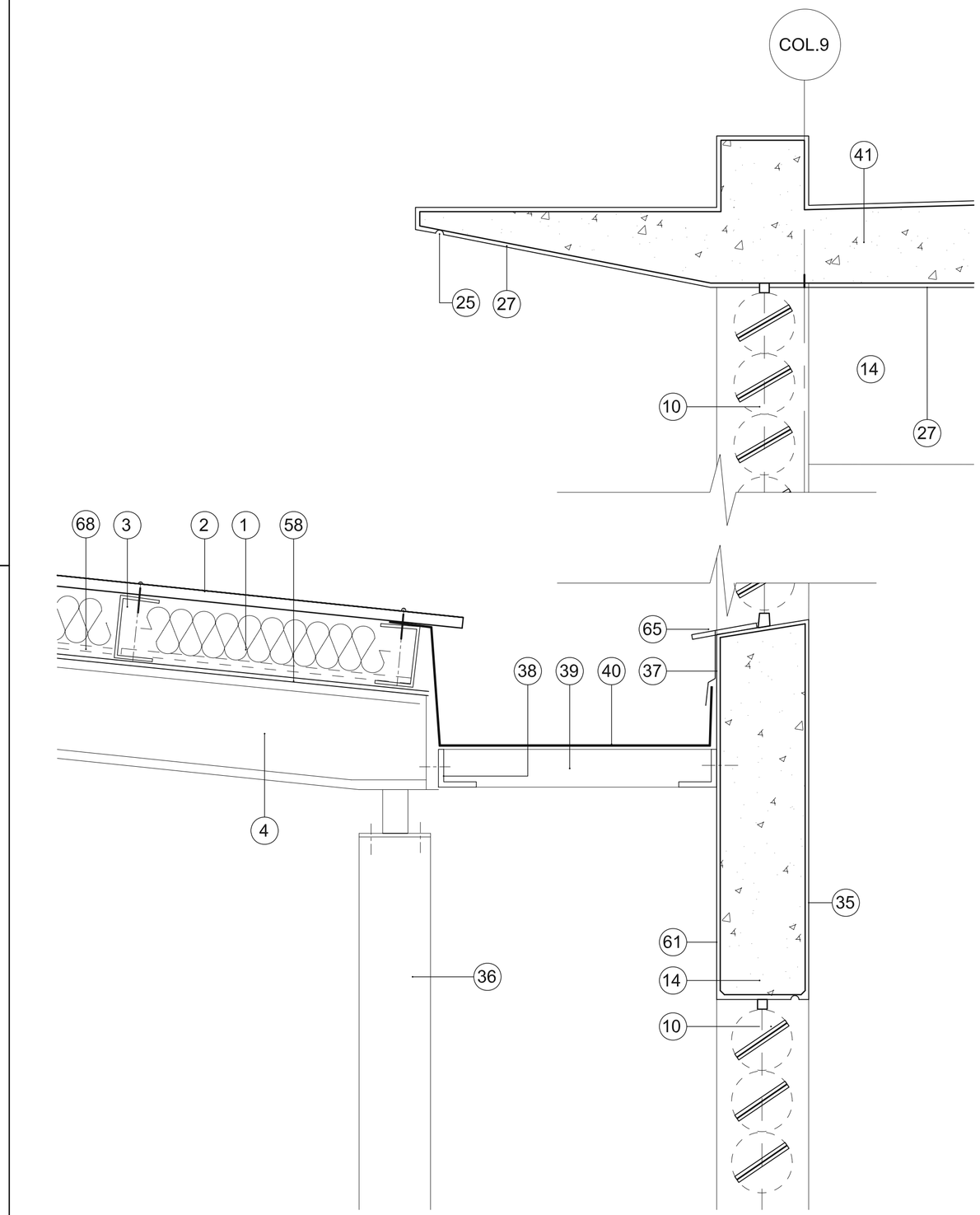


DETAIL 1



PLAN OF BALUSTRADE POST

DETAIL 2



DETAIL 4

1. 50mm ISOBOARD INSULATION FITTED BETWEEN PURLINS WITH STRAINING WIRES FOR SUPPORT.
2. KLIP-LOK 406 ALUMINIUM PROFILE ROLLED ROOF SHEETING IN CONTINUOUS LENGTHS, FORMED WITH O.7mm ALUMINIUM MILL FINISH, FIXED TO PURLINS WITH KL65 CLIPS AS PER MNFR'S SPECIFICATION. ALL EXPOSED UNDERSIDES OF THE ROOF SHEETING TO BE PAINTED WITH BITUMOUS ALUMINIUM PAINT PRIOR TO INSTALLATION.
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14. RC BEAMS AND CANTILEVERS WITH SMOOTH OFF SHUTTER FINISH TO ENGINEERS DETAIL FOR FILLET AND DRIP POSITIONS REFER TO ENGINEERS DETAIL DRAWINGS.
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35. 12mm EXTERNAL CEMENT PLASTER APPLIED TO SIKA LATEX WATERPROOF SLURRY APPLIED TO EXTERNAL BRICK FACE PRIOR TO PLASTERING ALL TO MNFR'S RECOMMENDATION
36. 203 x 203 UNIVERSAL COLUMN, PREDRILLED AND BOLTED TO THE FLOOR SLAB WITH THREADED BAR EMBEDDED INTO CONCRETE SLAB, TO ENGINEERS DETAIL
37. GMS FLASHING BENT TO PROFILE
38. 100 x 100 x 8 GMS CLEATS FIXED TO RC CONC. AND SUPPORTING CHANNELS
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47. DERBIGUM WATERPROOFING SYSTEM COMPRISING OF; ONE LAYER DERBIGUM SP 4mm THICK APPLIED TO PRIMED SURFACE FULLY SEALED TO CONCRETE SLAB, SIDE WALLS AND PARPETS MIN 75mm SIDE LAPS 100mm END LAPS TO BE SEALED TOGETHER BY TORCHED ON FUSION. TREATMENT TO BE FINISHED WITH TWO (2) COATS OF BITUMOUS ALUMINIUM PAINT. ALL IN ACCORDANCE WITH MNFR'S SPECIFICATION.
48. 50mm ISOBOARD LAID OVER CONCRETE SLAB AND COVERED WITH SCREED
49. 100 TO 60mm SCREED TO FALLS TO 100mm DIA RAINWATER DOWNPIPE OUTLET WITH FILLETS ON ALL INTERNAL ANGLES (1:80 falls)
50. 300mm RC DOWNSTAND BEAM TO ENGINEERS DETAIL
51. 200mm REINFORCED CONCRETE SLAB TO ENGINEERS DETAIL
52. 150mm REINFORCED CONCRETE FLOOR SLAB TO ENG DETAIL, WITH 60mm SCREED AND TILES REFER TO FINISHES SCHEDULE
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60. 200mm GMS CHANNELS FIXED BETWEEN FLANGES OF RAFTER TO ENGINEERS DETAIL
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62. AIR CONDITIONER / EXTRACTOR UNIT WITHIN DUCT TO SPECIALIST DETAIL
63. FULLBORE OUTLET TO 100mm DIA RWDP
64. 450 x 450mm PRECAST CONC. PAVERS
65. CUSTOM FORMED ALUMINIUM FLASHING ON FULL MORTAR BED AND SECURED BENEATH TILES
66. ALUMINIUM SUB STRUCTURE TO FURTHER DETAIL
67. 20mm THICK FIBRE CEMENT CLOSER FIXED TO 500mm RAFTER
68. 25 x 25mm FURRING CHANNELS SPANNING BETWEEN PURLINS
69. HARDWOOD TIMBER SUB FRAME

