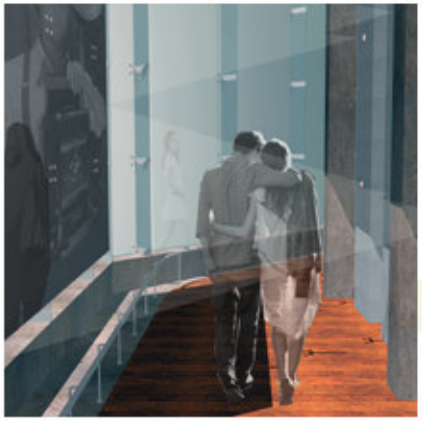
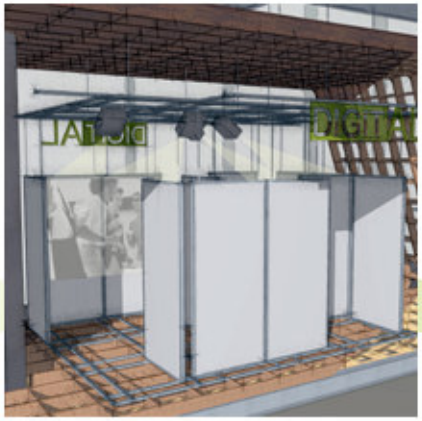
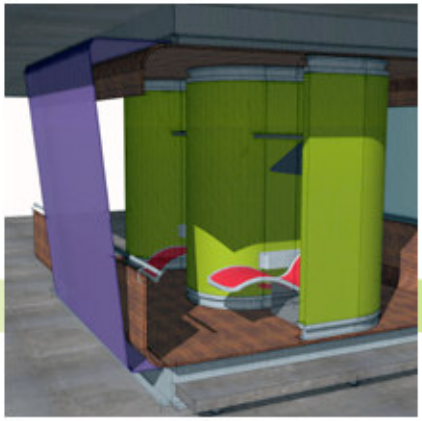






RE-INTERPRETATION OF THE CINEMA

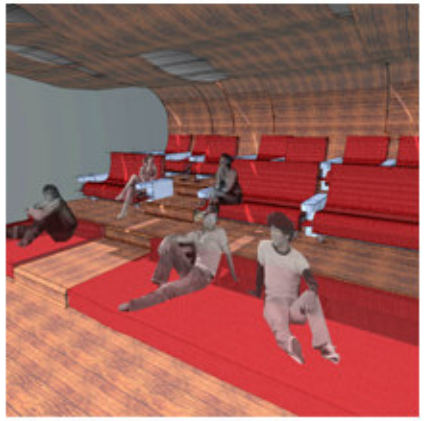
designing a new sensory experience

by Stephanie van Dyk

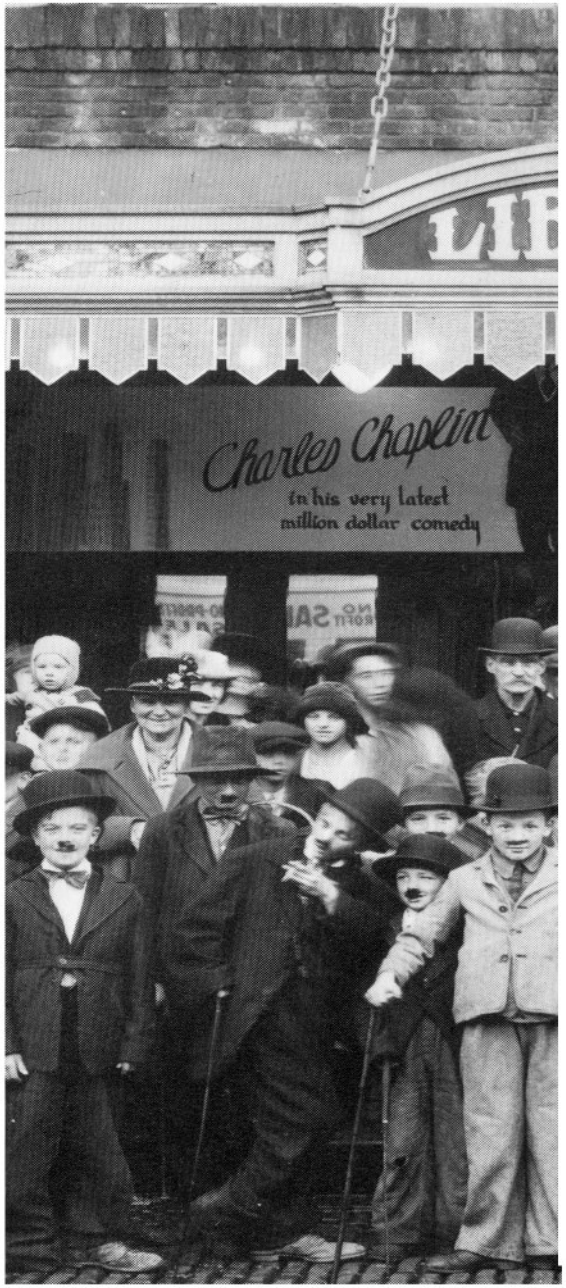
Mentor: Nico Botes

Study leader: Barbara Jekot

November 2005



SUBMITTED IN FULFILLMENT OF PART OF THE REQUIREMENTS FOR THE DEGREE OF MAGISTER IN INTERIOR ARCHITECTURE (PROFESSIONAL) IN THE FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY, UNIVERSITY OF PRETORIA,



"Why are there so few decent cinemas? If you walked down the street and every restaurant was a McDonald's you'd be frustrated. When you go out you want to decide if you want to eat Italian or Chinese or Indian. Sometimes you want to grab a sandwich, or a burger; sometimes you want to spend the whole evening over a meal. It would be bizarre if every evening you went out you had to go to the same identikit burger bar serving bland mass produced food where you sit on bright coloured plastic chairs under neon lights with muzak playing in the background. Yet nine times out of ten people go to the cinematic equivalent"(Baker *et al* 2002: 3)

Michael Winterbottom, film director, stated (in Baker *et al* 2002: 4) that as a cinema-goer he wants to have the widest choice of films to view: whether they are from America, Europe, Hong Kong, India, China or even Britain so long as he can see them in a cinema which is designed for them. According to Winterbottom, this is a cinema that is sophisticated and friendly, a cinema with good quality projection and sound, which has enough screens to give him a choice of films and which is near the bars or restaurants he might want to visit to afterwards. (Baker *et al* 2002: 4)

According to Baker (2002:6), the quality of a particular cinema makes a dramatic difference to the number of people who attend. Old, uncomfortable and unsophisticated cinemas cannot compete with the standards set by modern leisure facilities, and potential audiences respond accordingly. It has been proved through research, and the evidence of the cinema industry in general, that cinemagoers want new release films, value for money and choice.

“The standard of cinema buildings, the comfort levels and the quality of technical presentation are all rising rapidly. Unobstructed viewing, large screens, multi-channel sound systems, and comfortable seats with generous legroom are considered to be basic requirements by many modern cinemagoers.” (Baker et al 2002: 6)

Differentiation and choice are the keys to attract audiences to the cinema and this is the primary idea behind this dissertation. The objective is to enhance the experience of the viewers whether they attend the cinema centre as a group or as an individual by giving them the leisure of choice. Choice includes which movie to see and choice

Fig 1 Belgain poster (c. 1930)

Fig 2. Poster for ‘The man with a movie camera’

in the sound and visual quality. The viewer should at all times feel comfortable in the surrounding environment. By giving the viewer attractive choices these comfortable environments can be achieved. Emphasis is placed on incorporation of the old idea of cinema as a black box with new innovative ideas of cinema viewing.

1.2 THE HISTORY OF THE CINEMA THEATRE

“The origins of the movies lie within the collective genius of inventors working during the late nineteenth century.”(David Naylor 1981:13) Films were by no means the first answer to the desire to see the moving image. It was preceded in the late eighteenth and nineteenth centuries by an overabundance of techniques and machines capable of reproducing and projecting images to an excited audience.

From 1830 to 1900 cinema evolved from a Zoetrope - a drum with images of the various stages of an object that once spun, which enabled you to see the images in motion - to the series photography of Eadweard Muybridge (1830 – 1904). Next was the Chronophotographic gun of Etienne-Jules Marey (1830 – 1904) – a single camera capable of taking consecutive pictures of live action. Marey also designed a paper film roll. Tomas Alva Edison (1847 – 1931) was next with his company’s Kinetograph, a camera that was able to capture movement by allowing for more extensive sequences. (Fig 3) During the same time, Oskar Messter (1866 – 1943) designed a movie projector, providing a steady motion of the film roll. In France, the brothers Auguste and Louis Lumière (1862 – 1954, 1864 – 1948) invented the Cinematographe, a device that combined the functions of a movie camera, film printer and film projector. (Jarek Kupsc 1998: 1-3)

“On December 28, 1895, the Lumières opened the first movie theatre in history, showing several short films to a paying audience.” (Jarek Kupsc 1998:3)

According to Heathcote (2000:9), cinemas, every bit as much as films, are the physical embodiment of their eras. “The movie palaces of the United States in the 1900’s and the 1910s were the offsprings of a long and distinguished collection of buildings, dating back as far as the ancient Greek amphitheatres and through the formal stages of the seventeenth century. Baroque palaces, Mediterranean palazzos, Gothic Cathedrals and temples of the Far East served to inspire the designers of the grandest movie theatres. The buildings with the most direct bearings on shaping the movie palaces were the opera houses and music halls of the late nineteenth century.” (Naylor, 1981: 17) At the same time, the outbreak of the First World War in 1914 halted the development of the European cinema.

“The palaces’ nearest relative in time were the nickelodeons and the vaudeville

houses built just after the turn of the century. (Fig 4) Art Nouveau was then in vogue in America as evidenced by much of the theatre design of that period. Art Nouveau flourishes were visible in the façades of many nickelodeons that were small family-operated businesses, located in simple storefronts." (Naylor 1981: 24)

The 1920's gave way for a new idea of exoticism – auditoria of gold and velvet in the outrageously elaborate cinemas – palaces that made the audience feel that they too could temporarily immerse themselves in the dream of luxury. "This kind of extravagant, exotic auditorium became one of the fastest growing genres and was the first move away from European historicist styles." (Heathcote 2000: 15) The interior of the cinema was seen as a place of escape and fantasy. (Fig 5) It created a world in which one could forget one's reality and create a new reality. The architecture of these cinemas manifested the same idea of providing a fantasy world. "These dreamlike temple interiors were both absurd and striking, precursors to the childish awe, which theme parks attempt to instil by taking visitors around the world in a brief, self-contained visit." (Heathcote 2000:17)

Whether simply for economic reasons, for practical and acoustic reasons or for reasons of fashion, the 1930's saw the last gasp of the exotic theatres as Art Deco and Moderne gradually became indispensable. "It was in these years that the Art Deco, Modernism, Expressionism and all kinds of theatrical historicist applied styles coexisted for a brief period." (Heathcote 2000: 19) The greatest boom in cinema building more or less coincided with the lifespan of Art Deco – it became the first and only universally recognised building style for cinemas. One of the main reasons that proved so popular with cinema architects was its simplicity. Art Deco is merely a decorative style. "Cinema architects began to shift slightly from the conventional theatrical model of auditorium and the 1930's saw plans of cinemas developing into a shape derived from projection and sightlines of screens rather than stage."(Heathcote 2000:24)

During the 1930's Modernism began to take a firmer grip on the architectural avant-garde but, by and large, cinema owners and builders remained wary of the functionalist roots of Modernism. (Heathcote 2000:29) (Fig 6)

In the late 1940's and 50's after the Second World War, economic and cultural austerity deepened and cinema attendance began to fall away dramatically, with inevitable consequences for the building stock. During these modernistic times, few new cinemas were built. It was the start of the anti-building cinema – the drive-in. The drive-in was the perfect manifestation of a non-architecture of the mid twentieth century cinema design. During the 50's and 60's, the television gradually replaced cinema as the most popular form of mass entertainment. Other factors that also contributed to the decrease in cinemas, was the growth of alternative leisure pursuits, low standards of comfort and services in existing cinemas. (Heathcote 2000: 43)

The multiplexes and megaplexes that emerged in the 1970's and which dominated the new cinema building boom in the 1980's reduced the architectural element to the design of a garish, stick-on façade and lobby. The multiplexes have tended to be the most basic sheds, built by developers with minimum input from architects and then fitted out by the film chain. In this way the architecture was limited to the

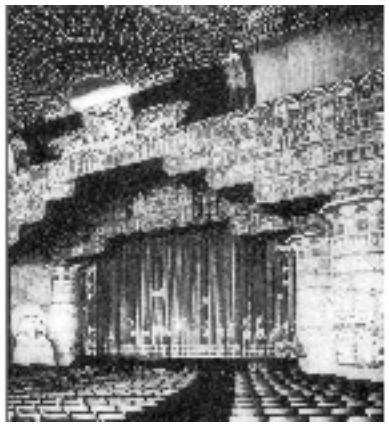
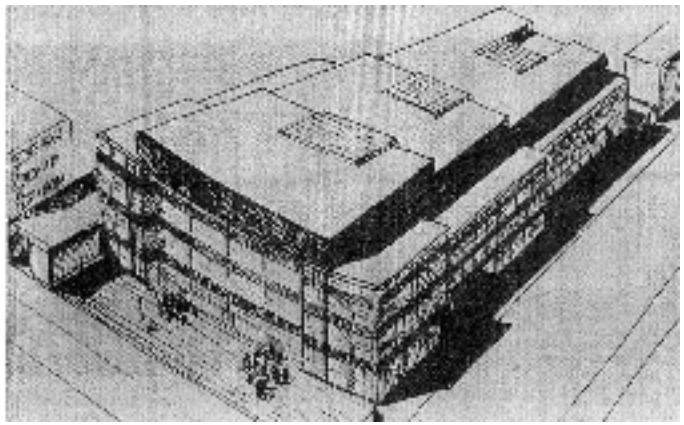




Fig 3 - 6. 3. Edison's Kinetodscope, 1891. 4. Nickelodeon - Dreamland Theatre (1907) Portland, Maine. 5. Grauman's Egyptian Theatre (1922) Los Angels. 6. Design for Kino Palast (1926) Max Taun

interior design and, at best, some kind of canopy. (Heathcote 2000: 43)

With economic growth and profitability being important issues of the 1990's, most of the big cinemas of the 1970's and 1980's were spilt up to form three or four smaller volumes. With this change of scale there was an inevitable loss of comfort and sense of occasion. This was largely due to the increased number of film releases and to give the public a wider choice.

"Recently, however, the revival of city-centre cinemas and a few, lavish and enjoyably kitsch out-of-town monsterplexes has led to a revival of interest in the architecture of cinemas." (Heathcote 2000:10)

Although sources with information on the history of South African movie theatres could not be found, one can assume that the history of the movie theatre design in this country correlates with that of Britain and the United States but that the time line is a decade or two behind.

1.3 PROBLEM STATEMENT

1.3.1 Real world trends

Where are cinemas going? Are they an evening out, a festive occasion, something of a 'luxury' when compared to the parallel availability of television? Are we looking at fewer cinemas, with more advanced technical standards, itself again a reflection of urban reorganization? Are cinemas changing to a means of education like the IMAX that shows a variety of documentary films? Or are cinemas going to fade out to make place for the comfort and ease of the cinema in your own living room?

Fig 7. Regent Theatre (1913) New York

According to Francesco Casetti: "…is the cinema not a neutral space, a mere container; if it may be said that it has served as the venue for contact between film and the audience, then the cinema is a point of transition between a possible world created for the screen and the real world in which the audience lives. Moreover, it guarantees mediation between the entertainment related by the film and that provided by the living environment, especially the city. A border zone, therefore, a margin; but also a threshold which in juxtaposing two worlds reveals their common traits and means of passing between them." (Casetti s.a: 1)

Cinema theatres have been undergoing numerous trends over the last several years. The increased construction of multiplexes is the main cause for the increase in screens. At the same time, smaller single screen theatres are being retired. One just needs to look around at the suburban mall to see the number and size of new theatre complexes. At the same time, older urban theatres are converted into retail space, concert halls, or demolished.

This increase in screens and decrease in cinema theatre complexes is largely due to the efforts on the part of theatre owners to reduce costs. Infrastructure such as parking, concession stands, and restrooms can be shared by a larger number of screens. (Husak 2004: 924) This creates more variety in the product, which serves the needs of the broader and more varied market.

The long-term trend is to concentrate on more screens at fewer sites, resulting in substantial cost savings and more choices of screenings.

In South Africa there has also been an increase in the competition among the leading cinema theatre companies. On Friday 18 March 2005, Nu Metro Theatres slashed their movie ticket prices to R12 for all shows in all their cinemas. This was in response to Ster-Kinekor's strategy to ensure future sustainability and profit, announced on 16 March 2005, reducing their ticket prices to R14 at 70% of their cinemas. As result, CEO of Ster-Kinekor, Ferdi Gazendam, expects cinema attendance to increase from 16.5 million to a staggering 26 million over the next financial year as a result (2005/2006, ending-June). (Marsland 2005 www.biz-communiy.com)

This indicates that movie ticket prices in South Africa are expensive in comparison to the renting of videos or DVD's, that the market is very competitive and that cinema owners have to make bold decisions to ensure growth in attendance. This

fact needs to be kept in mind in this project. According to Sanjay Seeth, Operations Director of Numetro, the price of movie tickets is a complex issue, and like the price of all products and services, they need to be appropriate, for both the consumer and for suppliers to maintain a viable business model. (Marsland 2005)

South Africa is also making its mark in the world of film. "The film industry has seen a considerable growth in the Western Cape over the past six years with Cape Town as a top international venue for film production. This is largely due to the favourable exchange rate and the region's diverse and magnificent scenery and locational settings, superb quality of light and availability of world-class technical support." (Masters 2004, http://www.dreamworld.com)

Due to this growth in the industry the development of the Dreamworld Film City Project emerged. This project situated in Cape Town provides a one-stop working film-studio complex. This complex will be able to accommodate foreign filmmakers and will have the capacity to expand when required to do so by the market. This project is a great boost for South Africa's economy and will have a positive impact on tourism in the country.

The aim of this development is to support the growth of the local film industry and to empower, train, sustain and develop local talent. (Masters 2004)

1.3.2 Design problem

The aim of the project is to design a **cinema centre** that is **original** and offers the user a **new and exciting experience.** Emphasis will be placed on new **technologies**, like **digital cinema** and innovative screens, bringing a new dimension to cinema viewing. Digital cinema will replace the **film-based cinema**, which will provide an enhanced viewing experience for audiences, content flexibility for theatre owners, and distribution cost savings for distributors. Digital cinema will make the showing of sport events, concerts as well as events of significant importance possible and this can take place in real time. These showings are called **alternative content.**

A **diverse range of approaches** to the cinema design will be incorporated. One will be the traditional **black box cinema** and how it can be improved. One should keep in mind the significance of the cinema auditorium that has stayed a black box for the last decade. It plays a vital role in the audience experience. Another approach is to create a new type of cinema, a **prototypical example** by using the essence of what a cinema needs to offer. The idea of cinema will be connected with the urban context by innovative positioning of the screen where the public square acts as the cinema auditorium. "… Invert the idea of a cinema as a closed space, isolated from the city by opening it and merging it with the urban setting." (Andersen 1999: 103)

Working with a company like **Numetro Theatres**, as a client, the feasibility of these new technologies will be explored. The project will be situated, and take form in the second phase of the **Melrose Arch development** in one of the three buildings adjacent to the second **public square**. Only one of the three buildings is proposed for **entertainment** by the urban developers and this building will be preferred. The development is situated between the Johannesburg CPD and Sandton on the M1 motorway.

1.4 TERMINOLOGY

Cinema multiplex – A complex that houses more than at least five or more cinema auditoria. A cinema multiplex is usually an individual building, functions independently and is not part of shopping centre, for example, Sterland in the Pretoria CBD.

Cinema centre – A cinema centre is a complex that houses cinema auditoria as well as other facilities related to the moving image like exhibition spaces, galleries or film studio. A cinema centre houses less auditoria than a cinema multiplex. Examples like this are not common to South Africa. The closest example is the shopping centre cinema like Ster-Kinekor Classic in the Brooklyn Mall, Pretoria.

Digital cinema – "Digital cinema is the replacement of celluloid-based distribution and projection with digital technologies." (Husak 2004: 921)

Alternative content – "Alternative content is defined as other types of entertainment displayed on a large screen in a theatrical setting. Common applications are sporting events such as football and soccer, concerts and stage plays, and potentially large-scale interactive gaming events. Alternative content will generally be presented in real-time or in near real time." (Husak 2004: 922)

Prototype development – An initiative that will be develop in the aim to test its feasibility before it is sold to a leading company that specializes in the related topic.

Concession stand **–** A stand where one can buy refreshments, like soft drinks and popcorn. These refreshments are usually very expensive as they are the primary source of profit for theatre owners.

1.5 DELIMITATIONS AND ASSUMPTIONS

Due to the time limit of the project there will be certain constraints on the research dissertation and design. The goals of this project (2.3) will act as framework for the design. The spatial layout of the part of the building excluding the cinema centre will not be included in the detail design, but will be included in the development process and will act as guideline for further development. Certain assumptions will be made regarding the design of the building, such as the height, the building footprint as well as any other guidelines stipulated by the Melrose Arch Design Guidelines from Arup et al (2004).

The history of the cinema theatre has only been discussed briefly in section 1.2. More emphasis has been placed on current precedents and future trends in chapter 4.

The parking for the project will be delimited from the design, as the precinct has a super basement that will run underneath the whole development. The people visiting the cinema will also use this parking. It will also be assumed that the existing portion of the basement's structural grid will merely be extended beneath part two of the development.

Maps and any other research will be based on the most recent surveys and databases available.

2.1. DESIGN PHILOSOPHY

2.1.1 The interior architect

Interior architects look at the relationship between space, the user and the object. Thus, they examine how the human utilizes the space he or she occupies and the connection with the surrounding objects, where the space is never empty – always embodies a meaning. In this context space can be described as the absence of something signifying the relational distance between a boundary and an object, and object/ boundary and another object/ boundary or an object and the

user. As a designer we are bystanders and observe and study the ways in which humans utilize these spaces, how they interact and move through these spatial environments, to generate a certain mood or feeling in an environment. (Fig 8)

To watch a movie is a virtual journey to all the places the movie allows you to experience, and as interior architect we have to design a space within which this journey can take place. In this instance we have to create a feeling of safety and comfortability to allow the user to experience the fantasy, the journey without distraction. Another aspect the designer has to keep in mind is the transition space between the world of fantasy and the world of reality. Does the user just 'jump' from one world to the other or is it a gradual change? The world of fantasy includes documentary films, films based on literary works as well as films on specific parts of the world, travel films. It is the fact that the audience can experience a certain place, simulation or reality without being there at that specific time that makes it part of the fantasy.

2.1.2 The cinema theatre

According to L Manovich, (1998: 5 www.manovich.net) "…in the case of cinema, its physical interface is a particular architectural arrangement of movie theatre, its metaphor is a window opening up into a virtual 3-D space."

In the context of the cinema theatre, the idea of space – user – object can be approached from two contrasting directions. The one is the traditional cinema auditorium isolated from its surroundings referred to as a black box in numerous texts; the other, the open-air cinema that forms part of its urban context. In the first approach the auditorium signifies the space, the spectator signifies the user, and the

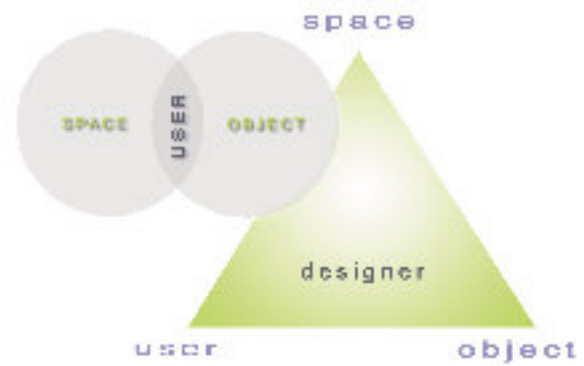


Fig 8. The interconnection between space and object and the relationship between user- space-object

screen the object. As soon as the lights fade, the physical space of the auditorium becomes less significant but the spectator remains subconsciously aware of it. The spectator enters a world of every changing context, a world where one moves from the reality and the tangible space to the fantasy and simulation of reality – this is a conscious hallucination. "The film subverts the viewers' actual existence, offers them, for a limited time, an alternative way of seeing, an alternative life." (Rattenbury 1994: 35) According to Miller and Stam (1999:251), in watching a film the viewer focuses his or her full attention on the representation on the screen and disregards the physical space outside it. This concentration is possible because the image fills the entire screen. The screen "functions to filter, to screen out, to take over, rendering non-existent whatever is outside its frame." (Miller & Stam 1999: 251) One can also add 3D cinema in this category where the audience participates in the experience. By wearing the 3D glasses, the illusion is created that everything in the movie happens there in the movie theatre.

The human's ability to leave reality for a world of fantasy and illusion can be described in the following example. During one of the early films from 1896 a train moved towards the camera, which shocked the audience into fleeing the auditorium for fear of their lives. (Heathcote 2001:54)

In the second approach of the open-air cinema there is not a distinct difference between the space and the object. The space becomes the object and the object becomes the space. The screen becomes part of the space and forms an integral part of the architecture. "During the show, the cinema acquires an architectural dimension not only because it intervenes into the city's night landscape as another urban element but also as it duplicates on the screen fragments of architectural and urban space. The spectator holds two positions; identifying with the show and with the surrounding built environment." (Georgiadis 1994: 81)

2.1.3 The approach

Cinema is all about contrast, the contrast between fantasy – the simulation of reality - and reality, light and dark, heavy and light and scale. Movement also plays an important role in cinema, the movement of images on a screen as well as the movement of the viewer from the fantasy world to the world of reality.

The conceptual argument is based on the metaphor of contrast and movement. Walls can be seen as these heavy entities that form an exact boundary. By using this concept of contrast and movements walls can become light structure. Walls become screens and screens become walls. This can be achieved by using projections, plasma screen technology as well as vapour screens. By using vapour screens one can create the feeling of a boundary that does not really exist. Moving

components, screens that can change their direction, walls that become doors and the movement of the viewer through the building, emphasize the concept of movement.

A different approach to movement is the moving image, the actual film itself. In the design the user is going to form part of this moving image by penetrating the image on different stages of his or her journey through the building.

The idea of a large scale outdoor screen for the moving image, rooted in the drive-in cinema, will also be explored.

These aspects will form the basis of the design process and will be conveyed in the design of the cinema auditoria, the foyer, the digital gallery and all other related facilities.

2.2 SITE CRITERIA

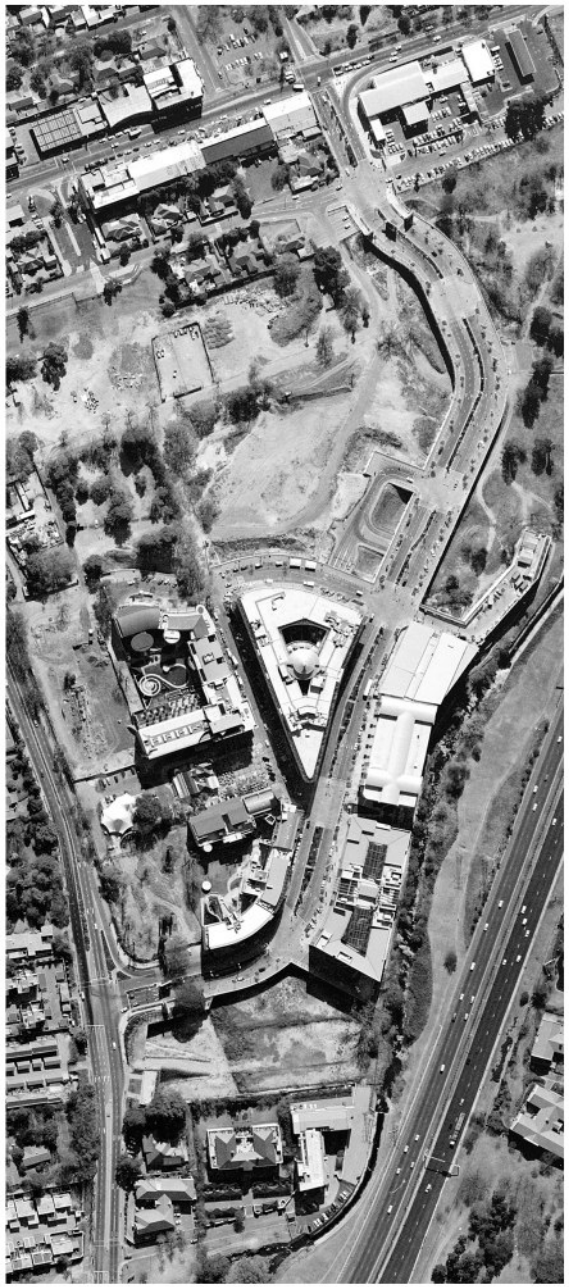
The following selection criteria assisted in the identification of the appropriate site.

- The site should be in an urban context, preferably in Johannesburg or Pretoria.
- The site should be located so that it assists the development of the evening economy and local regeneration.
- A site should have pre-existing structures, that are big enough to house a few cinemas and suitable for development, with addition to and expansion of the existing structures, or a site that is big enough for this project and in close proximity to other facilities, like restaurants and retail.
- The related facilities should cater for students, young skilled professionals and tourists – my main user groups.
- The site should be accessible, thus close and visible from vehicular and pedestrian routes to create public awareness.
- Ideally the site should be bordered by a public space or a public square to accommodate the outdoor cinema and the crowd (leaving the cinema centre at the same time after a screening).

2.3 GOALS OF THE PROJECT

The goals of this dissertation are as follows:

1. Due to the fact that there is no existing building structure in Melrose Arch that can currently house this cinema multiplex development, only a development program, the project will include the design of an outer shell. The interior will shape and form the exterior.
2. Planning of the spatial layout of the traditional black box cinema theatres with all its related facilities like projection booths and concession stands.
3. Design of the entrance/foyer of the building and the digital gallery, with emphasis on materials and lighting effects.
4. Detailed design of the experimental cinema auditorium and cinema booths, with emphasis on acoustics, ergonomics, visual and sound qualities, and ventilation. Here the idea of the individual and group experiences will be explored.
5. Product design, which will include the individual booths, seating and lighting in the experimental auditorium and entrance and foyer projection.
6. The development of the project will also include the connection between the public square and the cinema complex.



3.1 CLIENT AND USER PROFILE

3.1.1 Client

The Melrose Arch site was first purchased by the Mine Officials' Pension Fund (Sentinel Mining Industry Retirement Fund and Property Partners). Their idea was to create a living, working and recreational space in a single development, something unique for South Africa. "The master plan is based on traditional town planning notions of mixed-use, connectivity, an integrated open street system and clearly defined public and private domains." (Arup et al, 2004: 1)

The entire development was recently sold to Southern Palace (Pty) LTD, a wholly owned subsidiary of Property Partners, a Cape-based equity finance and development company, which is planning to continue with the project and start phase 2 later in 2005. According to Stuart Chait, the CEO of Property Partners, they intend to maintain the standards and quality of the aesthetic integrity of the scheme. They will also be introducing more restaurants, coffee shops, cinemas and top grocery stores to the area. (Wilson 2005: 1,www.knowledgeplex.co.za)

According to an article in the 'Rapport' of April 10, 2005, Property Partner intends to sell part of the ground for some of the new projects to developers, but is also willing to collaborate with developers through the formation of joint ventures. (Van Rooyen 2005: 14) This cinema multiplex project to be developed as a prototype initiative, will be seen as a joint venture between Property Partners and Nedbank, who has sponsored projects like the IMAX in Menlyn, as well as the IMAX in Hyde Park that has since been closed.

A company like Numetro Theatres will be involved in the development of the project and the feasibility of the project.

3.1.2 User

Cinemas are one of the most universal art forms and communicators and the profile of the viewing public will encompass people of all ages and cultures, including young skilled professionals that work in the precinct to students, older people living in the Melrose area and children. By ensuring that buildings support sustainability and are inclusive, replication is avoided and changes in use are supported. Adequate facilities will be provided for disabled people, for example, lifts, adequate internal dimensions and appropriate toilet facilities. Although children under the age of 18 do not readily use Melrose Arch during the day, they will be exposed to the cinema multiplex for educational purposes that will be organised by their schools or visit the facility with parents or friends. The cinema will also attract teenagers during the evening and on weekends for entertainment purposes.

Although the multiplex can be used by everyone, the emphasis on the design decisions will be based mainly on the use of the multiplex by skilled young professionals, students and the disabled.

Edwin Heathcote (2001:49) stated that a new audience has been discovered in adults rather than adolescents and lowest common denominators that have been the ubiquitous targets of the marketing people for the last few decades. Bars and bookshops are as likely to be found in urban cinemas as arcade games and burgers are in out-of-towners.

Visiting tourists will also form part of the user group and due to the fact the Melrose Arch is a mixed-use development, it will also cater for the residents of the Precinct.

A major goal for the outdoor cinema is to provide for the 2010 FIFA Soccer World Cup as well as any other sporting and similar events, concerts and events of significant importance. According to speculations, tickets for the World Cup in 2010 will be expensive, due to the fact that they will cater for tourists, consequently the middle class South African will not be able to afford it. The outdoor cinema will thus provide an opportunity for these people to watch the games in an entertaining and vibrant setting.

