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APOIO

Towards Integrated Urban Education in Pretoria

A Multi-Functional Vertical Primary School in Pretoria

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Submitted in partial fulfilment of the requirements for the degree
Magister in Architecture (Professional)

Department of Architecture, Landscape Architecture and Interior Architecture
Faculty of Engineering, the Built Environment and Information Technology

University of Pretoria
November 2010

The production of this document would not have been possible without the loving support of my parents, Tjaart and Henriëtte du Plessis

I would like to express my thanks to the following people who either kept me motivated, inspired me or influenced me in some way during my studies:

Marianne de Klerk and Arthur Barker
(for their continues support, motivation and inspiration)

John and Irma Deppe

Tjaart and Lizette

All of my family

All of my friends



The Apollo Project investigates the recent establishment of numerous private educational institutions in the inner city of Pretoria. It identifies the need for adequate urban educational facilities and explores the use of existing buildings as schools. An existing educational cluster is identified at the eastern edge of the inner city, defined by Church, Du Toit and Pretorius Streets, and Nelson Mandela Drive. This city block and the ones surrounding it contain numerous primary, secondary and tertiary educational institutions in a predominant industrial/automotive precinct.

An urban design framework is proposed for the precinct. It is envisioned that the precinct may be developed as a mixed-use urban educational campus. Within the existing city block and the urban framework proposal, the Apollo Centre, located on the corner of Church-and Du Toit Street, is selected for an adaptive re-use intervention. The proposed use is an urban primary school.

The Apollo project investigates current pedagogical trends, which informed a concept that is largely defined by the idea of contextual learning within a vertical structure. Transparency and integration of education with the urban environment is at the core of the proposal. The traditional notion of horizontal education is explored in a vertical manner.

The existing structure is analyzed and a position taken regarding the adaptive re-use process that informs the design. Precedent Studies include existing schools within the inner city of Pretoria as well as local and international schools.

The process of converting the Apollo Centre into a primary educational facility, that shares its resources on a cross-programming basis, is explored in a series of proposals. The numerous explorations are considered in their various aspects, as well as their relationship to the whole, which then leads to a final design proposal. Key areas of the proposed Apollo Primary School will finally be resolved technically. A conclusion summarizes the author's thoughts on the result of the project.

Abstract



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“Education is the key to growing the skills required in a cutthroat competitive world - the skills to design, plan and implement the changes we need to go forward as a nation”.

Graeme Bloch
Bloch (2009: 17)

“Her day started at 05:15. She made a 45-kilometer two-bus journey to school, arriving slightly before 08:00. She became familiar with the passing urban landscape through the bus window, becoming acquainted with the moving space. She commented on feeling invigorated to see people on the move, making their way to their places of work or education. She recollected how her bus journey experiences, walking through the inner city to her school, and daily interactions with people from different backgrounds gave her a larger perspective on life beyond the limitations imposed by the streets around her house in Rustvale. Layla grew to love the exposure that her daily translocal mobility gave her, feeling privileged to encounter the buzz of the city and the ability to imagine a broader perspective of life”.

Fataar (2009: 17)

01



Introduction

As architectural professionals in South Africa, we have the ability to seek innovative solutions that explore the potential of adaptively re-using structures and the unique opportunities that they provide the educational building environment with. I believe that the potential of the existing building stock within the inner city of Pretoria should be taken advantage of before the option of new development for educational purposes is considered.

Cowan (1963: 56-59) suggests that most buildings are physically suitable for adaptation to most uses. This influenced the proposition that "long life-loose fit", which was popular in the 1960's, should be a guiding principle behind most design briefs. This longer view of use potential has recently seen a revival under the sustainability agenda as reported at the 2001 AIA convention (Plugman, 2001).

Within the current context of Pretoria and the availability of building stock, an adaptive re-use approach have the potential of creating dynamic solutions to the educational problems that not only our city, but also our country is currently facing. An architectural approach is required that re-defines the status and perceptions of our learning environments. This might in-turn re-define the role of educational environments within urban settings.

I believe that we as a nation should strive towards an ideal in which not only our youth, but the whole nation has access to quality education and supportive environments. A general perception of perceiving education as exclusive resource should be replaced by one of inclusiveness. These educational environments should be of the highest quality that offers its users the maximum exposure to educational programmes and provide the necessary resources to support these.



fig.1.1. Students from Berea Park School



fig.1.2. Students from Berea Park School



fig.1.3. Students from Berea Park School

Chapter 1

Introduction

Background

In recent years a significant number of Independent Schools have been established within the inner city of Pretoria.

Hofmeyer (2001: 15) and the Independent Schools Association of Southern Africa (ISASA) (2001: 17) states that there had been significant growth in independent schooling after 1990. James (1991) identifies two types of demand which, according to ISASA (2001: 4-5), have supported the growth of independent schooling since 1990:

- "Excess" demand for more schooling (usually associated with developing countries)
- "Differentiated" demand for different, and perhaps better schooling (usually associated with developed countries)

James (1991) suggest that "excess" demand probably accounted for most of the growth and largely took the form of Black middle and lower socio-economic households as a result of the Apartheid legacy of poor standards and pass rates in many predominantly Black schools. Fataar (2007: 9) suggests that Coloured and Black children all the more choose to access inner city schools because they regard them as crucial for cultivating the necessary aspirant dispositions that will allow entry into formal middle class employment and lifestyles.

However, James (1991) further suggests that differentiated demand, characterizing the traditional and religious schools of the past, also accounts for some of the growth in independent schooling. He refers to two groups in particular that were responsible for heightened differentiated demand:

- White households, which were concerned that the democratic government would not protect their cultural and religious ethos in respect of schooling
- Black households that could afford better quality schooling as a result of increasing social and economic mobility.

Hofmeyer (2008) argues that Private Education for the Poor (PEP) predominantly serves disadvantaged

Black learners in inner cities, informal settlements and rural communities. She states that PEP takes form in two distinct categories:

- Informal: Grouping of students within houses
- Formal: Established in rented or donated premises (mostly disused warehouses, offices, old houses, farm buildings and churches).

All of these newly established Independent Schools within the inner city of Pretoria have made use of an adaptive re-use strategy to convert mostly redundant apartment-and office, but also warehouse and workshop building types into schooling facilities (figs.1.4 - 1.11).



fig.1.4. Berea Park School



fig.1.5. Confidence College



fig.1.6. Greenwood College



fig.1.7. DANSA International College



fig.1.8. Founders Community School



fig.1.9. Princefield Trust School



fig.1.10. Haywood College



fig.1.11. Christian Progressive College

Educational Demographics

Pretoria contains numerous educational institutions (fig.1.13). These range from crèches and nursery schools to various public and independent primary and secondary schools, colleges and universities. Pretoria is also home to prominent tertiary educations such as the University of South Africa (UNISA) (fig.1.12), the University of Pretoria (UP) and Tshwane University of Technology (TUT) which all have campuses distributed throughout the larger Tshwane. Pretoria can thus be seen as a true city of learning that attracts people from all over Tshwane, Gauteng, South Africa as well as internationally for educational purposes.

Following an investigation into the current state of education within the inner city of Pretoria during 2009, and by means of questionnaires handed out by the author to the individual principals of schools within the city, it was concluded that the majority of scholars reside in the townships surrounding Pretoria. These include Hammanskraal, Soshanguve, Atteridgeville and Mamelodi, all of which are located an average 25km from the inner city (fig.1.14). There are however a small amount of scholars residing in the nearby precincts of Sunnyside and Arcadia.

Most students that travel from the townships thus have to make use of long distance transport modes like taxis, busses and trains (fig.1.16). They often have to make use of multiple transport modes in one journey. Students living in close proximity of their school either walk, cycle or make use of private transport to reach their destination (fig.1.15).



fig.1.12. University of South Africa (UNISA)

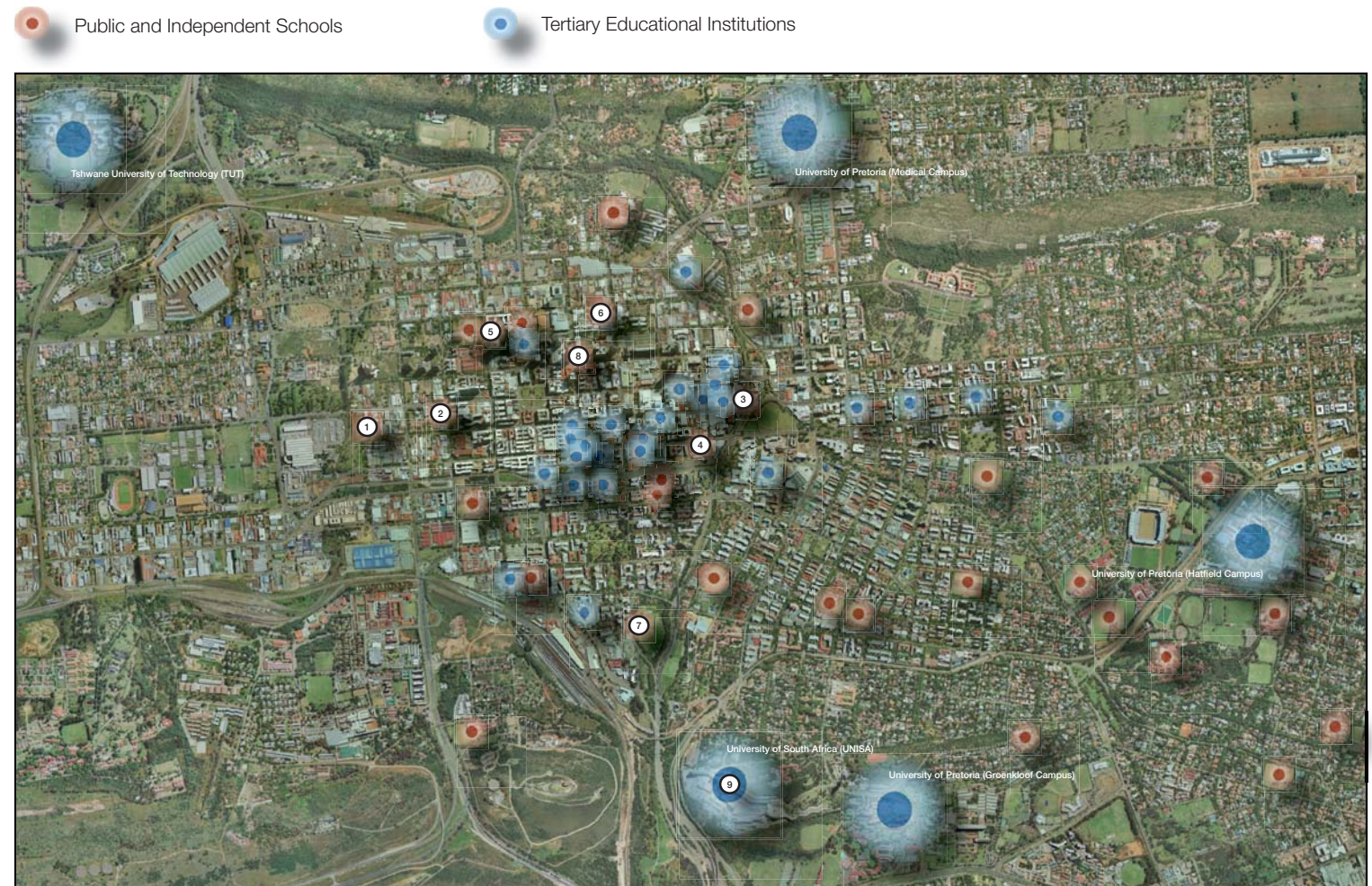


fig.1.13. Distribution of Educational Institutions within and around the inner City of Pretoria

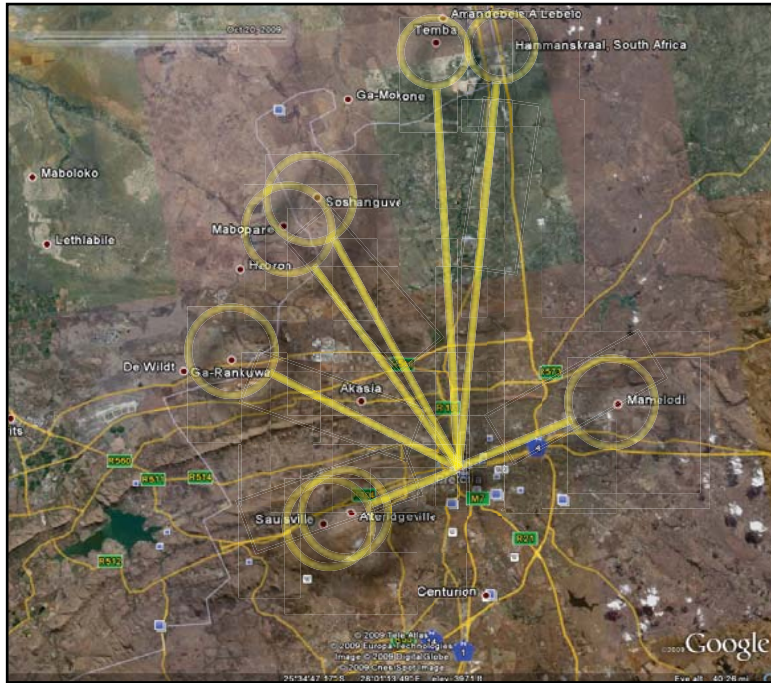


fig.1.14. Traveling routes towards the city of Pretoria from its surrounding townships and informal settlements (not to scale)

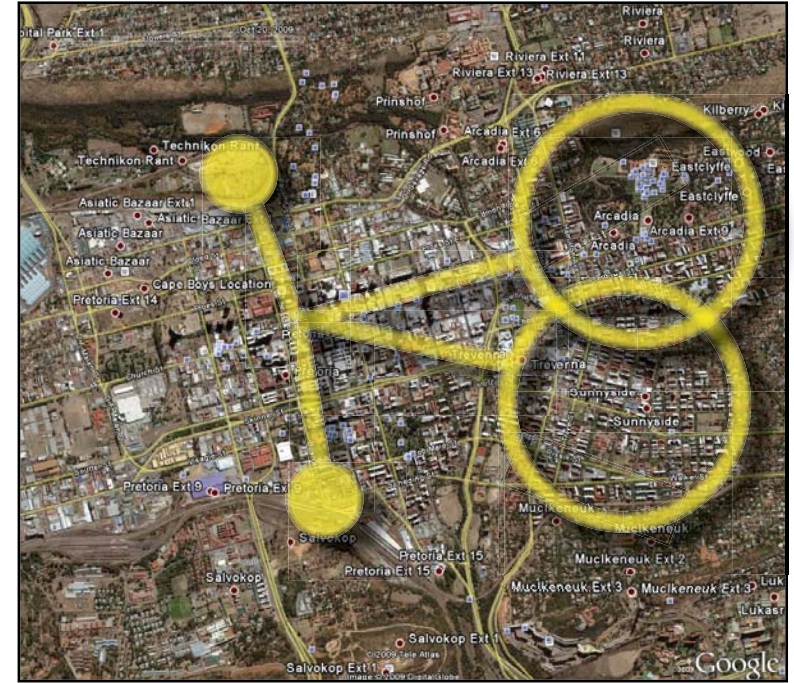


fig.1.15. Influx of students from the Arcadia and Sunnyside residential precincts, as well as Pretoria Station in the south and Belle Ombre Station in the north

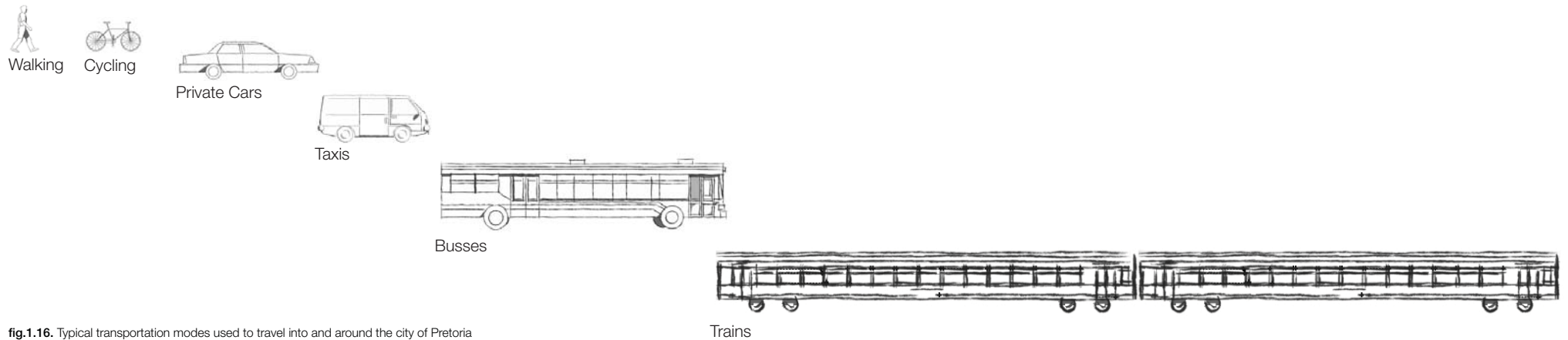


fig.1.16. Typical transportation modes used to travel into and around the city of Pretoria



Problem Statement

The question that arises is whether these adaptively re-used schooling facilities are built to fulfill the minimum requirements for schooling facilities as set out by the Department of Education in their document entitled; National Minimum Uniform Norms and Standards for School Infrastructure. Within the document referred to it is clearly stated that: “as a national instrument, these norms and standards will apply to ALL public ordinary schools (excluding hostels) that operate in South Africa. Also, in the process of registering an independent school, the MEC will ensure that such schools oblige the minimum norms as indicated in the document referred to.” DOE (2008)

Most of these inner city schooling facilities are not located on typical sites that are prescribed by the Department of Education. This means that various norms and standards have to in fact be interpreted and rationalized in order to suite their individual contexts.

The Department of Education have defined three level of provision meeting norms and standards:
1. Safe / 2. Functional / 3. Effective. DOE (2008)

1. Safe: “Norms and standards for a safety level that are the bare minimum allowable for a school to remain open.”
2. Functional: “Norms and standards for a functional level of provision is a minimum tolerable level of provision. Conceptually, the functional level of provision is that which allows the core functions of a school to run without undue interruption or inconvenience.”
3. Effective: “The effective level of provision is the optimum norms and standards. It comprises all facilities that most educators would agree is necessary for them to effectively support student training.”

An investigation into the current state of Pretoria’s inner city schooling facilities revealed that although these institutions are either on a safe or functional level, the vast majority are still inadequate educational environments that are not on an effective level, and thus do not meet all of the prescribed optimum norms and standards as set out by the Department

of Education (figs. 17-19).