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P.C LINTOLS MUST BE BUILT ABOVE ALL OPENINGS UNLESS OTHERWISE INDICATED.
WATERPROOFING TO RETAINING WALLS TO ENGINEERS DETAIL.
ENGINEER TO DETAIL AND SUPERVISE ALL STRUCTURAL WORK.
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ALL WALLS TO HAVE 350mic DAMP PROOF COURSE AT SLAB LEVEL AND ALL EXT. WALLS TO HAVE STEPPED DPC.
FOUNDATIONS WALLS TO HAVE BRICK FORCE EVERY 3rd COURSE AND ALL WALLS EVERY 4th COURSE.

ENDORSEMENTS:
1. STRUCTURAL WORK TO PROFESSIONAL ENGINEERS DETAIL
2. ALL GLAZING TO COMPLY WITH PART N OF THE NBR

● revisions	● date	● amendments
REVISIONS		

● project	PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT
● location	ERF No. 109 YACHT BASIN VICTORIA EMBANKMENT, DURBAN
● client	FANTASTIC FLYING FISH DANCE COMPANY

Lauren Haiden
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Student Number - 203507015

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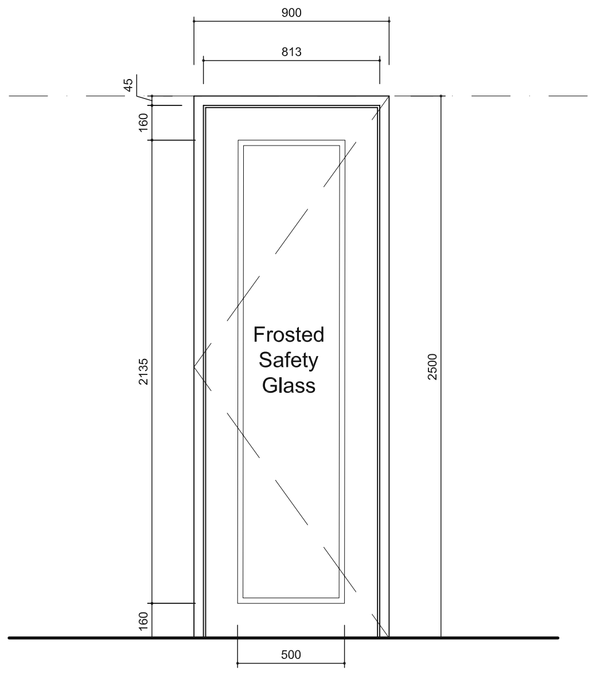
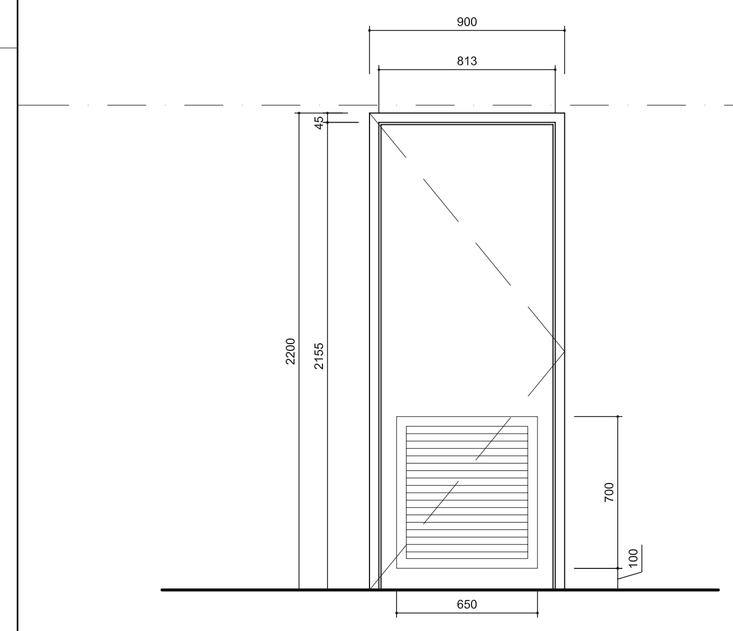
● drawing
DETAILS