3.2 MELROSE ARCH – URBAN DESIGN OBJECTIVES

The developers of the Melrose Arch precinct have established certain objectives that serve as guidelines for architects and designers working in the precinct. These objectives include:

- To explore the development opportunities that exist within the Melrose Arch precinct, by integrating the structure of the precinct proposal with its surrounding context. The surrounding global, as well as local, contexts are analysed in terms of their movement/economic potentials.
- To increase the accessibility of all elements of the precinct to be used over

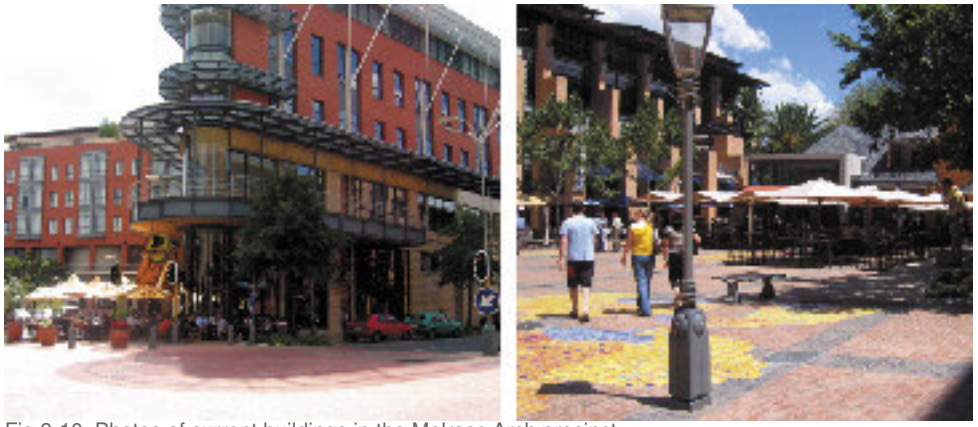


Fig 9-10. Photos of current buildings in the Melrose Arch precinct

a 24 hour period, a vital component to the sustainability of the proposal.

- To create an environment that is both safe and secure for tenants/residents and visitors alike. Urban form plays a vital role in attaining a safe and secure public realm in that buildings may be used to define public and private realms.
- To create an environment that promotes security by activity, public presence, and ownership of the public realm, as opposed to the conventional notion of security by isolation and separation.
- To explore development flexibility; ensuring a structure that may respond to changing markets and requirements.
- To include elements of a well designed city, which will contribute to the uniqueness of the precinct, and be the fulcrum around which public life will revolve.
- To ensure that the urban environment of the precinct is integrated with the natural environments that exist along and beyond its boundaries.
- To create an environment that promotes ease of movement for both vehicular and pedestrian traffic.
- To test and make proposals for the distribution of existing rights (bulk) on the site. Distributing bulk areas across the site will enhance the urban nature of the precinct, and alleviate certain economic constraints that have arisen due to geo-technical problems within the site boundaries. (Arup et al, 2004: 2)

3.3 SITE – PHYSICAL LOCATION

3.3.1 Site choice

After considering different buildings and sites in Pretoria CBD as well as within the Johannesburg area, a site in the Melrose Arch development, Phase 2, was chosen. (Fig 11) It complies with all the criteria mentioned above. This is largely due to the fact that it is centrally located and easily accessible. According to David Curry from Osmond Lange Architects and Planners, they are planning an entertainment area for Phase 2 of this development.

The framework for the buildings of phase 2 has been proposed but not finalized as Melrose Arch has been sold. Thus, there is currently no design for any of the buildings of Phase 2. By using the existing urban design canvas that has already been implemented throughout the precinct, a shell will be created for the purpose of this dissertation that will house the cinema multiplex.

The goal of this project is to design a cinema centre, which will appeal to its users and will complement the Melrose Arch Development.

3.3.2 Location – Melrose Arch within Johannesburg

According to the Regional Spatial Development Framework of Johannesburg (RSDF) 2004/2005, Melrose Arch falls in Region 3 – Sandton and in Sub area 21 Melrose North. This region has a growing high quality tourism infrastructure,

Fig 11. Photograph of site from the south

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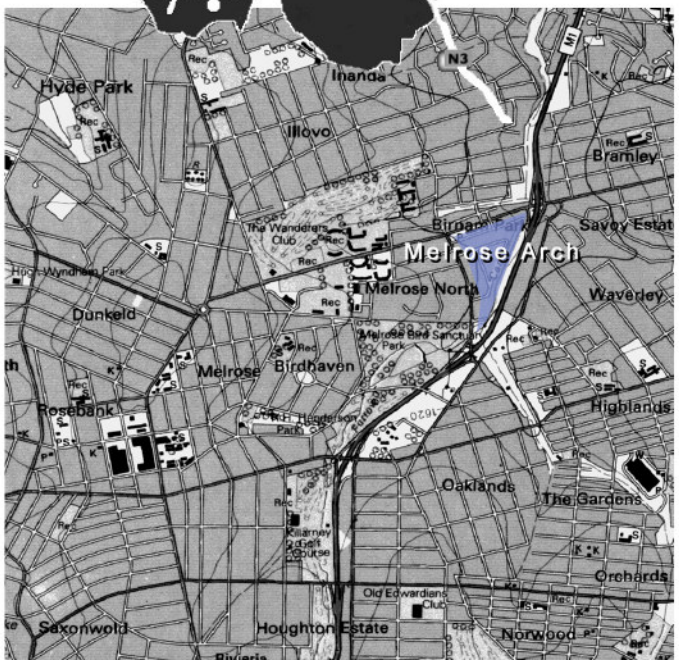

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Fig 12 - 13. 12. Map of Gauteng. 13. Map of the Melrose and surrounding regions

Fig 14. Aerial photograph of Melrose Arch

which boasts some of the country's top hotels, conference facilities, shopping and entertainment centres and sporting and recreational facilities, added to the international pedigree. The Sandton region falls within an area of relatively high environmental quality comprising commercial and high-income residential areas. Various walking trails, parks and open spaces can be found in this Region, as well as streams associated with green areas and nature reserves.

"Road linkages in this region on the north-south axis are good, although there is a problem of congestion. The east-west linkages are less well developed. There is considerable traffic congestion in the area as a result of employment and entertainment opportunities."(RSDF 2004/2005)

Melrose Arch is centrally located to the North-East of Johannesburg between Sandton and the Johannesburg CBD on the M1 motorway. (Fig 12-14) It can easily be accessed from Midrand and Pretoria. On its north side is Illovo and Birnam Park, on the east side Waverly, on the south side the Melrose Bird Sanctuary and on the west side The Wanderers Cricket Stadium. Corlett Drive bounds the site to the north and Athol-Oaklands Road to the left. Both of these roads have on and off ramps to the M1 highway making the flow of traffic more efficient.

Melrose Arch has been criticised numerously on its social context and related issues. Achille Mbembe, a research professor in history and politics at the University of the Witwatersrand stated in his article – Fantasies of the metropolis – that Melrose Arch can be defined as a synthetic spacetime, constructed tableaux on to which disparate images are grafted. Its architectural style is based on the recombination of borrowed imagery. It is marketed by private developers and property owners in contrast to an unravelling, chaotic city-centre besieged by swarming and inchoate crowds, incessant shouting and peddling, and a failure to contain disease, crime and pestilence. (2005: 28)

Melrose Arch forms a 'utopia', a new ideal city within a city, standing ignorant to the bigger picture. It can be seen as an elite space with the main focus on consumerism in contrast with Alexandra township's indigence just a stone's throw away.

On the positive side Melrose Arch promotes pedestrian and vehicle movement to co-exist. People feel safe and the precinct has a pedestrian scale, which adds to the vibrancy of the sidewalks.

3.3.3 Location – site within Melrose Arch

The entire Melrose Arch Development will consist of 37 buildings, lying on a two level super basement. "Melrose Arch is sold to residents and visitors not as a theatre of consumption but as a social environment, a "community", and a place where people can eat, dance, listen to music, enjoy a good conversation, drink coffee, interact and be entertained." (Mbembe 2005: 24)

Developers planned Melrose Arch according to the Traditional Urbanism framework – "New Urbanism". Characteristics of this framework include:

- "An interconnected system of streets
- Greater proximity of a variety of uses
- Daily needs within walking distance
- Sharing of infrastructure across a 24 hour period
- Supportive public transport
- A central focus: Local main street and public squares
- Density increased from the edge of the centre
- Buildings orientated to the public domain
- Clear distinction between public and private space
- Large open space on the periphery
- Small public spaces evenly spaced throughout." (Arup et al 2004:3)

Perimeter blocks form the base of the Melrose Arch building development. (Fig 15) It defines both the public and the private realms. This is in contrast with pavilion buildings. "Pavilion buildings sit in indetermined spaces, retreating form the public realm of the interconnected streets." (Arup et al 2004: 5) (Fig 16) Perimeter blocks sit on the edge of the street and right against each other with private domains as courtyards. By placing the building close to the pavement as well as by the use of

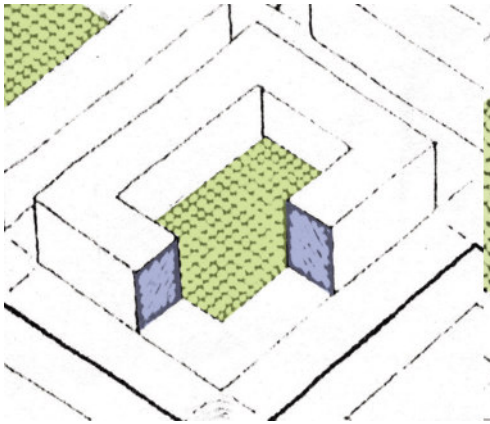


Fig 15. Perimeter block

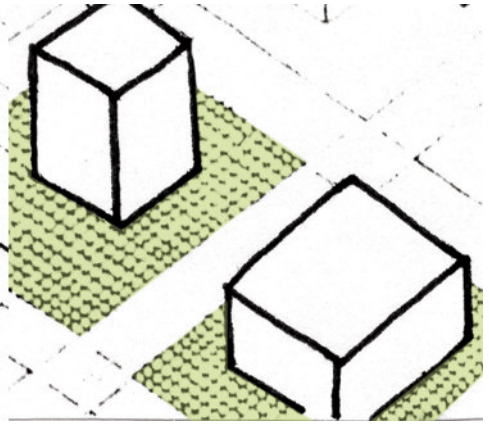


Fig 16. Pavilion buildings

colonnades (covered passages), interest and safety are achieved. (Fig 17)

Melrose Arch will have three main roads when the development is complete. Only two of these roads have been built, Melrose Boulevard and High Street. The third one will be Whiteley Road. In the second phase of the development, High Street will be extended and it will run on the west side of the project's site. Whiteley will run on the north side. A minor street, Curve Street, will run on the east side.

According to the framework of Phase 2 of the development, they are planning a new formal square, The Melrose Square, which will be one of the focal points in the precinct. The chosen site for this project will form the west boundary of this square with a street separating the two. The building that will be designed together with the building on its north will form the gateway into the square. "Where a building site is identified as part of a gateway the architect must acknowledge both the significance of the gateway and the existence (if any) of other buildings relating to that gateway." (Arup et al 2004: 9) (Fig 18)

David Curry (an architect from the firm, Osmond and Lange which is involved with the Melrose Arch Development) stated that they have planned for the square to be used as an entertainment space for activities like public concerts, promotions and other events during all times of the day and week. A retail and entertainment axis will be created from the existing square, Old House Square to the proposed new Square, Melrose Square and the site for the cinema will form the middle point, node, of this axis. (Fig 19)

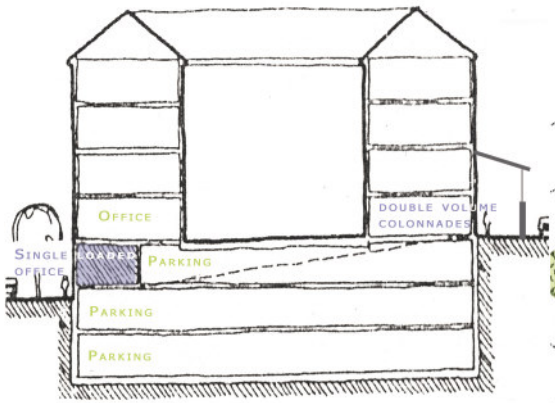


Fig 17. Single loaded office and double volume colonade

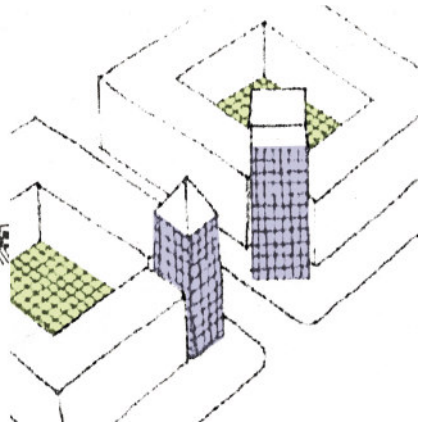


Fig 18. Gateway buildings

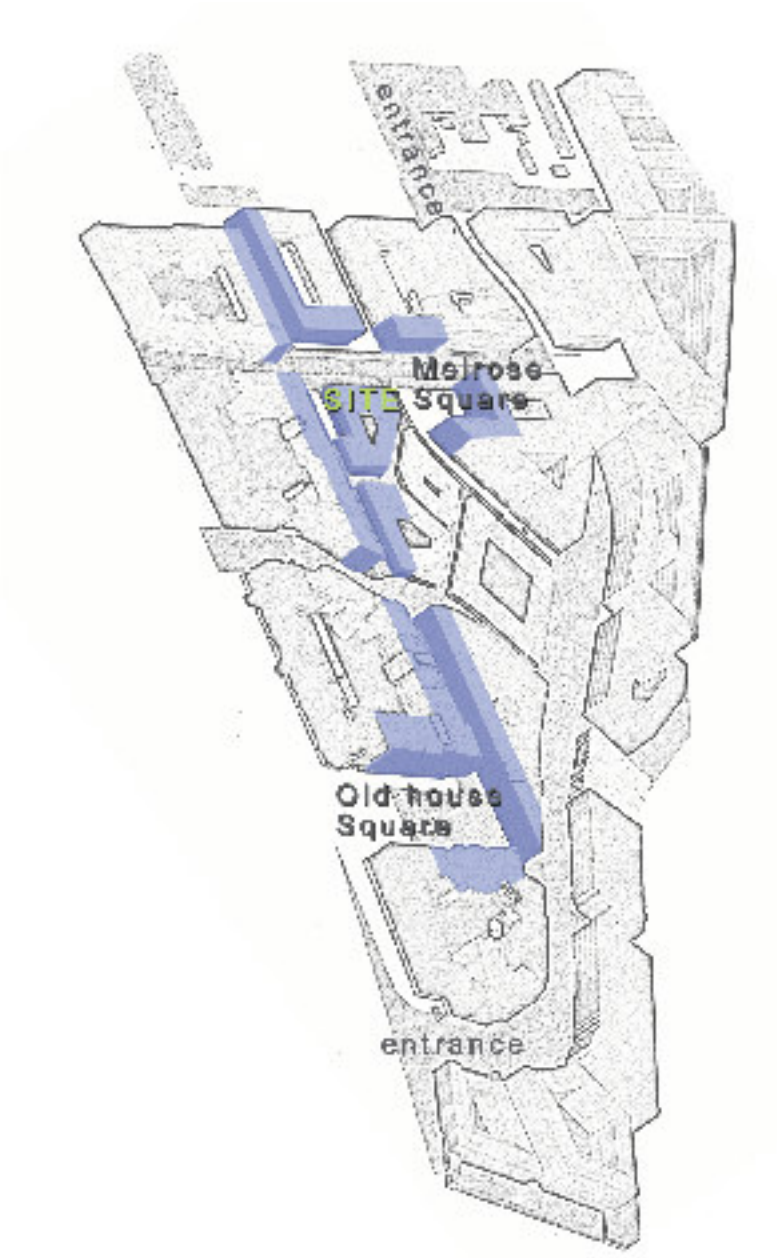


Fig 19. Retail zone and the two public squares in Melrose Arch

The super basement spans the footprint of the entire development and is used for parking and houses the services. At places where the entrance of a building is raised from the natural ground level and the slope of the site is of a certain nature, another level for parking would be added, like underneath the Virgin Active building. According to David Curry, the layout of the basement is a duplicate of the street system in the precinct – making it easier for users to orientate themselves.

Most of the services in the precinct as well as any elevator shafts, that serve as the entrances to buildings from the basement, are situated in the basement. Where the basement has been raised and faces the public streets, single loaded offices are used to hide it from the public eye. (FIg 17) Basement parking is accessed from minor streets so not to create traffic congestion in main streets. There is also possibility for on-street parking and this supports street life vibrancy.

Pedestrian movement is being encouraged in the whole precinct as mentioned in 3.3.2, for example by building large pavements, in some areas up to five meters wide. This is one of the key characteristics of Melrose Arch. Safety is an important aspect and is obtained in Melrose Arch, which also has an effect on the pedestrian movement. People feel safe and thus the streets are vibrant with activity.

Buildings that are right adjacent to the square will have continuous double volume colonnades, which will enhance the integrity of the square. “The Square of Melrose will be visually accessible from key positions in the grid, assisted by local landmarks within the square and surrounding architecture.” (Arup et al 2004: 8)

Excluding the design objectives mentioned above, the developers also established design guidelines for the buildings in the precinct. These guidelines will be used to form a framework from which the interior of the cinema and related facilities will evolve.

The building should be designed according to the perimeter block concept as mentioned above. A vital aspect to keep in mind is to retain the visual continuity of the street façade. (Fig 20) “A significant portion of the façade (80%) should be on the build-to line. Where setbacks and encroachments are incorporated it should not exceed 1,5 meters. Arup et al (2004: 11) comprise preferred building depths. For retail the depth is 17m, residential 10m and the depth of entertainment areas vary. “Multiple entrance must be created to encourage interaction between private and public areas, and to improve planning adaptability.” (Arup et al 2004: 12)

The proposed footprint and height, stipulated by Arup et al, for the building used in this project is:

- Footprint: 3655.56m²
- Height: six stories

3.3.4 Noise

An important factor to consider is the fact that Melrose Arch is situated right next to the M1 motorway and thus noise may be problematic. This will be especially relevant in the design of the cinema auditorium, where acoustics are an imperative technical factor as well as in the positioning of the outdoor cinema in relation to the highway. There are also other factors that will contribute to the noise levels, such as the vibrant atmosphere created in the square with restaurants and performances that may take place any time of the day.

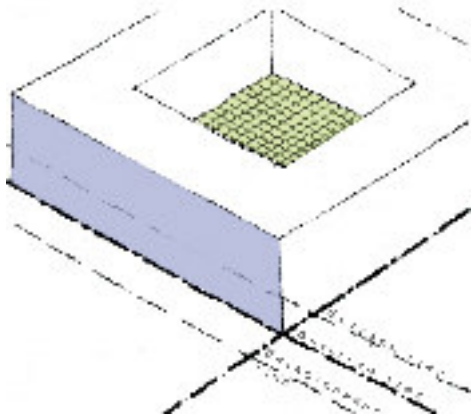
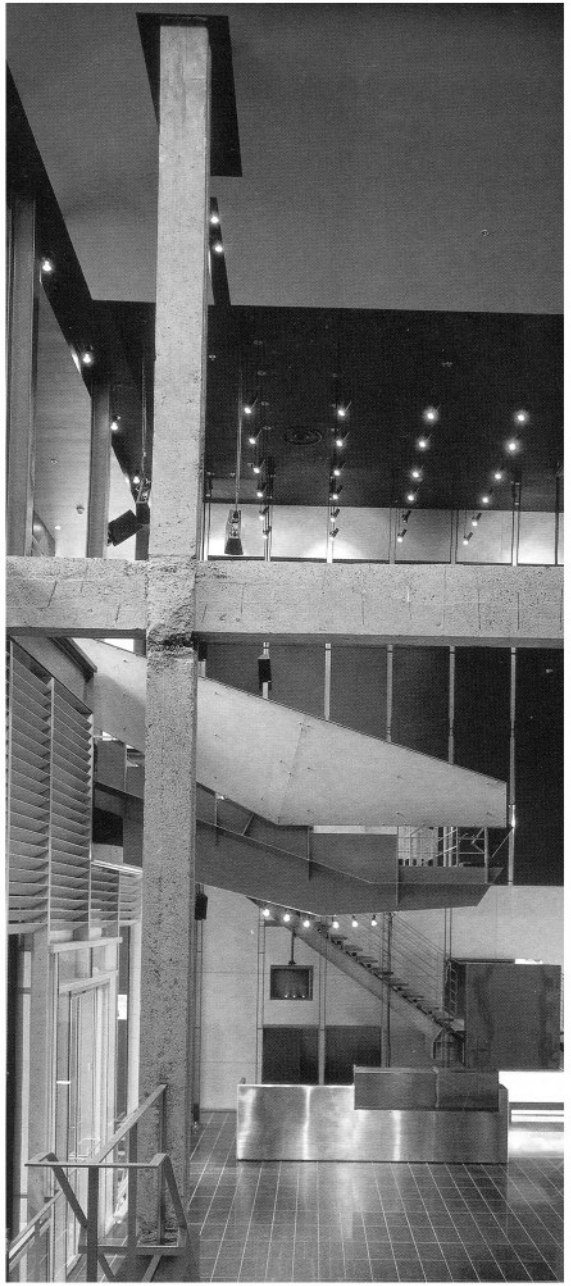


Fig 20. Build-to line



The following precedents are a selection of the precedents that have been studied and that have guided my design thinking. These precedents also had an impact on the design development in that they have set objectives and aspirations for the project and its extended facilities through establishing a conceptual context from which the design of structures and spaces can develop.

4.1 Building/Interior: **The Cine – an experimental film centre**

Reference: ANDERSEN, K. 1999. "Hariri & Hariri conjures up the Cine, an experimental film centre for the year 2020", *Architectural Record*, December 1999, vol. 187, no.12: 100 – 103.
HARIRI AND HARIRI. *s.a.* "When the building is a computer". Available on the Internet at http://www.haririandhariri.com. Accessed on 4 April 2005.
CAPOGRUPPO, P. 1999. "The Cine – experimental Film Centre, Brooklyn, NY". Available on the Internet at http://www.europaconcorsi.com/db/pub/scheda.php?id=2119. Accessed on 4 April 2005.

Architect: Hariri And Hariri
Place: Brooklyn, New York, USA
Date: 2020

Hariri and Hariri explored technology in another light at The Cine, an experimental film centre to be constructed on a pier near the base of the Brooklyn Bridge. The complex will not be complete until 2020. "Through form and structure The Cine explores relationships between architecture and film – and the very nature of the 1st century entertainment." (Andersen 1999: 100)

This film centre will feature Texas Instruments' Digital Micromirror Device(DMD) screens that are visible from the surrounding urban context. These digital displays can be programmed to convey information, receive and broadcast films (images) via satellite, or act as movie projection screens. (Andersen 1999: 100)

The complex consists of a concrete frame structure that supports the different parts of its program. At the main entrance of the film school and the entire complex, a digital screen offers movie previews to the public. The school component consists of a rectangular box housing the classrooms, and film studios. A film track gallery extending the whole of the length of the building and penetrating the concrete frames is clad in DMD and linked to the street by a spiral concrete ramp. Filmstrips exhibited on the interior face of this long DMD-clad tube are portrayed outwards onto the urban setting. The three cinema auditoria at the heart of the complex have large scale vertical and horizontal digital displays. These displays challenge the conventional screen format and dimensions – suggesting possibilities for future films. (Andersen 1999: 103) An indoor/outdoor cinema auditorium for film festivals at the pier end features a freestanding DMD screen that faces Manhattan and addresses those reaching the theatre by boat or sailing past.

Gisue Hariri stated that they want to invert the idea of a cinema as a closed space, isolated from the city by opening it and merging it with the urban setting. With new digital technology changing the process of photography and in filtering the entertainment and communications fields one can only imagine how the film industry – and the architecture created to accommodate it – will change in the near future. (Andersen 1999:103)

Design influence:

In this precedent the physical walls of the building become one with the new technology, the DMD screen. The innovative thinking of Hariri and Hariri is what has inspired the design thinking; their whole building has technology embedded in its walls. It has also contributed to my design with regard to other aspects:

- The way they turn their building inside out - what is going on inside is portrayed on the outside, connecting the surrounding urban environment with the interior of the building.
- The way that the building allows inclusive access to the public. The proposal allows for the public to move through the public spaces of the building allowing for a total experience and by doing that the public becomes aware of the more private facilities the building has to offer.

One might say that their approach might seem farfetched but there are still innovative ideas that have great potential on how one looks at the relationship between film, architecture and technology.


Fig 21. Screen at main entrance


Fig 22. Film track gallery penetrating through the concrete frames

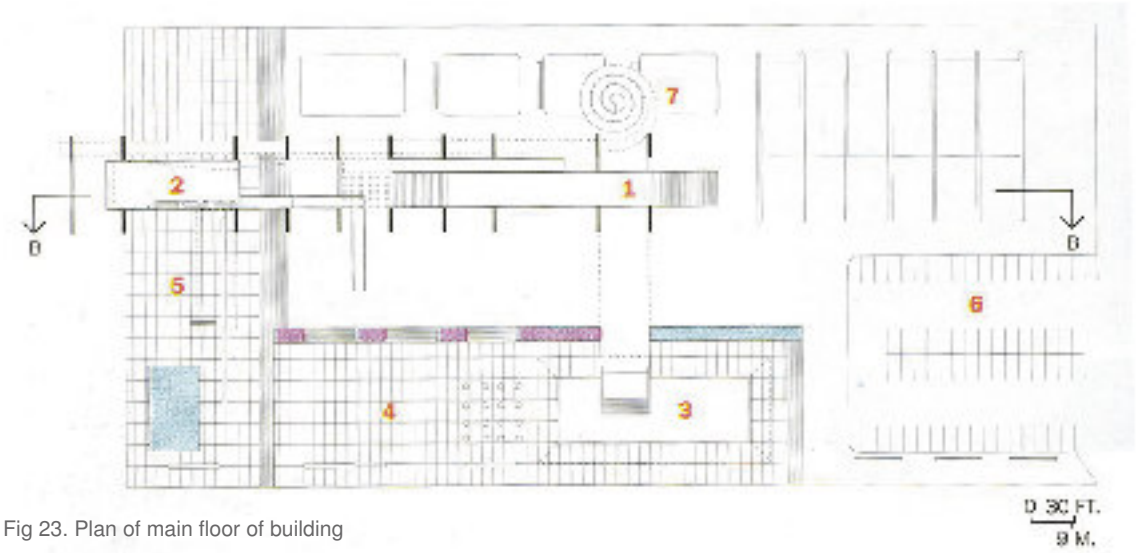


Fig 23. Plan of main floor of building

1. Outdoor lobby/shooting gallery
2. Observation deck
3. Cyber cafe/video arcade
4. Outdoor cafe
5. Promenade
6. Parking
7. Ramp

Fig 26. Screen of outdoor/indoor cinema

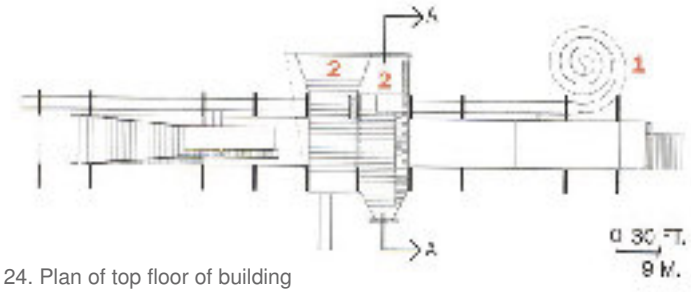


Fig 24. Plan of top floor of building

1. Ramp
2. Indoor cinema
3. Covered outdoor cinema
4. Film school
5. Vertical- screen cinemas

Fig 27. Film track gallery

Fig 28. Perspective of building from the water

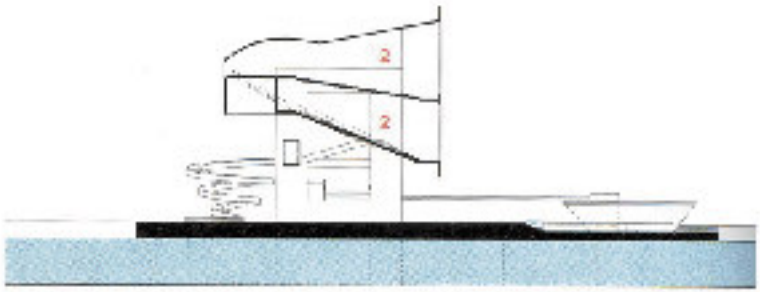


Fig 25. Section A-A through building

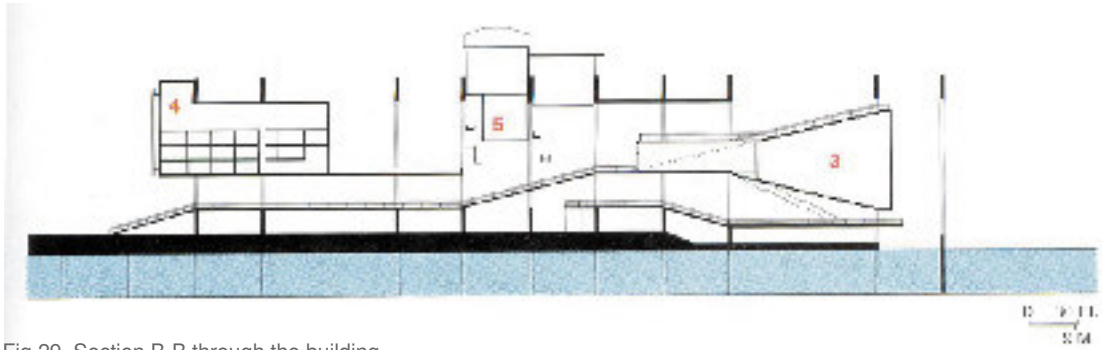


Fig 29. Section B-B through the building

4.2 Building/Interior: **Moving image centre**

Reference: DAVEY, P. 2003 “Moving image”, *Architectural Review*, May 2003, vol. 213, no. 1275: 50 – 54.

Architect: Francis-Jones Morehen Thorp
Place: Sydney, Australia
Date: 2003

The competition-winning proposal by Francis-Jones Morehen Thorp was to transform the stuffy building of the Museum of Contemporary Art, a huge and heavy shipping headquarters built in 1952. The sandstone shell of the building will be retained but a new linear respiratory system is to be installed all along the west side of the original plan. Fins of metal and glass will form horizontal shafts, in which fresh air (cooled by heat exchangers using harbour water) will be drawn in at low level and drawn up through the building by convection to be expelled over the roof. (Davey 2003: 50)

These metal and glass fins will unfurl at the north end to from almost flower-like forms. This part is to be the Sydney Harbour Moving Image Centre. The entrance to the building will be from a stepped sandstone pedestrian piazza on which is a glazed foyer. On the same level as the foyer will be the main museum and escalators up to the cinemas. The curved forms cause each of the main cinemas to face a monument. When the audience enters the cinema, they will face a glass wall that will frame either the Harbour Bridge or The Sydney Opera House. As the show starts, the screens will descend and while the screens are down, images will be projected from the outside from the piazza for advertising. Above each of the cinemas is an open-air theatre, which will enjoy the same views as the cinemas. This building allows interaction with its dynamic surrounding environment. (Davey 2003: 54)

Design Influence:

In this precedent Francis-Jones Morehen Thorp tries to move away from the traditional black box cinema auditorium by introducing glass in the cinema auditorium façade. This is quite a bold and unconventional move and it creates an interaction between the interior of the cinema auditorium and the surrounding urban context. Another aspect that connects the cinema to the environment is the fact that when the screen is lowered it is used from the outside as advertising and this draw people into the building.

It is the inventive way that the architects used unusual materials in the cinema design that has inspired the design thinking.