Bloch (2009: 82) refers to the national disaster in which our country’s education is finding itself presently by stating that according to departmental figures, 17% of schools have no access to electricity; 19 940 (or 79%) schools have no library facilities; 60% of secondary schools have no laboratory facilities; 68% of schools have no computers; 31% of schools depend for their water supply on boreholes or rainwater; of the 9 461 schools with municipal services, 6% depend on mobile tankers and 30% on communal standpipes; and lastly that 61% of schools with bucket or pit latrine systems have no sewerage disposal system in place. He adds that most schools thus are not very inviting places, nor places where pupils or teachers would want to spend their time.

Without a doubt the above-mentioned factors are influencing the education provided in our country and our city, Pretoria, and impacting our economic potential as well as affecting the quality of labor force available.



fig.1.17. Playgrounds (inadequate recreational space)

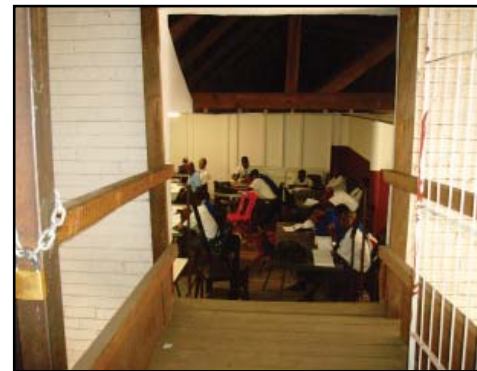


fig.1.18. Classrooms (inadequate natural lighting and ventilation)



fig.1.19. Library (no provision made for the storing of books)

Research Methodology

Research into the theme of inner city schooling began in 2009. As part of the BArch(Hons) the author set out to investigate all of the inner city schooling facilities within Pretoria. The investigation was photographically documented. Questionnaires that asked general questions relating to the schools history, its infrastructure and general needs was conducted and completed by each individual principle.

This investigation revealed that the majority of independent schools have relocated recently and that all of the independent schooling facilities visited, are the result of an adaptive re-use strategy. The investigation also contributed to the profiling of a typical inner city school that is as follow:

- An independent subsidized school
- Accommodates primary and secondary phase
- Located within an office/warehouse building type
- No recreational facilities, but events are organized
- No access to certain subjects because of inadequate facilities
- Have to travel approximately 20km to school and back each day
- Have to take a train, bus or taxi to school, walk if they live nearby
- General unsafe conditions as the interface between the school and the public realm are treated inadequately.

This initial research was only an introduction to the current state of education in the inner city of Pretoria. This lead to the identification of specific areas that needs to be researched in order to work towards an eventual solution.

The areas identified for further research include:

- Educational context of Pretoria
- Adaptive re-use strategies
- Educational facility planning
- Pedagogical philosophy
- Educational partnerships

In support of the above, architectural theories was investigated which guided the Architectural ap-

proach towards the proposed design. These theories include:

- Humanistic Architecture
- Community and Privacy
- Defensible Space (Oscar Newman)
- Theory by Herman Hertzberger
- Contemporary Educational Trends

The research process was done in an iterative way. New issues affecting the project were constantly influencing the outcome of the project.

Unlocking the Project

The research process followed could be compared to an "Architectural Key" which "unlocked" the Architectural project.

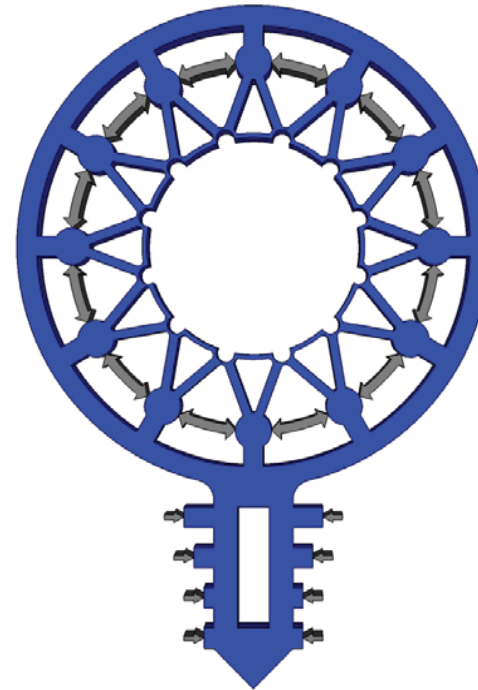


fig.1.20. Phase 1 - BLUE

BLUE represents the first phase, the identification of the problem. This problem is the result of a number of factors that contribute to a communal issue in a negative way. These factors are not all contributing equally to the problem and thus could be said to contain a hierarchy. This hierarchy needs to be identified in order to give importance to the factor that contributes to the greatest portion of the problem. The problem could be divided into sub-problems that is a direct result of the identified problem. These sub-problems are inter-related to one another and are directly linked to the problem.

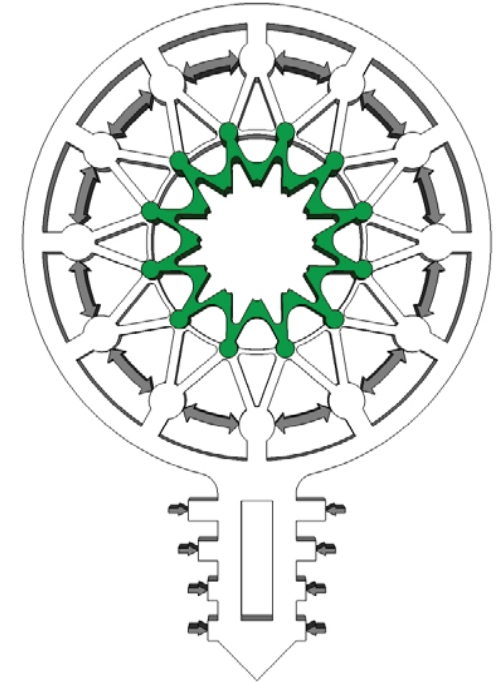


fig.1.21. Phase 2 - GREEN

GREEN represents the second phase. This phase is reached when the sub-problems are understood, and communal architectural issues are identified that links the sub-problems. These points can be seen as neutral as they are located in-between the negative, the problem, and the positive, moving towards an architectural solution.

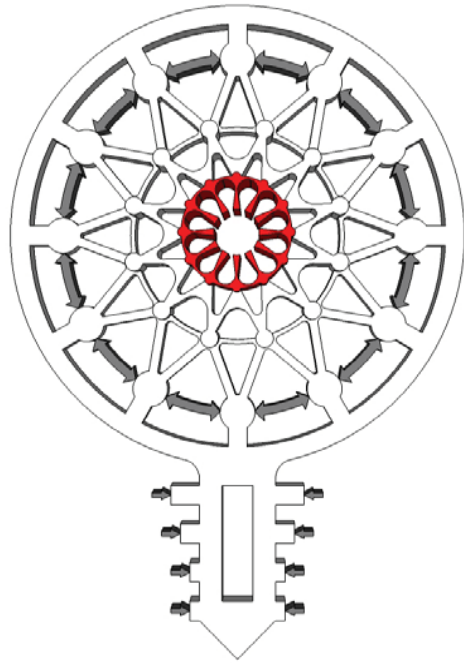


fig.1.22. Phase 3 - RED

RED represents the heart of the “key”. This is where the communal architectural issues identified are architecturally interpreted. An exploration starts to happen which uses architectural theories, precedent studies and experiences to form concepts that addresses the problem. This phase is constantly pulsating and producing solutions. It is alive and difficult to control.

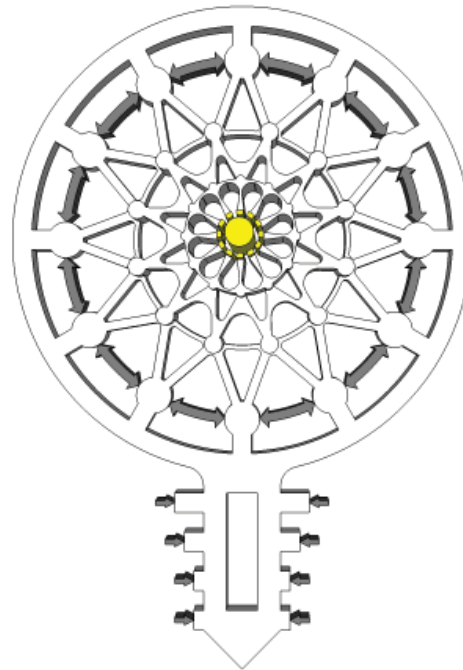


fig.1.23. Phase 4 - YELLOW

YELLOW represents the result of the architectural concept. It is starting to shape as a project but needs to be tested first. Practical issues regarding the concepts produced are resolved here and the result laid forth as a final solution. The final result is the nucleus of the key. Its quality is judged in relation to the whole.

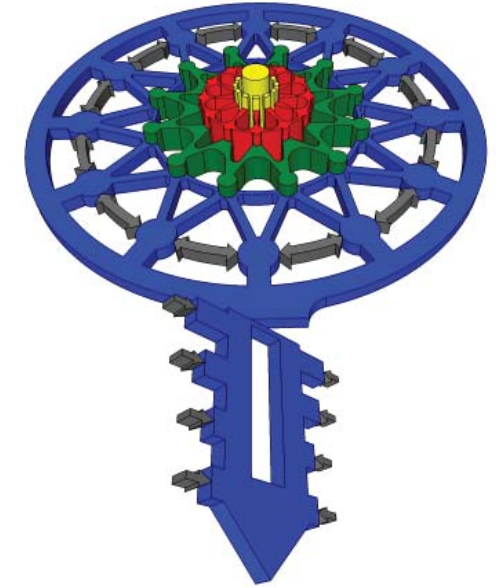


fig.1.24. Phase 5 - TURN 1

The key can now be turned for the first time. It needs to be stated that the unlocking of the project has now only reached its first stage. It has now only opened the first “door” that leads toward the final solution. During a project this “key” is constantly turning, unlocking new “doors” and continuously moving towards a more refined final solution.

Lastly, it has to be accepted that this “key” will never stop turning. The only thing that will make it stop, is time itself...



“To anticipate developments from outside, a city-wide integral accommodation plan has now been made in Arnham, Netherlands. A prognosis is made of which school’s turn it is for renovation, the state of the school’s premises, and how a school fits in with urban development trends. We want to be a step ahead of the developments. The next stage is to draw up priorities and then the plan goes to council, which has to release the funds”.

Gerard Bonte
Verstegen (2009: 184)

02



South Africa / Gauteng / Tshwane



fig.2.1. Eastern precinct of inner city Pretoria



fig.2.2. Map of the Republic of South Africa indicating the location Gauteng

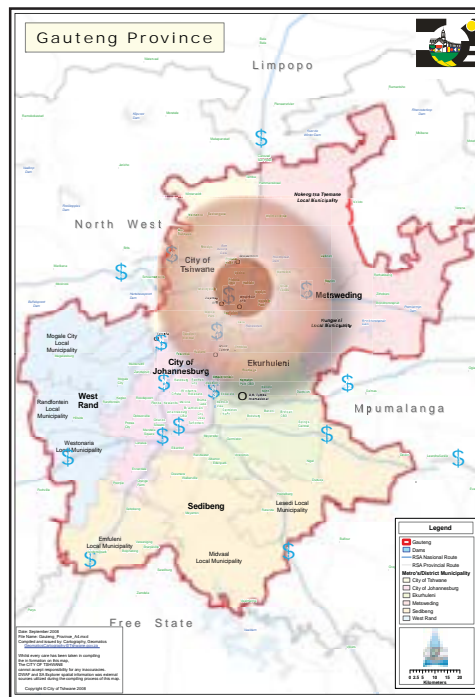


fig.2.3. Map of Gauteng Province indicating the location of Tshwane

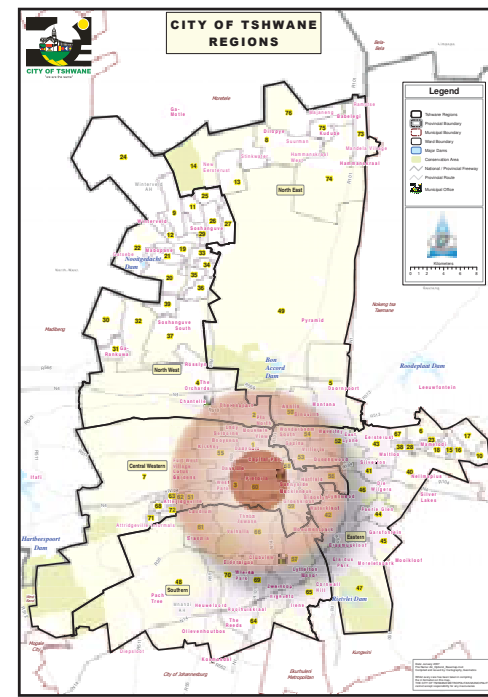


fig.2.4. Map of Tshwane indicating the location of Pretoria

Chapter 2

Context

Pretoria

The city of Pretoria is the capital of the Republic of South Africa. Its predominant function is to facilitate the administrative functions of the Republic. Various government departments occupy buildings within the city for this purpose.

Landmark attractions within the city of Pretoria, which can be observed from the rooftop of the proposed site of intervention, include the Union Buildings, Loftus Versfeld, the University of Pretoria (UP), the Telkom Tower, UNISA, Freedom Park, the Voortrekker Monument, the ABSA building, the Reserve Bank building, and the Pretoria Zoo.




-  - The Apollo Centre
-  - Main Vehicular Routes
-  - Railway Routes and Stations
- UB - Union Buildings
- L - Loftus Versfeld
- UP - University of Pretoria
- T - Telkom Tower
- U - UNISA
- F - Freedom Park
- V - Voortrekker Monument
- AB - Absa Building
- C - Caledonian Stadium
- RB - Reserve Bank
- Z - Pretoria Zoo



fig.2.5. Diagrammatic Analysis of Pretoria

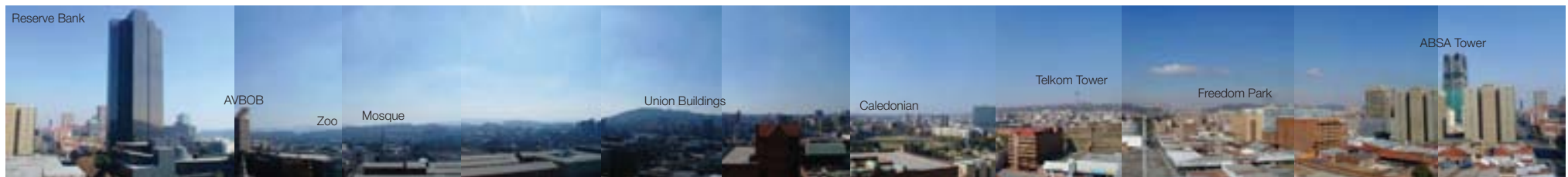


fig.2.6. Panoramic view of the city of Pretoria from a rooftop within the precinct investigated



- The Apollo Centre
- Independent Private Schools
- Tertiary Educational Institutions (FET Colleges)



fig.2.7. Educational Institutions within precinct investigated.
Specific block of intervention also identified

Urban Framework Analysis and Proposal



fig.2.8. Bird's Eye View of Existing Urban Fabric in Precinct

The Urban Design Framework is an attempt at establishing an architectural model for the numerous educational institutions within the inner city of Pretoria. It is proposed that the educational component of the city be a catalyst for future development within the inner city.

An attempt has been made to map all of the existing primary, secondary and tertiary educational institutions within the inner city of Pretoria (fig.1.13). This shows that there are a great amount of institutions present within the city.

The framework proposes that all of the educational institutions present within the inner city should be

linked to one another (fig.2.13). These linkages may be created through the mere sharing of resources, but also through physical connections by way of pedestrian routes. It is proposed that an urban campus for education and recreation might in fact be achieved. This will not be achieved by one broad intervention though. Critical clusters of educational institutions should be evaluated and included into a precinct scale urban development framework. A cluster to the east of the inner city has been identified as one such precinct that contains a prominent amount of educational institutions (fig.2.7).

The identified precinct contains a many industrial/automotive building typologies that are proportion-



fig.2.9. Industrial / Automotive building types in precinct



fig.2.10. Industrial / Automotive building types in precinct



fig.2.11. Industrial / Automotive building types in precinct



fig.2.12. Industrial / Automotive building types in precinct

ally out of scale compared to the rest of the city. The condition of these buildings are generally poor, dilapidated, and is not of any note worthy importance (figs.2.9 - 2.12). The majority of central areas of each city block in this precinct are occupied by either a very low density of similar building typologies or open parking areas (figs.2.9 - 2.12). It is thus proposed that new development should focus here and replace the existing industrial/automotive character by one of denser mixed use development, aimed at not only increasing residential and office uses, but also at increasing pedestrian activity. All this should be done according to the following prescribed urban framework guidelines that utilizes the existing educational institutions as catalysts for development.

Architectural guidelines for the implementation of the proposed urban framework includes:

Movement

- The main North/South vehicular movement should happen along Nelson Mandela Drive on the eastern edge of the precinct and along Van der Walt Street on the western edge (fig.2.13).
- East/West movement is already articulated by Pretorius and Schoeman Streets. This should remain the main movement (fig.2.13)
- Pedestrian movement through the precinct should be encouraged. The main routes currently consist of Du Toit and Prinsloo Streets. These movement

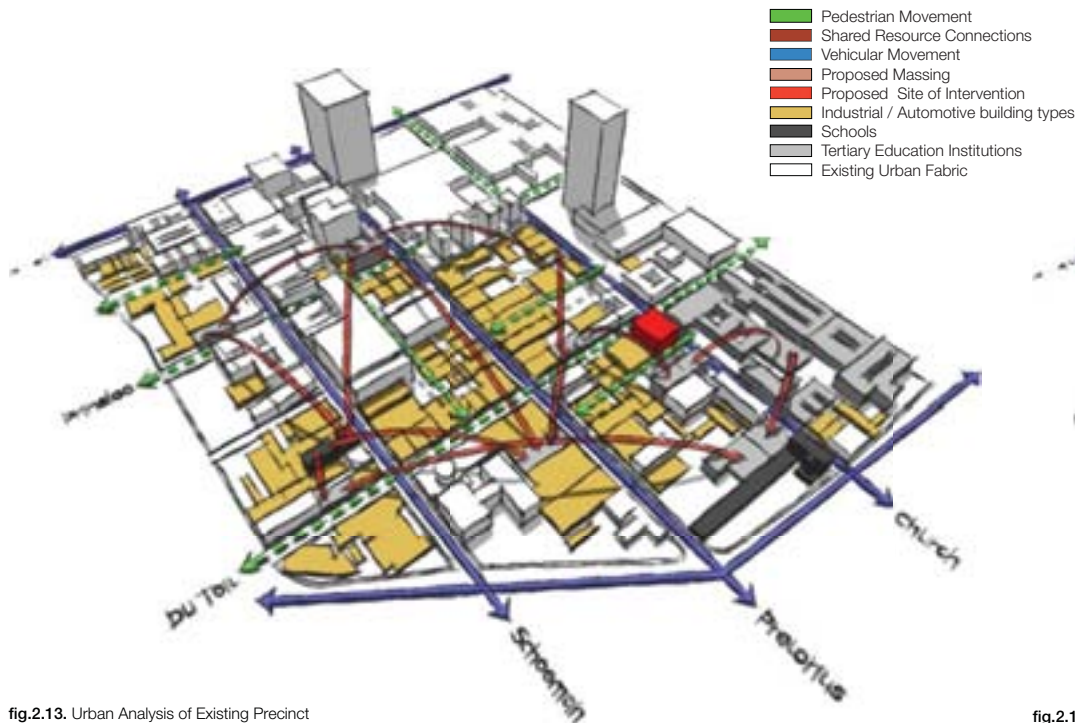


fig.2.13. Urban Analysis of Existing Precinct



fig.2.14. Urban Framework Proposal for Precinct

corridors should be upgraded with better street crossings and sidewalks, but pedestrian arcades through city blocks should be introduced where possible (fig.2.15).