● scale	1:10	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 402		



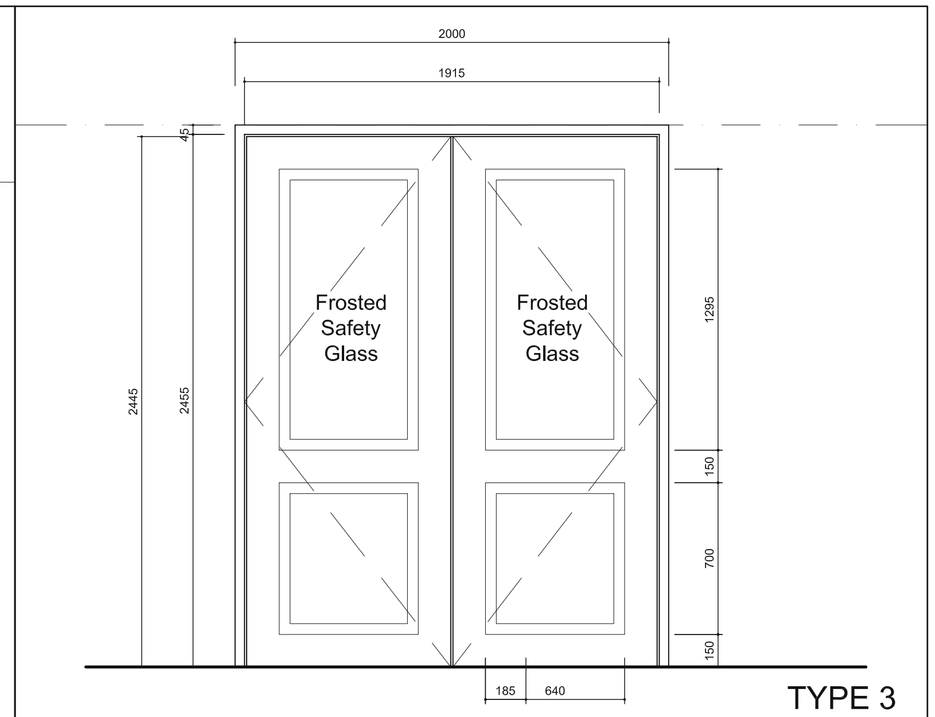
TYPE 1

DOOR LOCATION	D1 2 - 1 and 2 - 2 / D1 3 - 1
NO. REQUIRED	3
DOOR TYPE	Swartland Gold 10 yr guarantee 44mm thick one panel hardwood door with bolection moulds, size 813 x 2155mm high (Code: SD15)
DOOR FRAME	Hardwood timber frame to be varnished, two coats with Plascon water proof interior varnish, to MNFR's specification
IRONMONGERY	UNION mortice lockset comprising of crome ibis handle on rose 65600P -24PL with chrome finish (inc. pair of V14CR-24PL threaded escutcheons), 2 lever upright lock 22311-76PL (Standard) with chrome forend, keyed to differ (Standard)



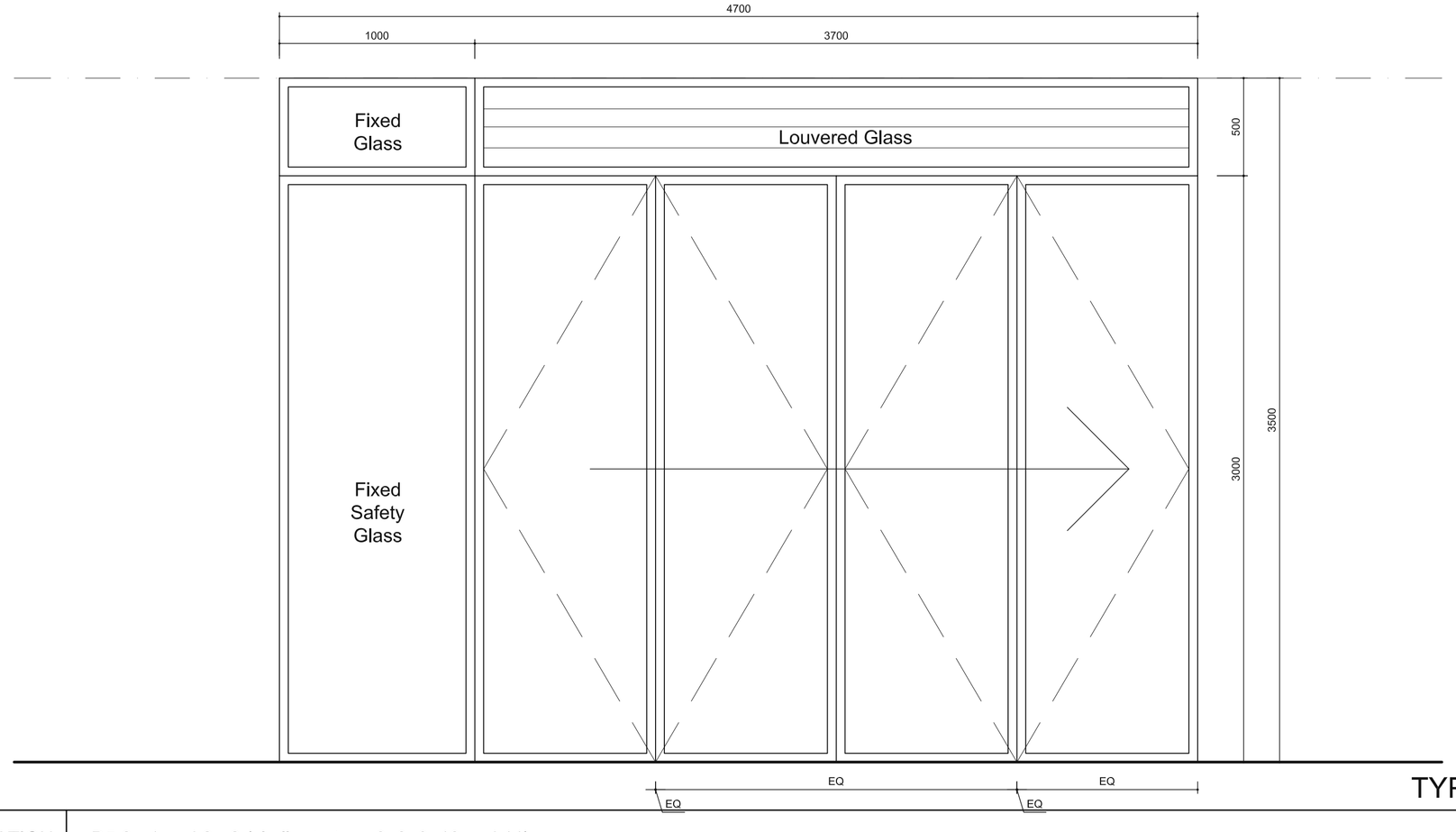
TYPE 2

DOOR LOCATION	D2 2 - 1 to 2 - 3 / D2 3 - 1 to 3 - 4
NO. REQUIRED	7
DOOR TYPE	Swartland Gold 10 yr guarantee 44mm thick one panel hardwood door with bolection moulds, size 813 x 2455mm high (Code: SD15) with 700 x 650 aluminium louvered panel inset, as indicated, white powder coated
DOOR FRAME	Hardwood timber frame to be varnished, two coats with Plascon water proof interior varnish, to MNFR's specification
IRONMONGERY	UNION mortice lockset comprising of crome ibis handle on rose 65600P -24PL with chrome finish (inc. pair of V14CR-24PL threaded escutcheons), 2 lever upright lock 22311-76PL (Standard) with chrome forend, keyed to differ (Standard)