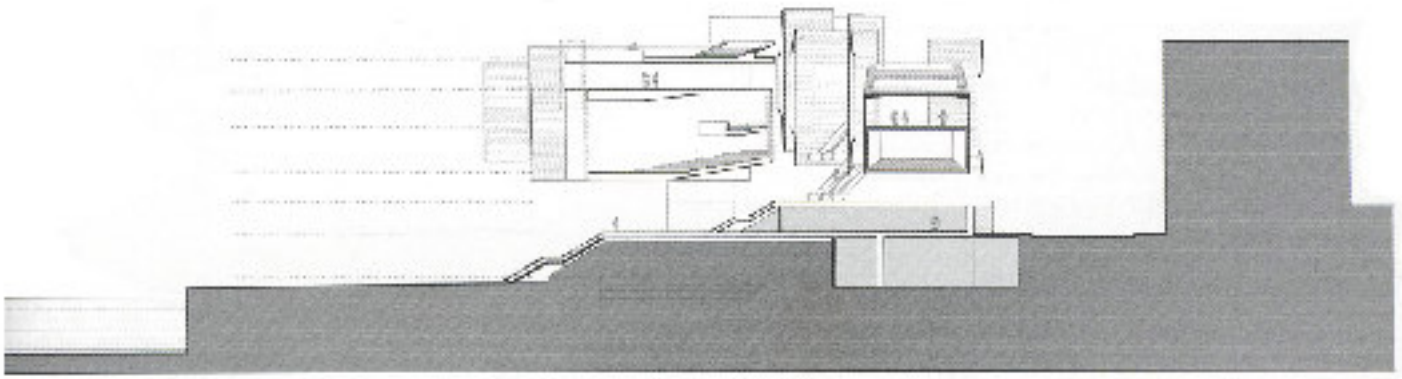


Fig 30. Section through cinema auditoria

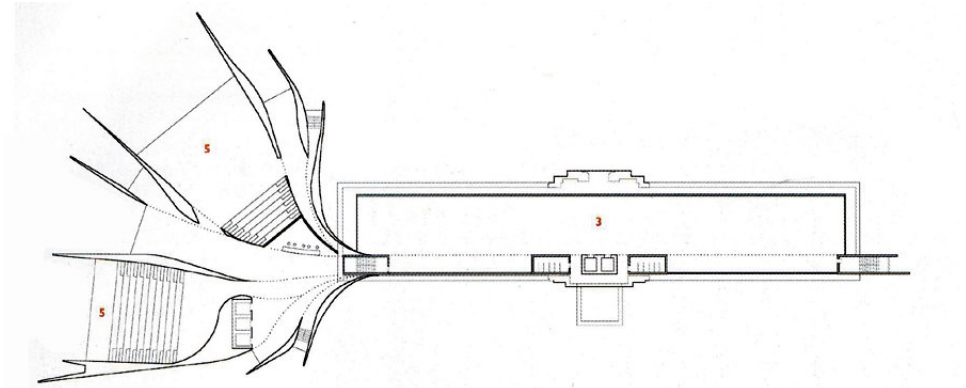


Fig 31. Top floor (open-air theatres)

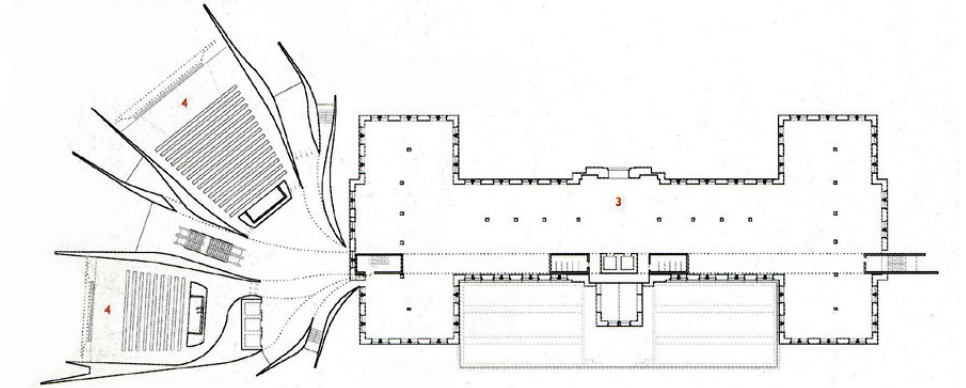


Fig 32. Cinema level

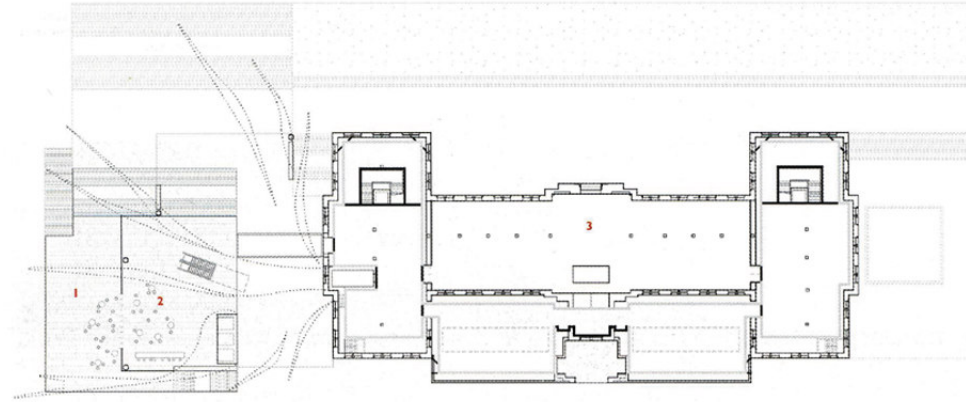


Fig 33. Entrance level

1. Piazza

2. Foyer

3. Existing building

4. Cinema

5. Open- air roof-top threatre

Fig 34. Images projected onto exterior of screens

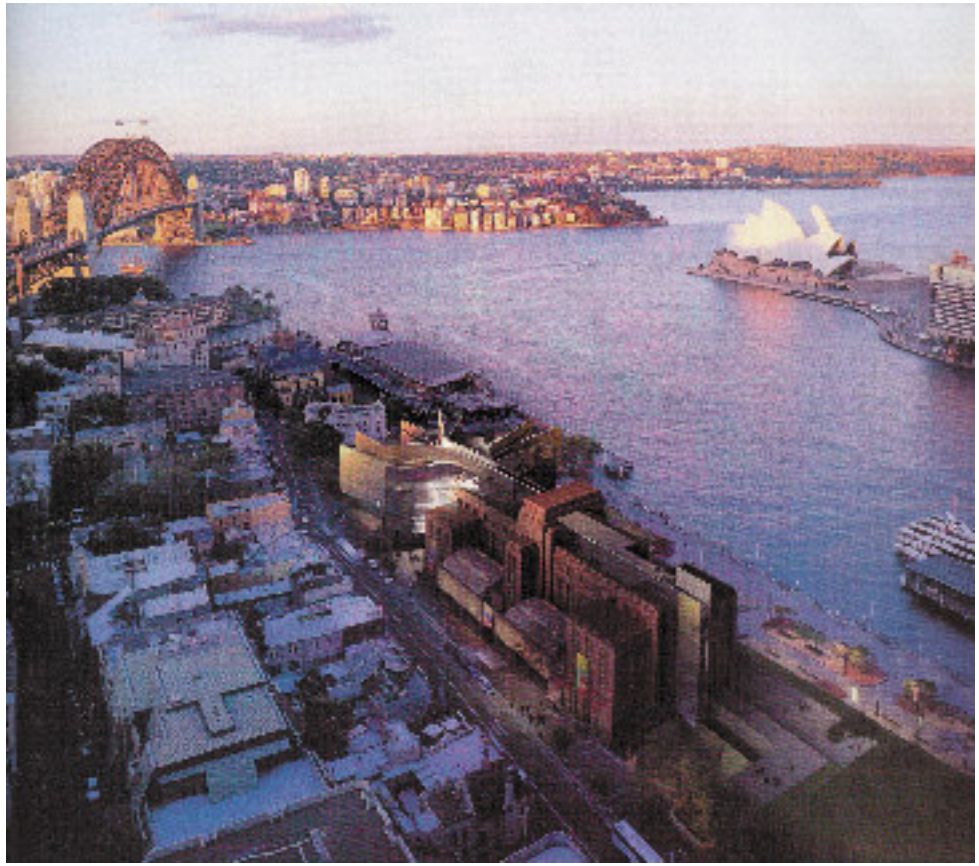


Fig 35. Views to the Bridge and Opera House

4.3 Building/Interior: **Cinémathèque Québécoise – Magnum Cinema**

Reference: CARTER, B. 1998. " Moving image", *Architectural Review*, August 1998, vol. 204, no 1218: 74-77

HEATHCOTE, E. 2001. *Cinema builders*. London: Wiley-Academy, 89 - 95

KAPUSTA, B. 2000. "Cinémathèque Québécoise", *Architectural Record*, November 2000, vol. 188, no. 11: 142-146

Architect: Saucier and Perrotte Architects
Place: Montreal, Canada
Date: 1997

"Saucier and Perrotte's fascinating little Cinémathèque Québécoise in Montreal is an example of a building which goes against the grain of the suburban super-cinema – the megaplex, to provide an exquisite little urban cinema centre contained within a sophisticated series of interlocking spaces and sculptural forms." (Heathcote 2001: 187)

The project is housed in two adjacent buildings, one that was previously a school and the other a vacant two-storey brick building. The school has been planned to house a range of public spaces - foyer, shop and 175-seat cinema - at street level and administrative offices on the floor above. The other building houses classrooms, offices, studios and exhibition areas for the film school. In the slot between these two structures a new extension has been added. It is this extension that establishes the character of the Cinémathèque and houses a café, a small new cinema and exhibition gallery. "As the word light refers to conditions of weight and illumination, so the design of this new light box explores both of those qualities within the context of the moving image."(Carter, 1998: 74) This light box's facade consists of a combination of transparent and translucent panes of glass and a ramped interior bridge on the second floor. (Kapusta 2000: 146) The translucent part of the glazed skin is a screen, which is used to project moving images that can be viewed from the street. The ramp interior bridge is situated between the projectors and this screen, thus the silhouetted images of visitors moving on the bridge appear periodically on the screen.

In the main foyer is a cantilevered seating area above the entrance, which faces a large projection screen. This public cinema was designed to seat approximately 50 people and is available for visitors while they are wandering through the building or waiting for their movie to start. "By placing screen and seating in mid –air, the cinema ceases to be a private, enclosed, darkened space and becomes an activity that is part of the public realm. (Heathcote 2001: 187)

Design influence:

This precedent had the most profound impact on my design thinking. This was primarily because of the way the architects incorporated the ideal of the moving image into their architectural language. The user is constantly aware of the function of the building and is not just a bystander but also an active part of the building and its activities.

By designing a cinema in the foyer of the building, open for the public, the designers moved away from the idea of cinema as an entity in a black space but connected to a public realm.

The materials within these internal spaces are monochromatic and with differences in texture. The designers created a space that comes alive as the user moves through it. Emphasis has been placed on the placement of different functions throughout the building. The light lobby sheathed in glass and metal houses the functions that take advantage of the daylight together with the other functions, like the cinema auditorium and exhibition space housed in the old buildings, where the daylight can be controlled.

In the words of Edwin Heatcote: "Complex, spatially inventive and thoughtful, the Cinémathèque Québécoise succeeds in bringing some of the versatility of film into architecture in one of the finest urban cinemas of recent years." (2001: 188)

Fig 36. Glass facade and translucent screen


Fig 37. Entrance lobby

Fig 38. Ground floor plan

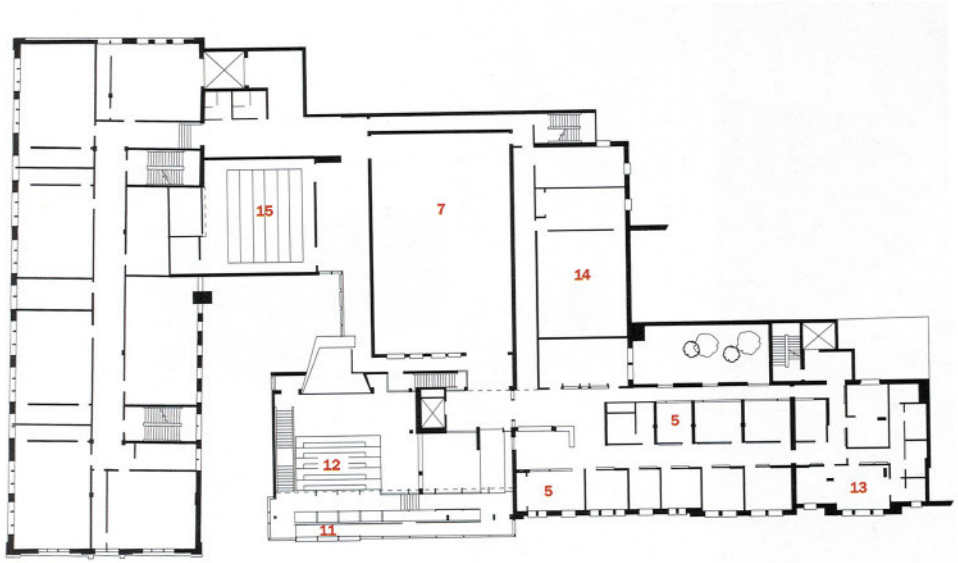


Fig 39. First floor plan

1. Entry
2. Lobby
3. Exhibit gallery
4. Shop
5. Offices
6. Theatre
7. Exhibition
8. Cafe
9. Garden
10. Multimedia showcases
11. Bridge
12. Suspended seating
13. Lounge
14. Photo storage
15. Video projection

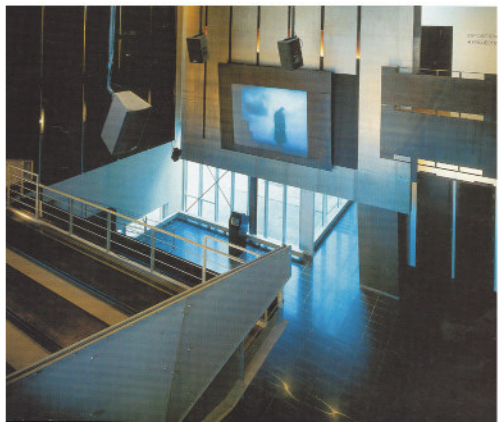


Fig 40 - 42. The entance lobby with cantilevered balcony for informal screenings

Fig 43. Sloping bridge

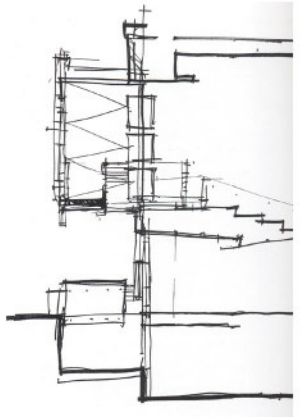


Fig 44. Sketch section

4.4 Building/Interior: **School of Fashion and Graphic Design**

Reference: VAN CLEEF, C. 1998. “Fashion sense”. *Architectural Review*. Vol. 203. Issue 1215, p 53 – 57.

Architect: Erick van Egeraat
Place: Utrecht, The Netherlands
Date: 1994-1997

The Dutch practice of Erick van Egeraat Associated Architects was to devise a more acceptable architectural solution to the design of the School of Fashion and Graphic Design after the initial designs of another practice had been rejected. The concrete foundations were already in place and the response of Van Egeraat was to build the school largely as initially proposed, and then cover it in a delicately transparent external skin.

“On a sprawling suburban campus the new building comprises three low-rise horizontal blocks cranked around a courtyard. The largest block contains cellular classrooms for fashion and graphic design, linked to an interstitial wing housing the entrance hall, a canteen, auditorium and facilities for a Montessori School. A third smaller part containing classrooms and a gymnasium meet the ancillary link at an obtuse angle.” (Van Cleef 1998: 53)

The transparent external skin is positioned 150mm from the face of the building. This aluminium framed glass wall is a uniform 12m high and comprises a single layer of 8mm thick clear glass. Behind this transparent screen one can see the contrasting textures of the concrete structure, plywood covering and mustard colour insulation on the inside of the building. Horizontal slits between the glass panels help to ventilate the cavity.

Within the entrance hall’s atrium is a small auditorium clad in translucent, ribbed fibreglass panels elevated on a random grid of spindly, angular pilotis. This cube-shaped volume of the auditorium is connected to the classrooms and ancillary spaces by glazed bridges. Smooth plywood sheets cover the auditorium’s gently sloping underside and light, from fluorescent tubes, diffuses through the auditorium’s translucent cladding and infuses the surrounding atrium with a surreal, radio-active glow.

Design influence:

There are quite a lot of similarities in this precedent that correlate with the ideas of the dissertation. Erick van Egeraat worked with the skeleton of the building and through intervention designed a building that works successfully. In the dissertation there is also a skeleton that forms the base of the design process and these constraints should not be seen as a barrier but as an opportunity for creative invention.

“The only part of the complex where Van Egeraat had a relatively free hand was at the north-east corner, where the orthogonal plan is fractured to create a luminous entrance atrium, which functions as an exhibition space.”(Van Cleef 1998: 57) By the intrusion of a cube-shaped auditorium in this space the idea of a building inside a building is created. Creating a building within a building is one of the main conceptual ideas of the dissertation. The cinema area of the building would become an entity on its own thus functioning as a building disconnected from the building that surrounds it and this will be achieved by the difference in floor levels.

Although the light box, the auditorium, is successful and gives the idea of lightness and surrealism, it is still disappointing to notice that the idea of lightness has not been expressed in the interior of the auditorium. The inside of the auditorium still looks very traditional and weighty. This is due to the fact that the auditorium should be acoustically appropriate and after investigation into the subject, it has been found that one can create the illusion of lightness but for acoustic reasons high weight and low stiffness are necessary for good sound insulation.


Fig 45. Transparent glass screen


Fig 46. Plywood covering on the inside


Fig 47. Auditorium seen from outside

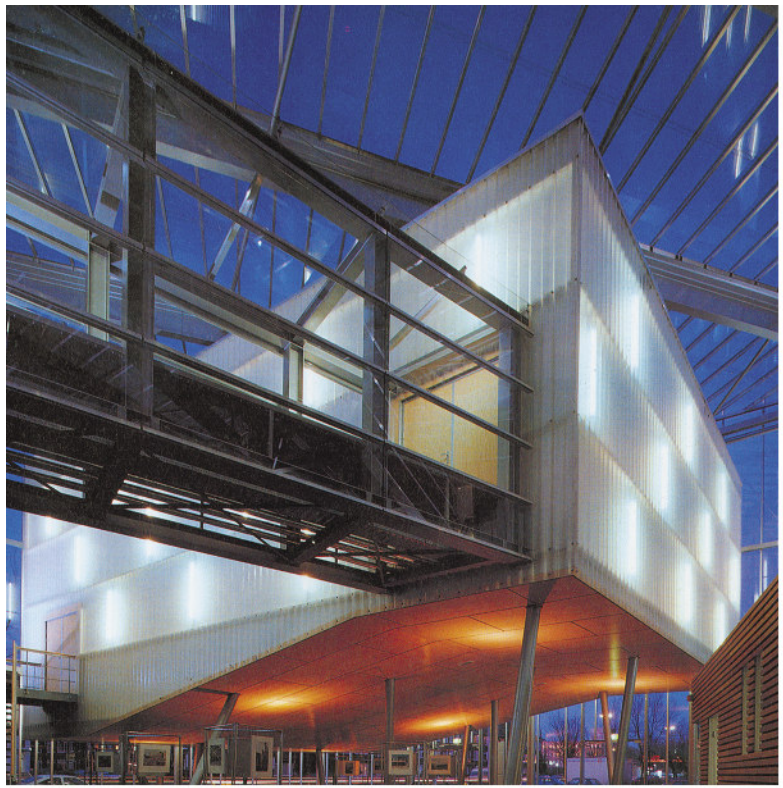


Fig 48. The luminous auditorium in the entrance hall

a. aluminium flashing
b. plywood
c. roof felt
d. concrete screed
e. prefabricated concrete floor elements
f. 8mm clear glass
g. fixing
h. aluminium mullion
i. 2 x 10 mm plasterboard
j. damp-proof layer
k. 75mm insulation
l. 12mm plywood
m. suspendid ceiling
n. aluminium widow frame
o. steel grill

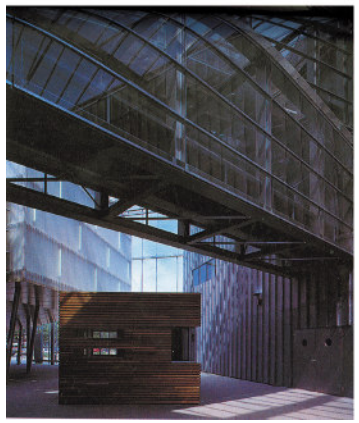


Fig 49. Bridge connecting the auditorium with classrooms

Fig 50. Inside of the auditorium

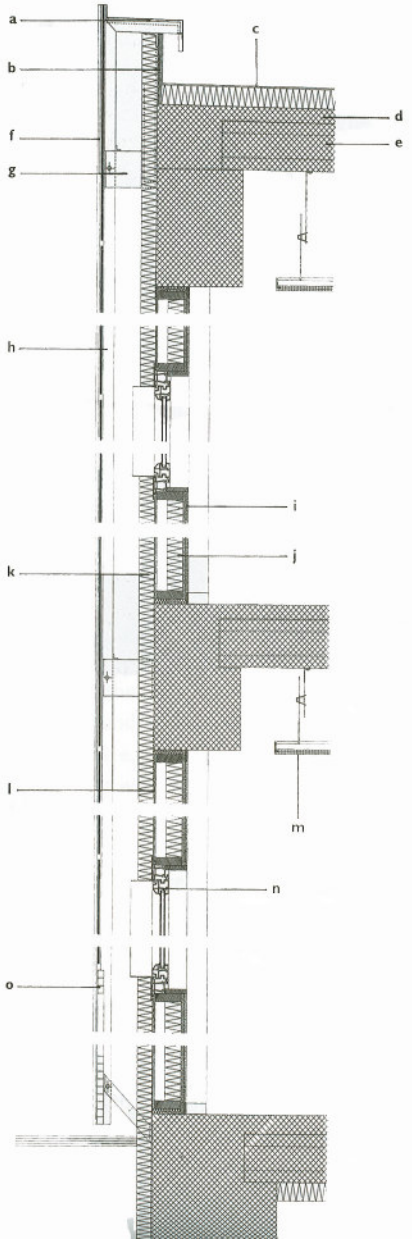


Fig 51. Detail of the exterior glass wall

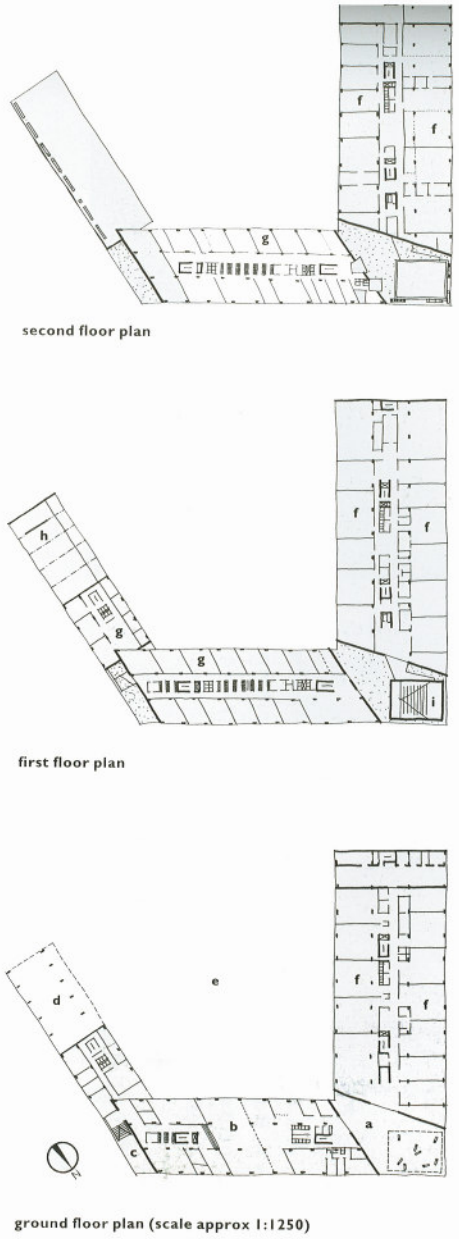


Fig 52. Plans of the building

4.5 Building/Interior: **UFA Multiplex Cinema Centre**

Reference: HEATHCOTE, E. 2001. *Cinema builders*. London: Wiley-Academy, 89 - 95

HEATHCOTE, E. 2000. "The development of modernist cinema – sideshow to art house", *Architectural design: Architecture and film II,* January 2000, vol. 70, no 1: 70 – 73.

KIL & BACHMANN. 1998. "UFA multiplex cinema, Dresden", *Domus*, September 1998, vol. 98, no. 807: 8 – 17.

KUGEL, C. 1998. "Picture palace*", Architectural Review*, July 1998, vol. 203, no. 1217: 54 – 58.

WIDMAN, T. & ROBNIK, D. 1994. "Coop Himmelb(l)au – The UFA cinema centre: splinters of light and layers of skin*", Architectural Design: Architecture and film,* November – December 1994, vol. 64, no 11/12: 49 – 55.

Architect: Coop Himmelb(l)au
Place: Dresden, Germany
Date: 1993 - 98

"Coop Himmelb(l)au is not simply constructing a space containing cinema auditoria but rather designing a mediating in-between zone, in which the entities of cinema and the city communicate with one another." (Widman & Robnik 1994: 49)

The UFA Cinema Centre in Dresden comprises two architectural elements: a basic concrete block, structured only in its outlines, which houses the eight auditoria. Four underground cinemas each seating 200 people and four additional cinemas, two seating 450 people and two seating 500 people. The second component is a clearly dominant metal-and-glass foyer structure in form of an irregular giant crystal spilling out on all sides. (Kil & Bachmann 1998:11) At night this crystalline structure becomes like a lamp displaying a series of complex and fragmented images to the city in a reflection of the vibrancy of the cinema screens within it. (Heathcote 2001: 90)

The foyer is actually a space where things happen and are experienced, almost becoming a cinema itself. Within this soaring interior of the foyer are ramps, stairs and bridges – some glazed, some enclosed by galvanized metal balustrades as well as a 'sky-bar' housed in a double cone suspended over the foyer on a conical cable structure attached to the highest points of the ceiling, like a giant cage. (Kugel 1998: 58) Other structures and facilities also housed in the foyer are an unsteady elevator tower and crooked media chimney containing the projectors as well as snack bars, cafeterias and an underground discotheque. The foyer's elongated surfaces, that are but slightly defined because of their possible modes of utilization, can be used for concerts, fashion shows and media exhibitions. All these structures and facilities contribute to the vibrancy of the foyer. (Widman & Robnik 1994: 51) There are also five projectors in the foyer that enlarge the cinematic experience both spatially and temporally. The films are not only shown in the interiors of the auditoria but on one of the exterior walls where the solid material is changed with fluid lightness of projected images. The main aim of the foyer was to reclaim a piece of urban space, even for people who do not want to buy anything or watch a movie. (Widman & Robnik 1994: 54)

The cinema auditoria housed in the concrete block are arranged over three storeys. They look as if considerations of economy had forced them to be squeezed in one above the other. "The only space that seems to have been left for corridors and intermediate foyers, indeed for the main box-office hall itself on the ground floor, is the residual room beneath the sloping ceilings of the auditoria. Visitors have the constant feeling of being in danger of bumping their heads." (Kil & Bachmann 1998: 11)

Design influence:

Each cinema's foyer fulfils the basic function of linking city and screen – the foyer acts as the mediating in-between zone. "It leads the way and even often anticipates some of that which will follow." (Widman & Robnik 1994: 50) The foyer acts as a public space. The glass façade lets one see the surrounding urban environment


Fig 53. Crystalline glass structure

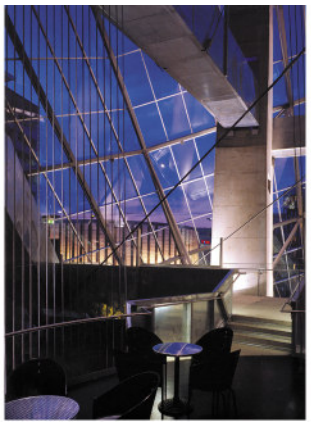


Fig 54. Interior of 'sky-bar'


Fig 55. Vibrant interior of foyer

from the inside and the vibrancy created by the visible routes through the building from the outside attracts people and invites them inside.

In this precedent the foyer surpasses its traditional purpose of being a waiting area but rather becomes a space that encourages the visitors to, formally or playfully, walk towards the cinematic experience. All the functions and structures in the foyer act as catalyst for the experience the visitors undergo as well as the use of projections inside the foyer. “The principle behind the UFA Cinema Centre’s foyer is the connection between sensory perception of feeling and seeing.” (Widman & Robnik 1994: 51) This principle is what leads my design thinking. The idea of stimulating the user’s sensory experience through the space, not only when they enter the cinema auditorium but also from the moment they enter the cinema foyer to the moment they leave the building.

The architect’s idea of creating a vibrant and interesting interior was successful in the foyer but some of that magic was lost in designing the layout of the auditoria. The auditoria are still dark black boxes and are not connected to the lightness of the foyer. The corridors that are not high enough create a sense of stuffiness for the user. Another critique on the building from the public as well as professionals is that one gets the idea that the building is only half done – it appears as if no time has been spent on detail and finishes.

As interior architect, these types of problems should be addressed and resolved successfully. Emphasis will be placed on the users’ experience throughout the building not just in certain parts.

Fig 56. Bridge enclosed by galvanized metal balustrades

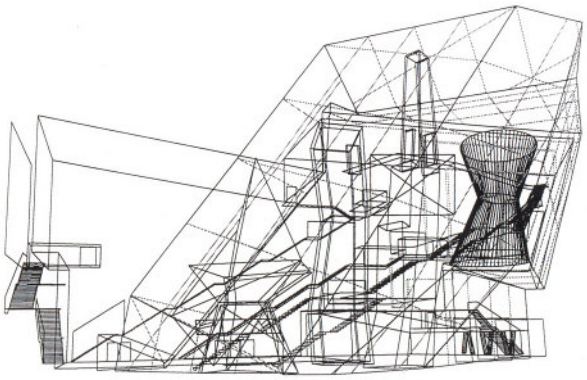


Fig 57. Perspective of the structure

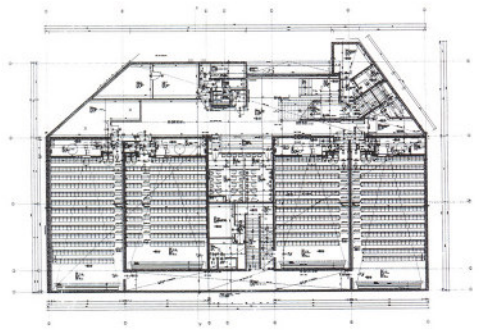


Fig 58. Lower ground floor plan

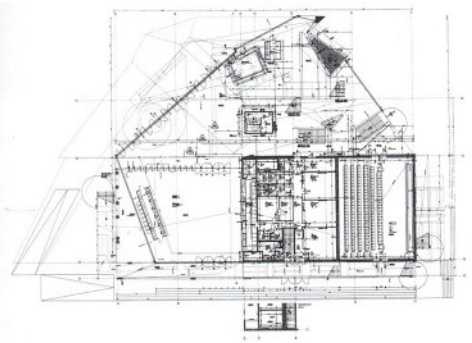


Fig 59. Ground floor plan

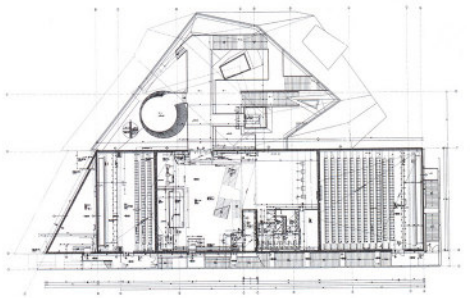


Fig 60. First floor plan

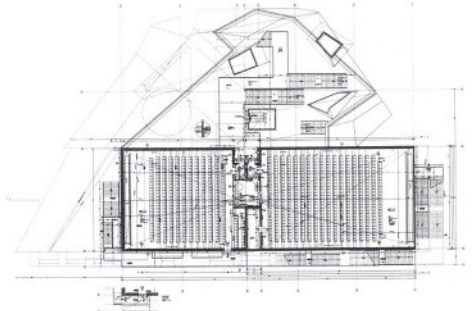


Fig 61. Second floor plan

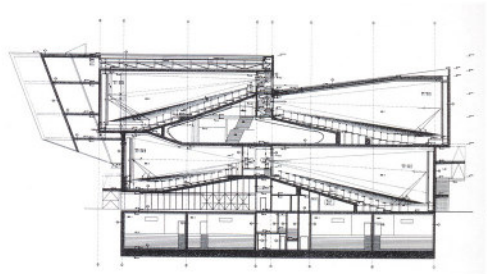


Fig 62. Longitudinal section through auditoria

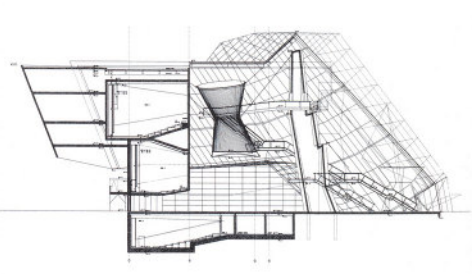


Fig 63. Longitudinal section through foyer

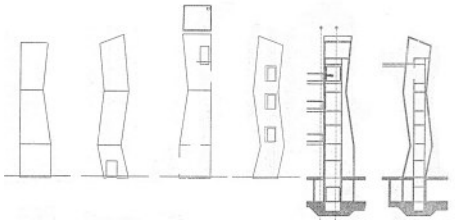


Fig 64. Elevations and sections of lift tower

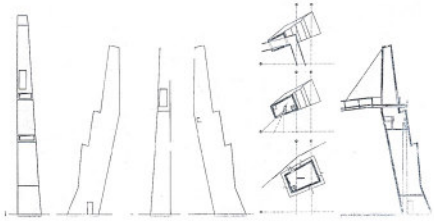


Fig 65. Elevations, plans and sections of service column containing the projectors

4.6 Building/Interior: **Black box, light box – RMJM's Performance Academy**

Reference: EVANS, B. 2005. "Black box, light box". *Architects Journal*. 21 April 2005, vol. 221, no. 15: 28-37.

Architect: RMJM
Place: Newcastle, United Kingdom
Date: March 2003 – November 2004

The building accommodates the Academy for Performance Arts, with a 250-seat theatre, a music venue, 11 recording studios, TV and radio studios, rehearsal and practice rooms, dance studios and two lecture theatres also licensed as cinemas. All the above is housed in the 'black box' area of the building and this helps create the necessary environmental control.

The 'light box' that is in front of the 'black box' is faced in polycarbonate. This polycarbonate front is also intended and extended to act as a screen for projection from the opposite building. On the southeast end of the light box the cladding is set up for back projection of sit-out/drive-in movies. "The interiors are robust, with services exposed on ceilings in corridors. The metal mesh used to retain acoustic absorbance on walls is used decoratively elsewhere."(Evans 2005:21)

Materials used for the light box include: powder-coated extruded aluminium curtain walling; twin-cell polycarbonate cladding with UV coating.

Fig 66. South-east end screen with back projection

Design influence:

This precedent has been studied to explore the possibility of polycarbonate to act as a screen for projection of movies. In the case of this precedent it has been successfully used for both front and back projection.

Fig 67. The south-east end screen

4.7 Component: A retractable timber – clad cinema screen

Reference: DAVIES, C. 2005. "A retractable timber – clad cinema screen". *The Architects' Journal*. 31 March 2005, vol. 221, no. 12: 30-31

Architect: Richard Murphy Architects
Place: Caernarfon, Wales
Date: September 2003 – January 2005

"At the heart of the new Galeri building is an auditorium designed for cinema, theatre or concert use." (Davies 2005:30) To allow this degree of flexibility, the cinema screen is constructed from a rigid steel frame that can be raised out of sight automatically or, alternatively, rotated and used as an acoustic reflector above the stage when the room is used as a theatre or auditorium. (Fig 7) By raising the screen vertically and suspending it at high level, a clear floor space is provided for the stage. A remote hand-held console operates the lift and rising of the screen. The screen weighs 1,500kg. This is due to the convex timber clad reflector surface at the rear end. This rear end also accommodates light fixtures that can be used in theatre mode.