- Pedestrian crossings should be upgraded (. Pedestrian movement should be enhanced by regulating traffic at new arcade intersections (fig.2.19).

Street Edges and Sidewalks

- The existing system of parallel parking on street edges should remain, but off-street parking should be introduced in new developments where possible (fig.2.16 and fig .2.18)

- All sidewalks in the precinct should be upgraded

using inclusive design principals so that there will be no sudden level differences along the routes. The sidewalks should be a minimum of 3m wide. Green structure that includes trees and planters should be introduced along new and existing pedestrian routes (fig.2.20).

- Street furniture that includes dustbins, benches and lighting should be provided along pedestrian routes. The street lighting provided should be on a pedestrian scale where possible (fig.2.20).

- Sidewalks should be covered by canopies that protrude a minimum of 1.5m out of the building facades (fig.2.20).

- Different textures can be introduced to define different spaces along the sidewalks (fig.2.20).

- Excessive signage along pedestrian routes should be introduced for information and orientation purposes, including educational information (fig.2.20).

Buildings

- All new development should respond to, or try to enhance the existing, as well as proposed educational infrastructure.

- The ground floor of buildings should be used for retail purposes.

- Buildings placed adjacent to one another should form continuous street facades, but the corners at traffic intersections should step back to provide a better visual line of movement and create spaces for

vendors and pedestrians to reside.

- All buildings should be built to a minimum height of 3-stories. Buildings lower than 6-stories may have a flush facade, but anything higher that should step back a minimum distance of 1.5m from the 4th floor upward (fig.2.15).

- Courtyard building typologies are encouraged.

An upgrade of the Caledonian Sports Grounds is proposed. The facility should become a semi-public venue for recreation purposes and allow educational institutions to gain access to it on an organized manner.



fig.2.15. Pedestrian orientated routes, introduction of green structure, continuous street facades and excessive signage



fig.2.16. Extended sidewalk space, and parallel parking



fig.2.17. Covered sidewalk space



fig.2.18. Off-street basement parking



fig.2.19. Pedestrian crossings



fig.2.20. Different floor materials, street furniture, and signage



Block Analysis



Education

Offices + Partially Vacant



Vacant



Light Industrial

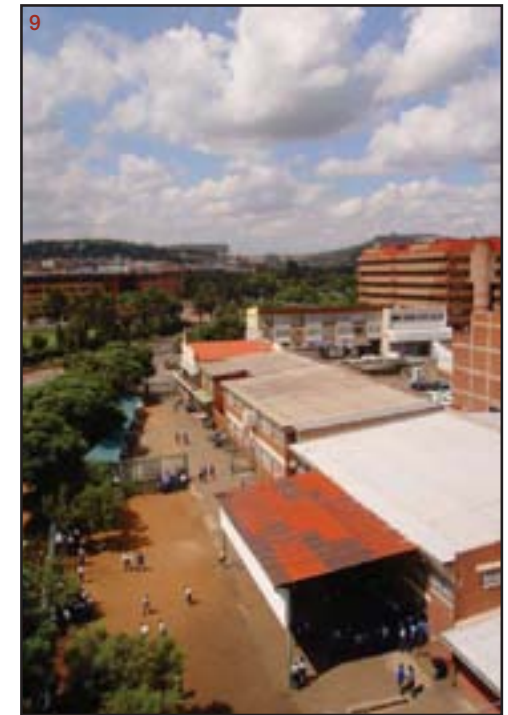
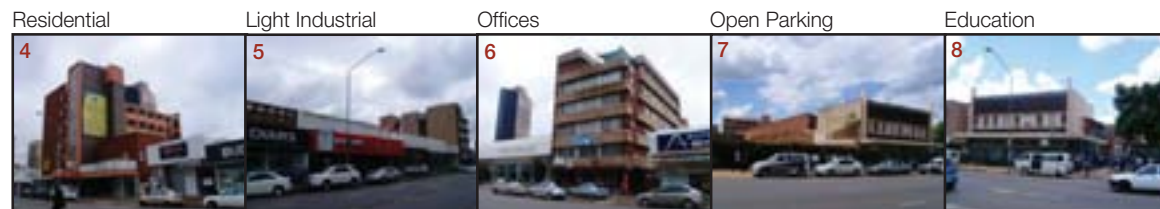


fig.2.21. Aerial photograph of block containing intervention



Proposed Block Demolishment Plan



*(All Educational Functions should remain in precinct, either within existing structure or housed within new development according to urban framework proposal. These institutions, as well as any programmes that adds to the educational character of the precinct should be the catalysts for the proposed new development.)



fig.2.22. Proposed Block Demolishment Plan

(Drawing not to scale)



Proposed Block Development Plan



* (All Educational Functions should remain in precinct, either within existing structure or housed within new development according to urban framework proposal. These institutions, as well as any programmes that adds to the educational character of the precinct should be the catalysts for the proposed new development.)



fig.2.23. Proposed Block Development Plan

(Drawing not to scale)



“School must represent life - life as real and vital to the child as that which he carries on in the home, in the neighborhood, or on the playground”.

John Dewey
McDermott (1973)

03



Introduction

Throughout the history of education there has been countless views, opinions, theories, and philosophies regarding pedagogical ideologies that should be applied to the time. Changing times, changing economics, changing politics and radical advances in the technological, scientific and biological spheres necessitated new pedagogical approaches that could keep up with the radical changes that planet Earth and its inhabitants underwent and still is undergoing.

Some of these pedagogical philosophies that have been proposed, investigated, tried and tested, and even doomed to fail by some, will be investigated within this project to create a holistic view of the educational realm. From this exploration and investigation it is aimed that certain conclusions will be made and then critiques investigated that will ultimately inform the foundation of an educational attitude towards the proposed project.

Within this chapter, four pedagogical philosophies will be explored. They are, in order: Outcomes Based Education, The Philosophy of John Dewey, Montessori Education, and Waldorf Education.



fig.3.1. Students of DANSA International College

Chapter 3

Pedagogical Philosophy

Outcomes Based Education



fig.3.2. Cartoon illustrating the effect of excessive tests

This is the Educational Philosophy that is predominantly followed in South Africa. The Department of Education, DOE (2002), states that Outcomes Based Education considers the process of learning as important as the content. Both the process and the content of education are emphasized by spelling out the outcomes to be achieved at the end of the process. The critical and developmental outcomes are a list of outcomes that are derived from the Constitution and are contained in the South African Qualifications Act (1995). They describe the kind of citizen the education and training system should aim to create.

The critical outcomes envisage learners who will be able to:

- Identify and solve problems and make decisions using critical and creative thinking
- Work effectively with others as members of a team, group, organization and community
- Organize and manage themselves and their activities responsibly and effectively
- Collect, analyze, organize, and critically evaluate information

- Communicate effectively using visual, symbolic and/or language skills in various modes

- Use Science and Technology effectively and critically showing responsibility towards the environment and the health of others

- Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation

The developmental outcomes envisage learners who are also able to:

- Reflect on and explore a variety of strategies to learn more effectively
- Participate as responsible citizens in the life of local, national, and global communities
- Be culturally and aesthetically sensitive across a range of social contexts
- Explore education and career opportunities
- Develop entrepreneurial opportunities

The DOE (2002) states that outcomes and assessment standards emphasize participatory, learner-centered and activity-based education. They leave considerable room for creativity and innovation on the part of teachers in interpreting what and how to teach. The South African version of Outcomes Based Education is aimed at stimulating the minds of young people so that they are able to participate fully in economic and social life. It is intended to ensure that all learners are able to develop and achieve to their maximum ability and are equipped for lifelong learning.

The Philosophy of John Dewey

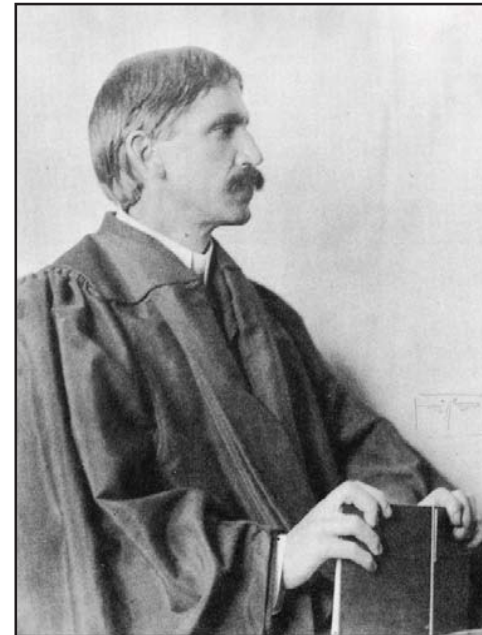


fig.3.3. John Dewey

McDermott (1973) suggests that John Dewey's philosophy of experience was pedagogy and his pedagogy was a philosophy of experience.

In 1897 John Dewey produced a document entitled: "My Pedagogical Creed". This document contained most of his subsequent judgments about educational matters. His main focus within this document was aimed on the individual as social, the school as a community, and the necessity of integrating discipline with the needs and potentialities of the children. McDermott (1973) argues that perhaps the most important remark in Dewey's "Pedagogical Creed" is his comment that "education must be conceived as a continuing reconstruction of experience; that the process and the goal of education are one and the same thing".

John Dewey believes that the only true education comes through the stimulation of the child's powers

by the demands of the social situations in which he finds himself. Through these demands he is stimulated to act as a member of a unity, to emerge from his original narrowness of action and feeling, and to conceive of himself from the standpoint of the welfare of the group to which he belongs. According to him education is thus the process of living and not a preparation for future living.

John Dewey believes that school must represent life - life as real and vital to the child as that which he carries on in the home, in the neighborhood, or on the playground. The school according to him, as an institution, should simplify existing social life; it should reduce it, as it were, to an embryonic form. As such simplified social life, the school life should grow gradually out of the home life; that it should take up and continue the activities with which the child is already familiar in the home. It should exhibit these activities to the child, and produce them in such ways that the child will gradually learn the meaning of them, and be capable of playing his own part in the relation to them. He adds that the child should be stimulated and controlled in his work through the life of the community. According to him the discipline of the school proceed from the life of the school as a whole and not directly from the teacher.

Regarding the child and the curriculum, John Dewey believes that the path to a solution is in the area of the nature of a child. John Dewey is of opinion that if we were to have a deeper insight to the actual ways that children learn and couple that with knowledge of their needs and potentialities, the curriculum would then take on significance heretofore closed off from the child. McDermott (1973) claims that Dewey's position is not that of a child centered classroom, if that means learning is subordinate to the whim of the child. He does hold, however, that it is the child who learns, and any efforts to teach a curriculum in which the qualities of the lives of the children and the differences among them are not grasped are doomed to failure.

Montessori Education



fig.3.4. Montessori Education

Standing (1966) suggests that the Montessori method could be summed up by saying that it is a method based on the principle of freedom in a prepared environment. In the word of Dr. Montessori: "It is not difficult to explain to such that the Montessori method is founded on the general characteristics of life, proper to all organisms, and that it will last as life itself lasts. It is not possible to imagine that such a principle, having once been introduced into pedagogy, could ever be abandoned. Standing (1966) comments that people have often asked Dr. Montessori what the main principle of the Montessori system is. According to him she used to think that it could conveniently be summed up as "a method of education through the senses and sense training". Then it seemed to her that "education by self-activity" described it better. Later, the phrase "education by means of liberty in a prepared environment" seemed more comprehensive. Standing (1966) continues and state that during her later years Dr. Montessori emphasized another principle, which is, perhaps the most fundamental of all, and one which might be looked upon as the very root and basis of her method, the nature of the difference between the child and the adult. Dr. Montessori suggests that: "The child is in a state of continues and intense transformation, of body and mind, whereas the adult has reached the norm of the species".

Standing (1966) explains that in training her teachers, Dr. Montessori insists again and again, not only on

the right use of material, but also on the teacher's seeing to it that the whole environment of the child in the Montessori school be kept scrupulously in order, with a place for everything and everything in its place. He comments that everything in that environment has been so constructed as to correspond with the stature - physical, mental, social and spiritual - of children, not of adults. Indeed in many cases, the very house itself has been specially constructed to suit the proportions of the children, not of adults. Such "children's houses" are built with low windows, small doors and stairs with steps of a very small gradient. In the rooms and corridors all the furniture and appurtenances are constructed on the same diminutive scale.

Standing (1966) is of the opinion that it wouldn't be freedom to put a child into an empty classroom and leave him to his own choice. He argues that there would be little or nothing for him to choose. But in the prepared environment of the Montessori school the child is surrounded by a great variety of attractive occupations, all of which seem to say: "come and use me".

Standing (1966) claims that the social environment also helps, in the sense that for one of the most stimulating invitations to work is seeing what the other children are doing.

Standing (1966) remarks that by visiting a Montessori school, the visitor is sure to see a number of children busily engaged in such occupations as dusting the materials and furniture, sweeping the floors, watering the plants, arranging flowers, scrubbing the tables with soap and water, etc. If it is before lunchtime, he/she may see a group of infants peeling potatoes, spreading butter on bread, or setting table. If lunch is in progress he/she will probably see some of the children acting as waiters to the rest. After lunch it will very likely be the children who clear away things, wash them, dry them and put them away.



fig.3.5. Montessori Education



fig.3.6. Montessori Education

Waldorf Education



fig.3.7. Waldorf Education

Norwall (2007) introduces Waldorf or Rudolf Steiner Education as a unique form of education from preschool through high school, which is based on the view that the human being is a being of body, soul, and spirit. He describes the method used in the Waldorf schools as coming from a view that the child develops through a number of basic stages from childhood to adulthood. The Waldorf curriculum is specifically designed to work with the child through these stages of development.

Nordwall (2007) explains that Waldorf Education is based on Steiner's broader philosophy and teachings, called anthroposophy (literally, wisdom or knowledge of man). He defines Anthroposophy as holding that the human being is fundamentally a spiritual being and that all human beings deserve respect as the embodiment of their spiritual nature. This view is carried into Waldorf education as striving to develop in each child their innate talents and abilities. Waldorf education operates in a non-discriminatory way, without regard to race, gender, ethnicity, religion or national origin.

Blunt (1995: p.104) refers to the philosophy of Steiner when he argues that Education should not only be able to develop the whole man, it should also be able to bring man's being together as a harmonious, integrated whole. This is not merely an educational goal;

it is the purpose of life itself - to bring what is spiritual to fulfillment in the physical world. Rudolf Steiner explains the theory behind his philosophy: "In the human being, the interplay of thought and will does not come about itself. In the animal, the process is natural; in the human being it must become a moral process. And because here on earth, man has the opportunity of bringing about this union of his thinking with his willing, therefore it is that he can become a moral being. The whole character of man in so far as it proceeds from the inner being depends upon the harmony being established, between thinking and willing, by human activity".

Blunt (1995: p.107) suggests that Steiner was more than aware of the tendency to reduce educational theory to a list of abstract principles, and nearly every lecture contains an attempt to arrest impatient theorizing and to encourage a more integrated approach to education. Steiner says: "For no education will develop from abstract principles or programmes - it will only develop from reality. And because man himself is soul and spirit, because he has a physical nature, a soul nature, and a spiritual nature, reality must again come into our life - for with the whole reality will the spirit also come into our life, and only such a spirit as this can sustain the educational art of the future".

Blunt (1995: p.108) explains that Waldorf Educational principles are bound up with life itself, and can only be properly understood in practical life. All teachings of Spiritual Science are nothing but means of entering into life itself, countering the tendency of modern man to become imprisoned within his intellect.

Blunt (1995: p.182 - 183) suggest that Steiner did take cognizance of the necessity of preparing children for their lives in the modern industrial society. This was a central concern in the education of the adolescent. According to him Steiner's thought contains many pragmatic elements such as his willingness to compromise with social customs in preference to alienating education from its social context. The holism of his thought establishes the purpose and usefulness of each element of his education. For example the pictorial arts and music are not only for

the education of the soul, but they are also related to the physical body through the Rhythmic System. Blunt argues that Steiner is therefore strongly pragmatic, but in a different way than John Dewey. Whereas Dewey looked for the relevance in the social and economic usefulness of activities, Steiner was also concerned with the physical, spiritual, and soul relevance: for Steiner, the relevance of an education presented artistically was that it developed the whole child.



Critiques

Understandably there are many different opinions on which pedagogical philosophy should generally be applied. The fact is simply that we can't forget that we live in a diverse world. We require different options because our specie consists of different races, different cultures, different religions, and different ideologies. This necessitates different pedagogical philosophies that support these different values.

In selecting a particular curriculum and moving towards defining proposed programmes, which will guide the proposed accommodation schedule, it is seen necessary to review a few critiques regarding the above -discussed pedagogical philosophies.

OBE (Outcomes Based Education)

EducationWeb (2008) recently made an urgent plea that Outcomes Based Education (OBE) should be abandoned. Amongst those calling for this withdrawal of the system are American educator and self-proclaimed father of OBE, Dr. William Spady. Spady is of opinion that OBE can only be used where there are no time constraints and students can work at their own pace. As an example he referred to programmes for institutions like Karate and Flight Schools that is not time based. This clearly isn't the case in formal education that is based on strict time schedules.

The Philosophy of John Dewey

Cheeks (2008) refers to an essay written by Richard Weaver, a rhetorician, philosopher and University of Chicago Professor, entitled: "The Role of Education in Shaping Our Society". It states that one of the great heresies of the followers of John Dewey is that they saw, and still do see, education as primarily political. This evidence, according to Weaver, of this damning proposition, is that they tried to make the schools not the means of handing down traditional knowledge and wisdom of our civilization but political instrumentalities for the constituting of a different kind of society.