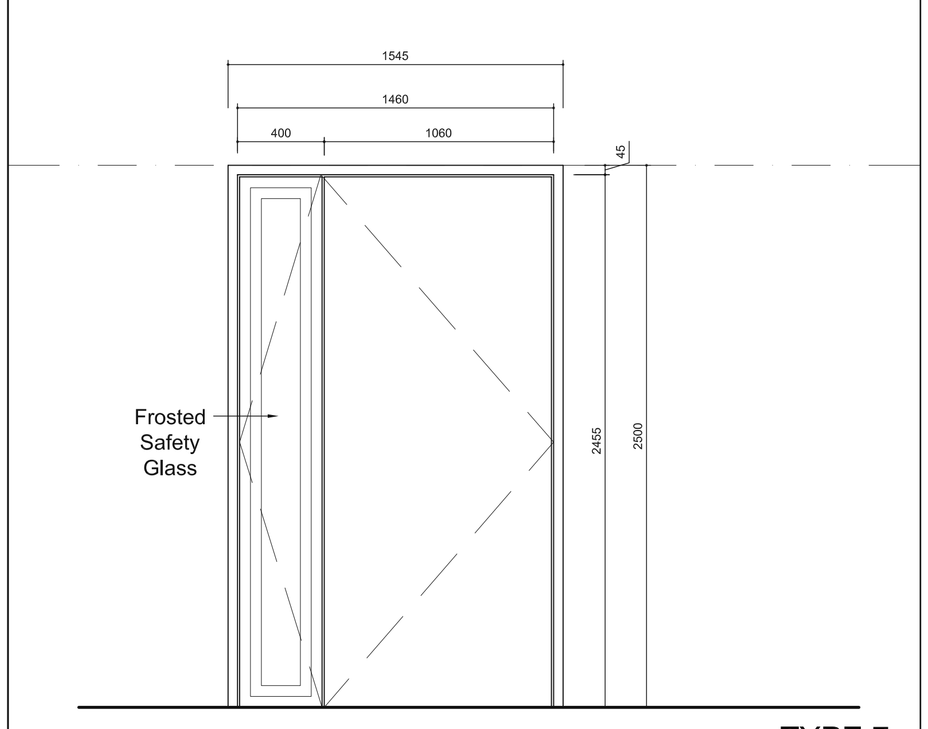
TYPE 3

DOOR LOCATION	D3 2 - 1 (similar to type 4)
NO. REQUIRED	1
DOOR TYPE	Swartland Gold 10 yr guarantee 44mm thick one panel hardwood door with bolection moulds, size 1915 x 2455mm high (Code: SD15) with safety glass as indicated
DOOR FRAME	Hardwood timber frame to be varnished, two coats with Plascon water proof interior varnish, to MNFR's specification
IRONMONGERY	UNION mortice lockset comprising of crome ibis handle on rose 65600P -24PL with chrome finish (inc. pair of V14CR-24PL threaded escutcheons), 2 lever upright lock 22311-76PL (Standard) with chrome forend, keyed to differ (Standard)



TYPE 5

DOOR LOCATION	D5 2 - 1 and 2 - 2 (similar to type 6, 8, 9, 10 and 11)
NO. REQUIRED	2
DOOR TYPE	Purpose made aluminium folding sliding doors, 3000 x 3700mm with 3000 x 1000mm fixed safety glass pane. To include fitted cylinder locks, securing bolts and Hilaldum 866 sliding system, white powder coated
DOOR FRAME	Purpose made aluminium door frame, 4700 x 3500mm overall dimensions, white powder coated
IRONMONGERY	FOLDASLIDE 866 with rebate for draught seal 506B chrome flush handles, 455 roller catch. 452 holdback catch 970 deadbolt lock, 100 x 75mm chrome plated hinges



TYPE 7

DOOR LOCATION	D7 3 - 1 to 3 - 6
NO. REQUIRED	6
DOOR TYPE	Swartland Gold 10 yr guarantee 44mm thick one panel hardwood door with bolection moulds, size 1060 x 2455mm high (Code: SD15) and side leaf 400 x 2455mm with safety glass as indicated
DOOR FRAME	Hardwood timber frame to be varnished, two coats with Plascon water proof interior varnish, to MNFR's specification
IRONMONGERY	UNION mortice lockset comprising of crome ibis handle on rose 65600P -24PL with chrome finish (inc. pair of V14CR-24PL threaded escutcheons), 2 lever upright lock 22311-76PL (Standard) with chrome forend, keyed to differ (Standard)

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ALL UNITS TO BE DELIVERED TO SITE, TAPED AND WRAPPED

ENDORSEMENTS:
1. GLAZING - to conform with Part N, SABS 0400, 0137, 1263 and AAAMSA selection guide for safety glazing materials. A 5 year warranty is to be provided against delamination and colour degradation of all laminated safety glass. Safety glazing to be permanently marked.
2. FINISH - All powder coating to be by AAAMSA approved applicators and in accordance with SABS 1796. Minimum 10 year guarantee.
3. All fixings to be stainless steel or aluminium where stipulated

● revisions	● date	● amendments
REVISIONS		

● project	PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT
● location	ERF No. 109 YACHT BASIN VICTORIA EMBANKMENT, DURBAN
● client	FANTASTIC FLYING FISH DANCE COMPANY

Lauren Haiden
University of Kwa-Zulu Natal
School of Architecture, Housing and Planning
Student Number - 203507015

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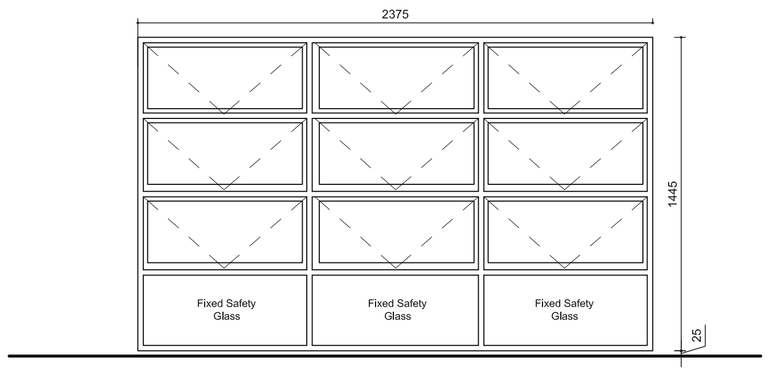
● drawing
DOOR SCHEDULE