"The screen is fabricated from a series of tubular steel trusses, which are 400 x 400mm at the top, 400 x 350mm at the sides and 400 x 200mm at the base. The propriety projection screen is laced simply into the outer frame and the perimeter edge masked with a traditional cinema-fabric 'valance'." (Davies 2005:30)

Fig 68. Back of screen acts as reflector

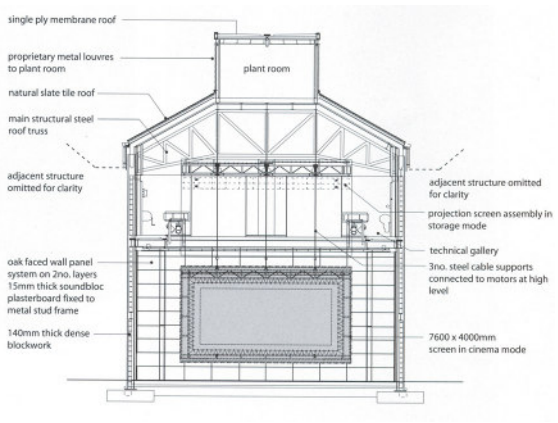


Fig 69. Elevation of screen in cinema mode

Design influence:

As the primary idea behind the design for the thesis is the multiple use of cinema space, this precedent informed the way in which one looks at the components of the cinema theatre. These components can be used if designed properly to enhance the multiplicity of the space.

This precedent was studied as an example of an innovatively used screen. The specific use of structure did not influence the design but the idea had an impact on the design thinking.

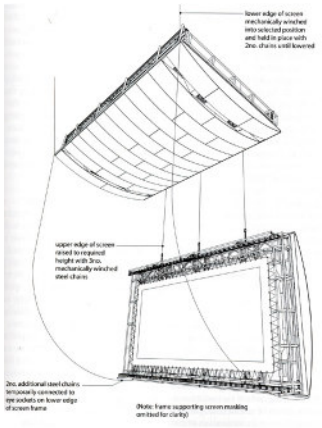


Fig 70. Screen in cinema and storage mode

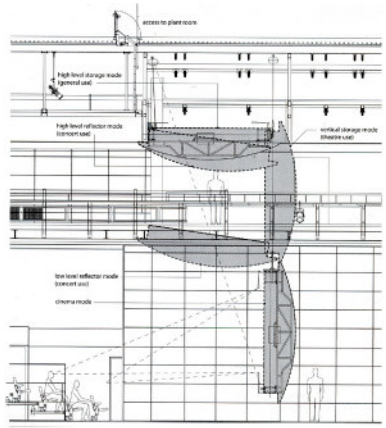


Fig 71. Section showing screen mode location

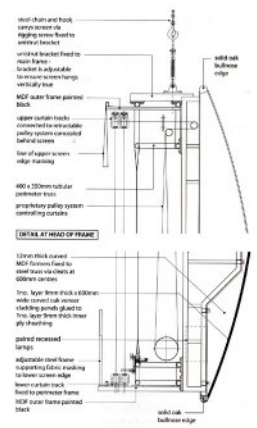


Fig 72. Detail at head and base of frame

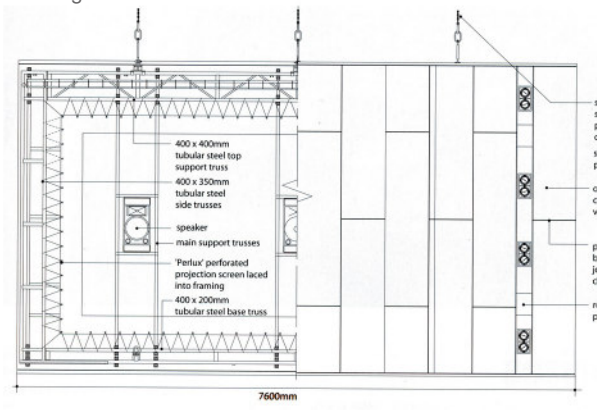


Fig 73. Elevation of screen showing framing and cladding

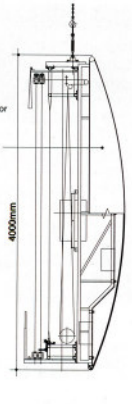


Fig 74. Section through screen

4.8 Component: **Seating with screens at the Heineken experience (museum and interactive gallery)**

Reference: *Experienced by the author*

Architect: Unknown
Place: Amsterdam, The Netherlands
Date: *Visited on 30 June 2005*

Design influence:

On a trip to Amsterdam in June we visited the Heineken experience – a museum and interactive gallery. In this museum they have used some of the most advanced visual technology like holograms as well as a cinema auditorium where the viewer stands on a moving platform. The platform then moves according to what is showing on the screen. Another interesting aspect of the Heineken experience, which had an influence on my design, was the use of individual seats with their own screen where people can watch Heineken advertisements from all over the world. The seat and the screen adjust with the push of a button.

The images are projected onto a mirror panel and are then reflected onto the glass screen. The speakers are situated on the seat next to a person's head.

As these seats with their screen are only used for short periods of time and not for viewings of longer shows or movies, they are situated right next to each other without a partition between two people sitting next to each other. Although it is used for short periods of time, the seats are comfortable and ergonomic. As the use for these type of screenings in the dissertations is quite different and the viewing period much longer, emphasis should be placed on the users' comfort and privacy.

Fig 80. Screens and seats adjustable.

Fig 75. Heineken experience

Fig 76 - 77. Seating with screens

Fig 78 - 79. Moving image projected on screens

4.9 Technology: Digital cinema

Reference: ANONOMOUS. Digital cinema - D-cine premiere DP100 projector. Available on the Internet at http://wwwbarco.com/digitalcinema/en/products/DLPCinemaprojectors.asp. Accessed on 3 May 2005.
LAGRANA, F. 2002. Digital cinema. Available on the Internet at http://www.itu.int/itunews/issue/2002/01/digital-cinema.html. Accessed on 24 May 2005.

Digital cinema can be defined as follows: “Digital cinema is a new service which applies the most advanced television technologies to the world of cinematography. It simulates conventional cinema (projection of films on giant screens for large audiences) by using the technologies that brought us high definition digital television. (Lagrana 2002:2,http://www.itu.int/itunews/issue/2002/01/digital-cinema.html)

According to Walt Husak, the cost of delivering a file to a screen is inversely proportional to the number of screens in a complex. Thus, the larger the number of screens at a given location, the cheaper it is to deliver a digital movie to an individual screen. He also stated that digital cinema will allow rapid relocation of theatre assets to meet changing demands and this mechanism will allow flexibility to maximize revenue. (2004: 299–230, http://www.sciencedirect.com) Another advantage of digital cinema is the quality of the image. With films the quality of the image decreases with each reuse of the film reel. This is due to the fading of print dyes, dust and hairs collecting on the film as well as scratches. With digital projection these problems are eliminated. No matter how many times a file is played, the image will be as good as when it was originally delivered.

A typical projector for digital cinema is the D-Cine Premiere DP100 by BARCO. This projector makes use of the Digital Micromirror Device technology and can accommodate screens up to 25 meters wide. Another advantage is the flexible two-piece construction for convenient installation and operation in digital theatres. The dimensions for the whole projector which include the projection head and pedestal are: 1482mm (in height) x 768mm (in width) x 1120mm (in length). (http://wwwbarco.com/digitalcinema/en/products/DLPCinemaprojectors.asp)

“With the advent of digital cinema, existing cinema complexes can be transformed into genuine multimedia centres, where, in addition to digital films, it will be possible to broadcast live high definition television programmes, stage productions, concerts and all manner of sporting and cultural events.” (Lagrana 2002:3)

Design influence:

With digital cinema the space required for the storage of large film reels and projection rooms is minimised. Another aspect that also has an influence on the design is that the digital projector’s probability to catch fire is less then a normal film reel and thus fire prevention in projection rooms for projectors will be decreased. The use of digital cinema substantiates the idea of a multiple used space by allowing movies as well as alternative content to be shown in the auditoria.

Fig 81. D-Cine Premiere DP100 projector

Fig 82. SLM R12+ projector of alternative content

5.1 Design development

5.1.1 The architectural language

The building is on the corner of Whitely Road and Curve Street in the Melrose Arch Precinct in Johannesburg. The unique characteristics of Melrose Arch and the guidelines stipulated by Osmond and Lange Architects have guided the design of the building and the architectural decisions on the development of the project. The shape of the building developed out

of the footprint given by Osmond and Lange Architects. As this dissertation will be submitted as part of the requirements for the Degree of Interior Architecture, the emphasis was placed on the interior of the building rather than the facade. However, the functions and the design of the interior components have a direct impact on what is happening on the outside of the building in terms of marketing and advertising.

The building is situated to the west of the future Melrose Square and the main entrance to the building will face the square. (Fig 87) The other entrance to the building will form a axis with the public entrance from the basement parking which is situated in the future building adjacent to the south of the cinema centre. To the south–eastern side of the cinema centre a walkway is formed between the two buildings. The façade of the cinema centre will be glass all along this walkway to create awareness of the activities going on inside the cinema and for the safety of the people walking outside the building.

All along the ground floor of the building will be opportunity for retail and this will enhance the pedestrian movement and the vibrant atmosphere on the sidewalks. The building consists of three basements that run underneath the whole precinct and four storeys from which only areas in two basements and areas on the ground floor and first floor will be occupied by the cinema centre and accordingly designed. The rest of the building will house retail opportunities on the first floor and office space on the rest of the floors.

On the ground and the first floor of the building the floor area where the cinema

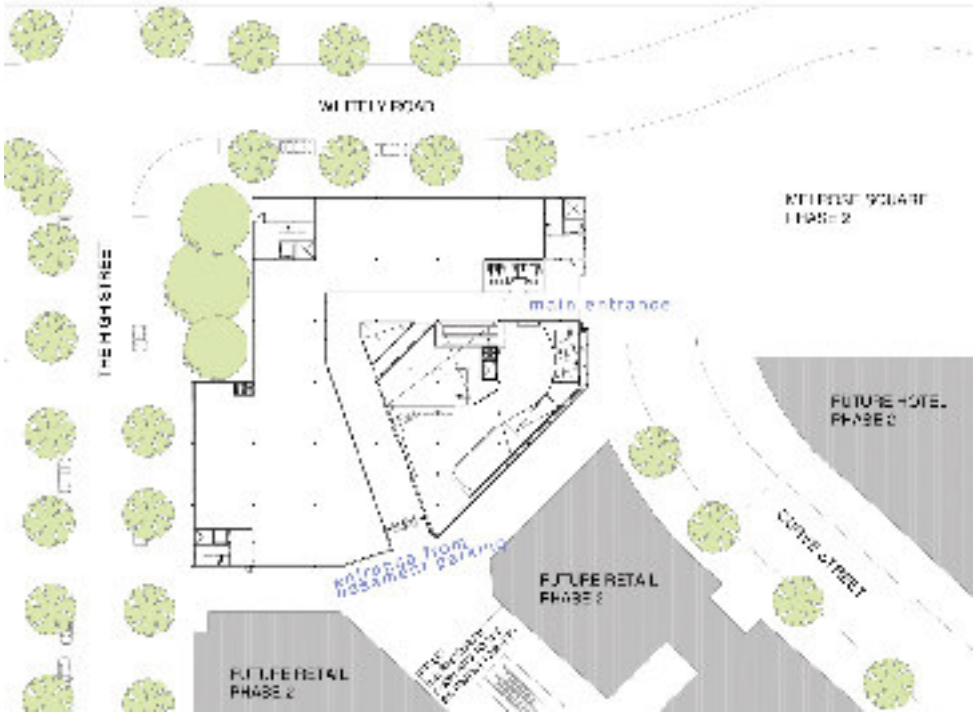


Fig 87. Footprint and site layout

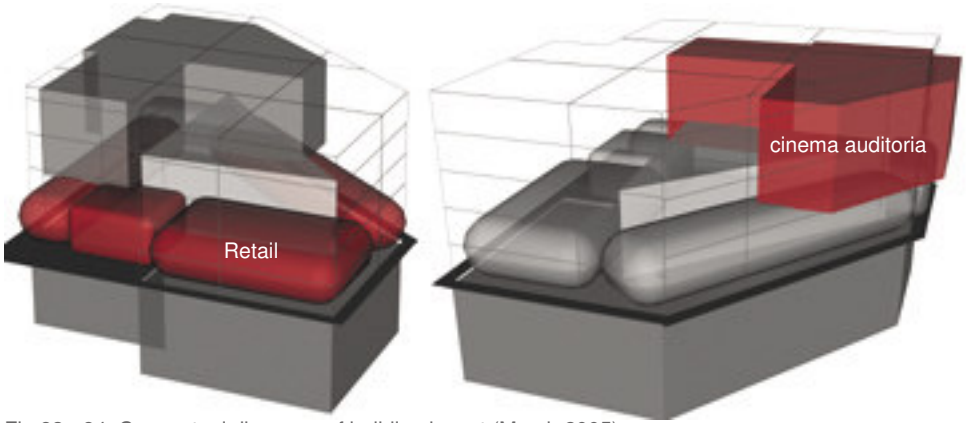


Fig 83 - 84. Conceptual diagrams of building layout (March 2005)

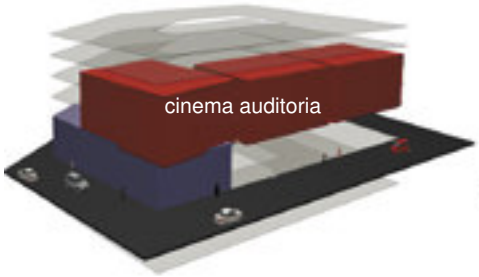


Fig 85. Concept of building layout (April 2005)

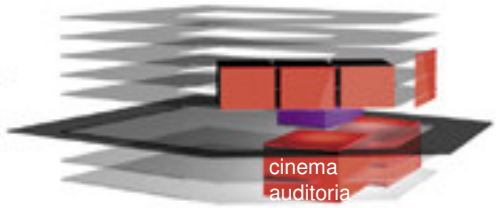


Fig 86. Concept of building layout (June 2005)

centre is situated has been cut out and lowered by 400 mm. This was done to accentuate the idea of a building inside a building – that the cinema centre is an entity on its own and functions individually from the rest of the building. Moreover, only this part and the cinema area in the basement have been taken into account is the design process.

5.1.2 Interior expression

Design concept

The cinema centre is based on the film and information technology industry especially new and future technological trends. The main focus, however, is the user's experience through the space and how it can be enhanced through the use of technology. The aim is to create a sense of voyeurism, which exemplifies the user's experience in the cinema auditoria and in the rest of the building by creating passing glimpses, which combine activity and object. The cinema centre will provide a space of invention, innovation and experience.

Zones of use

Two main zones of interaction have been established with their intermediated zones: **Public** – Semi-public – Semi-private – **Private.** (Refer to user profile and accommodation schedule in Appendix A) These zones distinguish the specific needs of the user in regard to this project.

The first zone is the public zone where visitors move freely through the space. This area includes the entrance and foyer, the digital gallery and all other retail facilities situated on the ground floor of the building. This zone acts as a point of connection between the cinema facilities in the basement and the cinema facilities on the first floor, both of which are semi-private spaces, thus linking the traditional /old with the experimental/new.

The intermediate zones are the semi-public and semi-private zones. These zones act as buffer between the private and public zone. The semi-public zone consists of the mezzanine level which includes a bar and concession stand. This is a semi-public zone because it is open for use to the public but will mostly be used by people on their way to the first floor while they wait for a movie or afterwards on their way down for some refreshment. The mezzanine level also acts as point of transition from the world of fantasy – the simulation of reality – create by the movie and reality. The semi-private zone includes the traditional cinema auditoria situated in the basement as well as the experimental booths and cinema auditorium situated on the first floor. Access to this zone is controlled, granted only to the ticket holding user.

The last zone is the private zone. This zone is under strict control and may not be accessed by the visiting public without consent from management. This sector includes management offices on the first floor as well as projection rooms and staff quarters in the basement. The management offices are situated on the first floor to the north of the building. This is away from retail facilities but close enough to the cinema centre to keep an eye on activities and easily accessible if there are any enquiries or complaints from the public. The projection rooms in the basement are connected to one another and can thus be operated by a single person or two people. Underneath cinema 1 on basement level 2 there are staff quarters as well as storeroom facilities for cleaning and maintenance equipment. The quarters also have easy access to the emergency route and access to the cinema auditoria away from the public eye.

The visual tour

Ground floor:
The orientation as well as the location of the public square had an impact on the placement of certain functions inside the building. As one enters the building from the entrance facing the public square, which is the main entrance for the cinema centre, one notice the double volume space with a glimpse of the mezzanine level and a concrete column grid with steel I-beams that support the floors above. The cinema

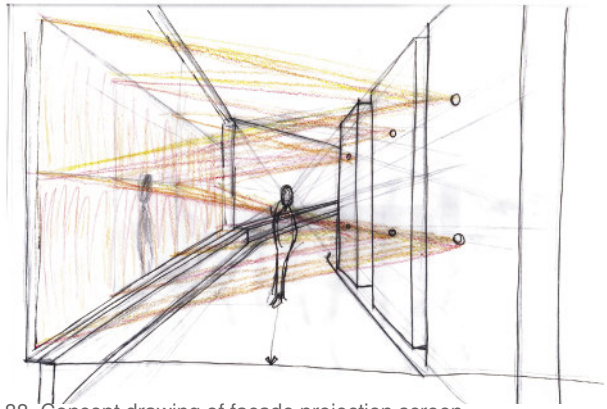


Fig 88. Concept drawing of facade projection screen

centre is then entered by a laminated wood ramp, which is one of the prominent features of the ground floor. The ramp lets visitor walk behind a Plexiglas (RP) rear projection screen that faces the walkway. The Plexiglas screen is especially designed for rear projection with a special gray-transparent colour and moulding compound that provides brightness and sharp contrasts. The screen is also glare-free due to its antireflective surface and is available in 3mm thickness. Because the ramp runs between the six rear projectors housed in aluminium and Plexiglas boxes and the projection screen, the silhouettes of visitors appear on the outside of the building as they walk down the ramp. (Fig 88) The idea of a large screen facing the public was rooted in the idea of the open-air cinema and its philosophy discussed in chapter 2.1.2. At the bottom of the ramp the visitor can enter the cinema centre or go up another ramp that extends from the first to the Digital Gallery. The Digital Gallery is situated along the glass façade. By doing this an interesting and lively display front is created which attracts people, walking along the outside, into the building. The display of the gallery is also adjustable and this adds to its intriguing appeal. From the outside of the building the ramp with the interactive screen display can be seen as the first technological glimpse of a set of glimpses throughout the building and the digital gallery as the second. By entering the cinema centre from the ramp, one faces a glass lift in a steel I-beam structure and the escalators that lead to the basement level. This area has a natural concrete floor finish with a clear liquid epoxy coating. The coating has a texture to make the surface slip resistant.

Another entrance is situated on the south side of the building. This entrance is to accommodate people that come from the public parking basements. The entrance and exit to and from the basement are situated in the adjacent future building on the south-east of the cinema centre.

As the cinema centre shows different movies at different times according to the demand and the design idea is to create a technological advanced centre, the visitor is encouraged to book a screening over the Internet and collect their tickets on arrival at a manual ticketing machine. For visitors who do not have access to the Internet or have not booked in advance, an information kiosk with assistance is available. The manual ticketing machines as well as the information kiosk are situated next to the staircase that leads to the mezzanine level. Both of these are easy accessible and visible from the ramp and the south entrance.

Natural light floods the ground floor of the cinema centre through the southeast glass façade. This significantly improved the light quality of the space and the use of artificial light sources are kept to a minimum. Through the orientation of the glass façade the amount of direct lighting and glare is controlled as the space houses digital display screens especially the digital gallery that runs along this façade. Problems may occur during early morning with the bright easterly sun but the cinema centre will only operate from 10:00 and direct lighting from 10:00 to 12:00 will be blocked by the screen structure facing the public square and the adjacent building to the south east. Power surface-mounted downlights with acrylic glass reflectors are to be used with compact fluorescent lamps for night time illumination and extra illumination during the day if needed. These compact fluorescent lamps are more environmentally friendly than tungsten lamps because they use less electricity and have a longer life. The stainless steel air conditioning ducts are exposed and suspended from the concrete soffit. (Refer to Technical resolutions p 50 for information on the air conditioning system.)

Basement:

From the ground floor one takes the escalators located next to the glass lift to the basement level where the traditional cinema auditoria are situated. As the design developed, certain functional spaces were moved to adapt to a more informed design. The large scale of the auditoria and their shape made these spaces hard to place. Initially these traditional cinema auditoria were situated on the first floor of the building. Further examination, however, showed that they can be seen as dark space, do not make use of natural lighting, are zoned as semi-private spaces and are not used by the general public but by ticket holding users as mentioned above. This made placement of the auditoria in the main building on the first or ground floor inappropriate as these spaces have retail potential and make use of natural lighting. After consulting David Curry of Osmond and Lange Architects on the use of the precinct's basement and the amount of parking bays that have to be accommodated, a decision was made to move these auditoria to basement level one. The foyer in the basement houses a concession stand as well as toilet facilities for men, women and disabled people.

The traditional auditoria also comply with the SABS National Building Regulations 0040 on fire safety. Because both of these cinema auditoria can accommodate more that 25 people, two emergency exits apart from the main entrance to each cinema had to be added as well as two separate emergency routes from the basement to the outside of the building. An emergency exit from the foyer has also been added.

Natural light that filters through the atrium during the day illuminates the basement foyer with the added help of downlights with acrylic glass reflectors and compact fluorescent lamps.

Mezzanine:

From the ground floor level there is a concrete staircase next to the manual ticketing

machines that leads to the mezzanine level. The last six steps of the staircase extend to form seating with cushions sunken into concrete, which faces a screen. (Fig 89 - 91) This level extends over the part of the atrium and part of the hallway at the main entrance thus creating a glimpse as one enters the building as mentioned above. The mezzanine level houses a bar and concession stand with informal tables where one can stand and have a drink. One of these tables is lower to accommodate people in wheelchairs. The mezzanine is also reachable by taking the glass lift making it accessible for all users. The mezzanine level's floor finish is the same as on the ground floor level with concrete and epoxy finish.

The concrete staircase that leads to the first floor from the mezzanine level is situated next to the glass lift and air-conditioning shaft. A Plexiglas RP screen cuts thought this staircase and acts as another projection screen according to the same principles that apply to the screen at the entrance of the building. This screen is rotated on an angle to allow a visitor that enters the building to have a glimpse of the silhouette of the people ascending to the first floor through the moving image.

Natural lighting from the glass façade as well as the atrium roof illuminates the mezzanine level. The artificial light sources used are specialized lamps that are incorporated in the bar design well as the design of the tables. (Discussed more in detail in part 5.2.2)

First floor:

As one enters the first floor from the staircase and the lift one is faced with a series of booths for the viewing of individual screenings. These booths are situated along the glass façade of the cinema centre. From the outside of the building people get a glimpse of these booths between the screens, which penetrate through the glass façade to the outside of the building and this creates awareness that something interesting and new is happening on the inside. The booths form a rhythm through the space vertically and horizontally. This has been done by their difference in sizes, by raising some from the floor and by the way they have been constructed. The first one has just the bare essentials of the structure moving to the complexity of the double booth, the last in the sequence. (Fig 92) This accentuates the idea of the movement through the space, which correlates with the movement of images in a movie. Lights that are levelled with the finished concrete floor with epoxy finish leads the visitor's eye from one booth to the next.

A laminated wood step and a concrete ramp leading to public toilet facilities and an emergency route is situated on the left as one enters the first floor and are clearly visible and accessible to all.

In the middle of the first floor extending over the atrium is the experimental cinema connected to the first floor by bridges. This light box consisting of a translucent corrugated fibreglass shell can be seen throughout the cinema centre. It is isolated from the rest of the functions giving the idea that it is floating in the air, an entity on its own and it acts like a beacon in the space. Entering the experimental cinema one has to enter through a fog screen. The visitor then walks through the image projected onto this vapour screen. This creates an interesting experience, acts as threshold for the auditorium and substantiates the idea of integrating the user with the moving image. This cinema auditorium only houses 20 people and requires

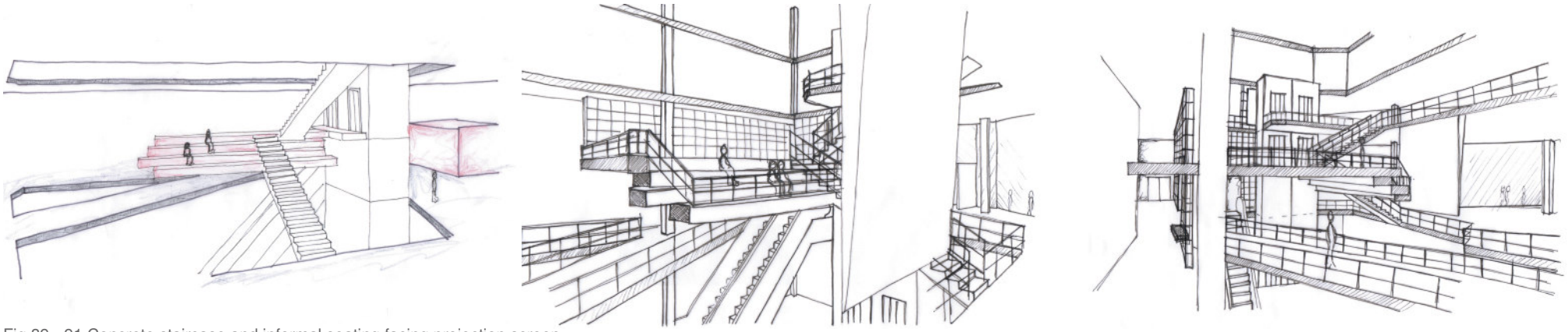


Fig 89 - 91 Concrete staircase and informal seating facing projection screen

only one emergency exit apart from the main entrance. The exit is situated close to the door that leads to another emergency route opposite the one at the entrance of this level.

Apart from the specialized lighting of the experimental cinema and the individual booths, natural lighting from the glass façade illuminates the first floor by day and power surface-mounted downlights with an acrylic glass reflector are used with compact fluorescent lamps by night. To prevent glare on the screens of the individual booths, screens that project through the glass façade have been incorporated in the design. These screens create the opportunity for marketing and advertising on the façade of the building. Again exposed stainless steel air-conditioning ducts were used to control the temperature on this floor.

Colour and Texture

The heavy concrete of the architecture is accentuated by the lightness of the design elements like the screens and glass balustrades. By adding richness and contrast in texture the user's sensory experience through the space is enhanced. In contrast with the building's monochromatic grey palette - concrete, stainless steel and glass – the interior components are bright colours and a rich wood colour. This contrast improves the use of a contrasting architectural approach, making use of design elements to create a sense of juxtaposition playing light against heavy and removable against permanent. The lustre and grain of the surfaces together with the tones of grey and splashes of colour exemplify a sense of film.

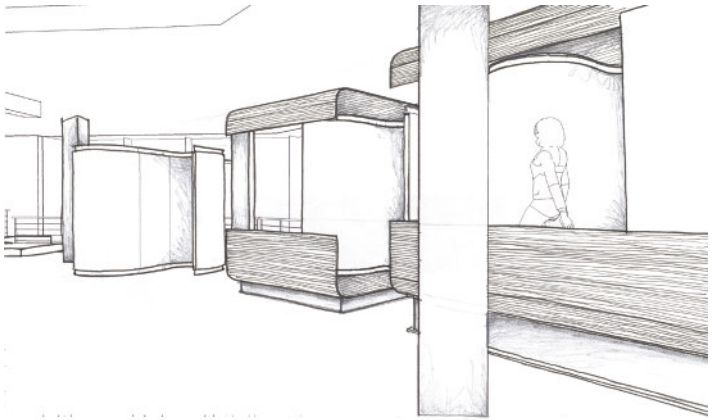


Fig 92. Cinema booths on the first floor

5.2 Design interiors

5.2.1 Ramp and digital gallery

The ramp at the entrance of the building consists of a wooden structure, a laminated wood floor finish and stainless steel edging to accommodate the balustrade on the side facing the window. The floor finish is coated with a textured clear epoxy to make it slip resistant and to keep its light dark wood colour and texture. Laminated wood has been chosen for the ramp, as it is a light material and contrasts with the heavy permanent structure of the building as mentioned above (Colour and texture). Technology and materials change as well as the use of building and these interior structures are not meant to last fifteen to twenty years but have a life span of five to eight years. Thus, the laminated wood flooring is durable for the ramp's life cycle. The ramp curls around the stainless steel and Plexiglas boxes that house the projector. It is wide as one enters and then narrows as one descends. This invites people to enter the space and to experience the ramp rather then entering with the step. Where the ramp curls around the boxes as well as some concrete columns it is cut away from them with a shadow line to create a crevice between the ramp and the column. Miniature fluorescent tube lamps are placed in these crevices to accentuate them. The wooden ramp is sunken where it meets with the concrete floor to make it level with the finished floor level. Where these two floor finishes meet, a thin aluminium strip has been applied to create a neat and clean transition line. The same aluminium strip will also be used where the ramp and the floor meet at the entrance.

The Digital Gallery extends out of the entrance ramp and forms another ramp as one enters the gallery. The ramp rises to 400mm above the finish floor level where it levels out to a horizontal plane and creates the gallery area. The second ramp as well as the digital gallery's floor is constructed the same way as the entrance ramp with a wood beam structure and a laminated floor finish. At the far end of the gallery the laminated wood structure curls up to form a wall and ceiling structure for the gallery. The two ramps and with the digital gallery give the idea of a piece of film that has been curled up and inserted into the space. This same idea had an influence on the other interior components designed in the cinema centre. (Fig 100)

The Digital Gallery has nine white translucent Plexiglas 1000 x 2500 mm movable box panels and in each of these panels is a set of LED lamps that can change colour. These panels are used on which to project clips and images from projectors fixed on a tract system above the panels. If the panels are not used for projecting images, the LED lamps are turned on and the panel changes into a specific colour.