Montessori Education

K12 Academics (2010) claims that some parents believe the Montessori environment leaves the children too free while others see the Montessori method as stifling to creativity. Some see Montessori schools as elitist prep schools for preschoolers while others question Montessori teaching priorities, and decry children spending time on such menial tasks as washing tables or arranging flowers. K12 Academics (2010) claim that some parents are put off by what the view to be Montessori teachers' unusual manners: some may appear too subdued, others too stern, none of them necessarily praising or teaching the children in a conventional manner. The two primary critics of the Montessori method in education theory are William Heard Kilpatrick and John Dewey. They thought that the Montessori was too restrictive, and didn't adequately emphasize social interaction and development. Dewey believed that the Montessori method stifled creativity.

Waldorf Education

Milstone (2002) states that Waldorf schools have no computers or high-tech gadgetry, and all classroom supplies are made of natural fiber (cotton, wood, wool, etc.). He claims that to keep pressure and competition to a minimum, there are no clocks, drill cards, textbooks or tests. He continues to say that no mirrors of any kind are allowed in Waldorf schools (they promote too much self focus), nor are any black crayons in early grades allowed (a harsh and undesirable color). Although not officially part of the Waldorf curriculum, Milstone (2002) suggests that Anthroposophy is pushed in brochures, newsletters and pamphlets that are scattered throughout the schools. The critics view Anthroposophy as a potentially dangerous religion that is New Age like and mystical. They are troubled for example, by how Anthroposophy rejects modern medicine and psychiatry and believes (among other things) in astrology, reincarnation and the existence of little gnomes in the woods. Milstone (2002) claims that a contingent of Waldorf critics charges that some of Steiner's Anthroposophical writings are racist, while others are simply bothered by the feeling of exclusion Waldorf schools create.

Conclusion

The above-mentioned critiques of the individual pedagogical philosophies discussed, reiterates the strong presence of difference, variety, and change on various levels of our contemporary society. As previously mentioned, times do change, economics to change, politics do change, and radical advances in the technological, scientific, and biological spheres are being made. It is worth mentioning that even people, their individual personalities, and cultural values do change with time. Each curriculum and philosophy indeed has its own advantages and disadvantages that favor the individual. It is therefore concluded that no individual curriculum or philosophy will be architecturally provided for.

What the exploration/investigation of the above-mentioned pedagogical philosophies did lead to was an educational position with regards to the proposed project.



Educational position

Education is a continuous process. The process itself changes with time and is only stopped by time itself. Education is everywhere and in everything. It is perceived by all of the senses; vision, hearing, smell, taste, touch and emotional condition. Educational environments should embrace this interactive quality that it offers.

Urban Educational environments offer unique opportunities that sub-urban models can't. Its urban context and the integrated nature thereof means that it need not be seen as exclusive environments, like the vast open lots in sub-urban areas, but ones that are inclusive, woven into the urban fabric, and part of the everyday life of urban dwellers.

This presents an endless array of architectural opportunities in relation to the design process for such environments.

Urban educational environments should be delicately interwoven into its context. It should not stand out as an entity but rather be perceived as part of the whole. It should respond to its context and surrounding activities. These environments should become part of the urban public's everyday life. They should be involved in the educational process, either actively or passively. Visual, physical and spacial connections should be established that integrates the educational environment with real life situations, as education is everywhere and in everything.

Educational environments should thus not aim at the establishment of idealistic environments where everything is different from the "real world". They should be exposed to the world as it presently is, ever changing. Pedagogical philosophies should mediate the process of interpreting what is being perceived and convert it into educational outcomes. Educational environments should provide spaces for its students to express themselves within the

environments. The environment should thus not be of a static nature. It should correspond to the ever-changing conditions present and continuous process of changing needs taking place. It should thus be able to adapt to change.

Educational environments should be perceived as a public asset, a public resource that provides the required infrastructure for educational purposes. The educational environment should be seen as a catalyst for supportive programmes to be established within this all encompassing context.

The traditional notion of the classroom should be re-considered as a space for learning. It should be able to facilitate different individual needs in the educational process. It should thus be dynamic environments that adapts to change in use.

Education is everywhere and in everything, also in everyone. Education is something that is part of being human. This is what formed our specie, "homo sapiens" (man the thinker) after all. These educational environments thus have the potential of being places that bring people together in the name of education, a place and space where gathering takes place that celebrates the phenomenon of being human.

Lastly, education should not be perceived as a process that prepares us for an end to itself. It is accepted that human beings will never know everything of everything. It is accepted that we are sub-ordinate to a divine power that is in control and that the quest for discovery will never end. Education should thus be seen as part of life itself. This means that we should constantly push the barriers of exploring new potential in everything we do. Educational environments should facilitate this process in life.





“In my view, a lot of our young people see the world in terms of the three ‘e’s: ease, enjoyment, earnings. Those ideas have gained the upper hand with a lot of people. The problem with that is that you can never get enough. I would be very wary about ventilating that modern sense of life of the three ‘e’s in a school building. As a school, we want to propose the alternative of the three ‘r’s: reliance, relation, responsibility. Those concepts ensure that you enter into a relation with the school, and that makes you feel better”.

Biet Boekhoud
Verstegen (2009: 14)

“ If you want to become a baker, then you have to train at school in surroundings like a bakery. Walk around all day in a baker’s clothes if necessary. You have to act your part. You have to start thinking on the basis of that profession. We’ve already designed that for the nursing course. We’ve kitted up a pharmacy and the classrooms look like hospital wards”.

Biet Boekhoud
Verstegen (2009: 15)

“In a traditional classroom all the pupils must be able to see and hear the teacher equally well. At the same time the teacher can see all the pupils and is in control. A room like that takes on the significance of surveillance and control. The result is that if the teacher turns around or leaves the room, someone gets up on a chair to attract negative attention. If you opt for a larger room with pupils and more than one teacher, one of them may still get up on a chair, but it has much less effect. Besides, there are always more teachers present to intervene if necessary.

Gert Jan Meijer
Verstegen (2009: 72)

04



Conceptual Statement

Education is everywhere, in everything and in everyone. It is perceived by all the senses; vision, hearing, smell, taste, touch, and emotional condition. Educational environments should embrace this interactive quality that it offers. Urban educational environments offer unique opportunities that suburban ones can't. The uniqueness of any urban context and the integrated nature thereof means that it need not be perceived as exclusive environments, like the vast open lots in suburbia, but rather ones that are inclusive, delicately woven into the urban fabric, and part of the everyday life of urban dwellers. The public should be part of the educational process, either actively or passively. The educational environment should not aim at establishing idealistic situations, but rather present the world/real life, as it presently is, ever changing, integrated, and interactive. Educational environments should provide the required infrastructure that facilitates this pedagogical process. Architecture enables the creation of such environments.

Horizontal to Vertical

Traditional schools are generally horizontally orientated, located on great open stands and mostly restricted to three storeys high. The challenge that an urban educational facility has to face is that the comparatively small stands and existing buildings are vertically orientated amidst general dense urban conditions.

This challenge requires a new approach to facilitate and arrange the required educational spaces in a vertical manner. This approach has the ability to in fact redefine the way in which educational environments are perceived of.

Functions that are traditionally located on ground floor areas will have to adapt to this vertical condition. Multipurpose halls and recreational facilities will potentially be located on the upper levels. Classrooms that are traditionally located next to each other will have to be stacked on top of each other. Open, outdoor socializing spaces will have to be integrated with indoor socializing spaces. Minimum vertical circulation in traditional schools, now become the predominant circulation route.

The above-mentioned challenges are but a few that will be facing the design of a vertically orientated educational institution. How will this new arrangement affect the educational process and outcomes? How will this process be integrated with the context? How will an existing building accommodate this vertical challenge?

The answers to the posed questions will potentially lead to new perceptions regarding the roles which educational facilities fulfill in future urban environments.



fig.4.1. View of urban context from DANSA International College classroom window

Chapter 4

Concept

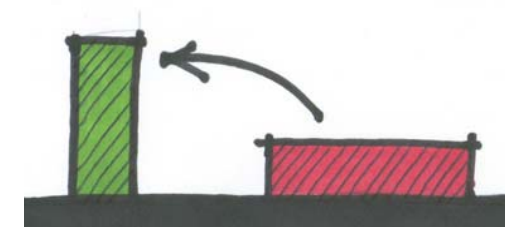


fig.4.2. From 'horizontal' to 'vertical' education

Urban Context



fig.4.3. DANSA International College, within a typical urban context

The traditional school in South Africa is generally located in the sub-urban areas that surround a city centre (fig.4.4). This is the case in Pretoria too. However, as this document has shown, numerous schools have recently been established in the inner city of Pretoria.

These schools are typically located in dense urban environments (fig.4.3). The result is that the educational environments referred to are not surrounded by low-density residential property, public parks, natural vegetation or any form of natural landscape. In stead they are located amidst a complex mix of various buildings typologies, varying in height, density and function. Surely the context must have an influence on the physical environment in which education is provided? Surely an urban context must provide alternative challenges in terms of management that the sub-urban ones don't? Surely this urban context has the potential to positively influence the educational process?

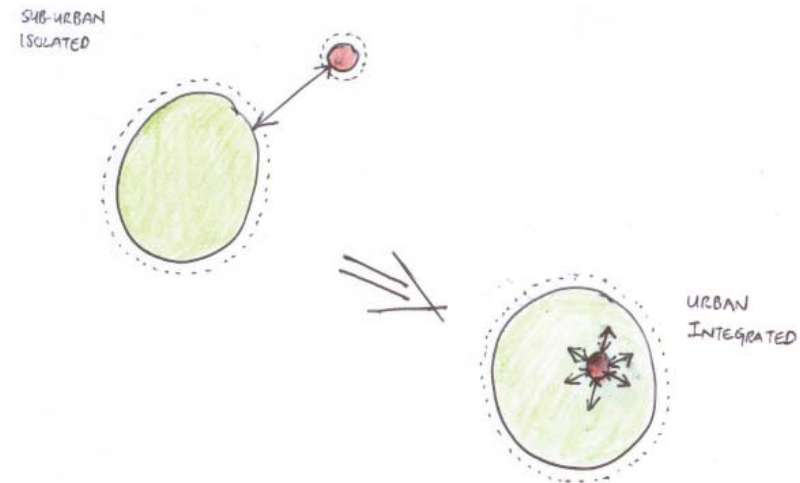


fig.4.4. Suburban vs Urban Context



fig.4.5. Open Air schooling



fig.4.6. Traditional classroom (Menlo Park High School)

Transparent Process

The Educational process generally takes place within an environment that is separated from the public's view (fig.4.6). This has been done for safety, as well as pedagogical reasons. The result is that a clear separation, not only physically, but also mentally is created between the 'real' world, and that of the educational space. Students are thus educated in isolated environments that prepare them for integrated, interactive, and mixed-use environments. Could there be a way to make the educational process more transparent for not only the students being educated, observing and applying their studies in real time, but also for the public to experience 'real time' education and becoming either actively, or passively involved there-in? (fig.4.7). Is a mutual relationship between the two realms indeed possible? Open Air schooling is an example where the educational process has been integrated with the 'real world' environment (fig.4.5).

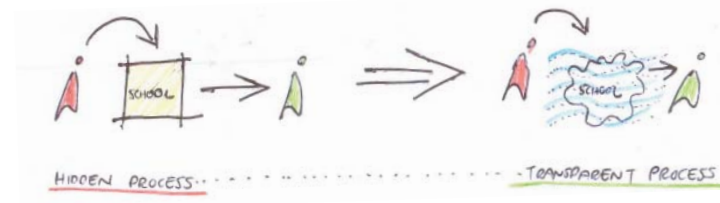


fig.4.7. Diagram indicating how the educational process should become transparent for the students, as well as general public



'Real life' vs Education

The traditional notion of education is thus clearly aimed at establishing a separation between 'real life' and the educational space (fig.4.8). The result is that the student will have to make a transition from the educational realm into the 'real life' realm at some stage in his/her life. This critical transitional point is generally where a lot of students have difficulties adapting to their 'new' environment or circumstances (fig.4.8). Independent behavior is suddenly required from the student stepping into the 'real world'. Students now have to apply all of their gained knowledge without the necessary guidance or supervision, not within a classroom, but within the 'real life' environment. This is a process that takes time to adapt to and thus the general separation between education and the working environment. Do the two realms have the potential of crossings each other's paths? Will the students benefit from seeing and experiencing their actions in relation to the public and learning from the results thereof?

I am of the opinion that the educational process and 'real life' should become one that is all the more integrated (fig.4.9). There should in fact be no single transition point. The process should become blurred and not necessarily reach an end. Active and passive involvement within the educational process by the public and the students could ensure a continuous process of education that benefits both ends of the spectrum.



fig.4.8. Diagram indicating how the traditional education process reach a critical point where 'real life' and education meets.



fig.4.9. Diagram indicating how the educational process and 'real life' becomes integrated and not necessarily ever reach a critical point



fig.4.10. Various alterations are visible on the facade of Berea Park School. The structure was originally used for warehousing purposes.

Adaptive Re-Use

Traditional education institutions are located within purpose built structures (fig.4.12). These structures are either designed to facilitate a specific pedagogic model, or designed to be flexible and adapt to contemporary educational trends.

The current trend of establishing educational institutions within the inner city of Pretoria faces a different challenge in this regard. Open land is scarce within the city, and in most cases the educational institutions can't afford to purchase these open stands. They are thus mostly left with the alternative of renting a vacant or under utilized structure. This proves to be a big stumbling block for the various educational institutions, as alterations to the structure, in order to facilitate exceptional education spaces, are largely dependent on the owner of the building (fig.4.10).

The challenge thus lies in the ability of the designer to utilize the available context, physical structure, resources, and finances most efficiently in order to create the optimum educational environment within the limits of the project scope (fig.4.11). A creative adaptive re-use process is thus required in order to facilitate the occupancy of existing buildings by educational institutions.

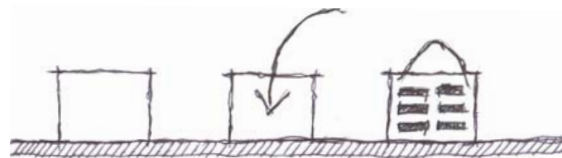


fig.4.11. Diagram indicating how an adaptive re-use scenario is established by applying a new use to an existing building



fig.4.12. Purpose built educational structure (Menlo Park High School)

Supportive Functions

Traditional educational facilities generally consist of a variety of spaces that are directly aimed at the educational process. It is quite rare to find an educational supportive function within an educational facility that is indirectly involved in the educational process (fig.4.13). These supportive functions have the ability of providing the required resources required to establish an exceptional educational environment. Not only is a mutual relationship established, but also accessibility to resources and information is improved.



fig.4.13. Typical example of an educational supportive function (PostNet)

Multi-Functionality

The multi-functional use of educational environments adds value to the facility. Educational facilities in fact have the potential of being utilized for a number of public functions. Various schooling facilities within the inner city are being used for adult education after hours and religious purposes over weekends (fig.4.14).



fig.4.14. After hour educational activities (Princefield Trust School)

The CSIR (2009) states that complex and intricate patterns and relationships exist between various public facilities. An example of relationships and inter-relationships between various public facilities is given in fig.4.15.

The relationships depicted in the example refer to:

- individual facilities (e.g. individual school buildings with their own individual playing or exercise areas); and

- shared facilities, including specialized facilities (e.g. main hall, main library), and sport facilities (e.g. swimming pools, tennis courts).

The CSIR (2009) states that the shared facilities will not exclusively serve the schools but also be accessible to the public. It is these interrelationships that present the opportunity for the clustering of facilities. Essentially there are two types of facility clusters: Multi-Purpose facility clusters and Functional clusters.

Multi-purpose facility clusters

The CSIR (2009) defines a multi-purpose facility cluster as being a multi-faceted facility under one roof or more, which offers a range of services such as social services, recreation, health, economic activity, in one location. They state that multi-purpose facility clusters are generally located together with one or the other structural elements of urban settlements (at a transport stop/interchange, urban square, market, sports field, etc). They continue and state that the multi-purpose facility cluster concept provides for flexible grouping of facilities at an accessible location.

The CSIR (2009) lists the advantages of establishing multipurpose facility clusters as indicated below:

- convenience, as all services are located in one centre and people can accomplish a number of tasks within a single journey, which equates to savings in terms of money, time and effort and has the net effect of improving quality of life;

- a reduction in the cost of providing public facilities through the sharing of resources, equipment and land;
- exposure for public facilities and encouragement of their use;
- integration of different communities;
- a reduction of inequalities in the provision of facilities;
- the provision of greater security; and
- the offsetting of transport costs.

Functional clusters

Another concept which the CSIR (2009) claims is becoming increasingly popular in terms of public facility provision is the creation of functional clusters of facilities (fig.4.16).

The CSIR (2009) states that current thinking proposes to externalize the provision of educational facilities from within local areas and cluster them around a hub of shared specialized facilities. They explain that in terms of this concept a number of educational buildings are loosely clustered together with residential and commercial facilities, around a hub of specialized facilities. The hub is easily accessible in terms of public transport. The specialized hub is a communal facility that can be used by the entire community. The school playgrounds and the fields are shared among the schools and are also available for use by the community after hours and on weekends.

The CSIR (2009) continues and state that individual schools within the education cluster can be enclosed separately if so desired, but the shared facilities should be easily accessible to the public and should be integrated into the built environment. They state that these shared facilities need not be physically attached to individual schools but should always be easily accessible - not more than a few minutes' walk.

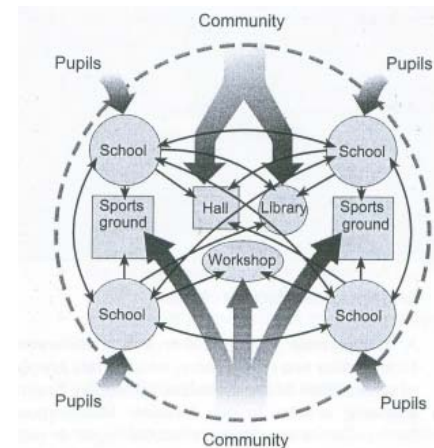


fig.4.15. Relationships between public facilities (CSIR: 2009)

The CSIR (2009) released a document containing a table showing a compatibility matrix that attempts to identify the degree of compatibility between various public facilities when related to one another. The degrees of compatibility are defined below and indicated in fig.4.17.

- Compatible: There are interrelationships or linkages between the facilities and they can be located close to, or clustered with, one another.
- Neutral: There are no obvious linkages or interrelationships between facilities; their location together would have no benefits or disadvantages.
- Incompatible: The facilities are unsuitable to be located in close proximity or adjoining one another, as their uses are contradictory.



05



Location

The Apollo Centre (fig.6.1) is located on the corner of Church and Du Toit Street on Erf (1111) Arcadia.

Background

The Apollo Centre was originally built in 1969 by the Architectural firm Ivan B. Sive May von Langenau. It has since undergone alterations on the first floor level which includes; the addition of a mezzanine level in a double volume on the western side of the structure and different cladding added to the north- and western facades.

Current Use

The Apollo Centre is currently managed by the City Property Group and being used for a variety of functions which include; retail space on ground floor, a vacant first floor, a caretakers residence on the second floor and a variety of office and educational spaces on the upper floors. It has to be mentioned that the building is approximately 50% occupied at present. The majority of interior spaces, excluding the ground floor, are formed by drywall partitioning.