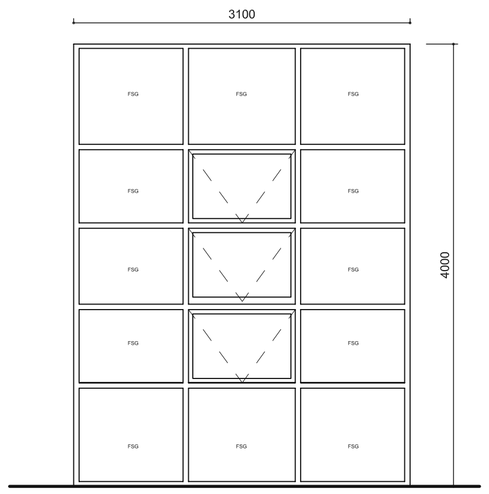
● scale	1:20	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 600		



NTS (refer to dims)

TYPE 1

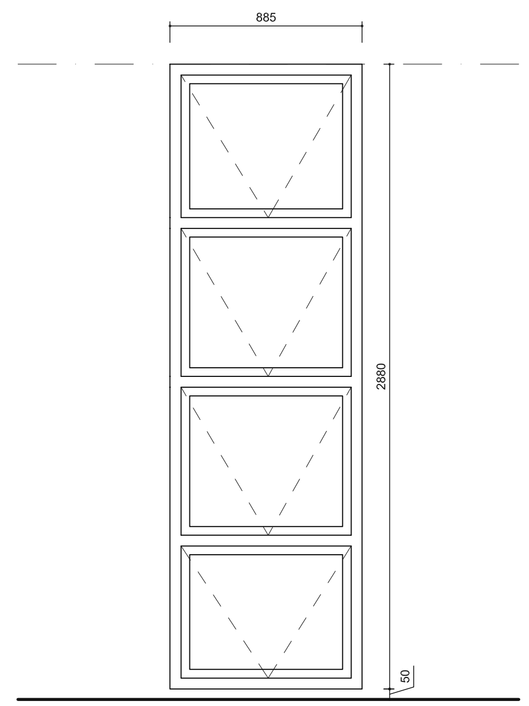
LOCATION	W1 3 - 1 to 3 - 3
NO. REQUIRED	3
WINDOW and FRAME	2375 x 1445mm aluminium hinged casement window with fixed bottom panels as indicated above
GLAZING	Safety glazing, minimum 6,5mm certified - refer to general notes
IRONMONGERY	To be provided by manufacturer, aluminium handles and stays
FINISH	White powder coated



NTS (refer to dims)

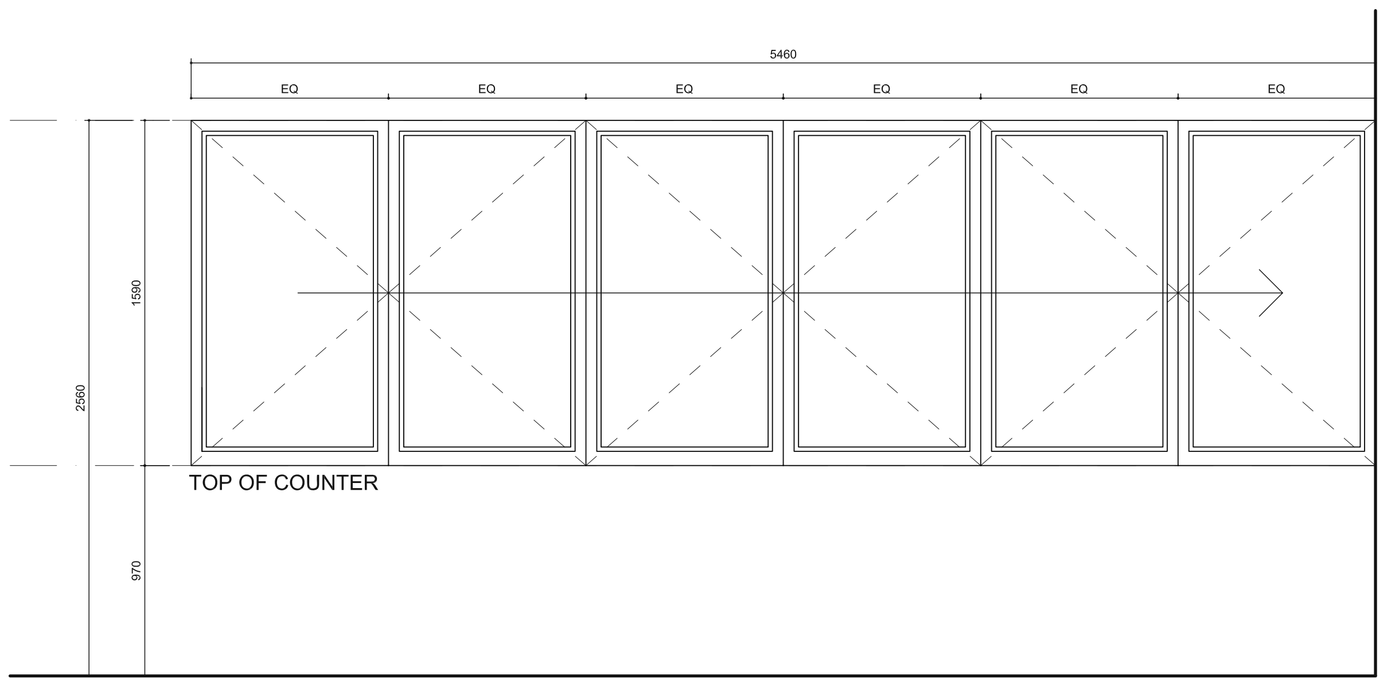
TYPE 2

LOCATION	W2 3 - 1 and 3 - 2
NO. REQUIRED	2
WINDOW and FRAME	3100 x 4000mm aluminium hinged casement window with fixed bottom, side and top panels as indicated above
GLAZING	Safety glazing, minimum 6,5mm certified - refer to general notes
IRONMONGERY	To be provided by manufacturer, aluminium handles and stays
FINISH	White powder coated