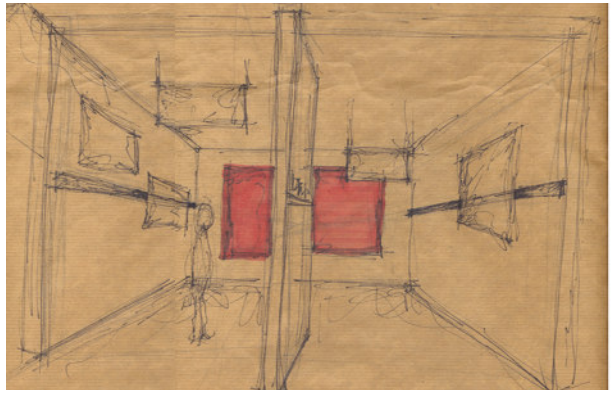
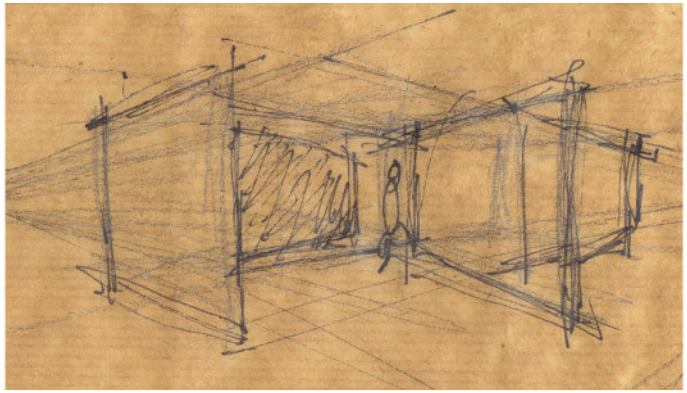
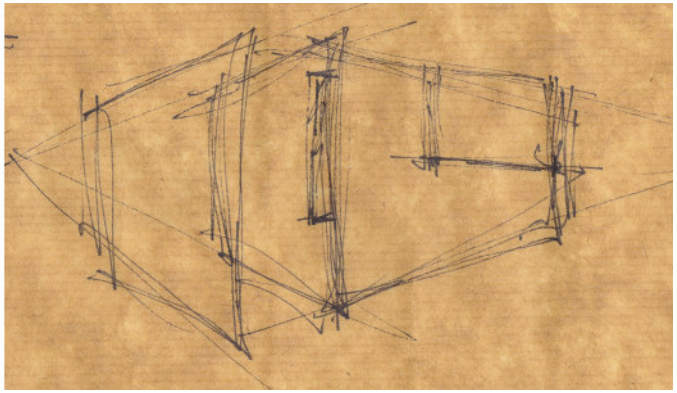




Fig 93- 95. Conceptual drawings of the digital gallery (Mei 2005)

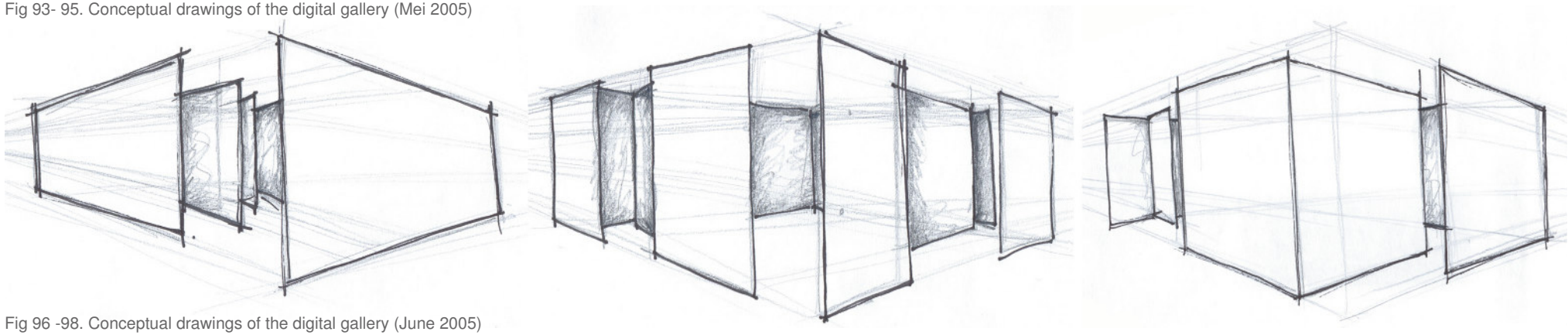


Fig 96 -98. Conceptual drawings of the digital gallery (June 2005)

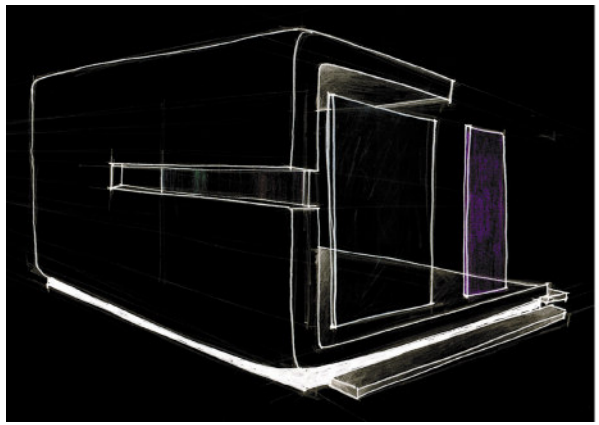


Fig 99. Conceptual drawing of gallery (August 2005)

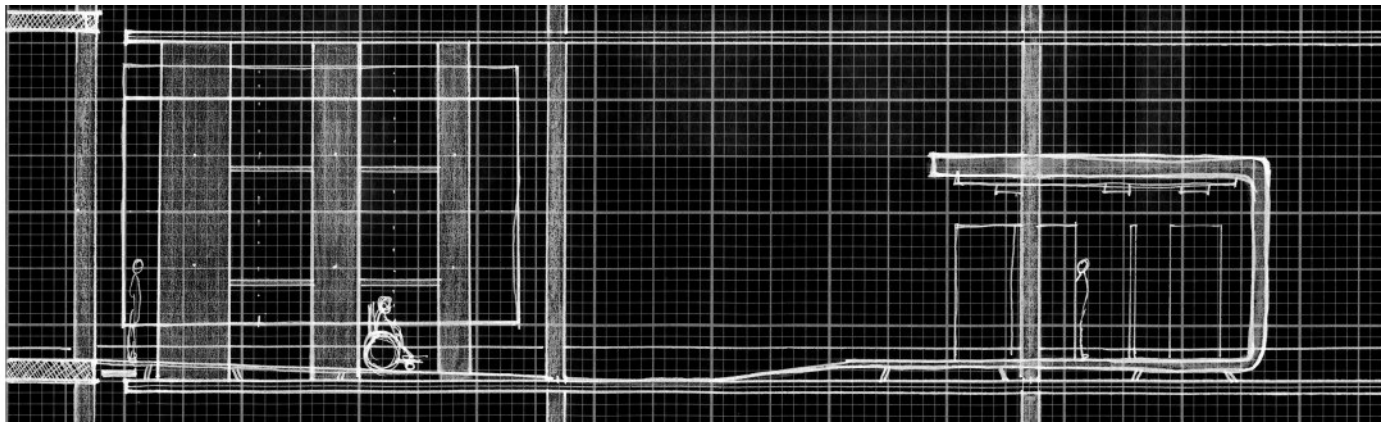


Fig 100. Elevation of final design of Digital gallery and ramp

Fig 101. 3D rendered presentation of the ramp and projection

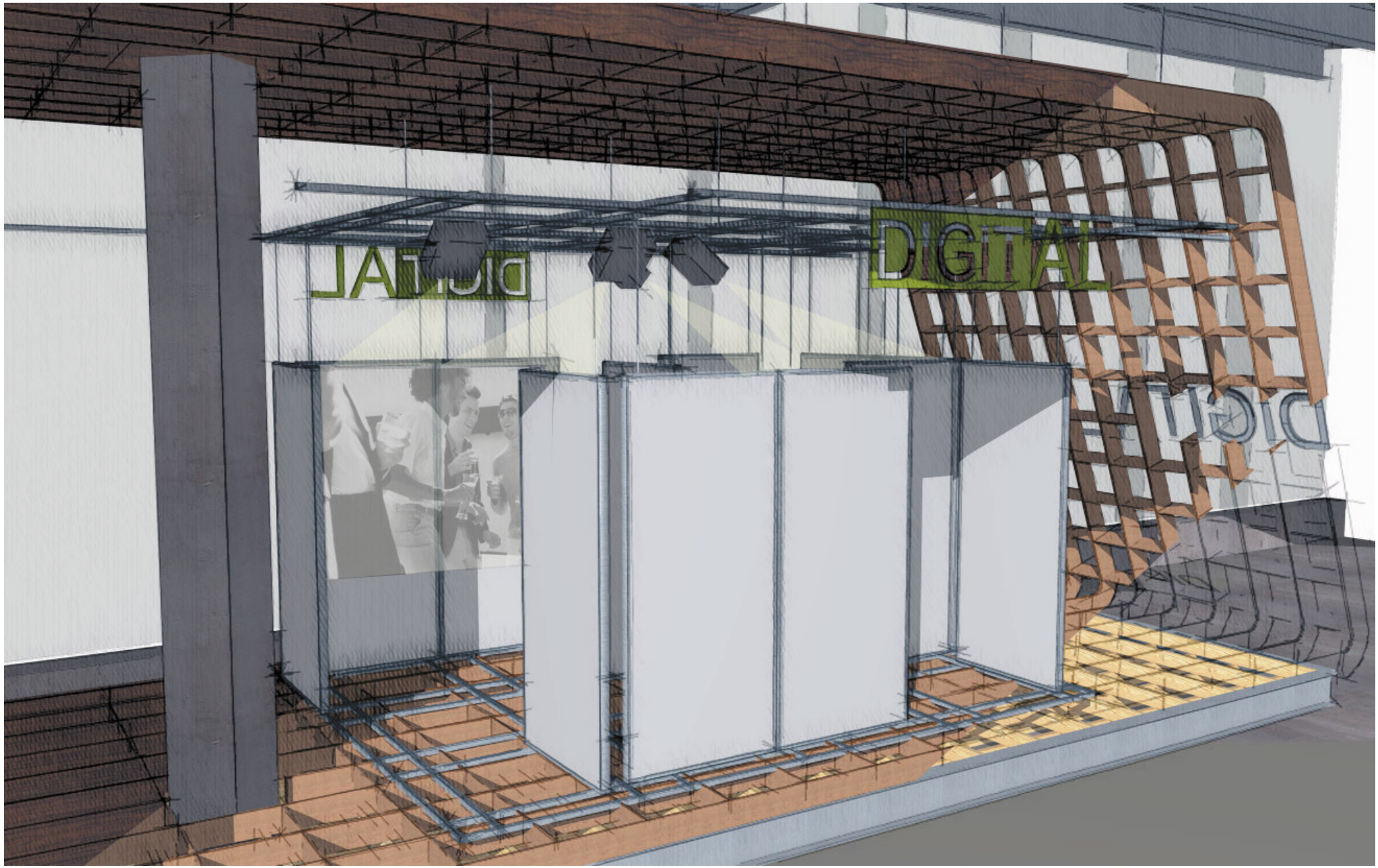


Fig 102. 3D rendered presentation of the digital gallery and structure

The idea of these movable panels is to create an every changing display, which attracts viewers again and again because the experience feels new each time they visit. The panels can be moved and rotated by a track system level with the floor finish and at the top of the panels.

The illumination caused by the natural light that enters the building from the glass façade is sufficient for the gallery during the day and at night the light from the panels creates a colourful glow in the space that will be spoiled if extra light sources were installed in the gallery. The same idea of exposed service like the exposed air/conditioning ducts applies here where the track systems and projectors are open and exposed for public viewing.

5.2.2 Elements on the mezzanine level

The counter of the bar on the mezzanine level is designed according to the traditional cinema entrances of the 1940's with the white illuminated box and the black lettering. (Fig 102) The design language of the bended filmstrip is also applied in the counter top as well as the design of the tables. The tables extend over the edge of the mezzanine level in different sizes and lengths and are connected to the underside of the soffit. This imitates the screens that penetrate through the glass façade on the first floor. (Fig 101)

The material used for the tables are colourful translucent Plexiglas *satinice* sheets that were bent. Plexiglas is a Polymethylmethacrylate (PMMA) polymer. According to Ashby and Johnson, PMMA is a thermoplastic that is hard and stiff, and can be thermo-formed and joined with epoxy, polyester or nitrile-phenolc adhesive. PMMA is usually a clear transparent polymer and resembles glass but new types have been introduced like the Plexiglas *satinice*. The *satinice* has a sandblast translucent look and this matte surface is retained after thermoforming. These sheets are available in a wide variety of colours, in sheet sizes of 3050 x 2050 mm and from 2mm to 20mm thick. (Ashby & Johnson 2004: 193) Plexiglas satinice was the material of choice for its bending properties, optical appearance and because it is insensitive to abrasion and resistant to finger marks. The last two points makes this material low in maintenance.

These 'boxes' that are created by the tables are illuminated with miniature fluorescent tubes where they connect with the concrete soffit. From the entrance on the south of the building these illuminated colourful 'boxes' are visible.

5.2.3 Cinema Booths

The cinema booths consist of a laminated wood floor that extends upwards to form balustrades and a laminated wood ceiling that is suspended from the soffit with a steel structure. (Fig 104, 105) A gypsum board box, painted a dark colour, hides the steel structure and a crevice is formed where it meets with the wood ceiling. The laminated wood floor finish, raised from the floor, rests on a tongue and groove plank floor supported by a wood beam structure. I-beams all along the edge of the wood structure add support and hide the wood structure from the public eye. Fluorescent tube lamps are positioned inside the crevices as well as fixed to the I-beam supports that carry the floor. This creates the illusion that the booth is floating

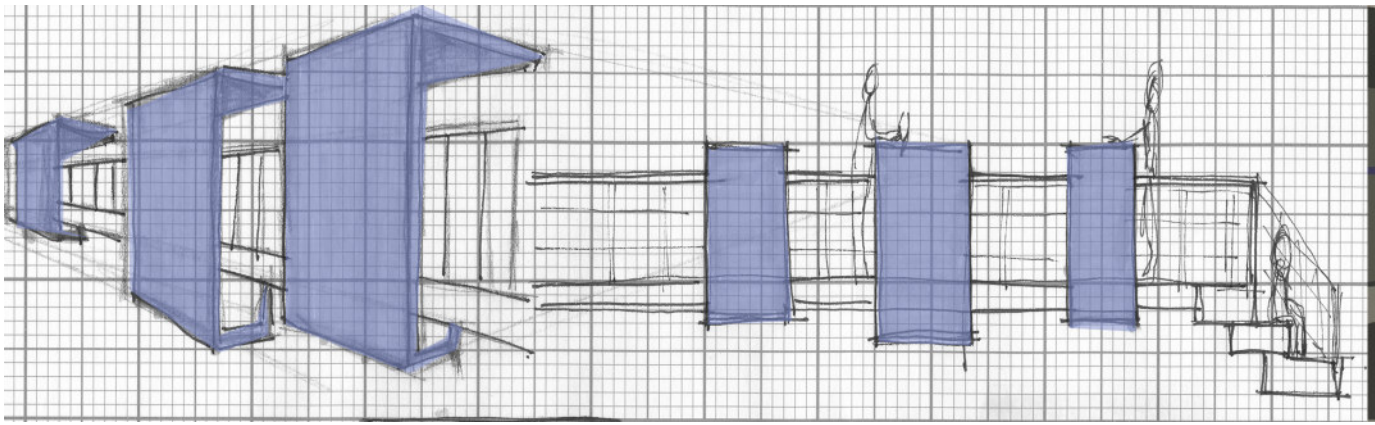


Fig 103. Drawings of the Plexiglas tables on the mezzanine level

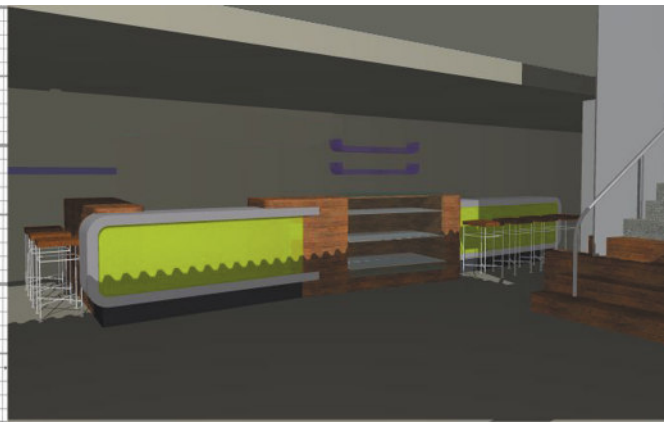


Fig 104. Bar counter

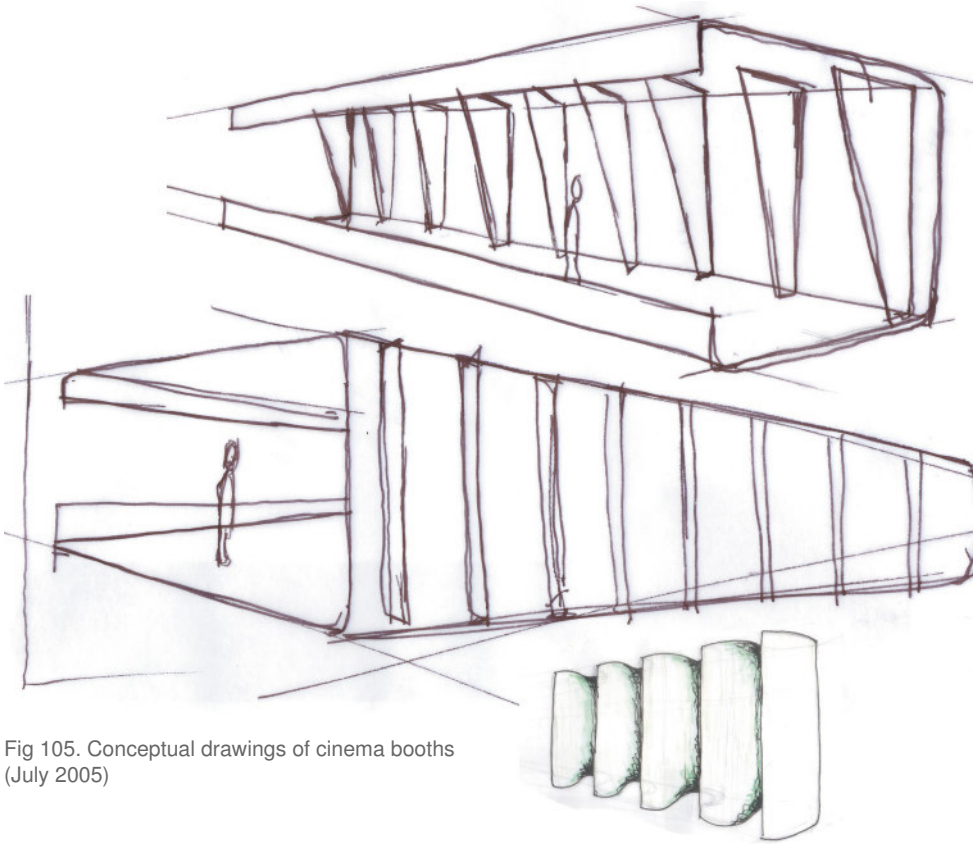


Fig 105. Conceptual drawings of cinema booths (July 2005)

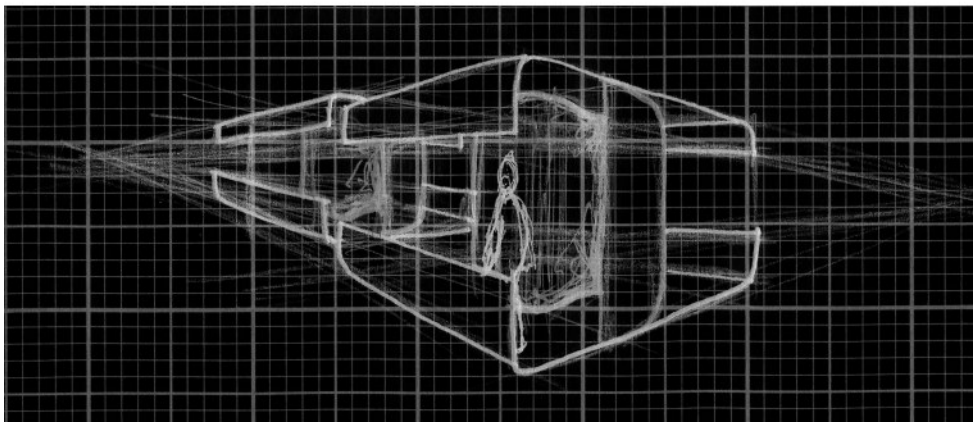


Fig 106. Prespective of cinema booths

in the air.

The floor and ceiling are connected to one another by a curved partitioning made from two layers of Plexiglas *satinice*. The Plexiglas partitioning is fixed to the laminated wood floor and ceiling by a steel structure that is bent according to the curve of the partitioning. The steel structure rises the partitioning from the floor to create a crevice. This is repeated at the connection with the ceiling. Miniature fluorescent tubes lamps are positioned inside the crevices, out of view. The curved partitioning creates private cubicles on opposite sides of each other. Each of these private cubicles is equipped with an adjustable seat and screen.

To make sure the visitor's attention is on the movie and not on people walking by the cubicle, a screen has been fixed to the laminated wood booths. These screens are positioned on the sides of the booths facing the atrium. This is to isolate the cubicle from the visitors on their way to and from the experimental cinema or the other booths. A track system makes these screens movable for the visitor's convenience.

The first booth as one enters the first floor does not have a laminated wood floor or ceiling. The partitioning component is directly fixed to the finished concrete and epoxy floor. These cubicles are not equipped with a seat and are bigger than the other cubicles. This is to accommodate people in wheelchairs. They do not have to leave their chair to enjoy the private screening. The screen is placed level with a person in a wheelchair's eye height or the eye height of a child standing.

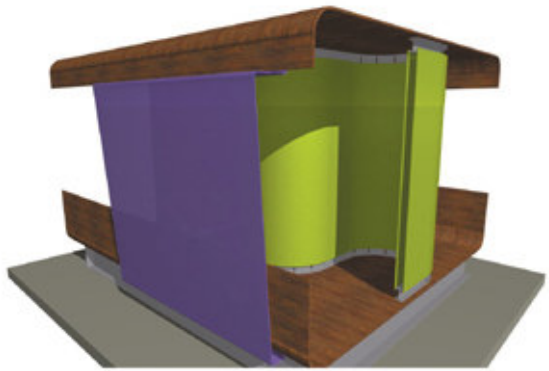


Fig 107. Rendering of Cinema booth

The last booth in the sequence houses cubicles that are designed to accommodate two people and not just one and are equipped with two adjustable seats and a larger screen. As with the other laminated wood applications the floor finish is coated with a textured liquid clear epoxy to make it slip resistant. The general air-conditioning unit for the first floor will also provide the booths with controlled temperature air.

5.2.4 Experimental Cinema

As one enters the experimental cinema a floating wood-clad organic inner shell is revealed. (Fig 108) This wood shell extends from the wall where the screen is positioned to the floor surface, grows into steps, then curls up against the wall in the back and splits into five different size fingers and forms a sinuous wood ceiling where it connects to the started point. The sinuous ceiling assist in the transmission of the sound throughout the space. The two other side walls do not have a wood clad but is finished with a thick, dark colour carpet for acoustic purposes. The carpet aids in the absorption of sound. This gives the impression that the wood shell has been sliced at the sides.

A wood beam stepped structure supports the laminated wood finish on the floor of the experimental cinema. (Fig 109)At the entrance the wood floor finish is level with the concrete and epoxy floor finish of the first floor and this was made possible by lowering the concrete slab of the experimental cinema. The wood floor surface does not extend to connect with the carpet wall but is set back. Where it is set back the wood beam support structure has been covered with gypsum board painted dark. This creates a crevice all along the sides of the wood shell floor.

Where the wood finish curls up against the wall, it is set back again and connected to the wall with steel channels. Thus, the same principles apply as for the floor finish with crevices created at the sides. Miniature fluorescent tube lamps are fitted into these crevices and the indirect light filters into the auditorium and emphasises the illusion that the wood shell is floating in the space.

The air-conditioning duct is positioned in the void between the back wall, roof of the box and the wood shell and ends in ventilation grills at the sides of the wood shell out of sight. The screen used in this cinema is a large plasma screen and no projection or projection facilities are needed. Although plasma screens the size needed for the space are not currently available on the market, it is safe to say with the growth rate of new technology that it will be possible to equip the auditoria with one in the near future. As for the purpose of this dissertation the use of a LED screen has also been considered. The disadvantage of the LED screen is that the user cannot be too close to the screen because of the very high brightness and sizes of the LED lamps used. It causes uncomfortable strain on the user's eyes as well as glare. It is thus not the most appropriate choice for the application in the cinema auditorium but has been used successfully for public billboard-like screenings where it is viewed from a distance away.

The seating in the experimental cinema is designed in three different stages. The first stage is the front row seats. These seats are mere upholstered cushions on the ground and encourage informal seating. These cushions are removable for cleaning and maintenance. The second stage is the middle row seats and are more

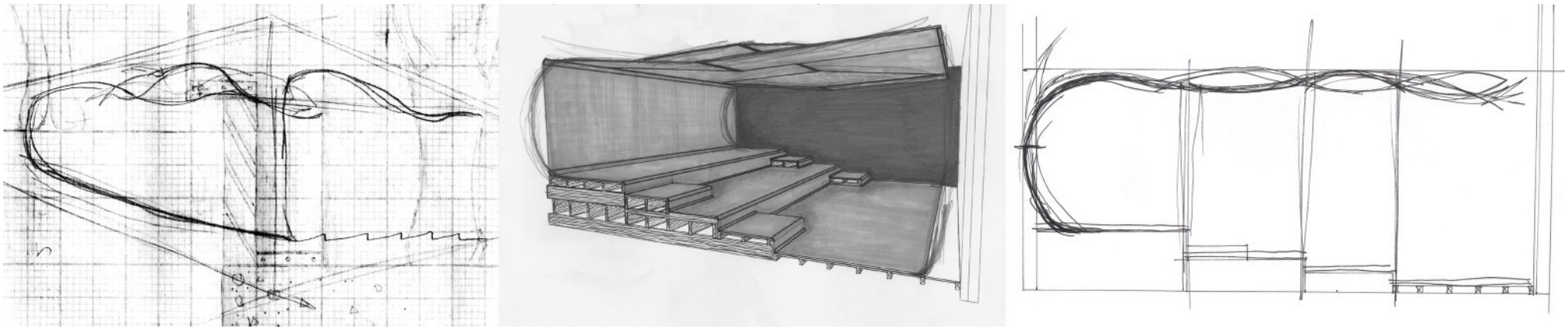


Fig 108 - 110. Conceptual development of the interior of the experimental cinema

Fig 111. Experimental cinema wood clad interior

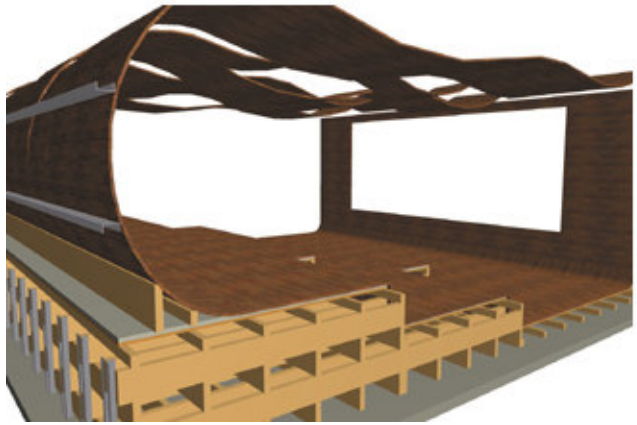


Fig 112. Laminated wood structure inside the experimental cinema

formal than the front row. The idea here is to create upholstered couch like seating. The last stage and top row seating are multi-purpose seats that can be adjusted to a day bed or to normal couch like seating. Material specified for this seating should be a strong weave that is durable, dark in colour and does not to show stains easily, because people are likely to spill especially on the front row cushions and if spills occur, the material should be easily cleanable.

People in wheelchairs as well as mothers with small children in baby strollers are accommodated in this auditorium by taking out part of the front row cushions. The cinema has been designed that such a person or stroller will not obstruct the view of the viewer behind. There is also no difference in level from the entrance of the auditorium to where these spaces are positioned.

As the word light refers to conditions of weight and illumination, so the design of the experimental cinema explores both of those qualities. Although the ambient inside of the experimental cinema is in contrast with its bright illuminated outer shell, both of them share the feeling of lightness of mass. This has been accomplished by the outer shell with its translucent illuminated surface and the inner shell by the feeling it creates, the feeling that it is floating.

5.2.5 Seating

According to Charlotte and Peter Fiell, authors of ‘1000 Chairs”, the success of a particular chair has always depended on the quality and range of the connections it makes, or which the designer is able to make through it, while addressing a specific need. They also stated that at the functional level, a chair makes physical and psychological connections with the individual sitting in it through its form and use of materials. At the same time, it may embody meanings and values, which connect with the user at an intellectual, emotional, aesthetic, cultural and even spiritual level. To them a chair can also connect visually and/or functionally with the context in which it is to be used, including other objects and styles. (2005:6)

“Achieving a good solution to the problems posed by the chair is a complex and challenging proposition, even though, over its long history, its function as an aid to sitting has remained virtually unchanged. Chairs support people of all different shapes and sizes for different lengths of time and different purposes. While the facility of correct lumbar support is important it is not crucial as the chair allowing the user to move their legs freely and to make frequent adjustments of posture. For more healthful sitting a chair should thus facilitate freedom of movement and encourage a variety of postures while providing flexible continuous support.” (Feill 2005:7)

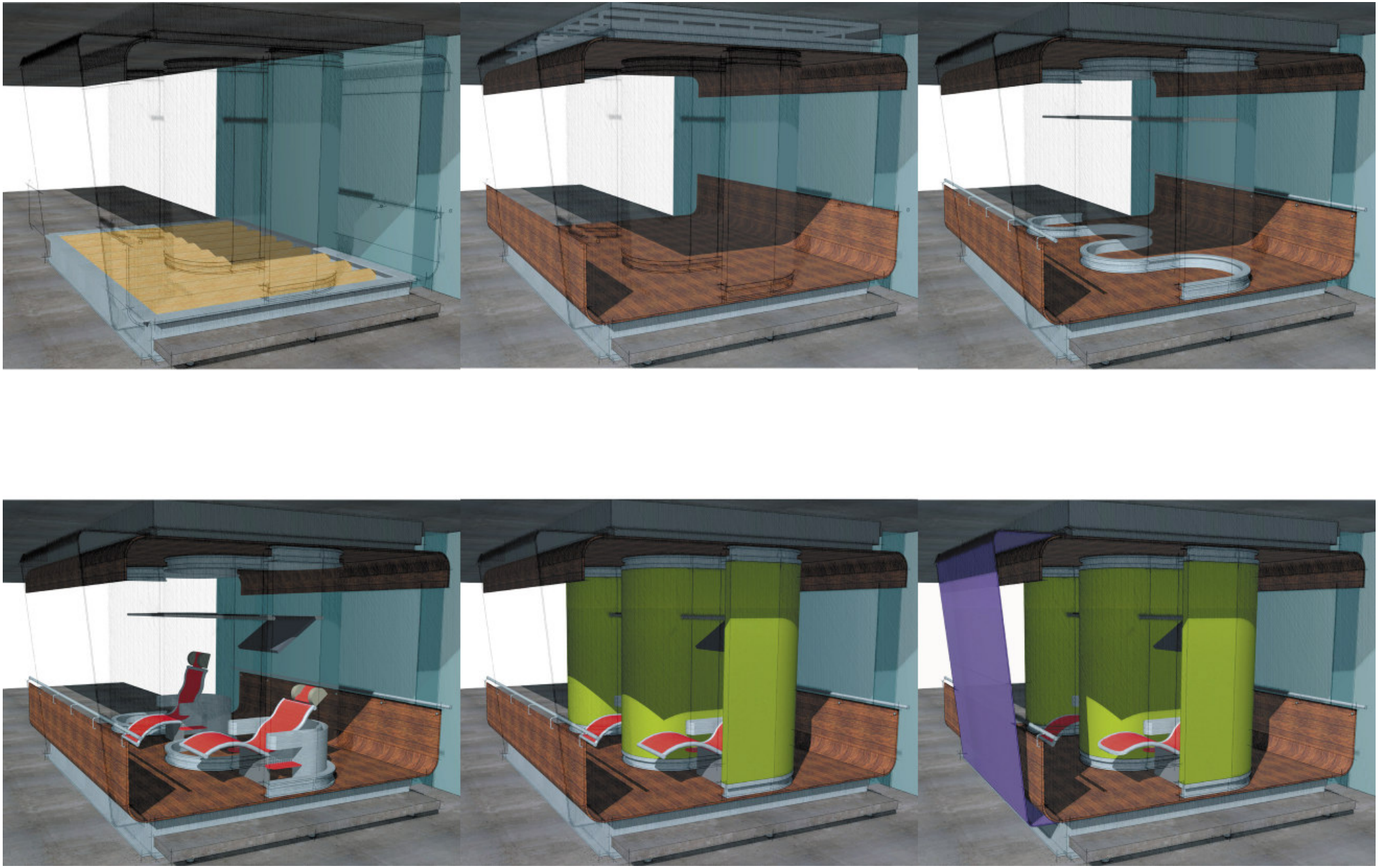


Fig 113. Rendered film strip - construction of cinema booth

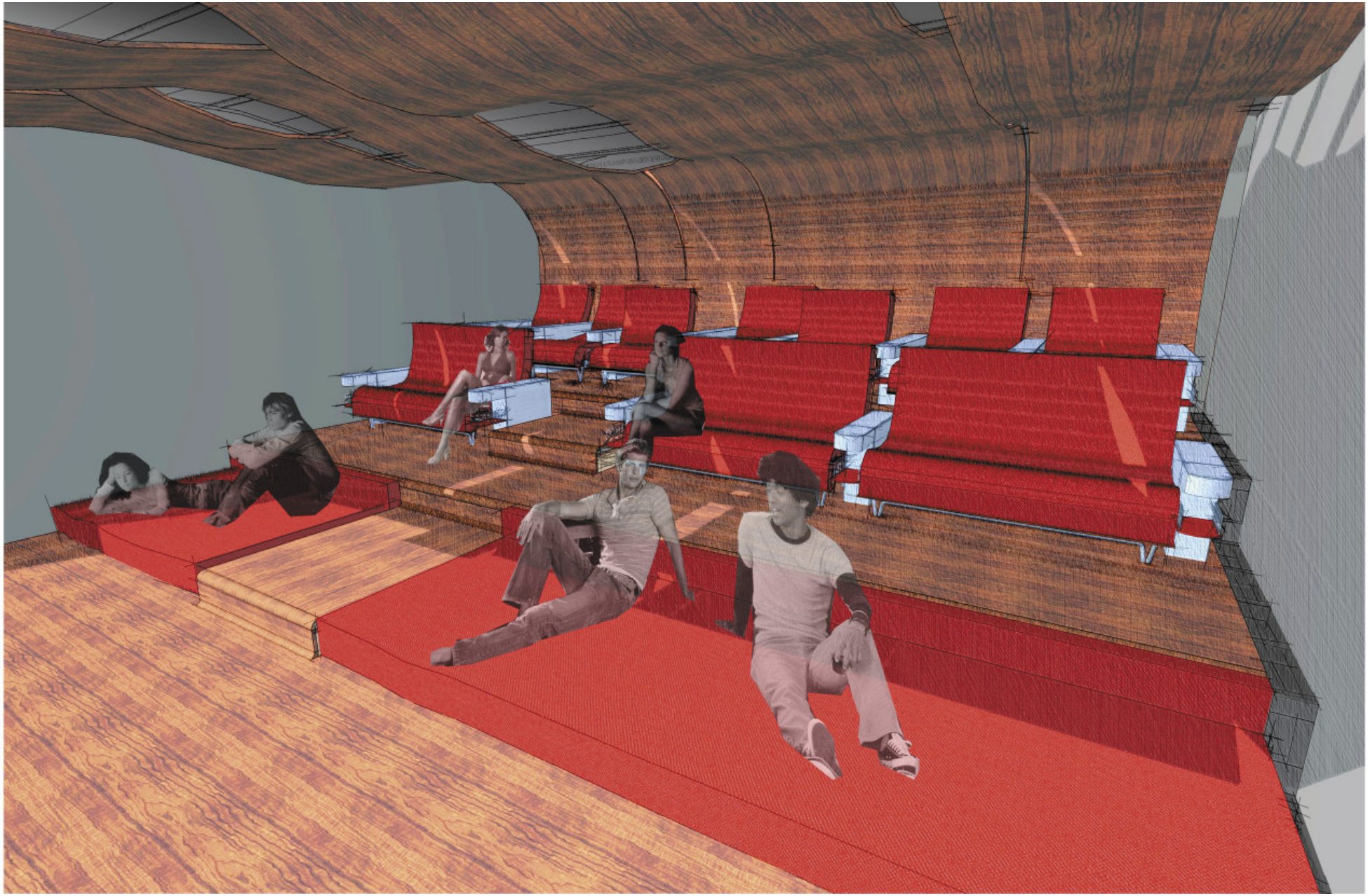


Fig 114. 3D rendered presentation of the experimental cinema

Chair design considers intended usage ergonomics (how comfortable it is for the occupant), as well as non-ergonomic functional requirements such as size, stackability, foldability, weight, durability, stain resistance and innovative design. Intended usage determines the desired seating position.

The following design principles will guide the design of the cinema seat and will be divided into general principles and specific principles.