Condition

The general condition of the Apollo Centre is very good. No structural damage is visible, and the structure as a whole is visibly well maintained.

Architectural Significance

The Apollo Centre contributes to the Architectural quality of the area as it is one of the most visible buildings in the precinct second to the Reserve Bank. Prominent columns on all facades as well as a tinted glass envelope gives the building a character of stature.

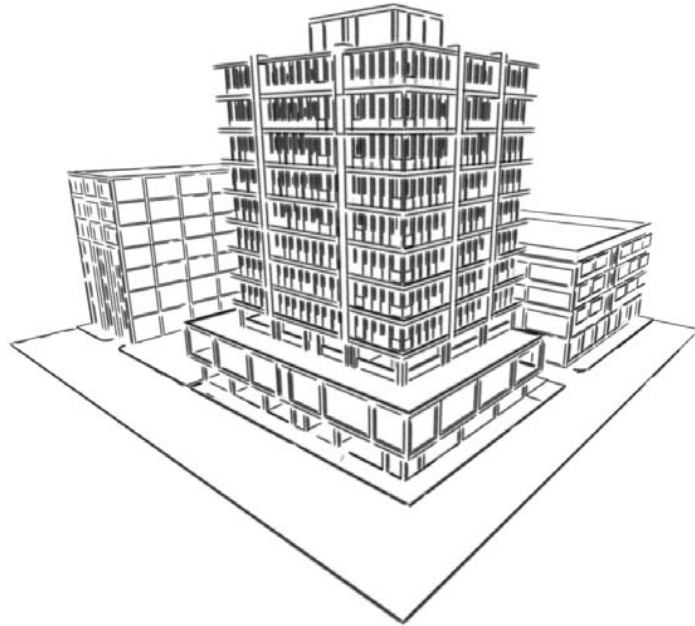


fig.5.1. Bird's Eye view of the Apollo Centre from the north-western direction



fig.5.2. The Apollo Centre on the corner of Church and Du Toit Street



fig.5.3. Vehicle orientated Church street forms the northern boundary

Chapter 5

Existing Structure

Site Boundaries



fig.5.4. Du Toit Street (western boundary)



fig.5.5. Service road and vacant warehouse (southern boundary)

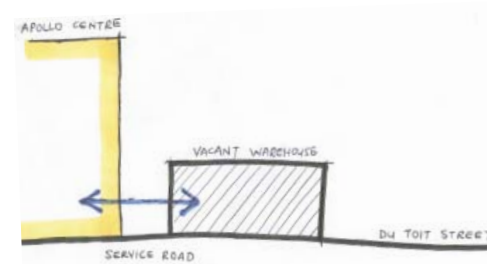


fig.5.6. Possible future connection

South and West Boundary

The western boundary is formed by Du Toit Street. It is a single, two way road which offers parallel parking bays on its sides (fig.5.4). It is predominantly used by pedestrians moving in a north-south direction.

The southern boundary is formed by a vacant warehouse structure that is separated by means of a derelict service road (fig.5.5). Both of the structures are built on one stand.

It is proposed that the vacant warehouse type structure be adaptively re-used as an educational institution. The possibility exist that the two structures be linked on the southern side, enabling the sharing of resources (fig.5.6)



fig.5.7. Church Street (northern boundary)



fig.5.8. Two-storey educational structure (eastern boundary)

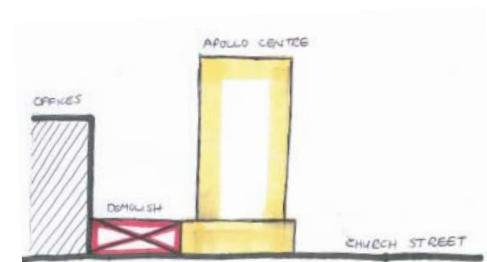


fig.5.9. Proposed demolition and creation of pedestrian walkway

North and East Boundary

The northern boundary is formed by Church Street. It is a four lane, one way road which offers parallel parking on its sides (fig.5.7). It is predominantly used by vehicles moving in an east-west direction.

The eastern boundary is formed by a two-storey structure that is being used for educational purposes (fig.5.8). This structure is contextually out of scale.

It is proposed that this structure be demolished and make way for a pedestrian walkway that will not only connect Church and Pretorius Streets, but also give access to various public spaces within the proposed urban educational campus (fig.5.9).

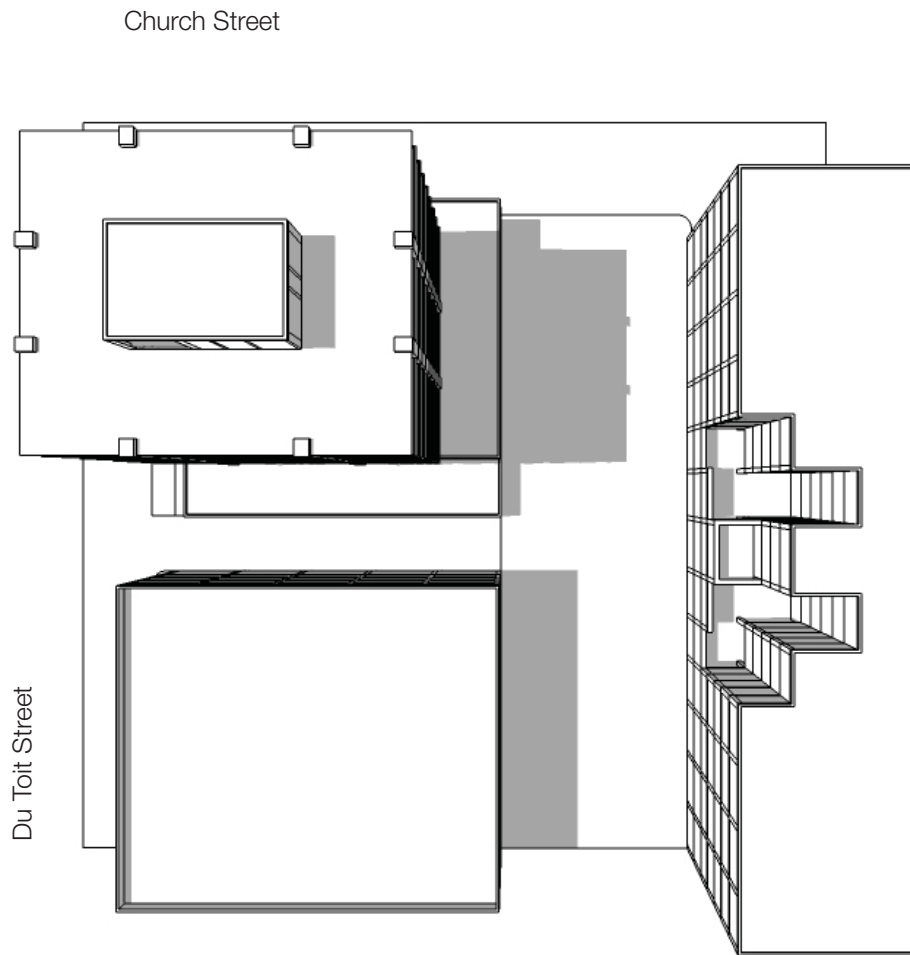


fig.5.10. Birds-eye view of site boundaries from above



fig.5.11. Birds-eye view of site boundaries from the north-western direction

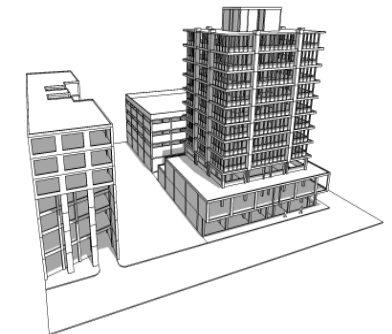


fig.5.12. Birds-eye view of site boundaries from the north-eastern direction

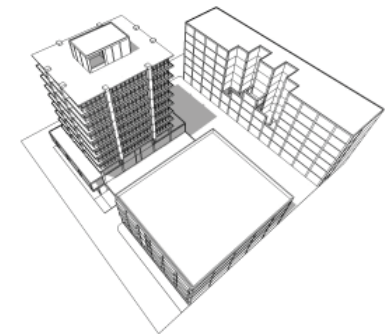


fig.5.13. Birds-eye view of site boundaries from the south-western direction

Structural Analysis

The Apollo Centers' structure is composed of a concrete core, concrete column, beam and slab structure.

The building consists of 2 basement levels, a ground floor, and a first floor that is partially double volume, cantilevers over the sidewalks below, and 8 floors on top that adds to a total number of 12 floor levels.

Levels 3-10 consist of in-situ concrete slabs with structural columns and beam on the perimeter supporting its weight.

Brickwork has been expressively used on all four the facades to create eight prominent columns.

The rooftop houses the elevators' motor room. This room is one-and-half storeys high, the reason being that rest rooms are built on each landing of the main staircase within the central service core of the structure.

Three elevators service the Apollo Centre. They are located in the central service core of the structure. Two staircases run the full height of the structure and are located within the central service core of the structure.

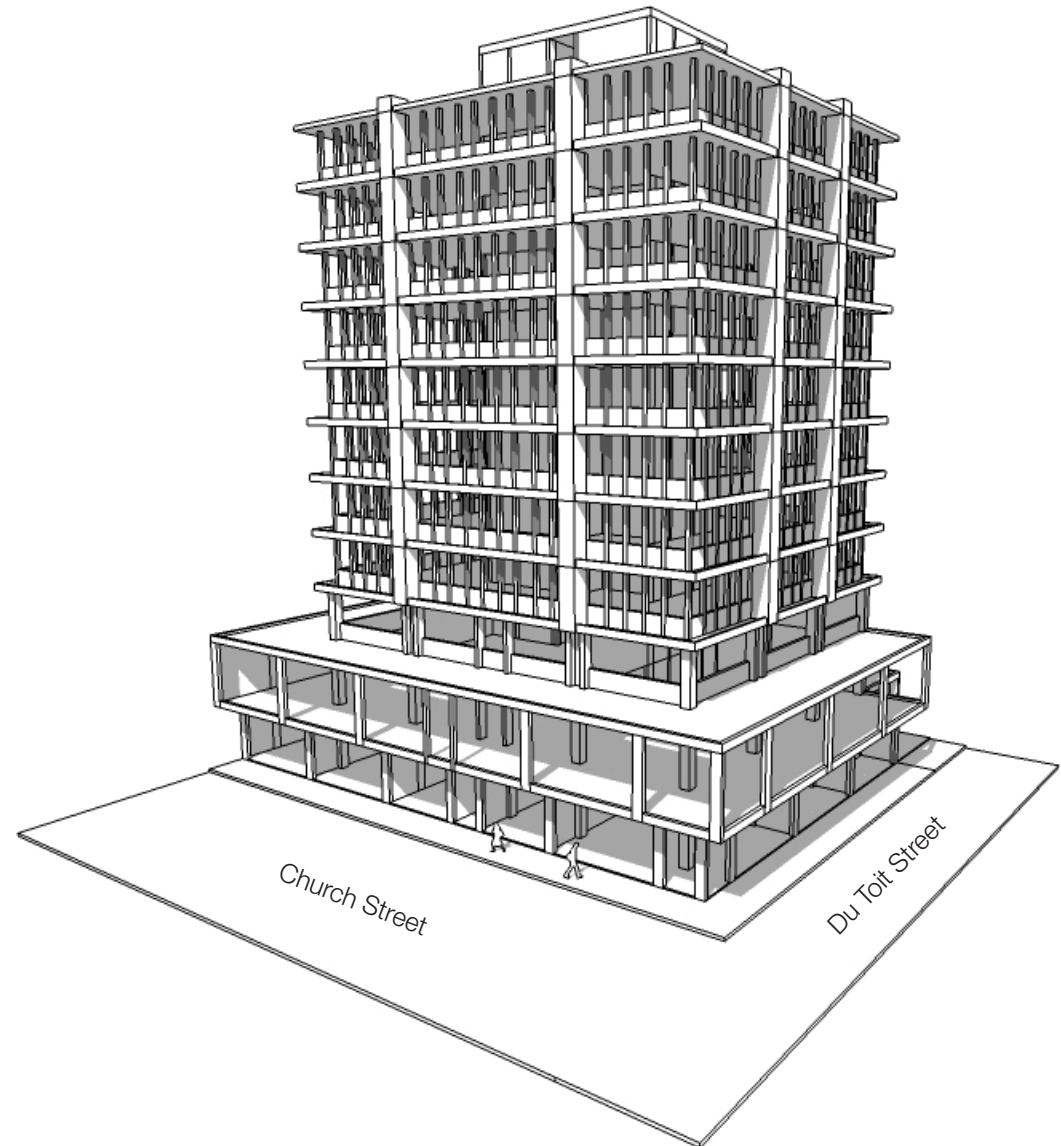


fig.5.14. 3-Dimensional structural composition of the Apollo Centre

Existing Ground Floor

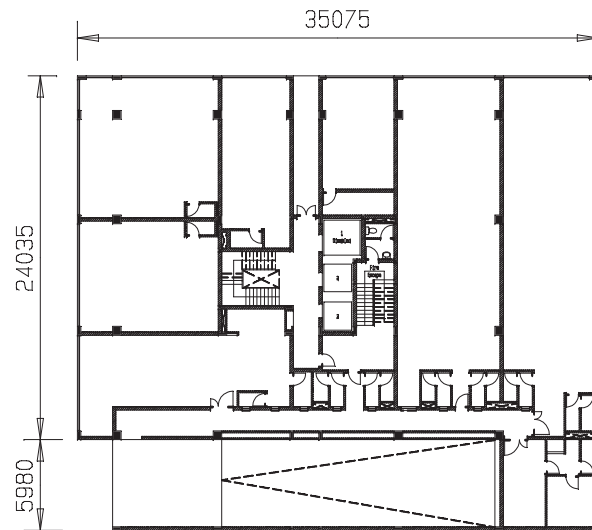


fig.5.15. Ground Floor Plan (Scale 1:500)

The existing ground floor of the Apollo Centre is located on the corner of Church and Du Toit Street. The main pedestrian entrance to the building is from Church Street (fig.5.17). Various retail functions are located on the ground floor with direct access from the pedestrian walkways (fig.5.18).

The main vehicular entrance to the Apollo Centre is from Du Toit Street (fig.5.19). A ramp that goes down to two basement levels can be directly accessed from the street.

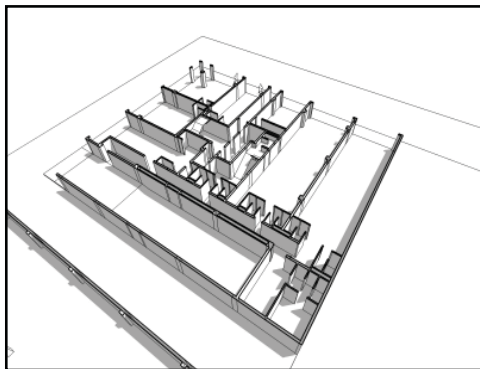


fig.5.16. Birds-eye view of Ground Floor



fig.5.17. Main entrance to the Apollo Centre from Church Street



fig.5.18. Various retail functions located on the Ground Floor



fig.5.19. Vehicular entrance to the Apollo Centre from Du Toit Street

Existing Basement Floors

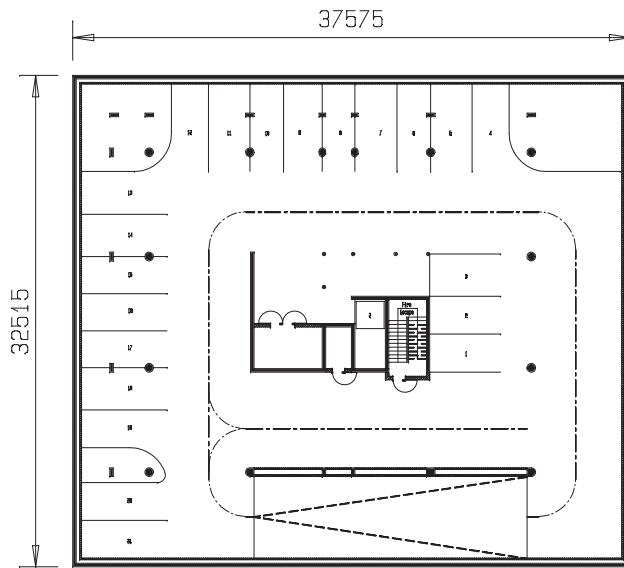


fig.5.20. Upper Basement Floor Plan (Scale 1:500)

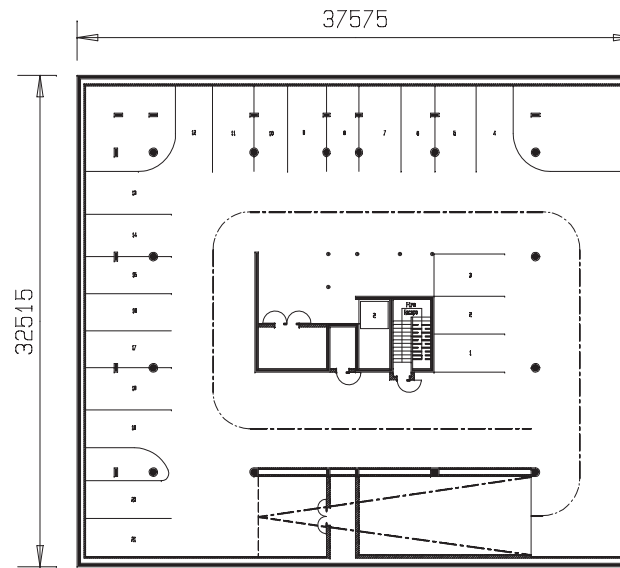


fig.5.21. Lower Basement Floor Plan (Scale 1:500)

The existing basement floor levels can be accessed from Du Toit Street. A concrete ramp connects the ground, upper and lower basement levels. Parking bays are located in-between existing columns (fig.5.23). The position of the driveway and parking bays are not effective, but will not be altered.

The basement walls consist of an outer concrete layer, an cavity, and an inner brick layer with weeping holes provided. The cavity in-between the concrete and brick layer is mechanically ventilated (fig.5.24).

The upper and lower basement levels also house the transformer room, meter room and high-tension room (fig.5.25).

Building services can be seen suspended from the basement soffits.