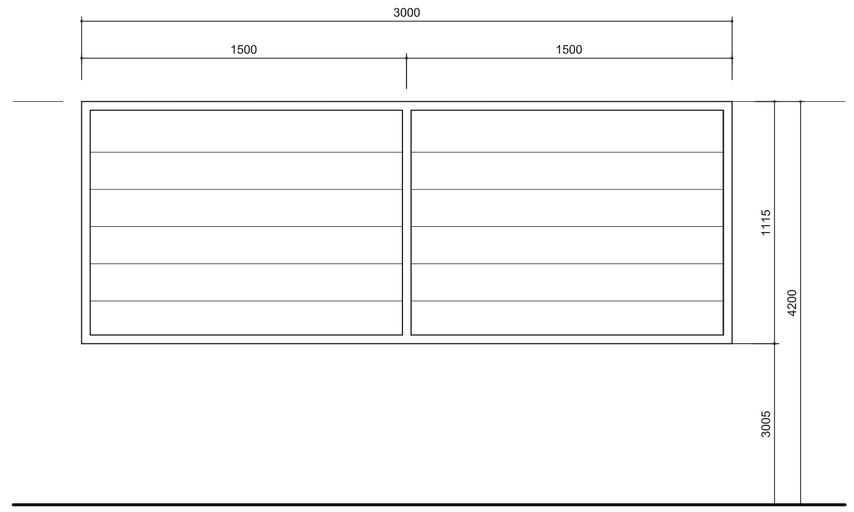
TYPE 3

LOCATION	W3 3 - 1 to 3 - 4
NO. REQUIRED	4
WINDOW and FRAME	2880 x 885mm aluminium hinged casement window
GLAZING	Safety glazing, minimum 6,5mm certified - refer to general notes
IRONMONGERY	To be provided by manufacturer, aluminium handles and stays
FINISH	White powder coated



TYPE 12

DOOR LOCATION	D12 2 - 1
NO. REQUIRED	1
DOOR TYPE	Purpose made aluminium folding sliding doors, 5460 x 1590mm - To include fitted cylinder locks, securing bolts and Hilaldum 866 sliding system, white powder coated
DOOR FRAME	Purpose made aluminium door frame, white powder coated
IRONMONGERY	FOLDASLIDE 866 with rebate for draught seal 506B chrome flush handles, 455 roller catch. 452 holdback catch 970 deadbolt lock, 100 x 75mm chrome plated hinges



TYPE 4

LOCATION	W4 3 - 1 to 3 - 6 (similar to type 5 and 6)
NO. REQUIRED	6
WINDOW and FRAME	3000 x 1115mm louvered aluminium window
GLAZING	Minimum 6mm certified - refer to general notes
IRONMONGERY	To be provided by manufacturer, aluminium handles and stays
FINISH	White powder coated

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ENDORSEMENTS:
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2. FINISH - All powder coating to be by AAAMSA approved applicators and in accordance with SABS 1796. Minimum 10 year guarantee
3. All fixings to be stainless steel or aluminium where stipulated

revisions	date	amendments

REVISIONS

● project: PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT

● location: ERF No. 109 YACHT BASIN VICTORIA EMBANKMENT, DURBAN

● client: FANTASTIC FLYING FISH DANCE COMPANY

Lauren Haiden
University of Kwa-Zulu Natal
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Student Number - 203507015

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● drawing: WINDOW / DOOR SCHEDULE

● scale	1:20	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 601		

ROOM NAMES	FLOOR										SKIRTING	WALLS		CEILING			CORNICE
	Min 25mm thick screed - 2:1 river sand / cement mix and wood float finish	150 x 150 x 5mm Slate Tiles to architects specification	300 x 300 x 5mm Slate Tiles to architects specification	600 x600 x 5mm Slate Tiles to architects specification	30 x 30 x 5mm Mosaic Tile (border) to architects specification	Polished concrete finish	300 x 300 x 5mm Ceramic Tiles to architects specification	Carpet to architects specification	Laminated timber flooring by specialist	Sprung Timber Flooring by specialist	Hardwood timber skirting, size 22 x 94mm, ref no. WSK 2 in solid hardwood, plugged and countersunk screwed and pellated to walls	1 sealer coat and 1 universal undercoat and 2 coats of paint - colour by architect	30 x 30 x 5mm Mosaic Tiles to architects specification	Skimmed plastered to underside of conc roof/slab and two coats of paint - colour by architect	Gypsum plasterboard suspended ceiling with Trulock shadow line cornice detail	12mm Plywood ceiling between rafters	75mm rhino gypsum plasterboard coved cornice - paint colour to be specified by architect
CONSESSION BAR	●						●				●		●		●		
STORE ROOM	●						●				●	●		●			
INTERIOR GARDEN COURTARD	●					●						●					
BAR OF RESTAURANT 2	●	●	●										●		●		
BAR STORE	●		●									●		●			
SUNKEN PORTION OF RESTAURANT	●			●							●	●			●		
WIND LOBBY	●			●	●						●	●				●	●
RESTAURANT 1	●		●								●	●			●		
INDIVIDUAL REHEARSAL / PRACTISE ROOMS	●							●			●	●				●	●
PERFORMERS WAITING AREA	●								●		●	●		●			
LARGE REHEARSAL VENUE / BANQUET HALL	●									●	●	●				●	●
WALKWAY	●								●		●	●					

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● revisions	● date	● amendments
REVISIONS		