General principles:
- Ergonomic
- Minimum maintenance
- Durable
- Sufficient leg room
- Arm rests
- Use of state of the art materials
- Differentiation – the seat contributes to the personality of a movie theatre

Specific principles:
- Comfortable (at least 2 hours) by having enough room on the seat to move and by using a reclining back.
- Easy adjustability (if adjustable)
- Safe place for handbags and other belongings
- Place for cooldrinks and confectionary items

Precedents

Traditional cinema seating
The Kimberley chair – model 5300
Figueras International seating S.A
www.figueras.com

Design influence

The Kimberley chair is a typical cinema chair and has been around, maybe not in the exact shape and sizes, for at least the last decade. This specific chair has some added features like the adjustable back and leg support, it is also bigger than the average cinema chair and is used in more prestige cinema auditoria but the same principles apply to this chair as for the average cinema chair. These include the bulky, heavy design and the use of upholstery.

As this dissertation focuses on new technology and innovation, the bulky and heavy feel of the traditional cinema chair has been removed from the design idea and more emphasis has been placed on the use of new technological materials and lightness of design.

Dentistry seating
Planmeca chair – model 510 & 610
Planmeca OY
www.planmeca.com

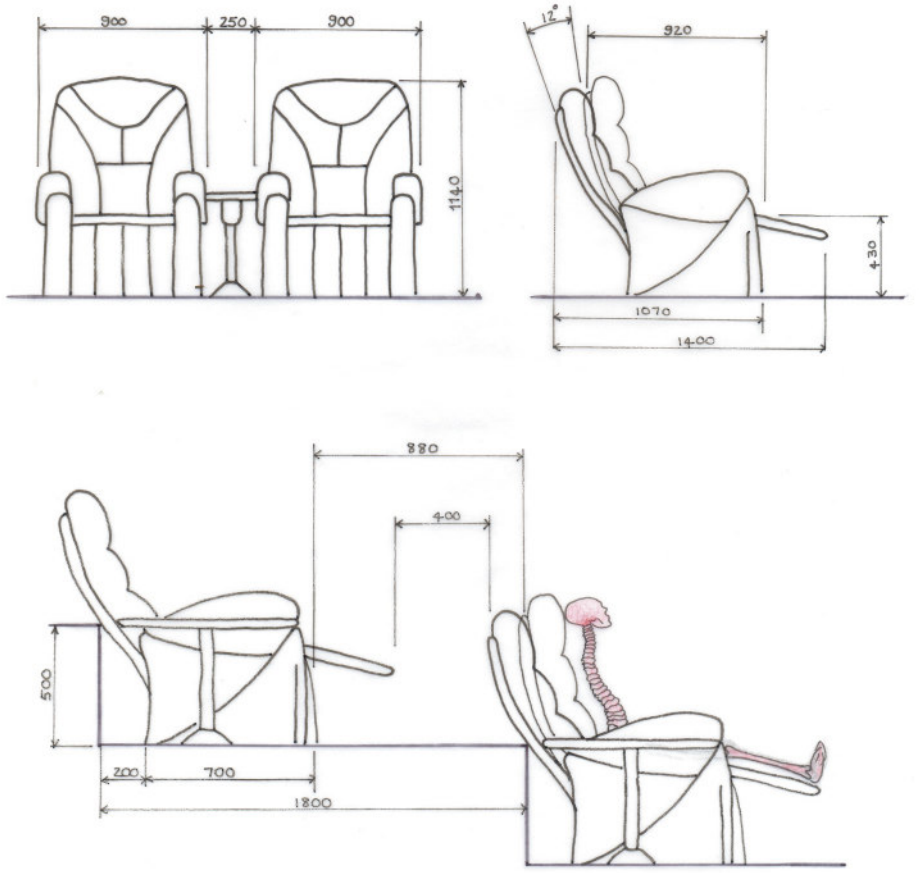


Fig 115. Elevations of the Kimberley chair

Design influence

In contrast with the traditional cinema seat the dentistry seat is lighter in appearance and can be adjusted on more levels that the cinema seat. It is this idea of lightness and slimness that had an influence on the design of the booth seat. A dentist seat has to be comfortable for a period approximately the same length as the screening of a movie but these seats have very little room in which to move or to change position because of their use.

Designing the cinema seat

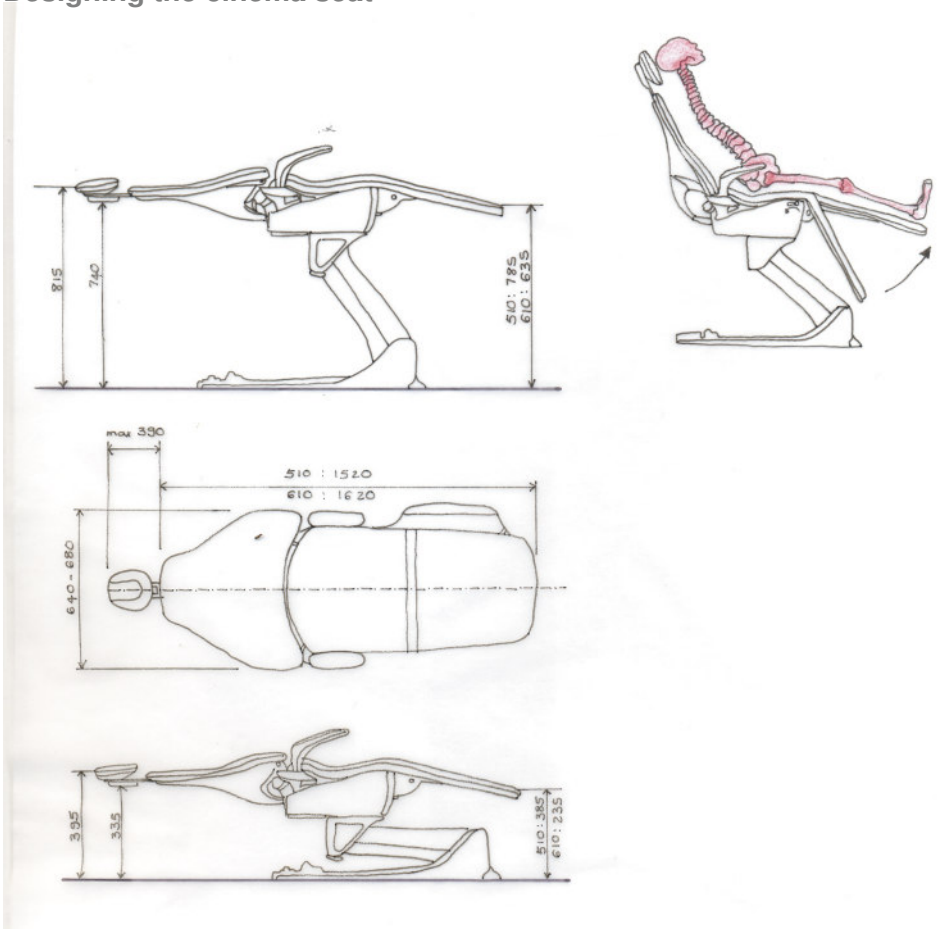


Fig 116. Plans and elevations of the Planmeca chair

Anthropometric data and ergonomics have guided the design of the booth seat. As mentioned above the idea behind the booth seating was lightness, slimness and the use of new technological materials. (Fig 112 - 115)

The seats for the booths were designed with the occupant's comfort in mind. The occupants will differ in size and shape and the seat should be comfortable whether the occupant is short or tall, thin or not so thin. The shape of the designed seat accommodates a wide variety of occupants especially in collaboration with the Levagel cushions. Levagel is a new patent class of highly elastic polyurethane gels. The gel represents a physical state whose properties lie between liquid and solid and is transparent in colour. This material has a flexible and elastic quality. "The gelatinous mass of the gel can deform up to values above 800%. It can also return to its original state once the pressure has ceased. Compared to foams used in upholstery, this gel has a notable capacity to absorb and distribute weight." (Pacchi 1998: 58) This characteristic of the Levagel makes it ideal for the application of the booth seat because each individual person will be supported ergonomically to their weight and sizes and once they leave the seat the Levagel will go back to the original form it was moulded in.

The seat has been designed that the whole structure reclines with 30º by the push of a button and the screen moves in places for viewing simultaneously. This position is naturally more comfortable for long periods of sitting - the case in this application – because some of weight is shifted form the seat area to the back distributing it more evenly. The control panel is designed separately from the seat because of the

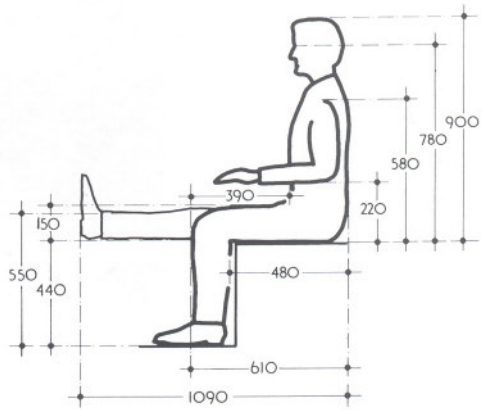


Fig 117. Anthropometric data of male sitting

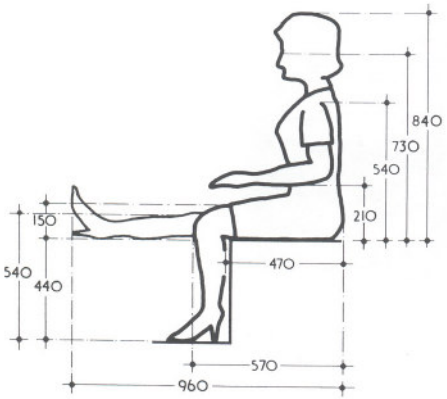


Fig 118. Anthropometric data of femal sitting

mechanical difficulty of the mechanism and for the seat to keep its lightness. The control panel will be positioned on a thermoplastic armrest on the right hand side of the seat. There will be an armrest on the left of the seat as well and it will have place for the storage of handbags and the placement of confectionary items.

The seat's structure consists of an aluminium round tube frame with bended thermoplastic backing that supports the Levagel cushion. The thermoplastic backings can be different in colour and are be used for advertising purposes because of the transparent nature of the Levagel. A specialised person will design the mechanism that will allow the seat to recline but an idea of the proportions and style has been supplied.

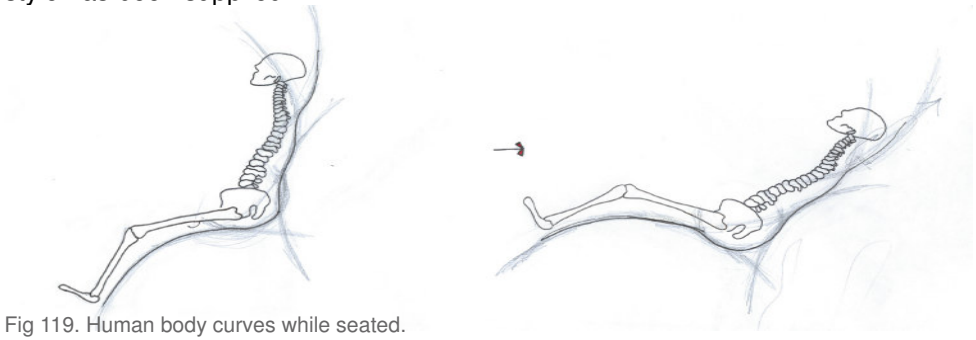


Fig 119. Human body curves while seated.

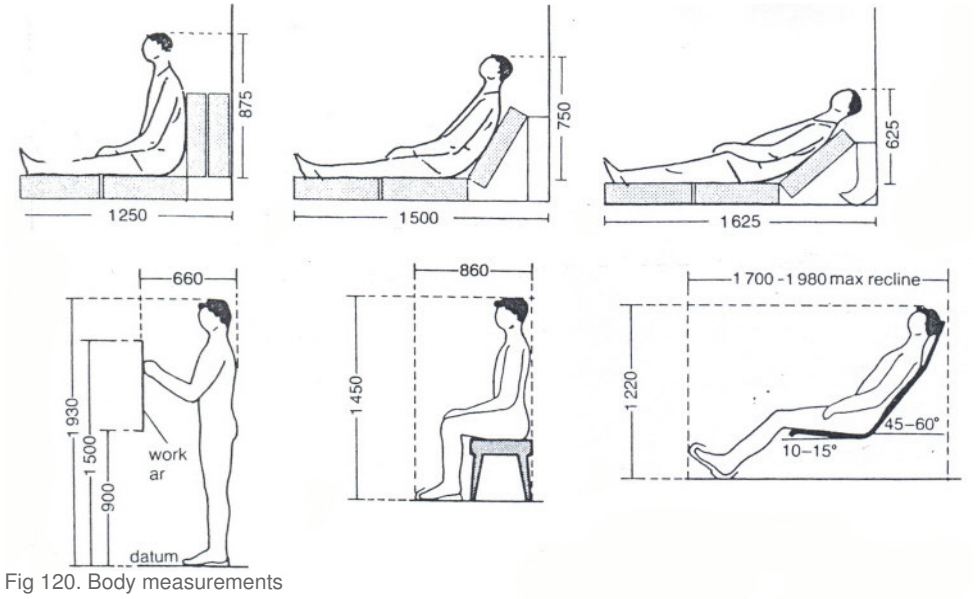


Fig 120. Body measurements

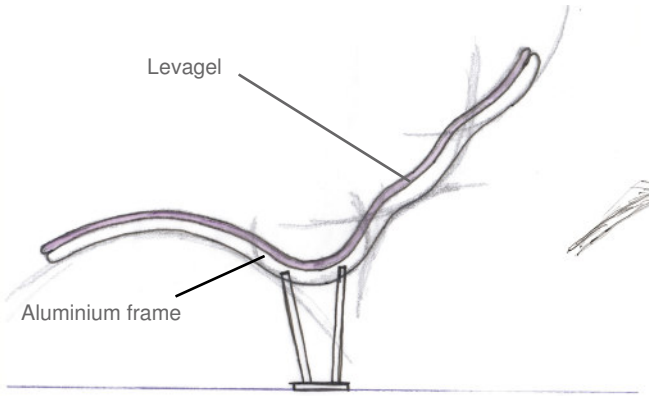


Fig 121. Conceptual drawing of cinema booth seat

Fig 122. Head rest and ear phones

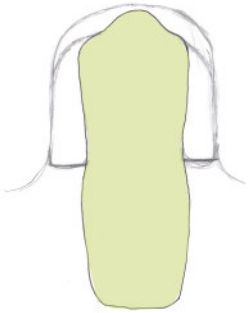


Fig 123. Plan of cinema booth seat

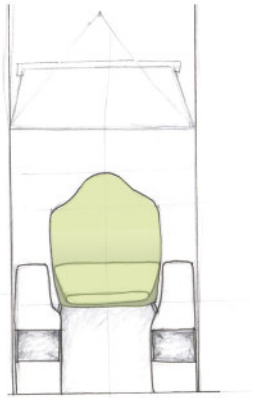


Fig 124. Elevation of cinema booth seat

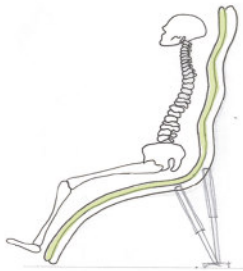


Fig 125. Seat in upright position

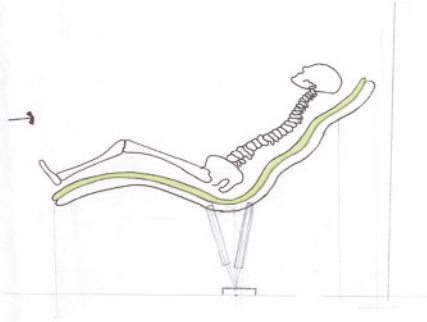
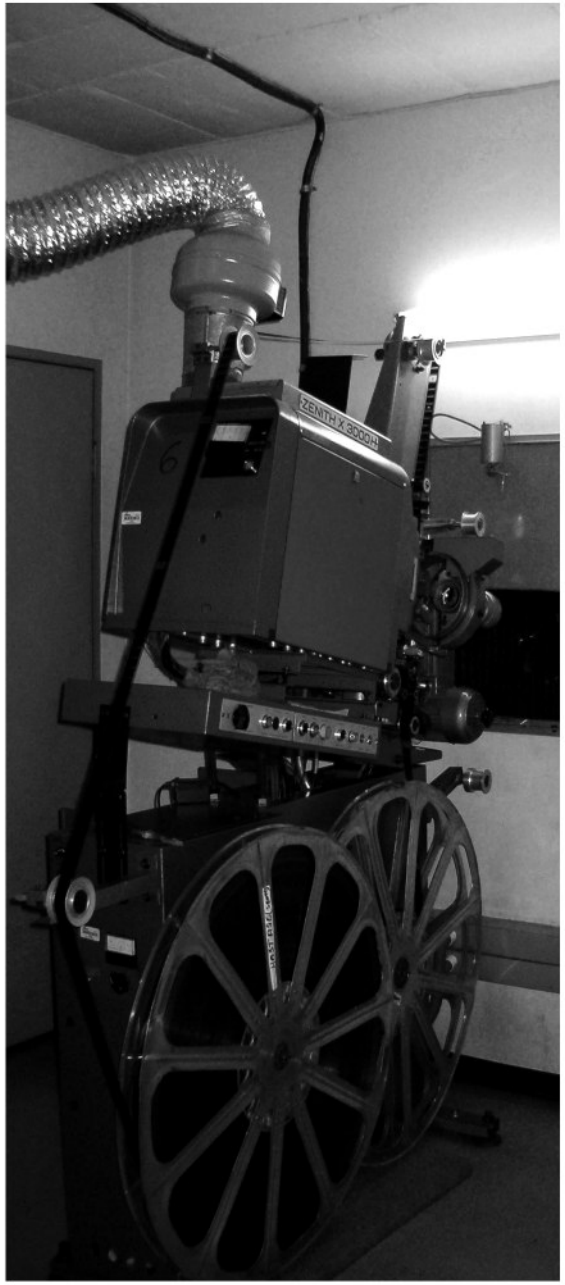


Fig 126. Seat reclined



6. TECHNICAL RESOLUTION

6.1 HVAC – heating, ventilation and air-conditioning

Air conditioning units should be used as a last resort as they use a vast amount of energy resources. The type of facilities situated in the building makes HVAC systems an integral part of this dissertation's design and technical resolution to meet the comfort and acoustic requirements - especially in the cinema auditoria. A comfortable interior temperature for moderate activity is from 20°C to 26°C. (Napier 2000: 2.3)

After consulting to Patrick Köhler from Spoormaker and Partners Inc. (Mechanical engineers who specialise in HVAC systems) it was decided to use an individual air-conditioning system for the different zones of the cinema. This will prevent the discomfort of the people in all the auditoria if the unit malfunctions or breaks. Each auditorium will have its own system with the cooling unit on top of the building where the amount of polluted air and dust are at a minimum. This system uses only 5*l*/s/ person fresh air and the rest of the air will be filtered and recirculated, as the volume of the space is larger. The unit cools the air down and this air is then transported to its specific zones through 1200 x 600mm ducts. A decision had to be made whether air should be supplied in the auditoria from under the seats or from ducts in the ceiling. Air is cooled to 13°C by the unit and if the users are positioned too close to the duct, it can lead to discomfort. This will be experienced if the air is supplied from under the seats. To correct this problem, the cool air will have to be warmed again to at least 18°C, which will increase the amount of energy use. If the cool air is supplied through the ceiling, it does not need to be warmed and more energy will be saved. Thus, in all the zones the cool air will be circulated through vents in the ceilings or direct from the ducts, that will be fixed to the soffit where the services are exposed as in the entrance and foyer area.

To overcome the noise problem that is caused by the air-conditioning systems, sound filters will be fitted into the ducts that lead from the main air cooling unit. These noise filters will also be fitted into the ducts that extract warm air from the building and transport it back to the unit to be cooled down again.

A positive air pressure should be maintained in a cinema auditorium to prevent dust from collecting on the screen. This can be achieved by supplying more air to the space than what is removed from it. More clean air prevents contaminated air from entering the space and a positive air pressure is maintained. The air from the air conditioning unit is kept clean by sending it through dust filters before it enters the cooling unit as well as the air that is being recirculated.

During winter this same system will be used to warm air. The process operates similarly to when cool air is transported through the building. In this case the unit warms the air and it is then circulated through the building.

6.2 Acoustics

Acoustic considerations had a direct effect on the design and technical decisions of this dissertation. Acoustic design controls intrusive noise and by choice of materials, dimension and shape auditoria, comfortable noise levels can be enjoyed. (Jones *et al* 1980: 18) Rectangular rooms with parallel floor and ceiling surfaces especially if long and narrow, give the worst result. The ideal is a fan shape auditorium, which is also ideal as regards viewing conditions. (Tutt and Adler 1979: 200) Other key acoustic design issues in cinema auditoria are sound insulation between auditoria, isolation to the outside, a good sound system, 'dead' room acoustics and moderate ventilation noise. (Nel 2003: 8.3)

The ideal material characteristics required for sufficient **sound absorption**:

- Surface porosity to allow sound wave penetration
- Integral porosity
- Soft resilient blankets or panels

The two aspects that have an impact on the **sound insulation** are the mass of the material and the stiffness of the material. To prevent the spread of sound one needs high mass and low stiffness.

Experimental cinema

Room: 8 x 8 x 3 meter
Floor: 150mm concrete floor, 200mm joists with 20mm plank floor, 100mm average air gap with 50 glass wool, 20mm laminated wood.
Ceiling: 20mm laminated wood, 100mm average air-gap with 50mm glass wool.
Walls: 110mm brick wall unplastered, 12mm gypsum board, 63mm air gap with 50mm glass wool, double 12mm gypsum board
Interior covering of walls: 50% carpets and 50% laminated wood with 100mm average air-gap
Doors: two special 60mm solid wood door with seal (1.2 x 2.1)
Windows: none
Audience: 20 seated on soft chairs.

Absorption coefficients:

Frequency	***(Hz)***	***250***	***500***	***1 k***	***2 k***
Floor		0.16	**0.28**	0.30	0.28
Walls:		0.16	**0.26**	0.28	0.29
Ceiling:		0.30	**0.15**	0.13	0.1
Door:		0.05	**0.05**	0.05	0.05
Seats upholstered empty 20%(per seat)		0.05	**0.05**	0.10	0.15
Seats occupied 80% (per seat)		0.32	**0.38**	0.35	0.38
Air (per m^3)		0.001	**0.003**	0.006	0.011
Absorption m^2					
Floor:	64 m^2	10.24	**17.92**	19.2	17.92

Walls:	90.96 m²	14.55	23.65	25.47	26.38
Ceiling:	64 m²	19.2	9.6	8.32	6.4
Doors:	5.04 m²	0.25	0.25	0.25	0.25
Seats empty	4 people	0.20	0.2	0.4	0.6
Seats occupied	16 people	5.12	6.08	5.6	6.08
Air	192 m³	0.192	0.576	1.152	2.112
Total absorption in room (A)		**49.75**	**58.28**	**60.40**	**59.74**
Room total surface (S)	**224m²**				
Average absorption coefficient T60(1)		0.22	0.26	0.27	0.27
Reverberation time (Norris-Eyring) (2)		**0.55**	**0.46**	**0.44**	**0.44s**

1. = A/S
2. T60 = $\frac{0.161 \times \text{volume}}{-2.3 \times S \log (1 -)}$

"Reverberation time is defined as the time that it takes for sound pressure level to fall by 60 dB after the source has been switched off." (Nel 2003: 8.2)

Reverberation time is an important parameter in the design and performance assessment of rooms that are intended for a specific use. According to graph 24.11 in The New Metric Handbook (Tutt & Adler 1979: 200), the reverberation time over 500Hz for the experimental cinema with an area of 192 m³ should be 0.725 seconds and currently it is 0.46 seconds. To increase the reverberation time the average absorption coefficient needs to decrease. This can be achieved by lowering the total absorption in the room. Reducing the adsorption in this case is not a possibility as the absorption prevents the leakage of sound outside the cinema, which will be distracting for the people in the individual booths. It also prevents sound from outside too enter the cinema auditorium. It is practice to solve the problem of reverberation time that is to fast by placing more speakers in the cinema, from the front as well as from the back, which will enable the viewers to receive the sound at the same time.

6.3 The design of a cinema auditorium

When designing a cinema auditorium there is a vast number of aspects to take into account like sightlines and seating layouts. "In commercial cinemas, every member of the audience should have an unobstructed view of the entire picture area without visual and physical discomfort and without picture distortion. The auditorium must be suitable for the sound reproduction used, which must be free from distortion and colouration arising from architectural deficiencies. In this, shape and nature of the surface play an important part: opposite surface of walls and floor and ceiling should not be parallel." (Tutt and Adler 1979: 195)

Viewing conditions

In this dissertation semi-stadium cinema have been designed. (Fig 124) This is a cinema that has stepped seating. In designing the step seating sight lines had to be taken into account to make sure that each viewer has an unobtrusive view from the bottom to the top of the screen. The guidelines given in "Ernst Neurfert – Architects' data" have been used in this regard.

Eye height of viewer: 1120 $\pm$ 100
Row spacing (T): 800 – 1150
Head clearance (C): 130 allows viewer to see over the head of the viewer in front. (Jones *et al* 1980: 349) (Fig 122)

In a cinema auditoria the seat blocks do not normally exceed 14 chairs. The distance from the screen to the front row of seats are determined by the maximum allowable angle between sightlines from the first row to the top of the screen and perpendicular to the screen at that point. This angle ranges between 30º and 35º. An angle of 35º produces a shorter distance from the first row of seat to the screen and is used more often because of the more extensive use of space. (Jones *et al* 1980: 354) (Fig 126)

In viewing a flat screen the seating area is represented by an area common to the

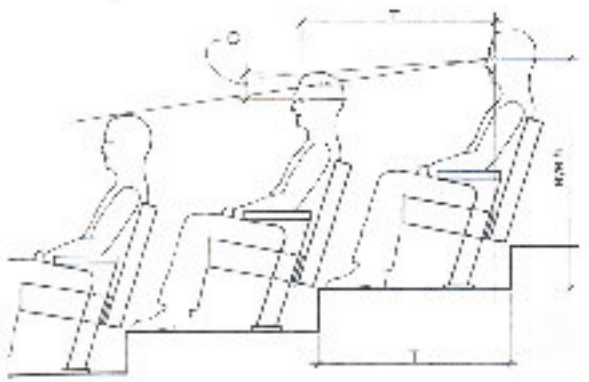


Fig 127. Typical seated spectator

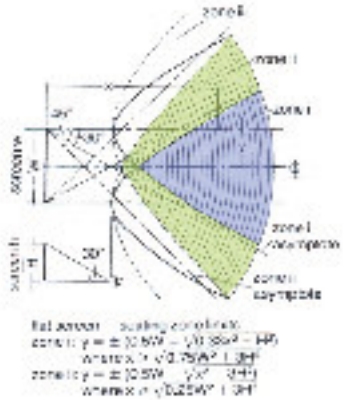


Fig 128. Film projection planning

space within two hyperbolas, which form certain zones on plan. These zones act as guidelines to where a viewer might experience distortion of the image. Zone I is where distortion exists but is not noticeable from seats falling within the hyperbola. Zone II is where distortion is noticed but tolerated from the seats falling outside zone I and zone III (seating beyond limit of zone II) is where distortion of the projected image will not be tolerated. (Jones *et al* 1980: 355) (Fig 123)

6.4 Baseline criteria (SBAT)

A cinema complex is not a sustainable responsible entity. This is mainly due to the large amount of equipment and materials that need to be imported, as this equipment is not available in South Africa. Another aspect against sustainable cinema development is the amount of energy used. All the equipment needs vast amounts of valuable energy to operate and the air conditioning systems also contribute to the energy usage. Thus sustainability has to be taken into account in other fields like the social and economical issues.

This design is based on the following criteria set up with regard to the context of the project and a sustainable approach according to Jeremy Gibbert's Sustainable Building Assessment Tool (SBAT).

6.4.1 Social criteria

Occupants Comfort

The use of natural lighting will be promoted throughout the building where possible and attention will be given to the minimisation of glare that can have an impact on user comfort. In cinema auditoria that are known to be black boxes, no natural lighting is used and this brings about a high dependence on artificial lighting. Where artificial lighting will be used, low energy lamps will take preference. With the large glass façade on the south side of the building the entrance and foyer part of the cinema are illuminated with natural light, and the light ray penetration are controlled, as there are display surfaces throughout the space.

The cinema area of the building depends on the use of an air-conditioning system to cool down the equipment and to create a comfortable environment for the users. Through the design of the building the amount of air-conditioned air can be kept to a minimum by minimising the east and west facing windows. With the south facing glass façade natural light enters the cinema area but its still kept at relatively comfortable temperature levels. Throughout the rest of the building it will be proposed to use passive systems that are ecologically friendlier and economically more viable in the long term.

Acoustic design is an important aspect to prevent the noise from the cinema auditoria from spilling from one to the other, or the noise of the parking basement from entering the cinema auditoria. This design approach has been discussed in 6.2.

Inclusive environments

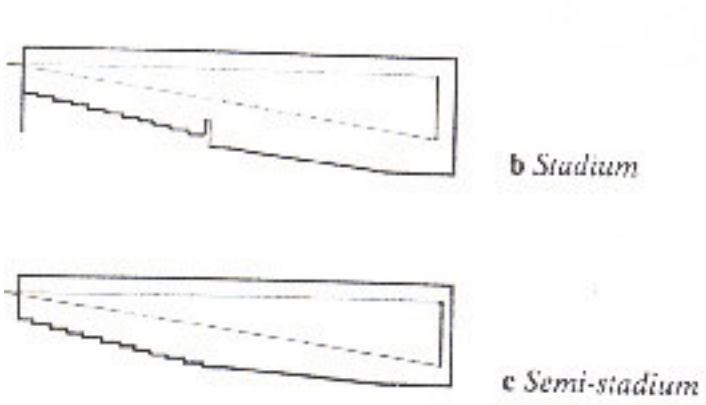


Fig 129. Stepped seating

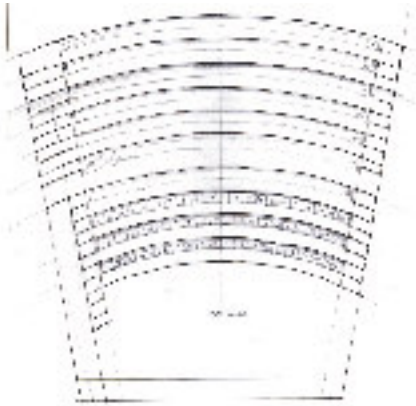


Fig 130. Layout of traditional cinema

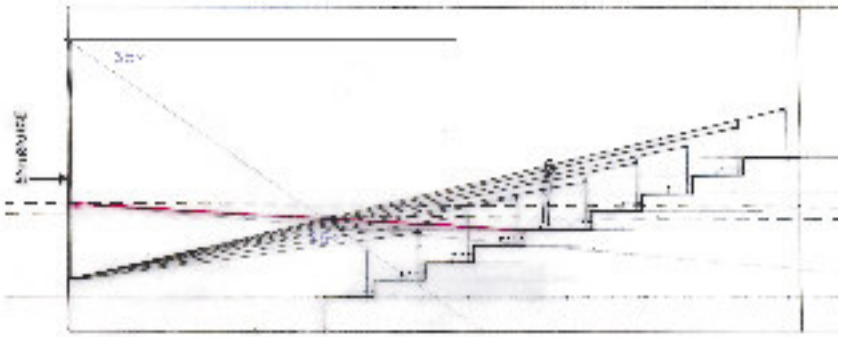


Fig 131. Sight lines

Any building or space should be designed to accommodate everyone. Ensuring that a building is inclusive supports sustainability and any replication or changes that have to be done after the design process has been finalised, is avoided. On all the public spaces the necessary ramps that have a fall of 1:12, or lifts, as well as adequate toilet facilities have been designed to accommodate people in wheel chairs. The lighting and signage have been designed to be readable and understandable for people that may have other impairments. All flooring is designed even and where change of level takes place, it will be clearly indicated. Ramp surface is also treated with a non-slip treatment to ensure easy movement.

In the cinema auditoria people in wheel chairs will be accommodated near the entrance where they can stay in their wheelchairs or be seated in one of the cinema seats. One of the individual booths will be designed that a person in a wheel chair can stay in his or her seat and still be able to enjoy a movie on his or her own.

Another important aspect is that people with disabilities have easy access to the escape routes. This has been taken into account with the design of these spaces. All the spaces that are designed for people with disabilities comply with the regulations of the design of facilities for disabled people. (SABS Building Regulations 0400)

Access to facilities

As the project is situated in the Melrose Arch precinct it is closely situated to other retail possibilities, banks as well as residential areas, which include flats and lofts in the precinct. The N1 also passes the precinct. This motorway connects the site to Johannesburg, Midrand and Pretoria. The precinct also has public telephones, Internet and e-mail facilities.

Another aspect that enhances the access in the precinct is that pedestrian movement is being encouraged throughout the precinct and people feel safe and at ease.

Education health and safety

The cinema complex and its various components have been designed to be used as an educational tool as much as for entertainment. The main aim with regards to education is to encourage learning through the use of new technologies and innovatively designed spaces. Institutions and schools can book an auditorium for a day or a show, for the presentation of educational material. These auditoriums can also be used by the businesses in the precinct for presentations, launches or conferences. This will contribute to the multiple use of the building.

Safety in the precinct has been discussed in the context study of the document and was one of the factors used to determine an appropriate site. In the building the necessary escape routes and fire prevention precautions have been taken into account and designed according to the fire regulations in the SABS 0400.

6.4.2 Economic criteria

Sustainable development does not just mean a cleaner environment; it also requires a stable and healthy economy. The following economic issues have been taken into account in this project.

Local economy

Through the cinema the local economy will be supported. Promoting South African produced films in the cinema will create an awareness of the impressive quality of work achieved in the South African film industry. Until recently the general public was unaware of this fact, because international films received more exposure. South African art and art clips will also be favoured in the digital gallery to promote South African artists.