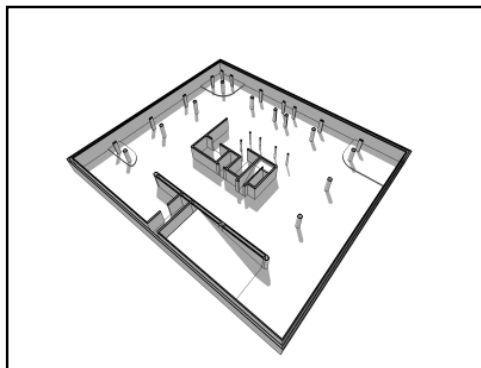


fig.5.22. Birds-eye view of Lower Basement Floor



fig.5.23. Parking bays located in-between existing columns



fig.5.24. Mechanically ventilated basement cavity walls



fig.5.25. Transformer room

Existing First Floor

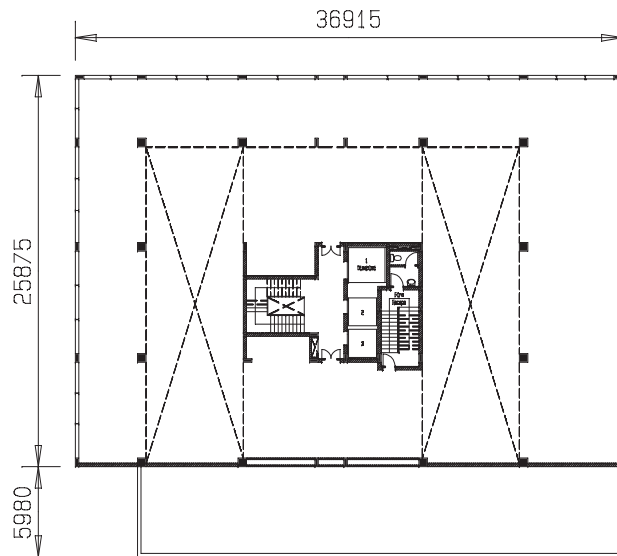


fig.5.26. First Floor Plan (Scale 1:500)

The existing first floor of the Apollo Centre is currently vacant. It partially cantilevers over the pedestrian walkways of Church and Du Toit Street below (fig.5.28). It is clad with light weight steel panels (fig.5.29). The first floor contains two double volume spaces on the eastern and western sides of the concrete service core (fig.5.30).

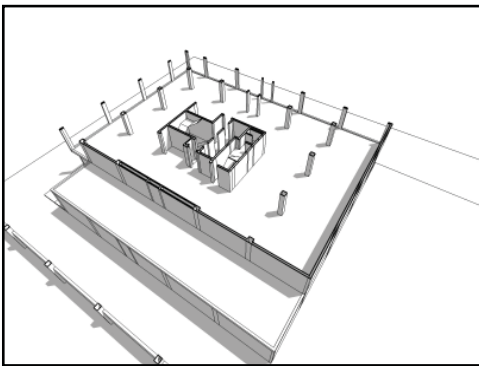


fig.5.27. Birds-eye view of First Floor



fig.5.28. First Floor partially cantilever over pedestrian walkways below



fig.5.29. Light weight steel cladding



fig.5.30. Double volume spaces on both sides of concrete service core

Existing Second Floor

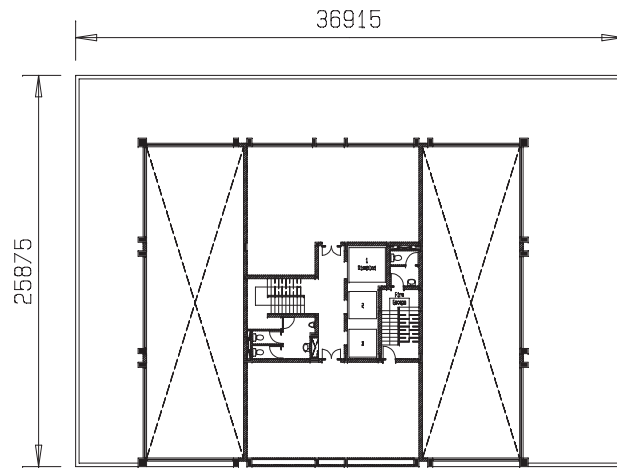


fig.5.31. Second Floor Plan (Scale 1:500)

The existing second floor of the Apollo Centre contains two double volume spaces on both the eastern and western sides of the concrete service core that are connected to the first floor below (fig.5.33). Two concrete platforms are situated on the northern and southern sides of the service core. The northern platform is where the mechanical ventilation motors are located (fig.5.34), and the southern platform is where the caretakers' residence is currently located.

The remainder of the second floor is located on the exterior (fig.5.35), which is essentially the rooftop of the first floor. These spaces are not being used but does allow for natural light to enter the double volumes and natural ventilation to cool the mechanical ventilation motor room.

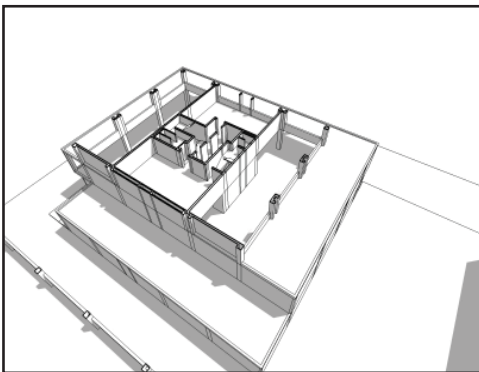


fig.5.32. Birds-eye view of Second Floor



fig.5.33. Double volume spaces that are connected to the first floor



fig.5.34. Mechanical ventilation room on northern platform



fig.5.35. Exterior second floor area (first floor rooftop)

Existing Upper Floors (3-10)

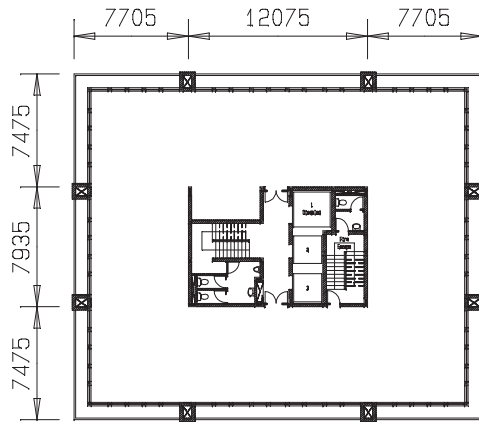


fig.5.36. Upper Floor Plans (Scale 1:500)

The existing upper floors of the Apollo Centre runs from floors three to ten of the structure. Its structure consists of concrete slabs that are supported on its periphery by concrete columns and a beam that connects them all (fig.5.38). The openings in-between the columns are filled with waist high walls and glazing upwards. No beams exist that connect the periphery to the concrete service core. An open plan layout is created that is currently divided by means of dry walling into office spaces. A suspended ceiling exists throughout the floor plan (fig.5.39), with mechanical ventilation ducts serving the floors above by means of openings in the concrete slab structure on the periphery. On the exterior of each floor a small concrete overhang exist. Tinted, glazed sunscreen panels (fig.5.40), which act as a second skin to the building, are fixed to these overhang areas. Eight hollow brick columns surround the floor plan in a geometric manner. These hollow brick columns are expressively used on the facades of the structure and currently being used as storage areas. The possibility exists that these columns may have been originally used as ventilation ducts.

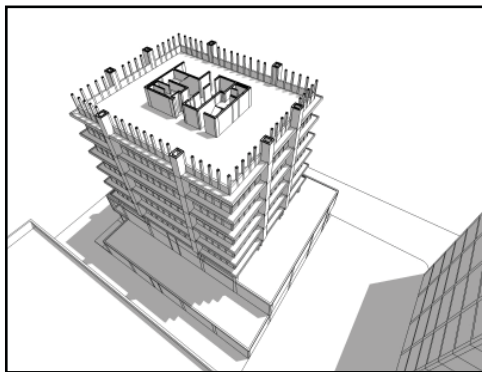


fig.5.37. Birds-eye view of Upper Floors



fig.5.38. Concrete columns periphery



fig.5.39. Suspended ceilings



fig.5.40. Tinted, glazed sunscreen panels fixed to concrete overhangs

Existing Rooftop

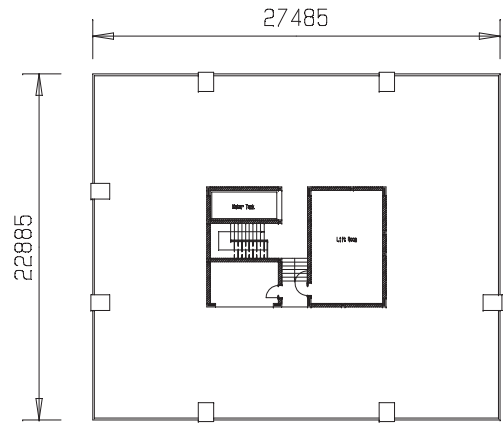


fig.5.41. Rooftop Floor Plan (Scale 1:500)

The existing rooftop space of the Apollo Centre consist of an open concrete surface area with a one-and-a-half storey elevator motor room located above the concrete service core (fig.5.43). A generator room is located opposite the elevator motor room. The hollow brick columns end with stubs on the periphery (fig.5.44). The periphery is not safeguarded. Views to some of the most prominent landmarks in Pretoria can be observed from the rooftop space (fig.5.45).

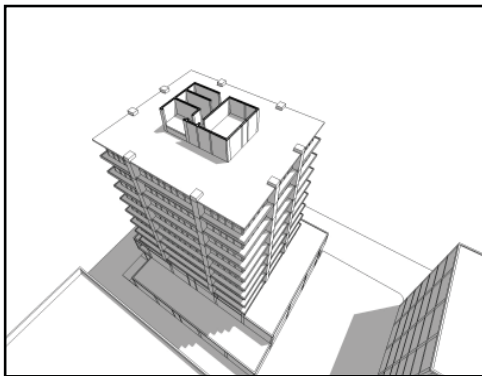


fig.5.42. Birds-eye view of Rooftop Floor



fig.5.43. One-and-a-half-storey elevator room above service core



fig.5.44. Unsafe periphery with hollow brick columns ending in stubs



fig.5.45. View down Church Street from the rooftop space

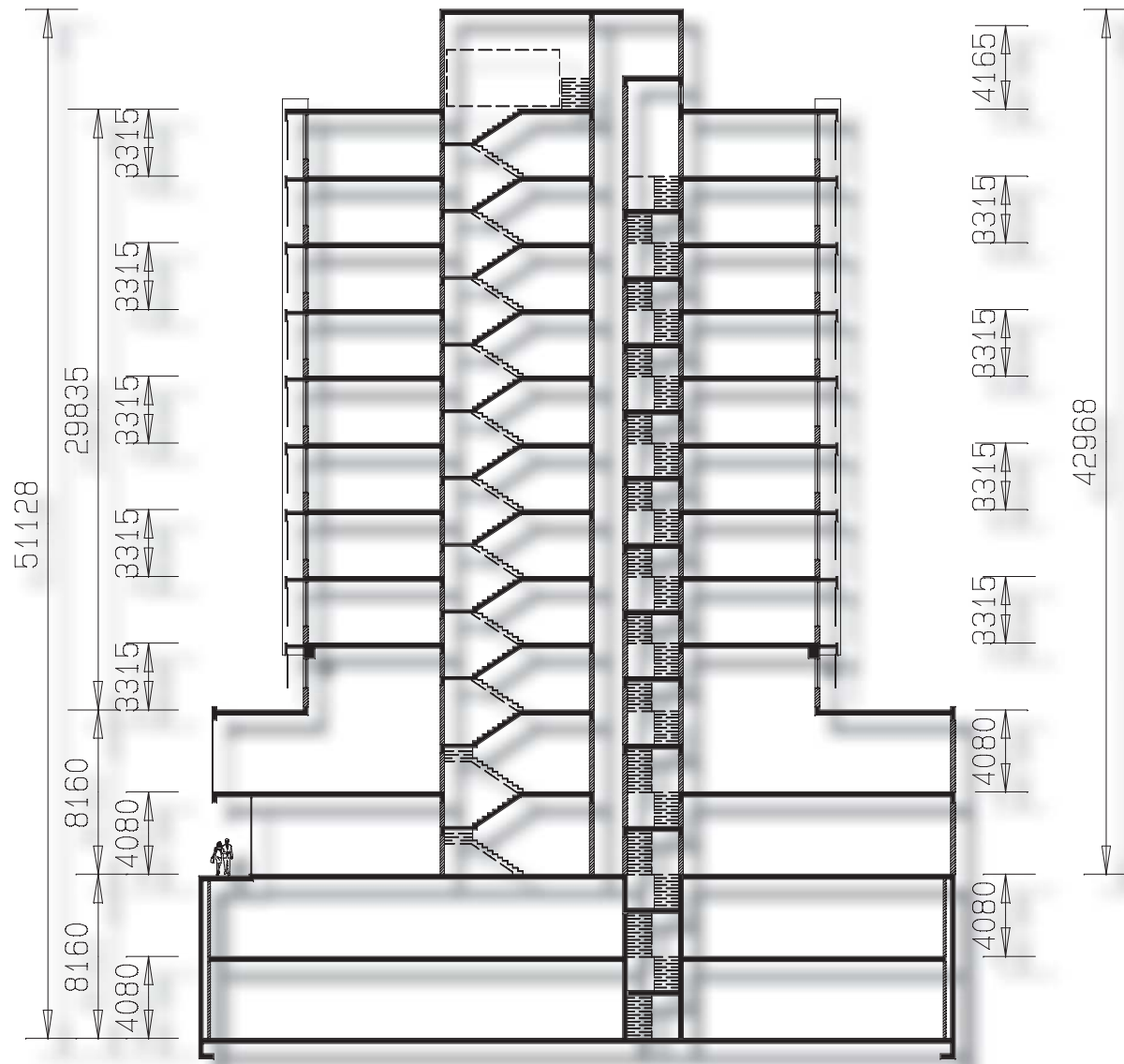


fig.5.46. Typical Section of the Existing Apollo Centre



“We don’t need new cities; we need to re-use and make better use of our existing urban areas”.

Robert AM Stern

“By modifying existing buildings and adapting them to new uses, costs of construction, not only in monetary terms but also in terms of embodied energy in construction materials and the design and construction process, can be considerably lower than those incurred in the development of new buildings. In addition, land as a resource is conserved and building services can be altered to reduce consumption of energy and other resources”.

Leigh Darroll
Darroll (2001: 25)

06



Introduction

As discussed in the urban framework proposal, the precinct under investigation consists predominantly of industrial/automotive building types. Most of these structures are in a poor condition and do not have any architectural significance in the context. The proposal thus states that new development is proposed for the majority of the precinct that has the described building types, done according to the stipulated guidelines, and aiming at the establishment of connections between the existing educational institutions.

There are, however, a number of existing structures in the precinct that are in relatively good condition and contribute to its architectural character. Some of these structures are built to the proposed scale of the urban framework and should thus be kept, or at least is considered for adaptive re-use purposes.

Du Toit and Karuseit (2010: 50) suggest that the presence of disused buildings in the city of Pretoria is a contributing factor in the deterioration of the integrity of the urban fabric. They further argue that the need to address the problem is compounded by ideals of sustainability, both ecologically and socially - that are currently a global concern as well as by the rapidly diminishing availability of empty sites in the cities. They conclude that it is evident that the notion of site, as it is traditionally held, is central to the problem and needs to be reconsidered.

Kincaid (2002: 7) is of opinion that the achievement of environmentally sustainable urban environment by effective and appropriate change of use of redundant building types to meet the evident new use demands, will be a continuing challenge to all involved in the decades to come.



fig.6.1. Berea Park Independent School



fig.6.2. Existing structure within city block of intervention



fig.6.3. Existing structure within city block of intervention



fig.6.4. Existing structure within city block of intervention

Chapter 6

Adaptive Re-Use

Process

Once the decision has been made that an adaptive re-use strategy is the way forward for the project, it has to be understood that a certain process have to be followed in order to make a success of the proposed project. Kincaid (2002: 12) proposes that there are a few basic options for the adaptation of buildings (fig.6.5).

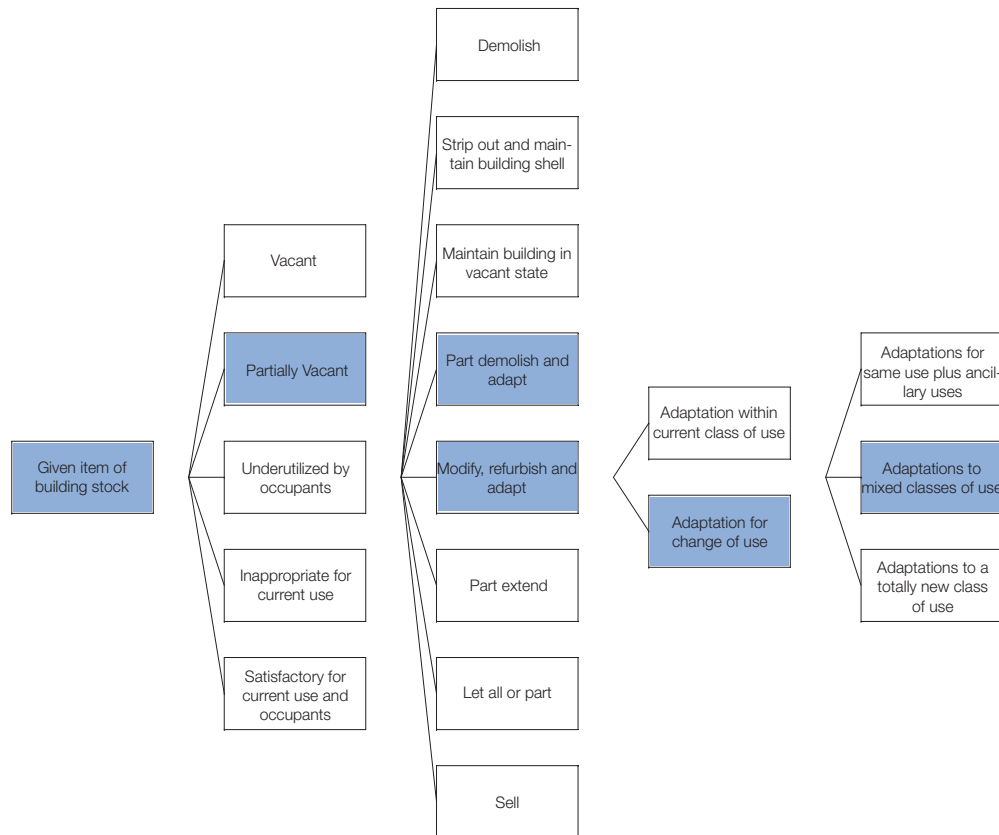


fig.6.5. Basic options for adaptation

URBED (1987: 6) summarizes the adaptive re-use process into three essential requirements that will ultimately lead to a successful project, and further divides the prescribed process into for stages:

Three Essential Requirements

- Adopt the appropriate development approach for the scheme (Conventional or Entrepreneurial)
- Make sure there is a committed driving force
- Pick a building that is basically suitable for conversion

1. Incubation Stage

- Choose a balance of uses that maximizes the use of space
- Enlist the support of the local authority early on
- Make sure the scheme is viable and sustainable for conversion (location, configuration, and condition)

2. Negotiation Stage

- Obtain the property on good terms
- Look for finance from all available sources
- Use grants to make innovative schemes work
- Choose a sound professional team
- Make sure that a reliable contractor is chosen

3. Construction Stage

- Ensure that the building works are closely overseen
- Carry out project phases where possible
- Watch the cash flow projections regularly

4. Management Stage

- Promote the scheme tirelessly
- Manage the building in an orderly way
- Continue to foster the success of the users



Statement of Significance

The Burra Charter

The Burra Charter refers to the Australia ICOMOS Charter for places of cultural significance. The charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians. ICOMOS (1999: 1)

ICOMOS (1999: 1) states that places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences.