● project: PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT

● location: ERF No. 109
YACHT BASIN
VICTORIA EMBANKMENT, DURBAN

● client: FANTASTIC FLYING FISH DANCE COMPANY

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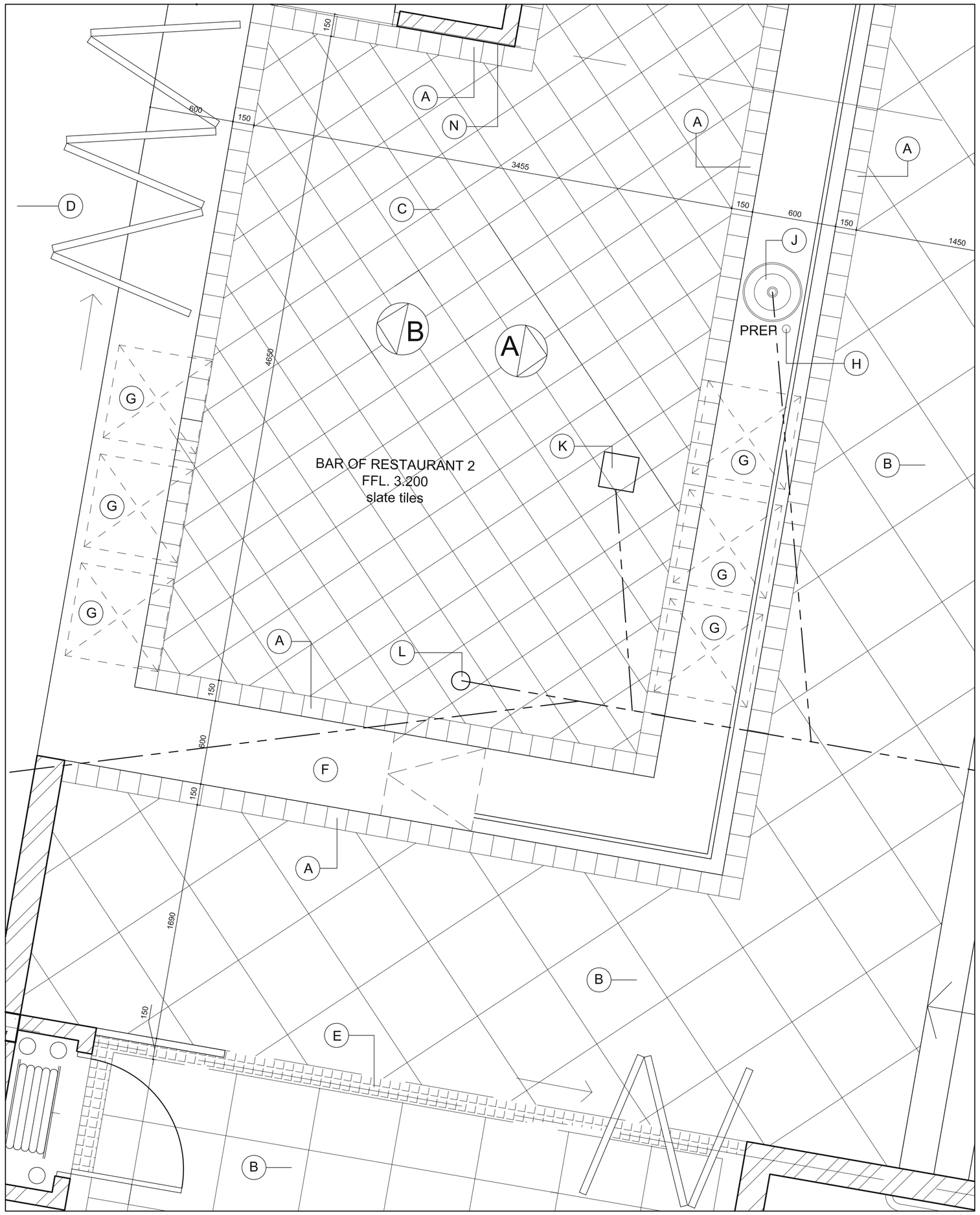
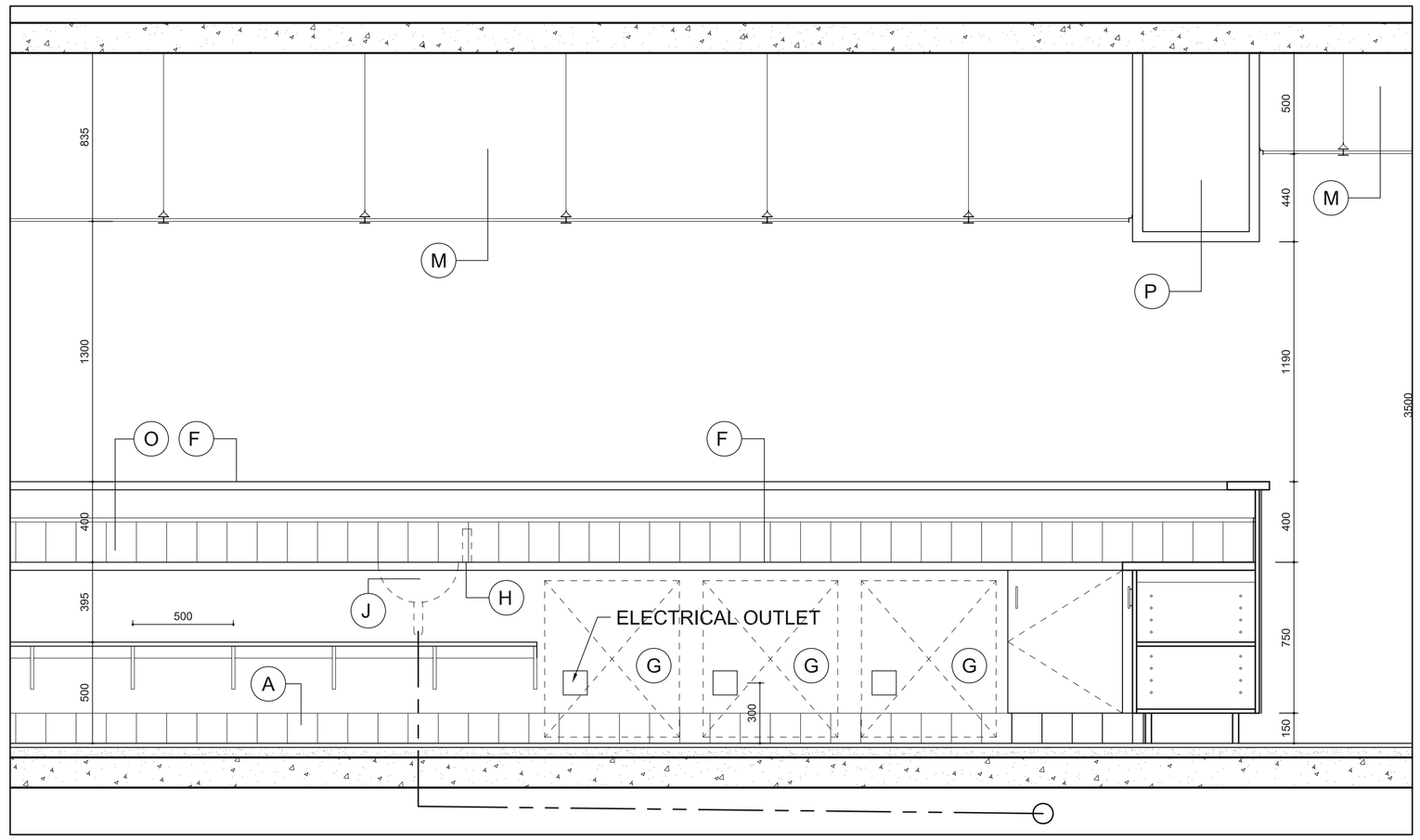
● drawing: FINISHES SCHEDULE