For this dissertation it will be proposed that small business initiatives should be contracted rather than large, well-established companies, to benefit and promote them. It will also be stipulated that only black economic empowered companies should be used or companies that encourage black empowerment. There is no charter/law stipulating that such companies need to be used but it will demonstrate the commitment to be socially responsible.

Local labour within close distance will be contracted to do all the construction on the project. This will have a positive impact on our local economy and will provide these people with skills to make them independent. Local contractors will also run the cinema and any subsequent maintenance to be performed will be carried out by local contactors, trained by the overseas suppliers in the use and maintenance of the cinema equipment. Low-embodied energy materials that are produced locally, will be used as intensively in the building as possible. Materials such as concrete, glass and standard sized steel I-beams that are sourced locally as well as their applications, are familiar to contractors and workers. Another positive impact from the use of locally produced materials is that it minimises the transport energy consumed. Recycled materials will also be preferred.

Efficiency of use

As this is a retail and recreation development with additional office space, it is imperative that the space use efficiency is raised to a maximum as investors are counting on a profitable return of their investment. The use of the cinema part of the building will be visited seven days a week anytime of the day and evening, as visitors can choose their own viewing times or fall into a already scheduled time slots. This will create a high occupancy for the cinema part of the building. The non-useable spaces are kept to a minimum. The air conditioning plant rooms are situated on the roof of the building, which also lowers the non-usable spaces in the building. By situating the traditional cinemas that are referred to as black boxes in the basement, more opportunity for retail and profitable spaces are created.

The cinema will be technologically advanced and the cinema auditoria can also be used by companies in the building as well as in the precinct for conferences or launches which will boost the multiple use of the building. Both parties will benefit from this arrangement as it creates an additional income for the cinema. Moreover, the companies will not have to rent huge spaces for conference rooms or make large capital outlay to buy the expensive equipment.

Adaptability and flexibility

Buildings that can accommodate change easily support sustainability by reducing the requirement for change and the need for new buildings.

As the building has a column structure to support the floors as well as the roof, the use of easily removable partitioning and no-load bearing walls will be used inside the building. This will increase the lifespan of the building through adaptability of use. The digital gallery and the experimental cinema booths are designed to be lightweight and easily removable. This is done to accommodate rapid technological change and future innovations. All the floors are also at least 3m from the floor to the underside of the slab of the floor above, with the ground floor double volume. This makes the space more adaptable for different uses.

Ongoing cost

The materials used inside the building will be specified to be low in maintenance cost and minimal cleaning cost. For example, the floor will be finished with concrete and epoxy which is easy to clean and hard wearing. The more public areas of the building such as the entrance and foyer area of the cinema centre will have exposed air-conditioning systems that will offer easy access for maintenance. With the plant rooms on the roof of the building any disturbance created by maintenance will be kept to a minimum.

Cinemas consume a large amount of energy for the running of the equipment, which will increase the cost of energy use in the building. This effect will be equalised by promoting the use of alternative low energy sources in the rest of the building.

As the building lies within a secured precinct, the cost of security is kept to a minimum. This will also have an impact on the ongoing costs.

6.4.3 Environmental criteria

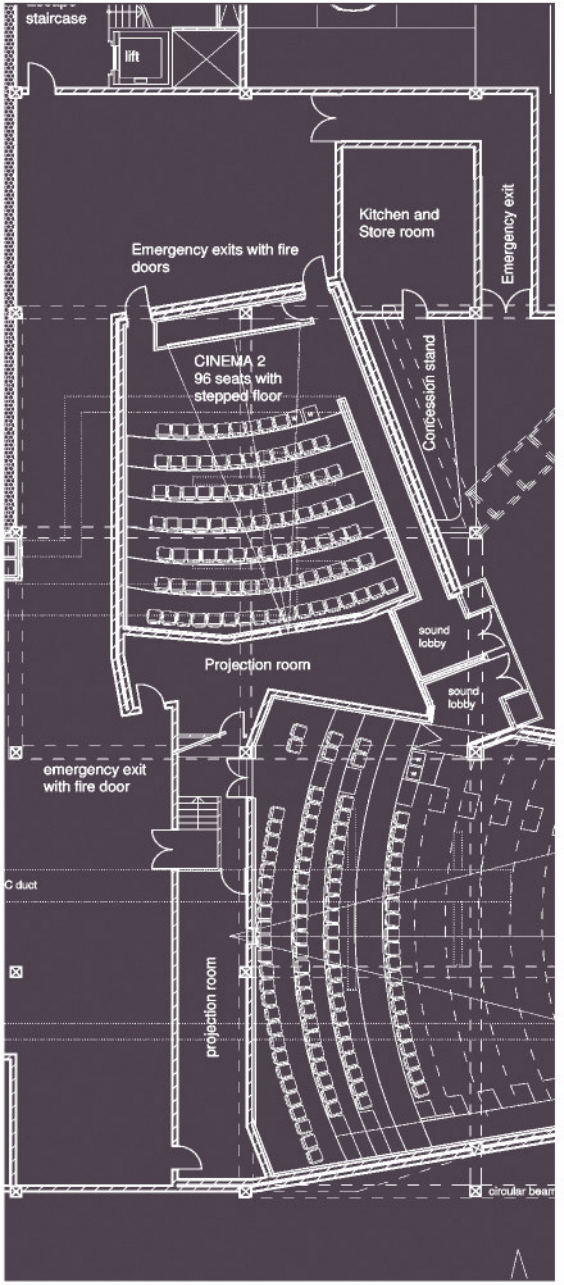
Energy

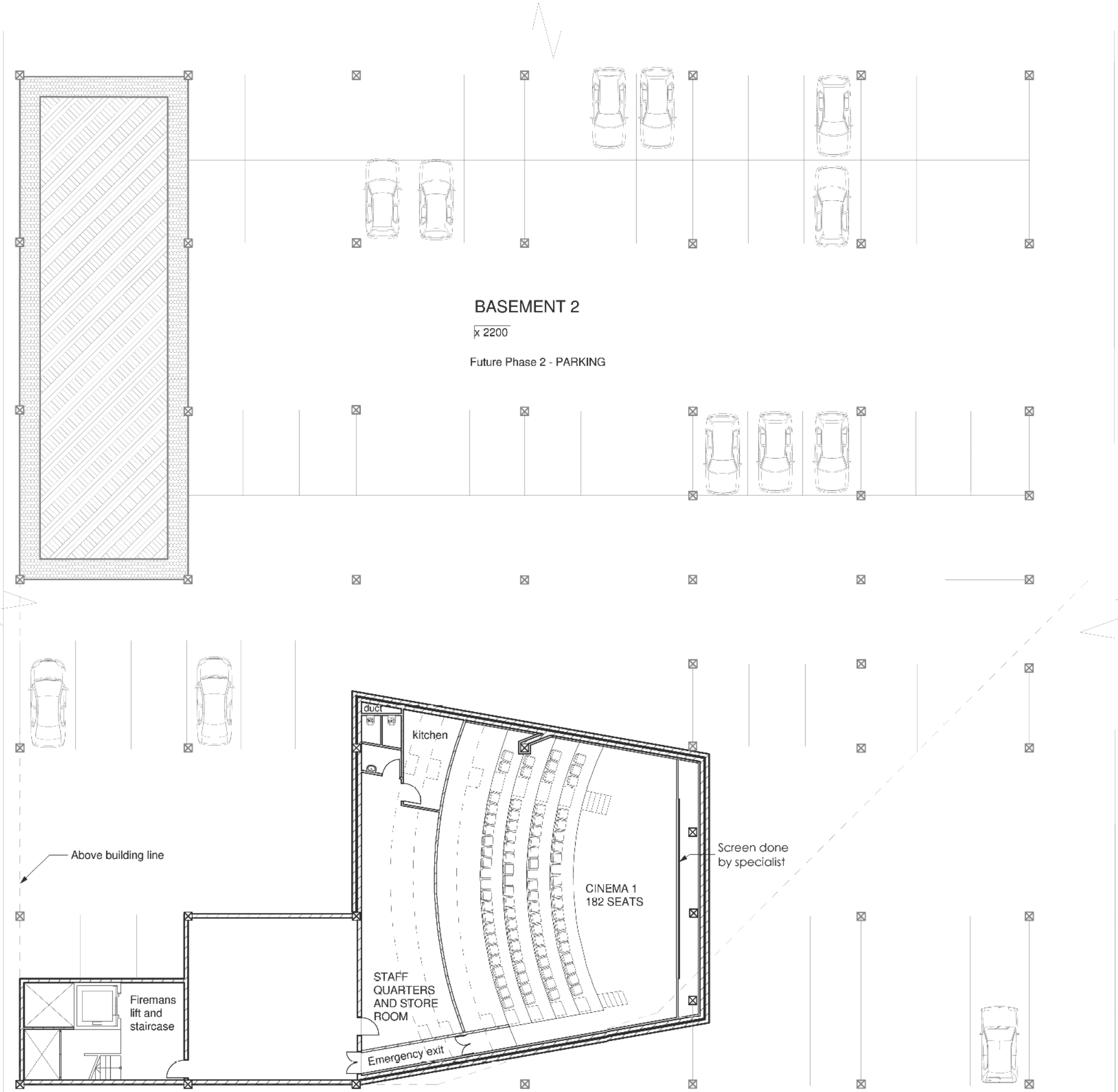
The site is situated in an urban environment and is within walking distance of public transport.

Heating, cooling and passive ventilation principles will be incorporated as extensively into the existing structure as possible. However, mechanical ventilation will also be used, especially in the basement and the cinema auditoria as discussed in 6.1. Natural lighting should be preferred and energy efficient light fittings are to be used wherever appropriate. It is, however, important to establish mechanisms, which will reduce excessive direct sunlight during summer months.

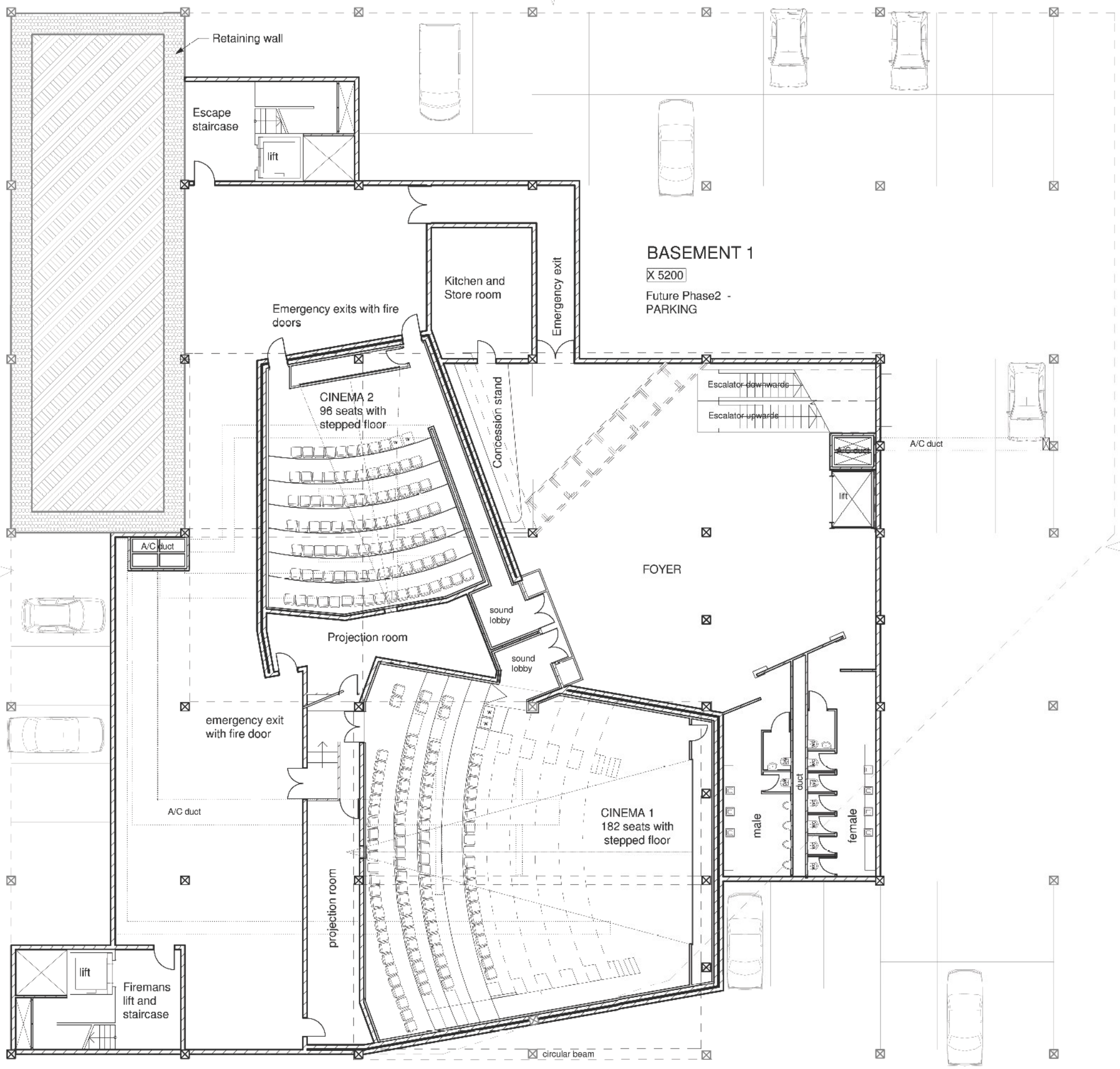
Recycling and reuse

It will be proposed that all building material used in the interior design of the building should be reused or recyclable after the life cycle of the cinema. The stainless steel used in the balustrades is recyclable as well as the Plexiglas *satinice* panels. These panels are non-toxic and recyclable and can also be reused. The laminated wood used as flooring and wall coverings can also be reused in other applications or again as flooring or wall coverings. The necessary arrangements will also be made for the safe disposal and recycling of toxic/harmful substances from the cinema centre.

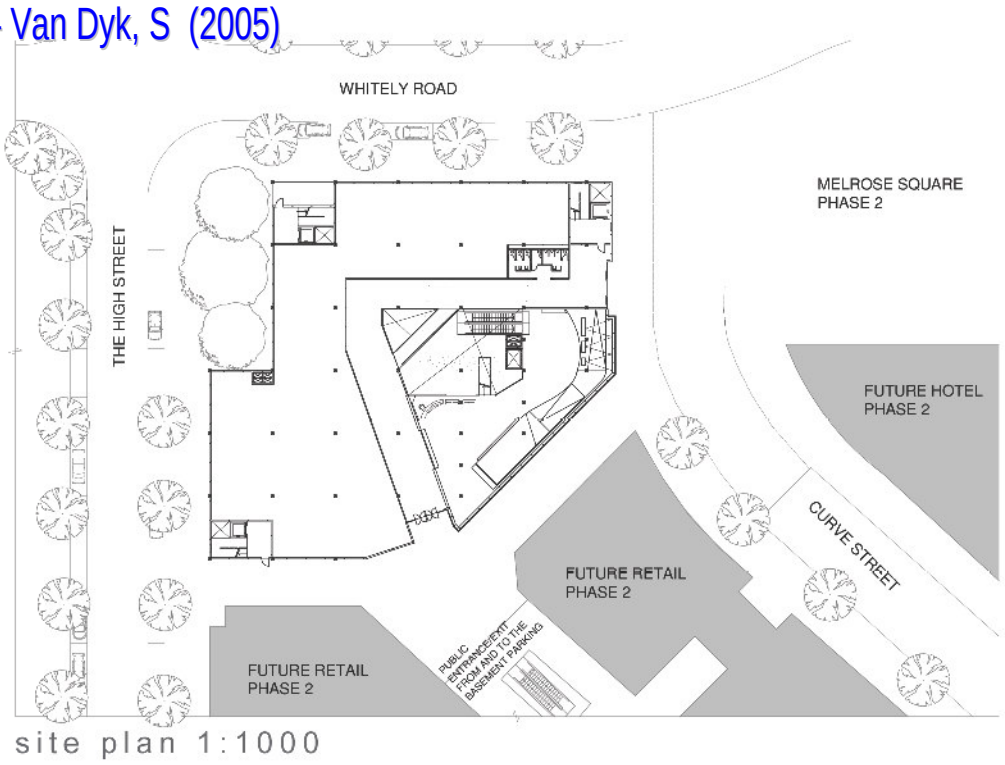

staircase
lift
Kitchen and
Store room
Emergency exit
Emergency exits with fire
doors
CINEMA 2
96 seats with
stepped floor
Concession stand
sound
lobby
Projection room
sound
lobby
emergency exit
with fire door
C duct
projection room
circular beam



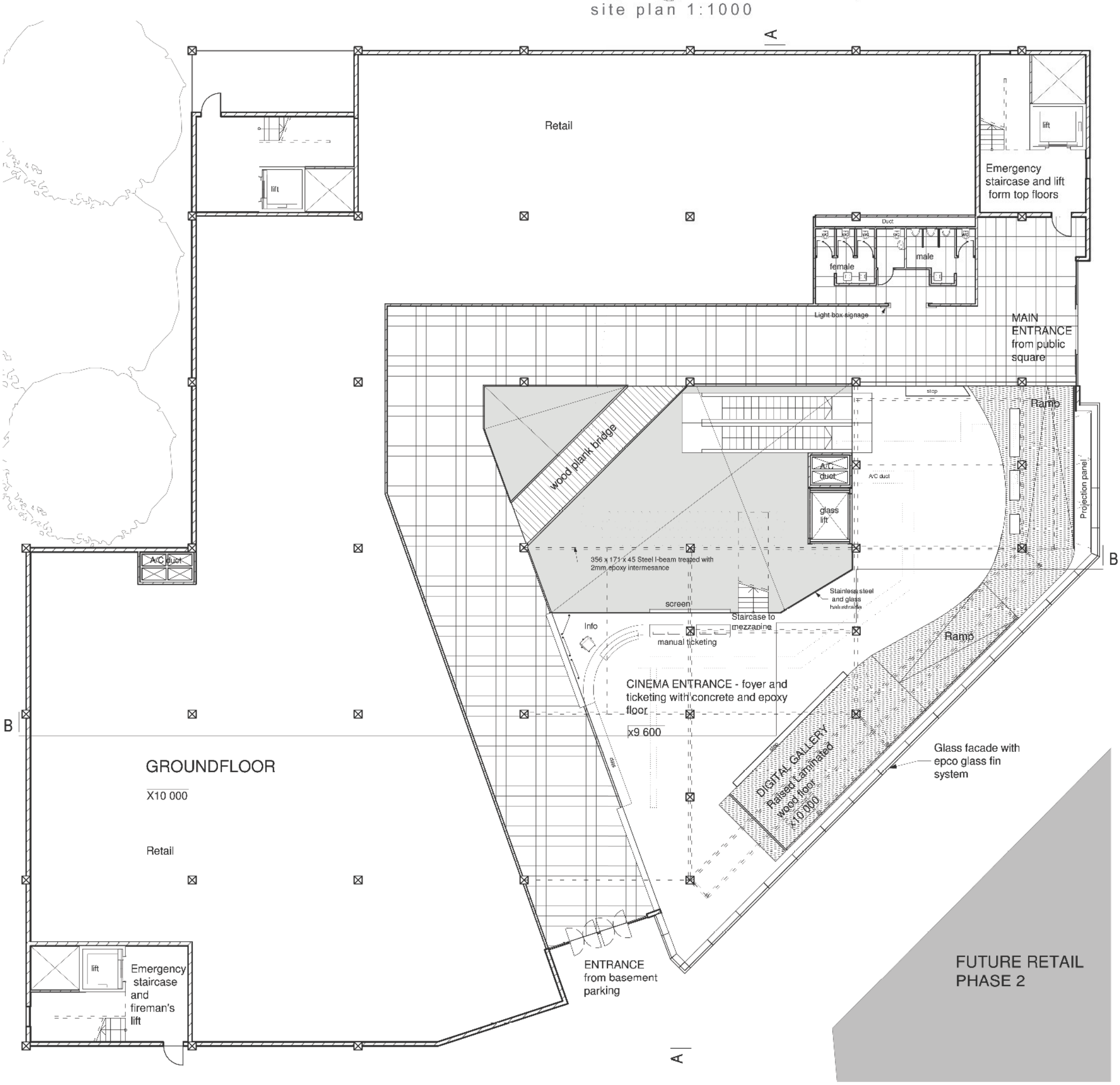
basement 2 plan 1:200



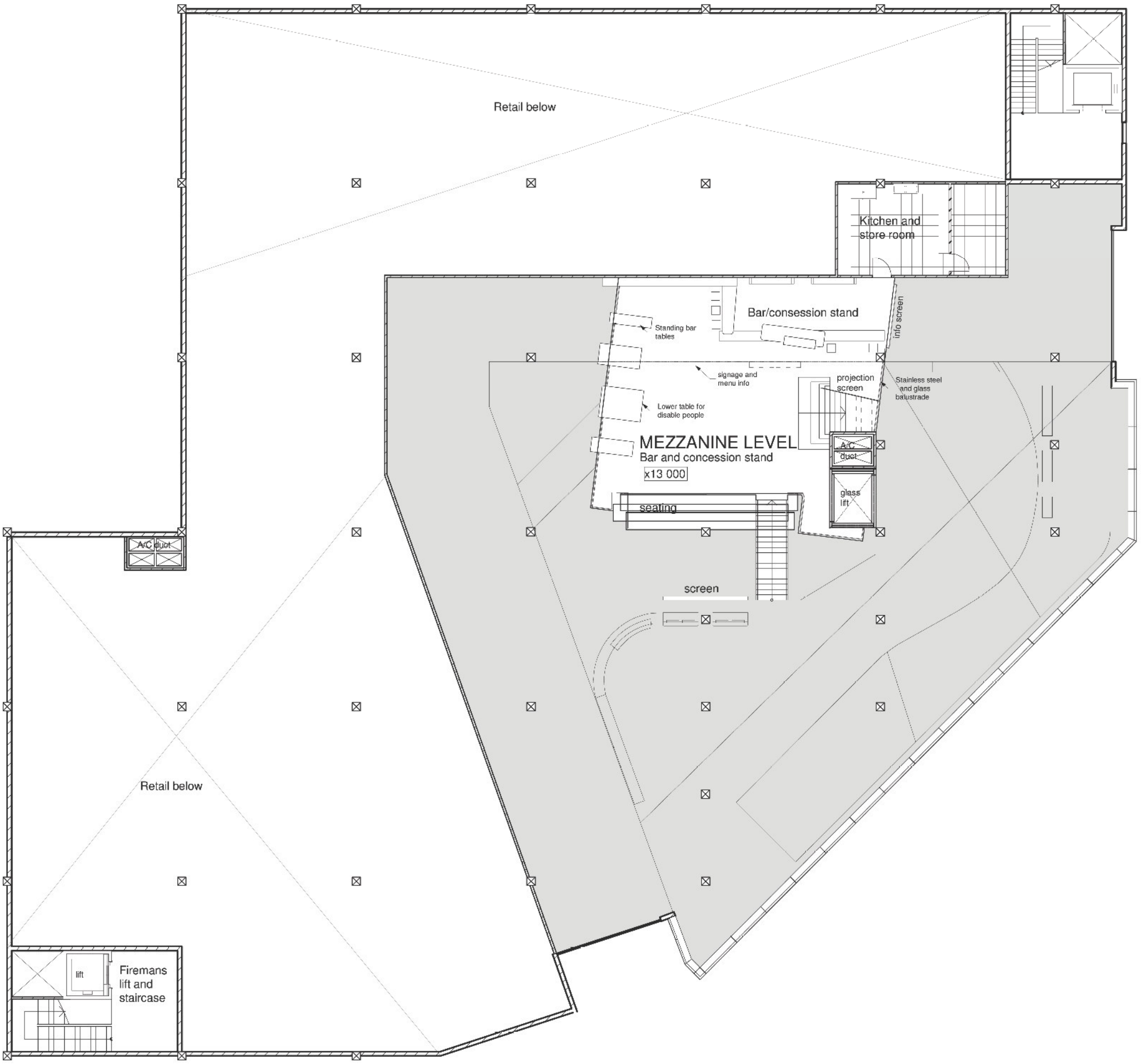
basement 1 plan 1:200



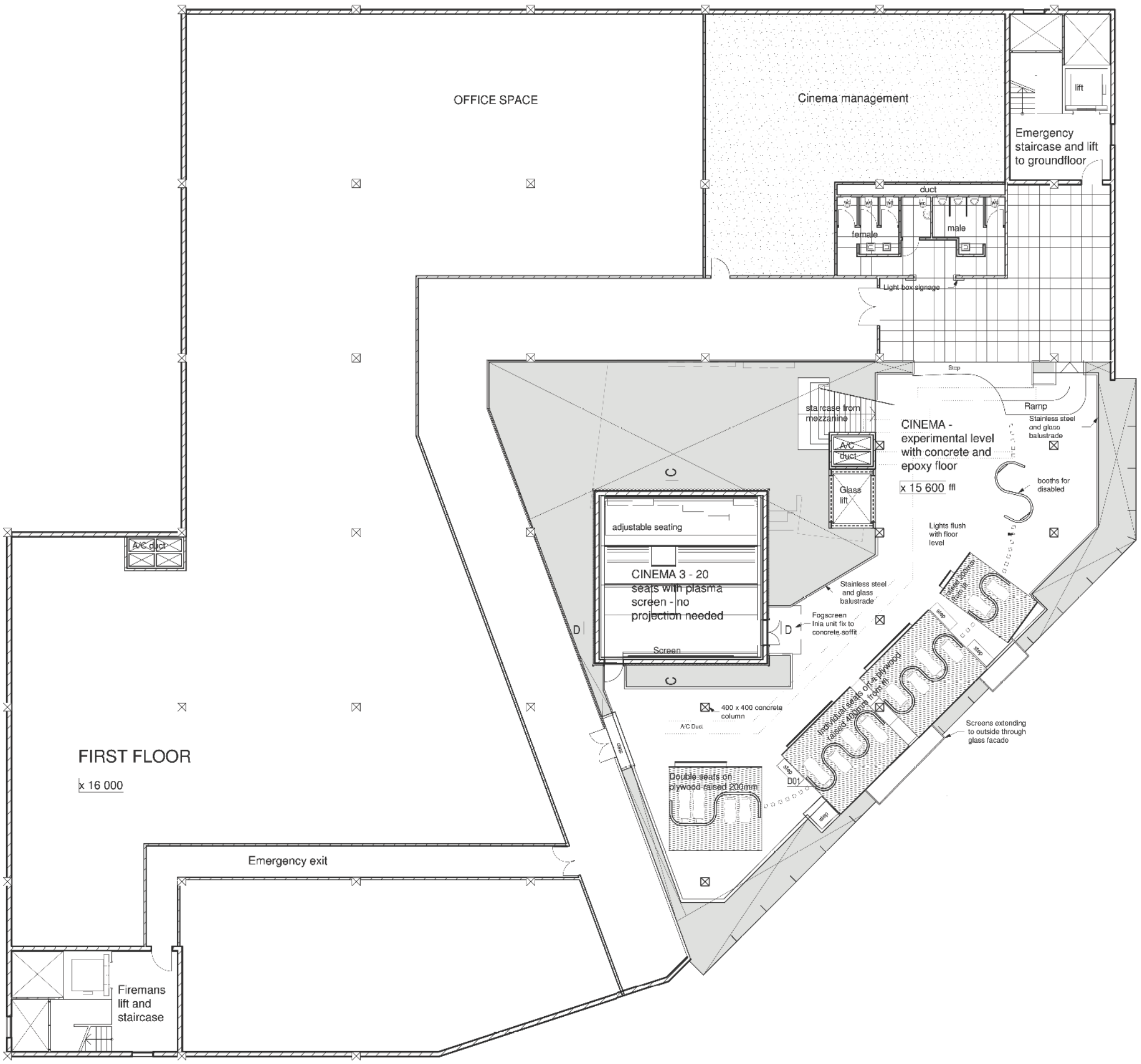
site plan 1:1000



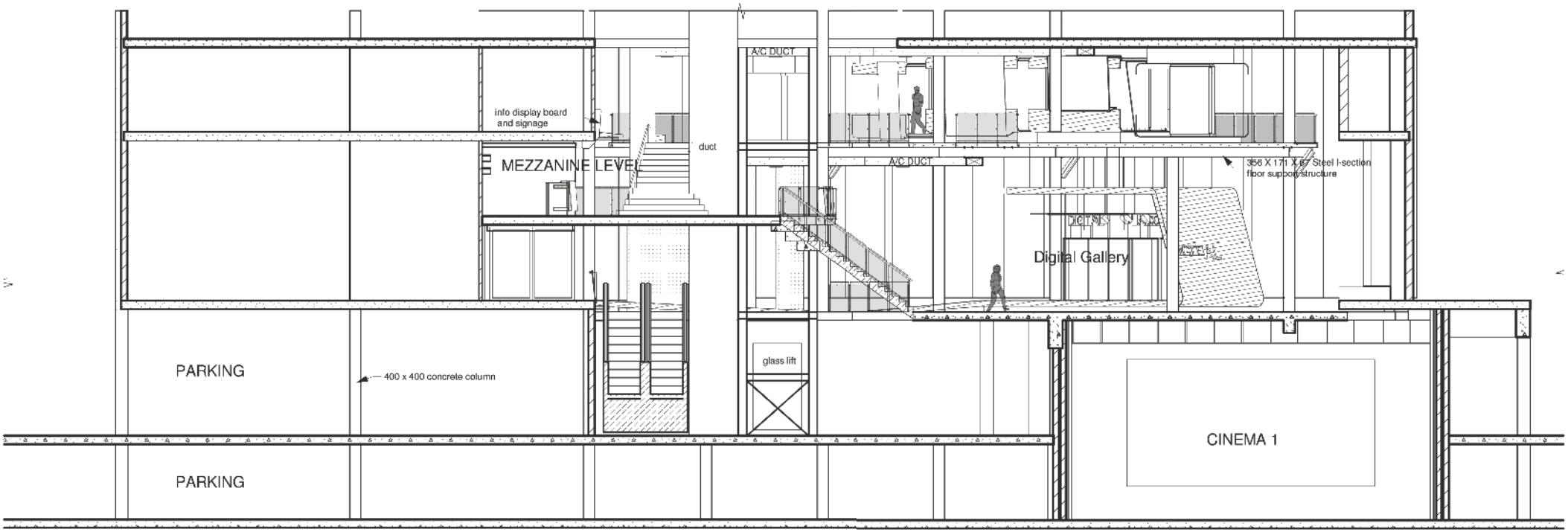
ground floor plan 1:200



mezzanine plan 1:200

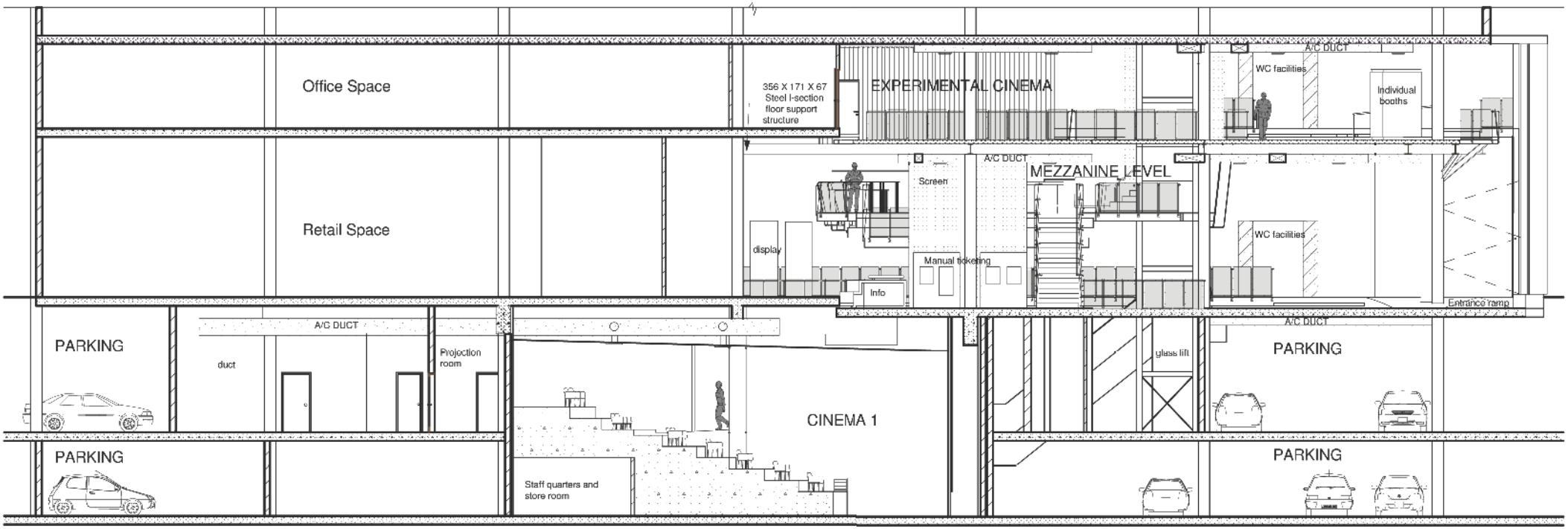


first floor plan 1:200



section a-a 1:200

indicated on ground floor plan



section b-b 1:200

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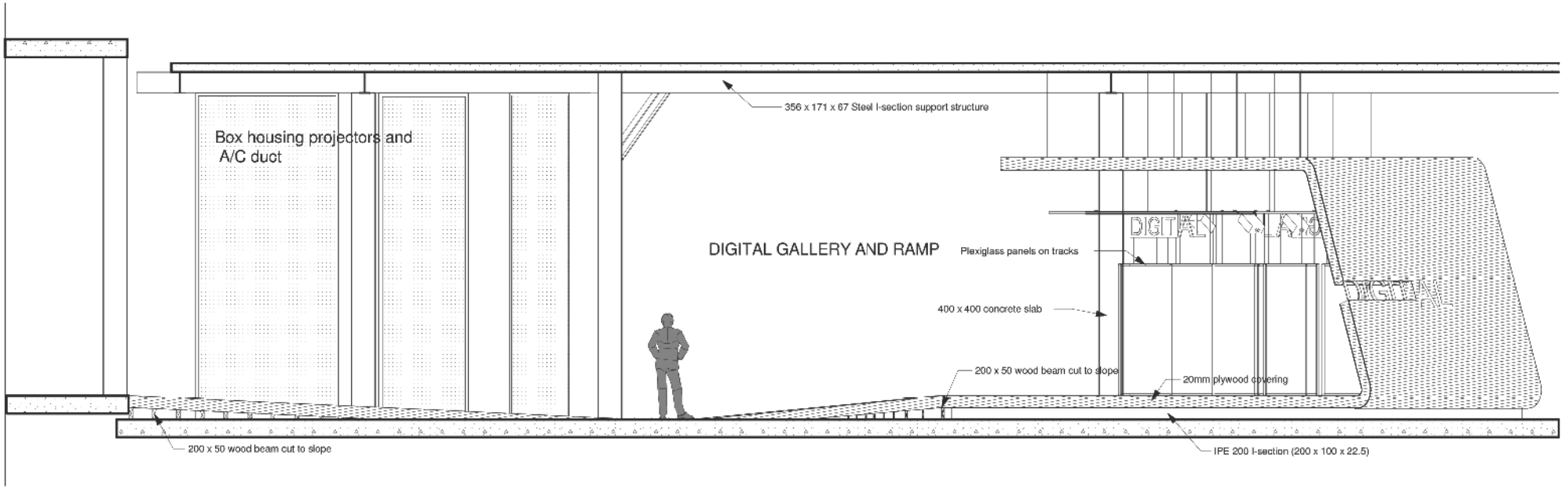
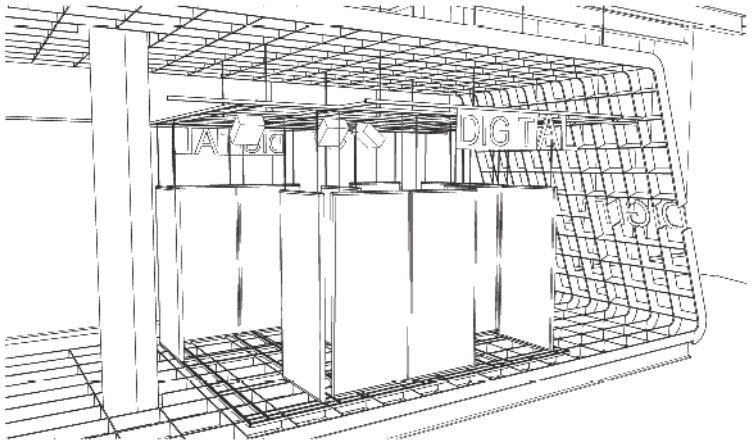
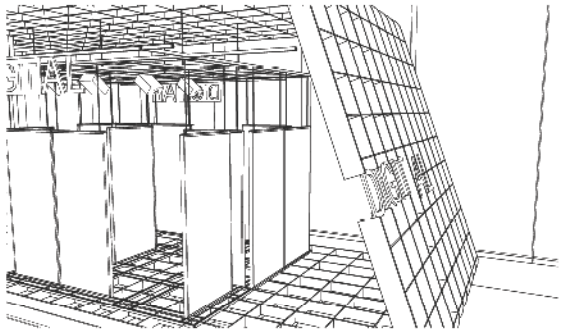