The question is asked if the Apollo Building has any cultural significance. If so, to what degree and how should this be respected?

The cultural significance of the Apollo Building lies neither in its use, nor in its date of construction.

It does however hold a very significant location within this part of the inner city. The building is located on the corner of Church and Du Toit Street and is one of the landmark buildings in the precinct. It is one of the highest structures in the precinct and its glazed facades distinguishes it from the surrounding context. Architecturally the seemingly massive columns (in fact only storage areas and likely ventilation ducts that have become redundant) on the facades, emphasize the building as a vertically orientated structure. The strongest architectural quality of the building is the uniform use of tinted glazed panels as sunscreen devices on the facades (fig.6.6).

Its significance therefore lies not in its cultural connotations, but rather in its scale in relation to the precinct, and its location on the corner of Church and Du Toit Street as a prominent landmark.

Relevant articles from the Burra Charter that may influence the adaptation process is stated hereafter. It has to be mentioned that these principles will only be used as general guidance during the process and not as strict limitations to the project:

Article 8: Setting

- Conservation requires the retention of an appropriate visual setting and other relationships that contribute to the cultural significance of the place.
 - New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.
- (Aspects of the visual setting may include use, siting, bulk, form, scale, character, color, texture and materials.)

Article 14: Conservation Processes

- Conservation may, according to circumstance, include the processes of: retention or reintroduction of a use; retention of associations and meanings; maintenance, preservation, restoration, reconstruction, adaptation and interpretation; and will commonly include a combination of more than one of these.

Article 21: Adaptation

- Adaptation is acceptable only where the adaptation has minimal impact on the cultural significance of the place.
 - Adaptation should involve minimal change to significant fabric, achieved only after considering alternatives.
- (Adaptation may involve the introduction of new services, or a new use, or changes to safeguard the place.)

Article 22: New Work

- New work such as additions to the place may be acceptable where it does not distort or obscure the cultural significance of the place, or detract from its interpretation and appreciation.

(New work may be sympathetic if its siting, bulk, form, scale, character, color, texture and material are similar to the existing fabric, but imitation should be avoided.)

Article 24: Retaining Associations and Meanings

- Significant associations between people and place should be respected, retained and not obscured. Opportunities for the interpretation, commemoration and celebration of these associations should be investigated and implemented
- (For many places associations will be linked to use.)



fig.6.6. The Apollo Centre

Berea Park School Independent Primary and Secondary School, Pretoria



fig.6.7. Berea Park School

Berea Park Independent School was established in 2003. They moved from their previous location, the Berea Park Clubhouse, to their current premises, a warehouse building type and the Lion Bridge Building, in 2008. The school site consists of two stands arranged in a longitudinal north-south orientation, forming the eastern perimeter of the city block. The structure on the southern stand was previously used as a retail outlet of electrical supplies. A brick warehouse, where all of the supplies were stored, was built up against the back of the shop fronts and offices facing Pretorius Street. The Lion Bridge Building, an eight-storey office building type, occupies the northern stand.

On the southern stand, the shop fronts were adapted to serve as the main entrance to the school. Office space was adapted into a reception space, administration spaces, ablution facilities, and an IT-lab. The brick warehouse was adapted and sub-divided into classroom spaces. These classrooms are intended for the use of the primary school children. Another warehouse structure was adapted to serve as a multi-purpose gathering space. An openable fence connects the two stands.

On the northern stand, the Lion Bridge Building was adapted to serve as classroom spaces as well as accommodation units for teachers. These classrooms are intended for the use of high school children. Exterior spaces are used for informal exterior activity.

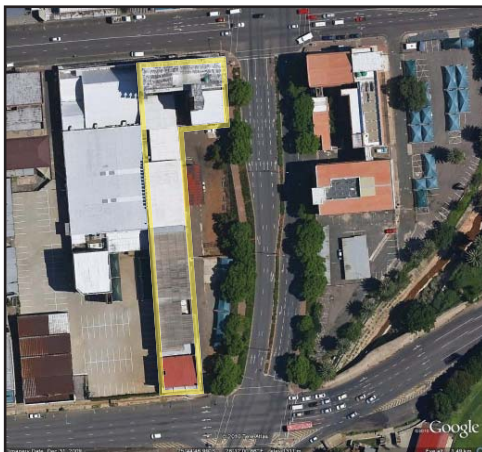


fig.6.8. Aerial Photograph of Berea Park School



fig.6.9. Lion Bridge Building (classrooms and staff accommodation)



fig.6.10. Main pedestrian entrance (previously shop fronts)



fig.6.13. Drywall partitioning used to create classroom spaces



fig.6.11. IT-lab (different previous usage visible in background)



fig.6.14. Steel supports inserted for wooden flooring above



fig.6.12. Drywall partitioning is used to sub-divide the warehouse into classroom spaces (minimum natural lighting and ventilation)



fig.6.15. Multi-purpose indoor gathering space



DANSA International College Independent Primary and Secondary School, Pretoria

DANSA International College was established in 1996. They moved from their previous location, the current Berea Park Independent School, to their current premises, an office/apartment building type, in 2007. The school is located on a stand that edges Schoeman Street to the North and Skinner Street to the South. The structure was previously used as offices.

The existing structure consists of a concrete column and beam structure with brick cladding on the exterior. Entrance to the school happens from Schoeman Street. Reception, administration and office spaces are located on the second floor. The majority of classrooms receive an abundance of natural lighting from either north or east. No structural alterations have been undertaken, but internal divisions have been made with brickwork. The heavy material provides acoustical insulation from socializing indoor spaces. Views of the urban context are constantly visible throughout the school environment. Ground floor space, previously used for retail purposes, has been adapted to serve as a multi-purpose gathering space. The first three floors of the structure are intended for use by primary school children. The upper three floors are intended for use by high school children.



fig.6.16. DANSA International College



fig.6.17. Aerial Photograph of DANSA International College



fig.6.18. Main pedestrian entrance from Schoeman Street

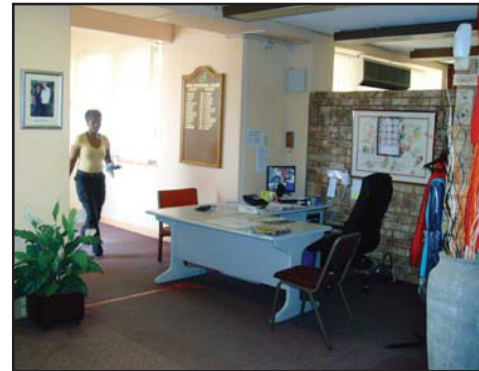


fig.6.19. Reception on the second floor (alteration in background)



fig.6.20. IT-lab (alteration visible in background)



fig.6.21. Typical classroom with an abundance of northern light



fig.6.22. Typical classroom with an abundance of northern light

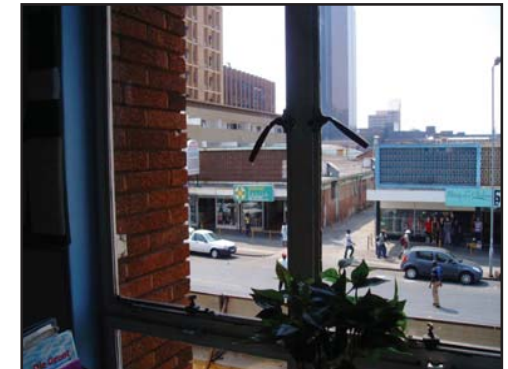


fig.6.23. Views of the urban context is constantly visible



fig.6.24. Gathering space on ground floor (previously retail activity)



Landau City Library (1998)

Germany, Landau
Lamott Architekten BDA



fig.6.25. Landau Public Library at night



fig.6.26. The alteration clearly distinguishes the old and new on the elevation with different materials. The scale of the alteration has been done in a sympathetic way to the existing

This project entailed the adaptive re-use of an historic slaughterhouse to a public library. Koenig (1999: 114) states that the architects' solution consistently forged a dialogue between old and new-juxtaposing lightness with heaviness, transparency with opacity, and traditional elements with simple machinelike interventions-to achieve an integrated whole. A wood-slatted brise-soleil is wrapped around the exterior of the existing masonry structure together with the architects glass and steel addition. Koenig (1999: 119) states that Lamott addressed the structural limitations of the original foundations by pouring a new load-bearing concrete slab that is independent of the existing shell, not even touching it. She adds that this separation between old and new is accentuated by gaps or reveals where Lamott's floors meet the stonewalls and the original cast-iron columns.



fig.6.27. Horizontal wooden-slats provides shading for the interior

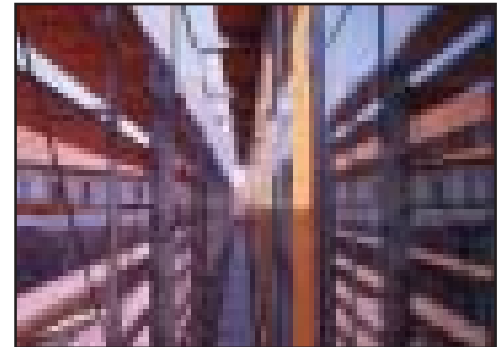


fig.6.28. The added brise-soleil is offset from the main structure, with a metal grille inserted in-between as a fire escape



fig.6.29. A play of old and new, and heavy and light materials is created on the interior.



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“The ideal school has a healthy interior climate and is made from sustainable materials. There is a place for both introvert and extrovert school pupils to work. The school building is flexible: in terms of internal arrangement, and in the interaction between inside and outside. School buildings are exciting if the inside becomes the outside and the outside becomes the inside. For instance, by studying on benches in the garden and by bringing trees into the school”.

Michaela Stegerwald
Verstegen (2009: 128)

“Ask people and they remember their school building. The rooms, the light, the routing through the building, the materials and the visual axis

Michaela Stegerwald
Verstegen (2009: 129)

07



fig.7.1. Open Air School in Amsterdam

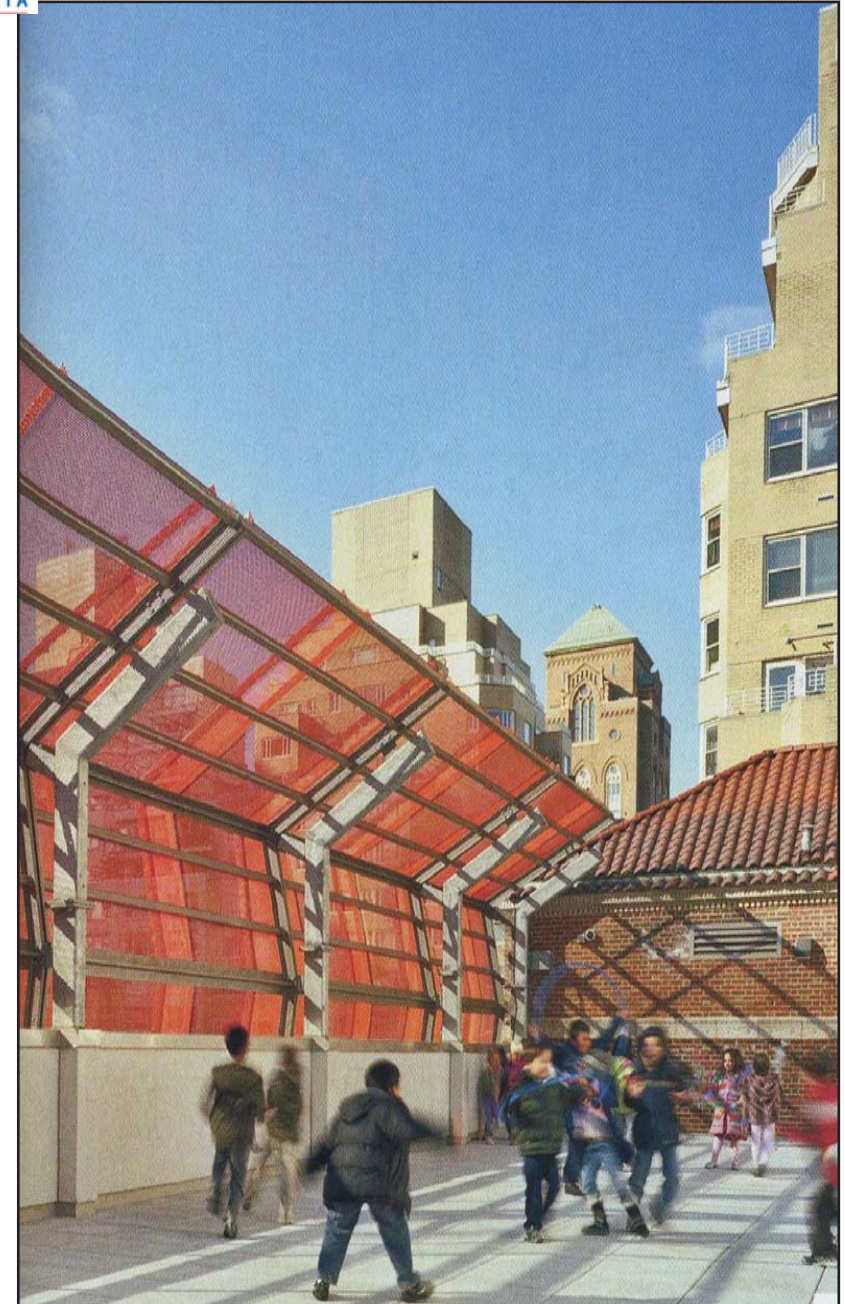


fig.7.2. Rooftop Playground of The Beekman Hill International School, New York

Chapter 7

Precedent Studies



Hampden Gurney Church of England School (2002) England, London

Anthony McGuirk, Building Design Partnership



fig.7.3. Partially covered rooftop playground

In this vertical school, or “children’s tower”, students “move up” the school as they progress through the years. The school has been created over six levels, with the classrooms on three levels above the new ground floor nursery, a state-of-the-art library and multimedia room on other levels, and a group teaching room on the roof. The classrooms on each level are linked to open-air play decks that provide safe weatherproof play and territory for each age group, accessed by a bridge across the central light well. The design offers good northern light for each classroom and the prospect of open-air classes on warm days. (It has to be mentioned that this project is located in the Northern Hemisphere that means that good southern light will be the equivalent in the Southern Hemisphere.) All the classrooms are naturally ventilated utilizing the stack effect of the central light well. Close attention was paid to maximizing available natural daylight.

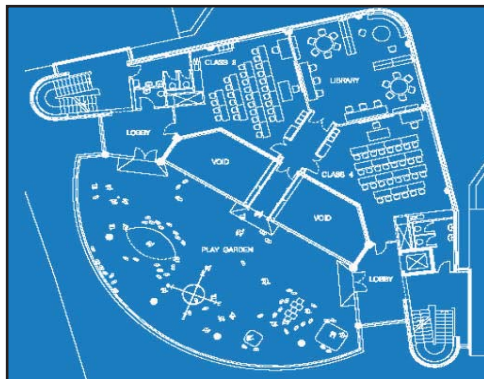


fig.7.4. Typical Floor plan layout (not to scale)

The Beekman Hill International School (2008) USA, New York City

Ehrenkrantz Eckstut & Kuhn



fig.7.5. Protected Rooftop Playground

This K-5 school’s temporary new home inside a former hospital annex building on Manhattan’s Upper East Side is the result of a unique public-private partnership. The architects converted diminutive dormitory rooms into flexible classrooms with areas for small group learning; and narrow, fixed corridors into lively circulation zones with nooks for storage and informal breakout spaces.

The decision to locate the gymnasium on top of five levels of classrooms necessitated robust structural and acoustical interventions. Existing interior columns throughout the floor were removed, and perimeter columns and transfer beams added in their place.



fig.7.6. Gymnasium on 6th floor

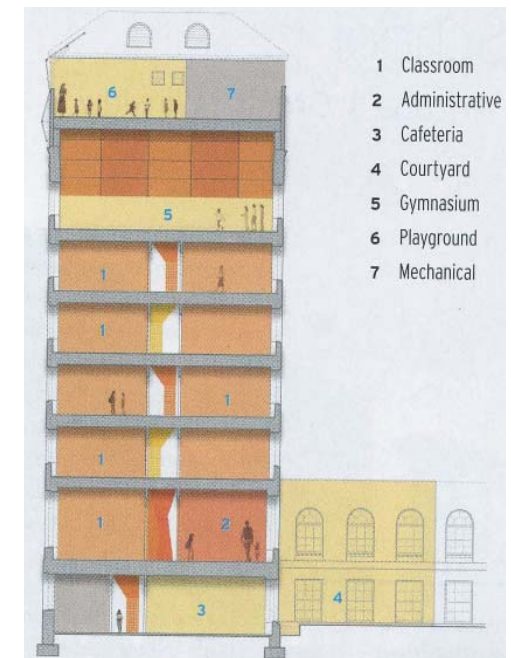


fig.7.7. Vertical composition of school (not to scale)

Centraal Beheer Office Building (1972)

Netherlands. Apeldoorn

Herman Hertzberger (with Lucas & Niemeijer)

Apollo Schools

Netherlands

Herman Hertzberger



fig.7.8. Personalized working platforms cantilevering into the central atrium

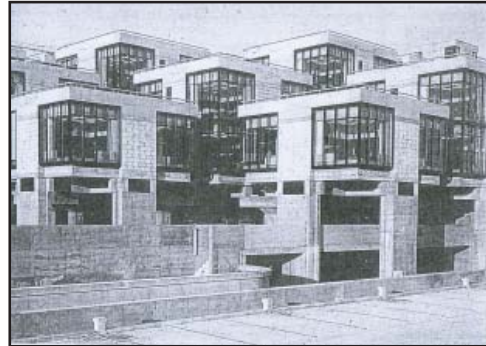


fig.7.9. Group working areas seen from the exterior

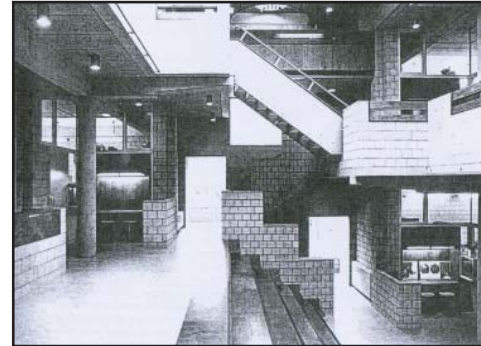


fig.7.10. Central communal staircase as versatile and interactive space

The Apollo Schools classrooms are grouped around a central communal space. Hertzberger (1991: 213) suggests that when the children leave their classrooms, they automatically converge in the centre and that this creates much opportunity for casual and spontaneous contact between children of different ages. He remarks that this might even stimulate ideas for doing things together.