● scale	-	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 602		

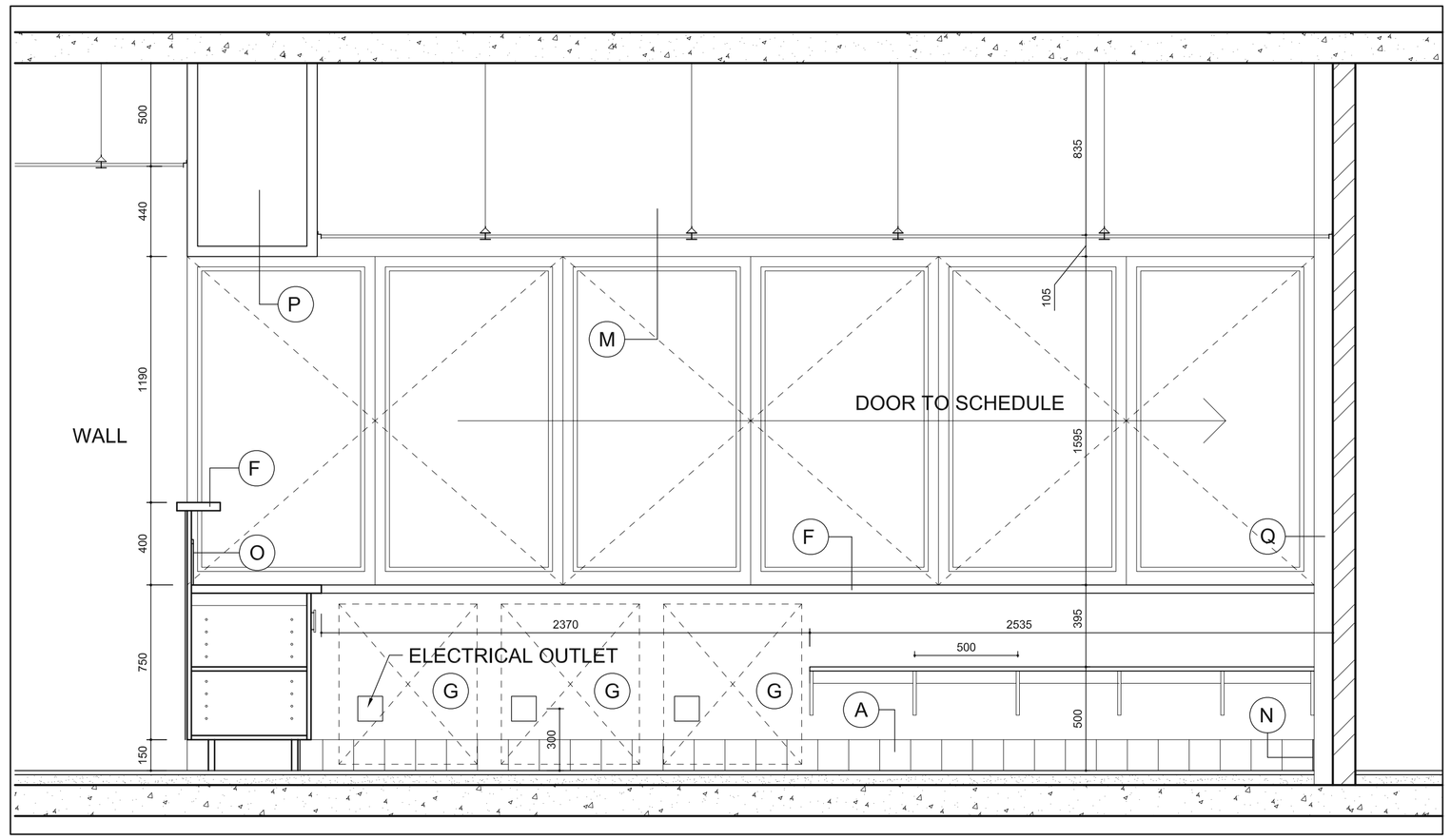


BAR PLAN 1:20 (tiling layout)

A. 150 x 150mm SLATE TILE BORDER ON FLOOR AND BENEATH COUNTER
B. 600 x 600mm SLATE TILE FLOOR INFILL AT 45°TO BORDER
C. 300 X 300mm SLATE TILE FLOOR INFILL AT 45°TO BORDER
D. POLISHED CONCRETE FLOOR
E. 30 x 30mm MOSAIC TILE WITHIN 150mm WIDTH BORDER
F. 40mm GRANITE COUNTER TOP FIXED ONTO S/S BRACKETS
G. UNDER COUNTER BAR FRIDGE BY SPECIALIST
H. COBRA GALA MIXER TAP
J. 430mm KWIKOT Classique PREP BOWL (SPB-STD)INSTALLED TO MNFR's SPEC
K. STAINLESS STEEL FLOOR DRAIN TO MNFR's SPEC
L. 100mm DIA RODDING EYE
M. SUSPENDED CEILING WITH TRULOK SHADOWLINE CORNICE
N. 150 x 150mm SLATE TILE SKIRTING WITH EDGE BEADING
O. 200 x 200mm SLATE TILE SPLASHBACK WITH EDGE BEADING
P. RHINO PLASTERBOARD BULKHEAD TO FURTHER DETAIL
Q. 300 x 300mm RC COLUMN BEYOND



ELEVATION A 1:20



ELEVATION B 1:20

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P.C LINTOLS MUST BE BUILT ABOVE ALL OPENINGS UNLESS OTHERWISE INDICATED.
WATERPROOFING TO RETAINING WALLS TO ENGINEERS DETAIL.
ENGINEER TO DETAIL AND SUPERVISE ALL STRUCTURAL WORK.
ALL CONCRETE SURFACE BEDS TO HAVE 375mic DAMP PROOF MEMBRANES.
ALL WALLS TO HAVE 350mic DAMP PROOF COURSE AT SLAB LEVEL AND ALL EXT. WALLS TO HAVE STEPPED DPC.
FOUNDATIONS WALLS TO HAVE BRICK FORCE EVERY 3rd COURSE AND ALL WALLS EVERY 4th COURSE.

● revisions	● date	● amendments
REVISIONS		

● project	PROPOSED NEW PERFORMING ARTS CENTER FOR DURBAN'S EMBANKMENT
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● drawing
BAR LAYOUT

● scale	1:20	● date	2008.10.29
● drawn by	LH	● checked by	DB
● project no.	2008/01	● revision	0
● dwg no.	W 700		