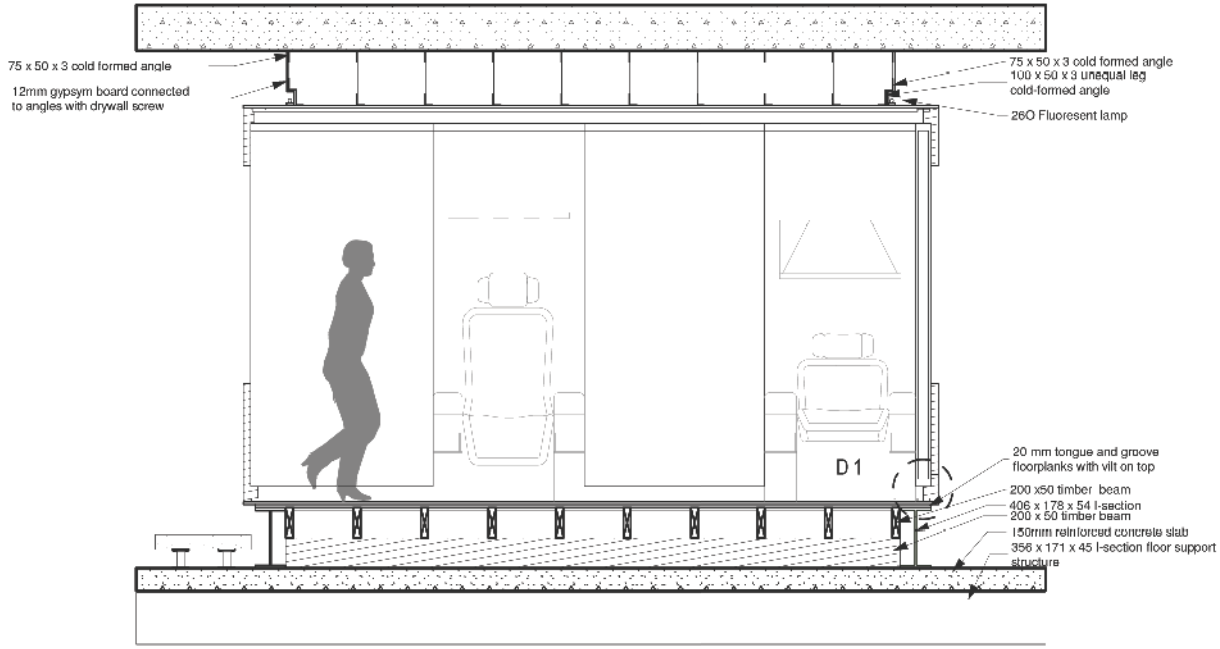
elevation of digital gallery 1:100



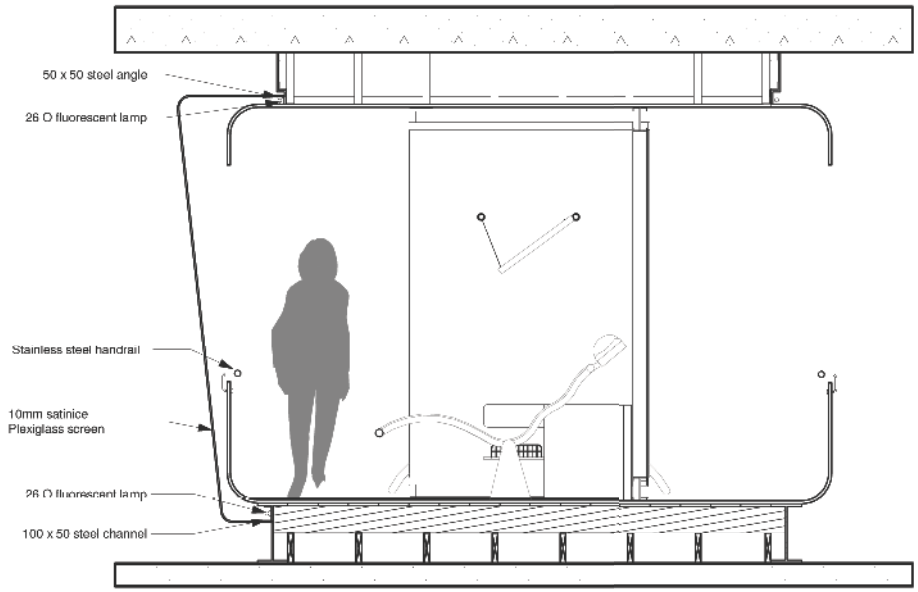
perspective of gallery structure



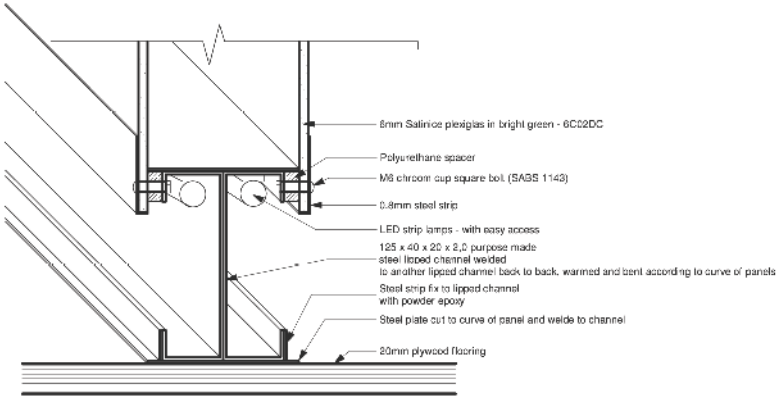
perspective of gallery structure



section through booth e-e 1:50

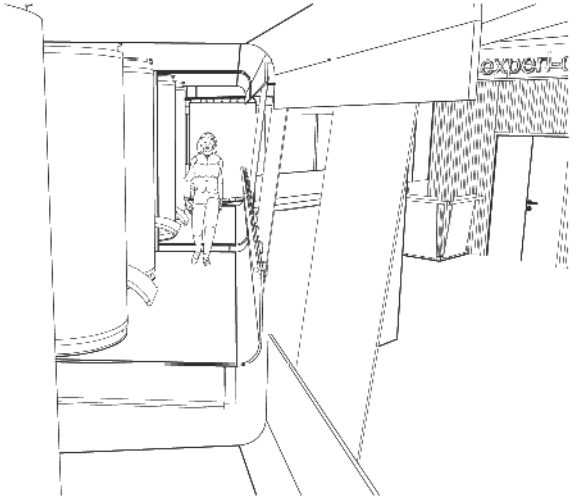


section through booth f-f 1:50



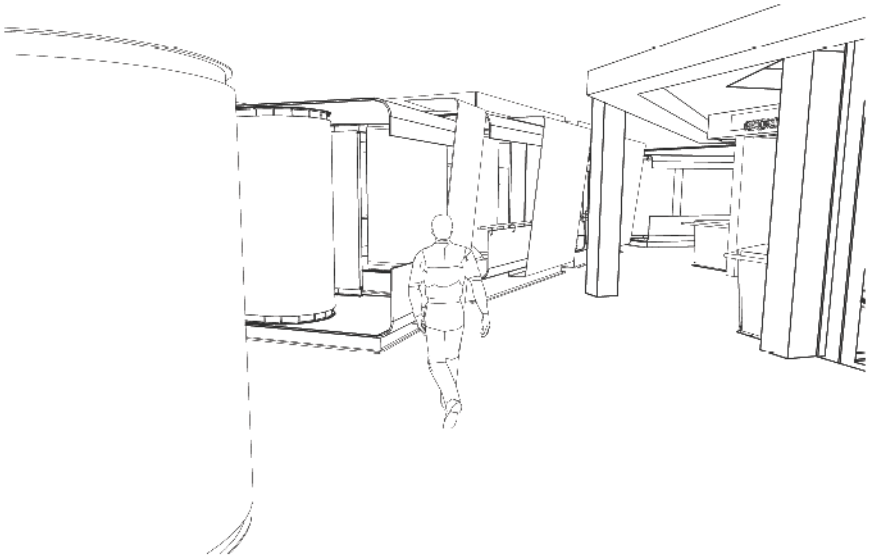
detail 1 1:5

indicated on section of booth

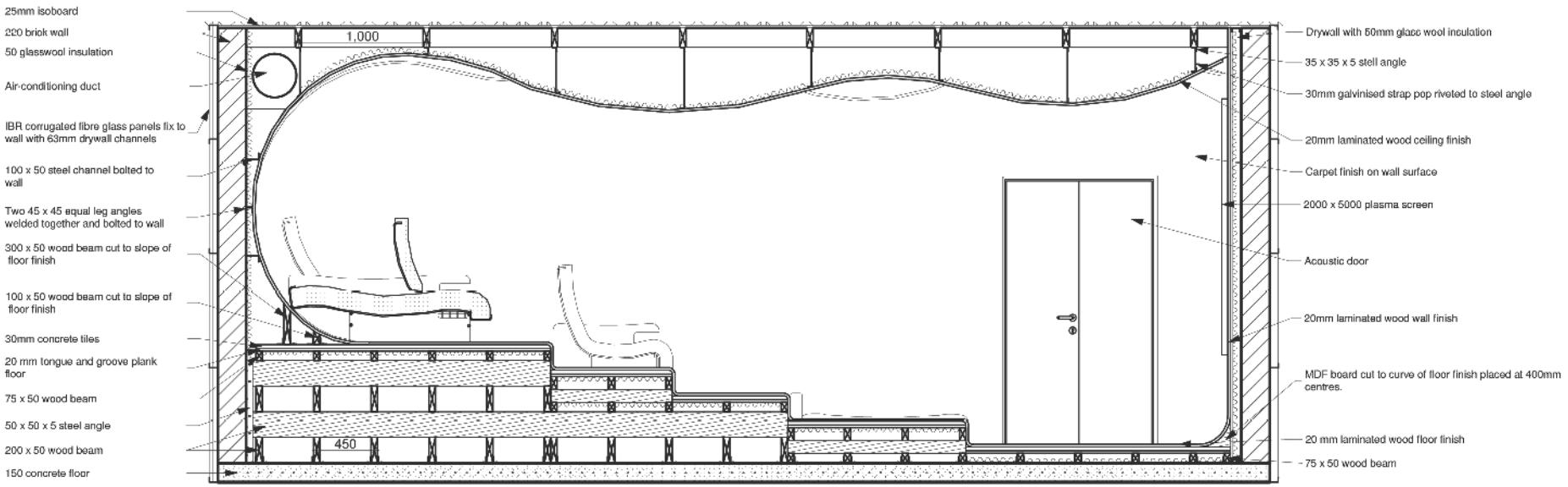


perspective of booths 1

perspective of booths 2

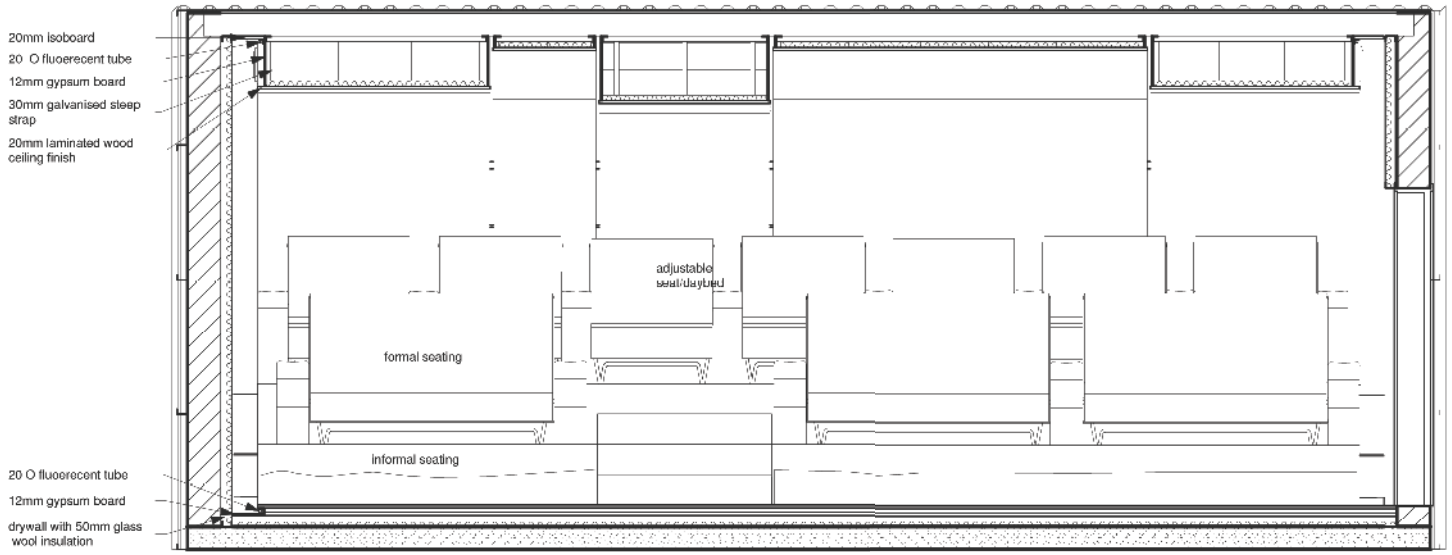


perspective of booths 3



section c-c 1:50

indicated on first floor plan



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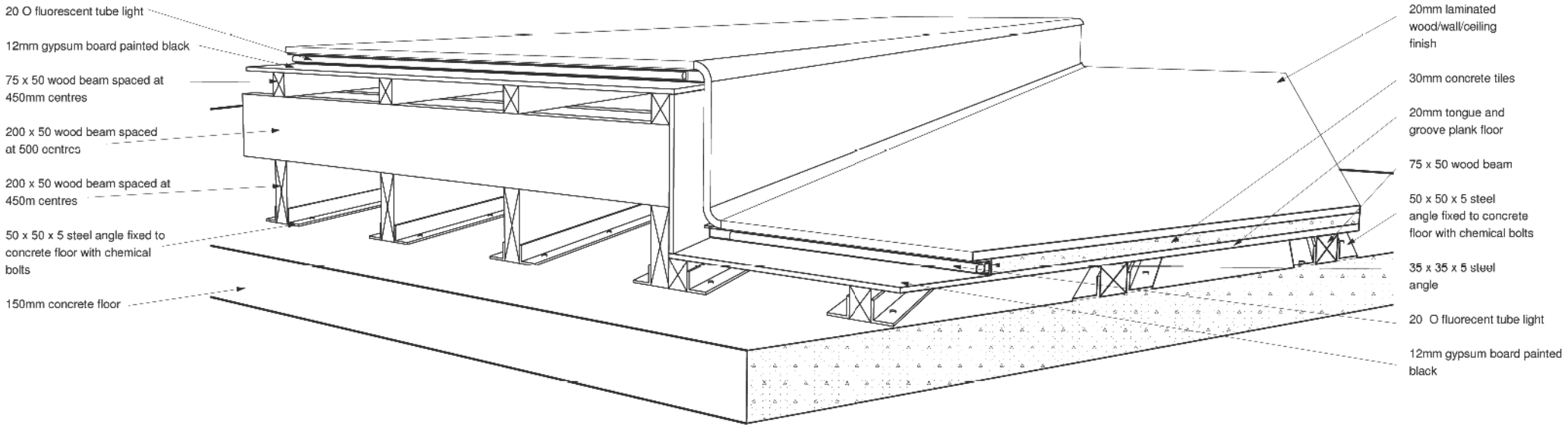
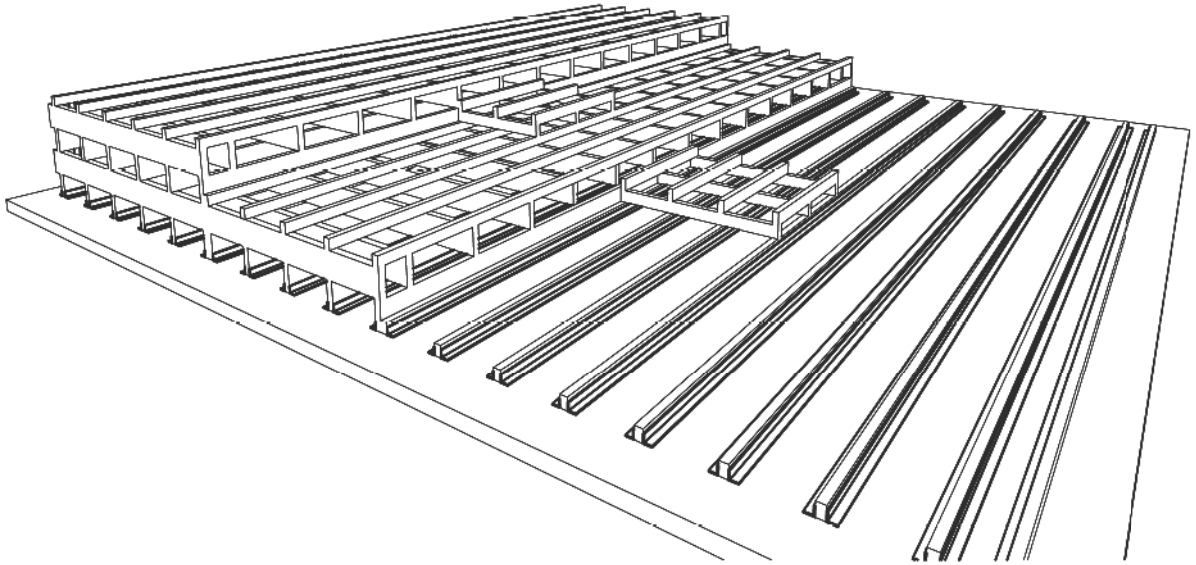
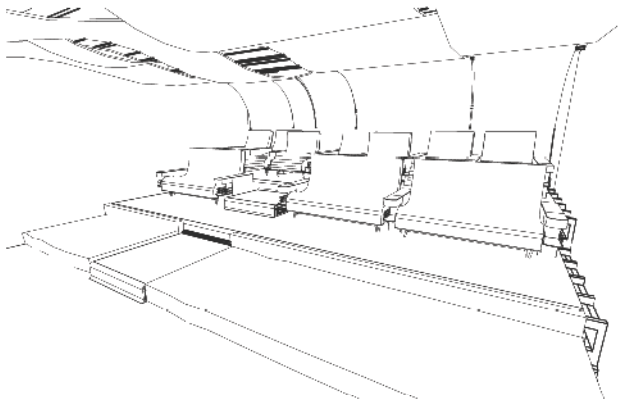


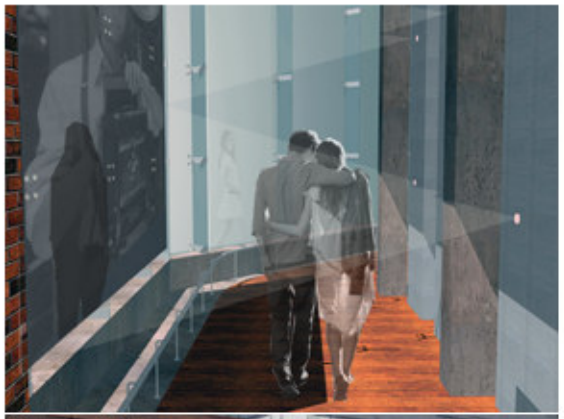
detail of floor

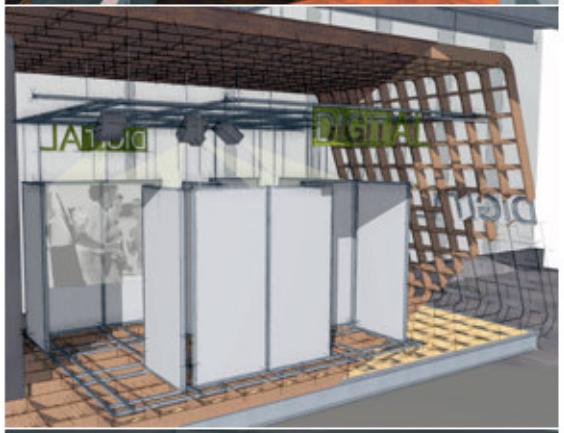


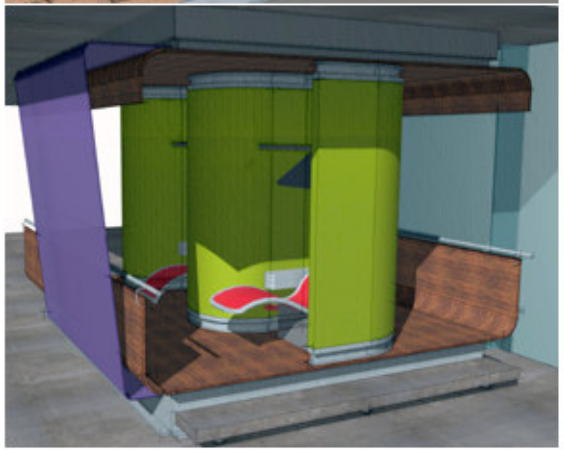
perspective of structure



perspective of interior







Conclusion

The main focus of the dissertation is the user's experience through the space. This was addressed through the use of projections and screens in the public area of the cinema centre. The design of the cinema building successfully creates a series of glimpses, which combines the activity with the object in the space. The user and the moving image became one, integrated in the space. The informal seating on the mezzanine level also acts as a cinema that is in contrast with the widely assumed notion of the cinema as a sealed black box. This space is available to visitors as they wait for their movie to start or while they wander through the Cinema Centre.

Another example of the idea of watching a movie outside the realm of the black box is the individual booths. Here in contrast to the black box and its purpose of eliminating distractions for the viewers to aid in their journey from reality to the world of fantasy and back, the individual booths exploit this feature. The distractions form part of the experience and the viewer and the moving image become integrated. These booths are successful because it is an individual experience. Dark cinema auditoria can be intimidating for a person who is watching a movie on his or her own, but in the booth he or she can see and partly be seen and the person thus feels more at ease.

The experimental cinema still follows the basic principles of the cinema auditorium, namely stepped seating that faces a screen; thick walls and the space exemplify a black box. This is for acoustic purposes and for the viewer to distinguish between spaces. They are familiar with the black box cinema. The difference between the experimental cinema and the traditional cinema auditorium is the use of a plasma screen, informal seating and the choice the viewers have of which movie to watch. The fact that this space can only house twenty people when seated and the technology used make it ideal for the screening of live events and educational material and the whole space can then be booked in advance by a group of people. This makes it multi-purpose.

A space of invention, innovation and experience are created through the combination of the specialized facilities like the digital gallery, public cinema, the individual booths and the glimpses created throughout the building.

REFERENCES

Books

ASHBY, M. & JOHNSON, K. 2004. *Materials and design – the art and science of material selection in product design*. Oxford: Elsevier Butterworth-Heinemann.

FIELL, C. & FIELL, P.2005. *1000 Chairs*. Köln: Tashen.

HEATHCOTE, E. 2001. *Cinema builders*. London: Wiley-Academy.

JONES, V. *et al* . (ed). 1980. *Ernest Neufert Architects' Data*. 2nd edition. Oxford: Blackwell Scientific Publications.

KUPŚĆ, J. 1998. *The history of cinema*. New York: Writers and Readers.

MILLER, T & STAM, R. (ed). 1999. *A companion to film theory*. Oxford: Blackwell Publishing.

NAPIER, A. 2000. *Enviro-friendly methods in small building design for South Africa*. Durban: Alaric Napier.

NAYLOR, D. 1981. *American picture palaces – The architecture of fantasy*. New York: Van Nostrand Reinhold Company.

TUTT, P. & ADLER, D. (ed). 1979. *New metric handbook*. Oxford: Reed Educational and Professional Publishing Ltd.

Journals

ANDERSEN, K. 1999. "Hariri & Hariri conjures up the Cine, an experimental film centre for the year 2020", *Architectural Record*, December 1999, vol. 187, no.12: 100-103.

CARTER, B. 1998. " Moving image", *Architectural Review*, August 1998, vol. 204, no 1218: 74-77.

DAVEY, P. 2003 "Moving image", *Architectural Review*, May 2003, vol. 213, no. 1275: 50–54.

DAVIES, C. 2005. "A retractable timber – clad cinema screen". *The Architects' Journal*. 31 March 2005, vol. 221, no. 12: 30-31.

EVANS, B. 2005. "Black box, light box". *The Architects' Journal*. 21 April 2005, vol. 221, no. 15: 28-37.

GEORGIADIS, N. 1994. "Open air cinemas – the imaginary by night*", Architectural Design: Architecture and film,* November – December 1994, vol. 64, no 11/12: 81-83.

HEATHCOTE, E. 2000. "The development of modernist cinema – sideshow to art house", *Architectural design: Architecture and film II,* January 2000, vol. 70, no 1: 70-73.

KAPUSTA, B. 2000. "Cinémathèque Québécoise", *Architectural Record*, November 2000, vol. 188, no. 11: 142-146.

KIL & BACHMANN. 1998. “UFA multiplex cinema, Dresden”, *Domus*, September 1998, vol. 98, no. 807: 8-17.

KUGEL, C. 1998. “Picture palace*”, Architectural Review*, July 1998, vol. 203, no. 1217: 54-58.

MBEMBE, A. 2005. “Fantasies of the metropolis”, *M&G Leisure*, March 2005 : 24-28.

PICCHI, F. 1998. “Materiality”, *Domus*, February 1998, vol. 98, no. 801: 57-62

RAATS, J. 2001. “Three dimensional – Melrose Arch phase 1 in Johannesburg”, *Building*, vol. 82: 72-77.

RATTENBURY, K. 1994. “Echo and narcissus*”, Architectural Design: Architecture and film,* November – December 1994, vol. 64, no 11/12: 35-37.

STEIN, K. 1997. “North Carolina museum of art”, *Architectural Record*, June 1997, vol. 97/6: 120-129.

VAN CLEEF, C. 1998. “Fashion sense”. *Architectural Review*. Vol. 203. Issue 1215, p 53-57.

VAN ROOYEN, D. 2005: Melrose Arch gaan vyf keer groter word. *Rapport – Gauteng bylae*, 10 April 2005, p 14.

WIDMAN, T. & ROBNIK, D. 1994. “Coop Himmelb(l)au – The UFA cinema centre: splinters of light and layers of skin*”, Architectural Design: Architecture and film,* November – December 1994, vol. 64, no 11/12: 49-55.

Websites

ANONYMOUS. 2004. ABSA and Cinemark create live cinema experience. Available on the Internet at http://www.biz-community.com/Article/196/97/4998.html. Accessed on 11 April 2005.

ANONYMOUS. [S.a]. Digital cinema - D-cine premiere DP100 projector. Available on the Internet at http://wwwbarco.com/digitalcinema/en/products/DLPCinemaprojectors.asp. Accessed on 3 May 2005.

BAKER, R. *et al.* 2002. At a cinema near you – strategies for sustainable local cinema development. Available on the Internet at http://www.bfi.org.uk/facts/publications/cinemanearyou.pdf. Accessed on 4 August 2004.

CAPOGRUPPO, P. 1999. The Cine – experimental Film Centre, Brooklyn, NY. Available on the Internet at http://www.europaconcorsi.com/db/pub/scheda.php?id=2119. Accessed on 4 April 2005.

CASETTI, F. [S.a]. “Towards a history of the cinema theatre”. Available on the Internet at http://www.mediasalles.it/c_hist.htm. Accessed on 18 Jan 2005.

HARIRI AND HARIRI. [S.a]. “When the building is a computer”. Available on the Internet at http://www.haririandhariri.com. Accessed on 4 April 2005.

HUSAK, W. 2004. Economic and other considerations for digital cinema. Available on the Internet at http://www.sciencedirect.com. Accessed on 14 Feb 2005.

LAGRANA, F. 2002. Digital cinema. Available on the Internet at http://www.itu.int/itunews/issue/2002/01/digital-cinema.html. Accessed on 24 May 2005

MANOVICH, L. 1998. Cinema as cultural interface. Available on the Internet at http://www.manovich.net. Accessed on 16 April 2005.

MARSLAND, L. 2005. Cinema price war benefits public as Nu Metro slashes to R12. Available on the Internet at http://www.biz-community.com/Article/196/97/6084.html. Accessed on 11 April 2005.

MASTERS, W. 2004. Dreamworld's vision for Cape Town and the Western Cape – Background information document. Available on the Internet at http://www.dreamworld.com. Accessed on 24 May 2005.

WILSON, N. 2005. Melrose Arch to add to the mix. Available on the Internet at http://www.knowledgeplex.org/news/71315.html. Accessed on 4 April 2005.

Reports

ARUP, OSMOND LANGE, URBAN SOLUTIONS, Melrose Arch Design Guidelines, 2004.

Johannesburg Regional Spatial Development Framework (2004/2005)

NEL, P. Earthstudies 320 notes on acoustics, University of Pretoria (2004)

Interview

CURRY, D. 2005. Interview with David Curry, Osmond Lange Architects, 30 Melrose Boulevard, Melrose Arch, 8 March 2005.

COCHLER, P. 2005. Interview with Patric Cochler, Spoormaker and Partners, South Street, Centurion, 15 August 2005.

> APPENDIX A

Schedule of accommodation

APPLICATION	ZONE	OCCUPANCY (SABS 0400)		AREA (SABS 0400)
CINEMA CENTRE	Public/ Semi private	Occupancy class	Maximum No of people	
ENTRANCE AND FOYER (including information and ticketing)	Public	-	340	439m²
AUDITORUIM 1	Semi private	A2	200	272m² (according to the amount of fixed seating)
AUDITORIUM 2	Semi private	A2	100	120m² (according to the amount of fixed seating)
AUDITORUIM 3	Semi private	A2	20	64m² (according to the amount of fixed seating)
INDIVIDUAL BOOTHS	Semi private	A2	16	Seat per booth
ADMINISTRATION	Private	G1	-	-
- Office manager	Private	G1	1	15m² (according to minimum requirement in SABS 0400)
- Staff quarters	Private	G1	6	100m² (according to minimum requirement in SABS 0400)
- Staff water closet facilities	Private	-	10	3 toilets 1 urinals
Bar and concession stand	Semi Public		-	100m²
- seating and standing area	Semi Public	A1	60	132m² (more than the minimum of 1m per person to accommodate the movement of people to the first level.
- Kitchen and wash-up	Private	B3	2	32m² (according to minimum requirement in SABS 0400)
WATER CLOSET FACILITIES Through out whole cinema centre	Public	-	200	Female: 12 WC's 8 Basins Male: 3 WC's 10 Urinals 4 Basins Disabled: 4 WC's with basin
DIGITAL GALLERY	Public	C1	10	100m² (according to minimum requirement in SABS 0400)

Special thanks to:

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Phillip and Jaco – for just being there

Leigh-Anne – for helping me with my English and your support

All my friends – you are the best

The Lord – who blessed me and never left my side