Apollo Schools have a split-level amphitheatre like organization, which increases the range of visual contact. Hertzberger (1991: 213) states that on this 'amphitheatre', situations of players and audience arise easily and spontaneously: children sitting on the treads of the stairs connecting the two levels soon behaving like an audience, thereby challenging the players on the lower level to give what you might call a performance.

Hertzberger (1991: 195) states that the articulation of space was the principle underlying the Centraal Beheer insurance office. The point of departure was that all work, as well as all recreational activity, takes place in small groups, not individually but not collectively either.

The interior has been left as unfinished grey blocks. The aim being that users of their specific environments take ownership of that environment and given the opportunity to personalize that space.

Small group working platforms cantilever into a central atrium. The enclosing brickwork of every working platform is kept very low. This improves visibility from all levels overlooking the atrium. The presence of a variety of personalized spaces gives this space a unique character that changes with time.

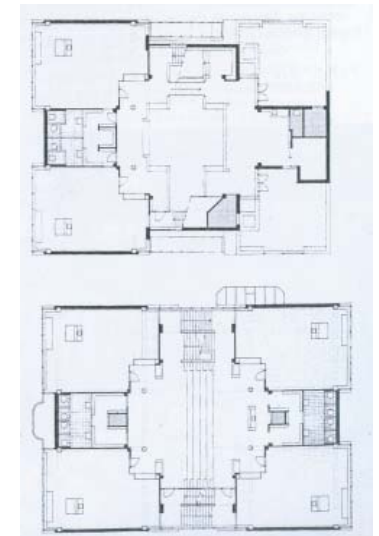


fig.7.11. Spatial composition of structure (not to scale)

De Evenaar Primary School (1986) Netherlands, Amsterdam Herman Hertzberger



fig.7.12. Stepped parapet next to staircase overlooking central space

In 'De Evenaar' school, two adjoining classrooms were placed behind a curved section of the facade, hereby creating a communal bay. The wall dividing the classrooms comprises at one end, where it meets the facade, a sliding partition. When it is closed, the two spaces are both visually and audibly separated, but when it is opened, the two classrooms easily blend into one area embraced by the bay. The view of the outside world from each classroom is also considerably widened when the partition is opened.

Hertzberger (1991: 186) suggest that parapets bordering staircases are usually placed slantwise, following the direction of the handrail. But in a situation where a parapet is so positioned that it offers a view of something, as in "De Evenaar" where it offers a view into the communal staircase space, it invites people to lean their elbows on the top, or even to sit on it.

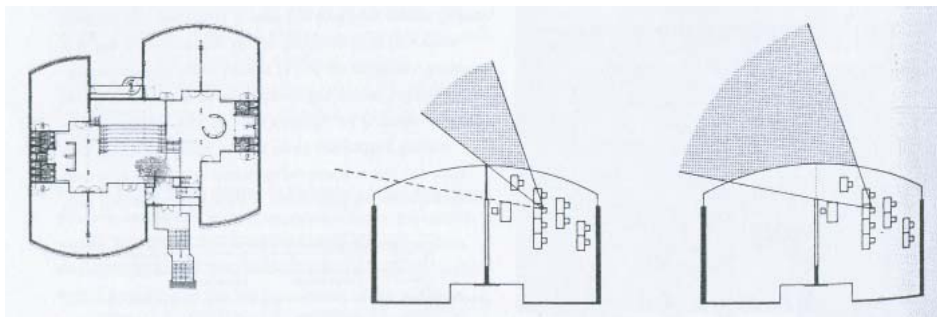


fig.7.13. Openable section between two classrooms (not to scale)

Open Air School (1930) Netherlands, Amsterdam J. Duiker



fig.7.14. View of the Open Air School with its outside learning spaces on the upper levels



fig.7.15. View into the school from street level

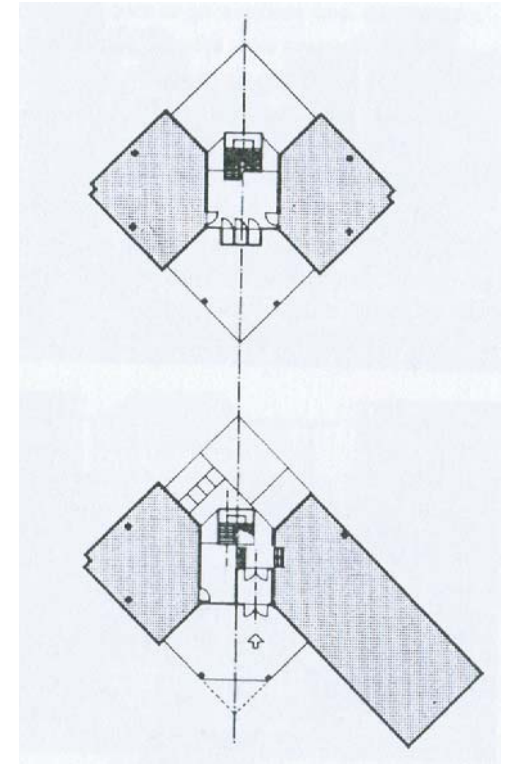


fig.7.16. Typical floor plan layout

The building consists of layers of two classrooms on each floor, each which could thus share one outside classroom, grouped around the stairwell. Hertzberger (1991: 246) states that the glass facades makes visibility from the inside-out, but also from the outside-in possible and a strong connection is thus formed between the surrounding environment and the learning "classroom" environment. Boundaries between the school as a separate entity and real life is thus blurred and becomes one.

Technikon (1955) Netherlands, Rotterdam H.A. Maaskant



fig.7.17. Aerial view of the Akragon and Technikon

The Technikon in Rotterdam is a school cluster in which the separate educational institutions hardly share any facilities. Each school in this complex for technical and professional education has its own entrance and lift. The large auditorium, with a capacity of 500, and the canteen also function independently. The striking Akragon sports tower, an intriguing monolith in the Hofplein, accommodates a swimming bath, a large sports hall, and six ordinary gyms. This sports tower also functions autonomously.

Verstegen (2009: 65) remarks that the advantage of this complex lay above all in the module and construction for the schools adopted by Maaskant. In a fifteen-year design process, the architect Maaskant grouped the eight schools for vocational education in an elongated volume. He is of the opinion that this gave the building not only an imposing appearance, but also an efficient ground plan for the classrooms and adds that they were designed in such a way that they could be used by one institution or another without expensive alterations.



fig.7.18. Main building and connecting area

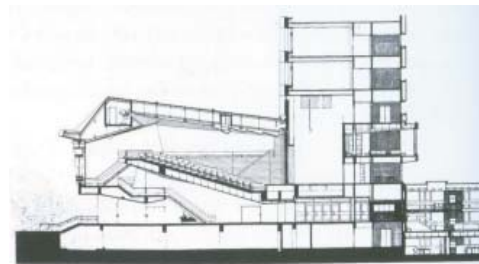


fig.7.19. Cross-section of the main hall (not to scale)

The Educatorium (1997) Netherlands, Utrecht OMA, Rem Koolhaas



fig.7.20. The structural form expresses and complements its function



fig.7.21. The transparent facade makes the interior activities visible

Its invented name intended to suggest a factory of learning, the Educatorium houses two lecture theatres, three examination halls, and a large refectory (dining hall), which also functions as an informal study area and performance venue. These facilities are shared by the University's 14 faculties and many research institutes, creating an important new centre of rendezvous and exchange.

The Educatorium occupies a corner site and abuts an existing long, low building at its east end. Van Cleef (1999: 1) describes the structure by commenting: "Like a languidly wave, it rolls away from its neighbor and swells out to the west. The ground floor rises as a continuous concrete plane through the building and rolls back to create a prominent bulge along the west facade". This folded plane is the Educatorium's main organizational device, enclosing lecture theatres above and the refectory below. Examination halls are contained in a more conventional two-storey box joined to the lecture theatres by a large central vestibule (portal).

Van Cleef (1999: 1) is of the opinion that the Educatorium acts as an extension of the campus landscape, synthesizing in microcosm aspects of university life - learning, socializing, being tested and so on - in a continuous, overlapping experience. She also states that the glass walls expose a dynamic interior realm of ramps, stairs and promenading spaces, animated by teeming hordes of students perpetually milling around the building.



Leicester University: Engineering Building (1963)

England, Leicester

James Stirling and James Gowan



fig.7.22. Bold expression of the brick clad theatre

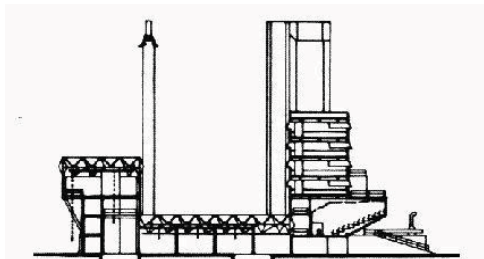


fig.7.23. Sectional Drawing (not to scale)

Walmsley (1988: 10) describes the Leicester Engineering Building as a glass building, resting on a podium perhaps twice the height of a person. She continues and comments that the primary part of the building is a large, folded, trussed rectangle that houses the workshops for heavy equipment. She states that one enters this workshop on the northeastern side through a heraldic portal that rises above some of the neighboring buildings on the campus, and displays its engineered face as a sign. It has a small footprint and is massive in conception, as a gateway should be.

Walmsley (1988: 10) comments that the brick podium gives way to an arch which straddles the entryway, on one side consisting of vertical circulation, and on the other a series of rooms stacked vertically. The archway has an equal entry directly ahead, retaining the strength of the idea.

Walmsley (1988: 10) describes the workshop as being a private affair, but that the gatehouse is for the public. She is of the opinion that from the exterior this is clearly stated, as a ramp leads up onto the podium where there is a patio that reconfirms the message sent by the tall 'portal', that of the engineer's aesthetic for handrails and exhaust pipes.

Walmsley (1988: 10) comments that from the external gathering place one can reach the theatres whose forms are clearly apparent because of the raked bottoms showing in profile, and therefore public by gesture. She comments that an access stair that is encased in glass, leading up to the theatre, is clearly visible.

Walmsley (1988: 10) states that the tertiary rooms, the offices for the staff in the most visible tower (six stories) and the laboratories in another tower behind that (four stories) are removed from the public access by resting on top of the massive theatres .

Walmsley (1988: 10) is of the opinion that in all of this the predominance of glass is resolutely persistent. She states that on the roof its potential is exhibited in the jewel-like protruding edges of the ridges that run at 45 degrees to the walls, apparently defying the rigorous order of the podium, and at the southwestern edge it rises up even higher with all its energy to make provision for equipment to be brought through the floors, from underneath the cantilever it provides.

Walmsley (1988: 10,11) comments that on the portal the glass interrupts and overcomes the statement of the strength that it starts to make at its massive base. She describes it as wrapping around the office tower that lengthens under its constricting power. She continues and says that it oozes out of the laboratory towers and one can get a glimpse of its predominance as it has taken over the gaps between the two. She is of the opinion that it is as if it has intruded with the strength of a glacier, it defies our understanding, supporting at its highest point the weight of the water reservoir required for experimentation in hydraulics. She adds that it was as if the design had exhausted itself, but the glass had the strength to accommodate it at 100 feet above the ground.

Walmsley (1988: 11) states that the workshop is minimally partitioned internally to allow flexibility in order to anticipate development and change in equipment either through technological advances or through acquisitions by the university. She further states that the folded glass captures the north light more effectively by its angle at 45 degrees to the enclosing walls. She describes the windows as being double-glazed with a sandwich of plate and clear glass enclosing a layer of insulation.



fig.7.24. View from campus showing 45 degree angled glazing protruding from heavy brickwork on secondary tower

Dutch Embassy (2003)

Germany, Berlin

OMA, Rem Koolhaas



fig.7.25. Different lighting techniques and glazing colors reinforce the architectural intentions



fig.7.26. Part of the main circulation route is expressed on the transparent facade by the extrusion thereof

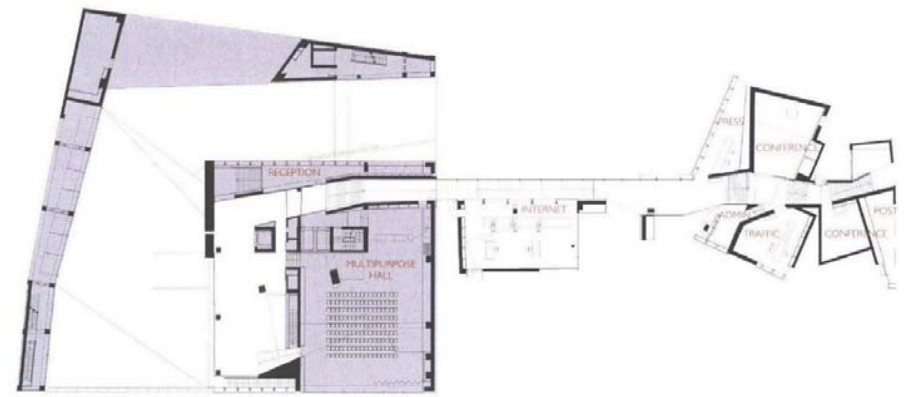


fig.7.27. Plan of 'unravelling' trajectory (not to scale)

This project's relevance lies in the transparent treatment of the structure's skin and the expression of form in relation to function. An approach where the inside activities are partially made accessible to the public and vice-versa has been followed. The bold extrusion of a circulation route in the form of a glass corridor that connects the second to third floor, creates a space that is public by nature in a visual sense. Brensing (2004: 50,56) refers to the continuous strip of 200m, or what Koolhaas calls a 'trajectory' (in effect, a succession of staircases, ramps and corridors), which snakes its way up through the building. At some points it emerges on or even through the facade (in the case of the cantilevering glass corridor), changing direction of ascent and gradient until it reaches the restaurant and roof terrace. These series of ramps, the visibility and structural expression thereof, provides an interactive and dynamic quality to the structural form, as the structure in essence is composed of a cube. Brensing (2004: 56) states that because of the deliberate spatial complexity, there is little coordination between the interior and exterior. He is of the opinion that Koolhaas pays the price for his structural maneuvering here, as he is obliged to rely on a load-bearing double facade. Where the internal zigzagging of the trajectory feigns freedom or even anarchy, the straight steel columns that run down the full height of the building indicate a necessary and more simplistic rigor.

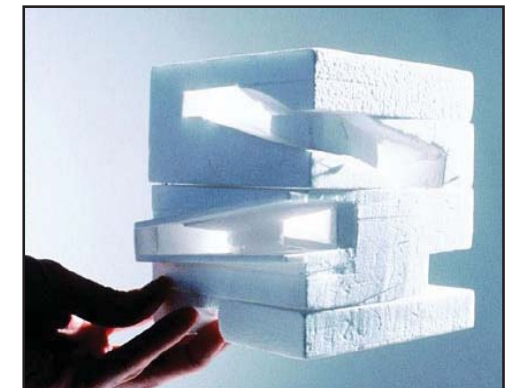


fig.7.28. Architectural Concept: Trajectories 'zigzagging' around a cube

Montessori College Oost (1993) Netherlands, Amsterdam Architectuurstudio, Herman Hertzberger



fig.7.29. A Timber clad skin conceals the main circulation volume

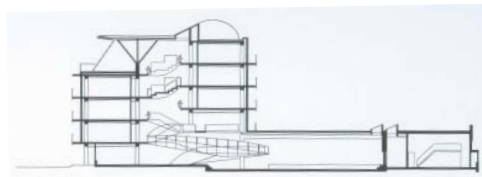


fig.7.30. Sectional Drawing showing differing floor heights



fig.7.31. Main circulation volume with 'bridges' connecting both sides

Verstegen (2009: 89) claims that Herman Hertzberger's Apollo Schools for primary education were the source of inspiration for this project. Here too the multiple use and significance of the communal domain is the guiding architectural theme.

The tall volume in-between the two blocks has four floors, arranged in a split-level system around an elongated void. This enables visual relations between the different floors and creates a strong sense of space. The void is intersected by a number of very wide bridge staircases that also function as places to meet and as alternative learning domains. Verstegen (2009: 89) remarks that the buildings variety and spaciousness suggest a square in a city, deliberately keying in with the world that the pupils experience.

Bredero College Extension (1998) Netherlands, Amsterdam De Architectengroep, Van Gameren en Mastenbroek



fig.7.33. Bredero School Building



fig.7.34. Kitchen

This new extension to Bredero College contains several classrooms for practical instruction, a hall and two gyms. The ground floor facade functions as a big showcase. Behind it is the bakery, the kitchen and the restaurant, which according to Verstegen (2009: 239) is open to the public twice a week. A glass partition has been placed between the restaurant and the kitchen. People walking past the school, or even driving, are thus aware of the activities taking place inside. This method of showcasing practical instruction makes the educational intentions accessible to all who find themselves in the vicinity of the school.



fig.7.32. Technical Classroom

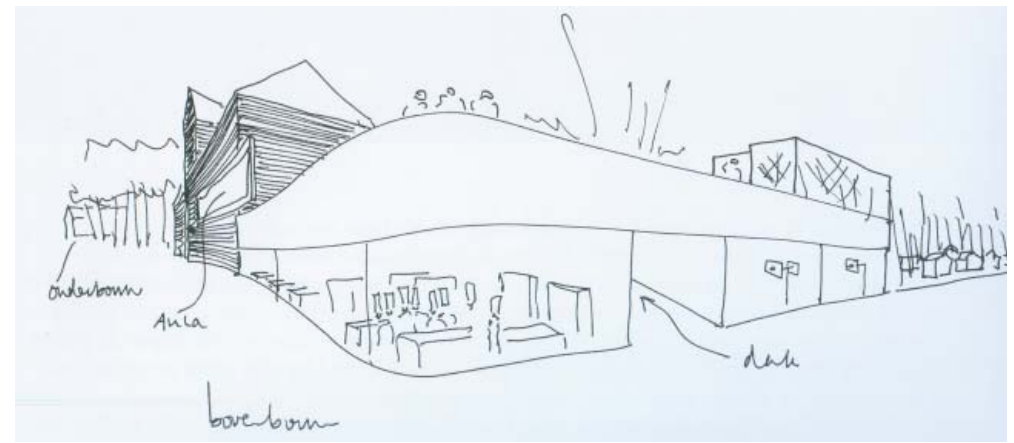


fig.7.35. Sketch Design by Van Gameren en Mastenbroek



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“I don’t have a blueprint for school architecture, but I do know that you have to let people draw the consequences from their ideas about it. I always start by asking a school governing body or director about the changes that they see in the world around them. After that you can ask them about their vision of their own organization in the light of those changes. What is your ambition? What are the activities that will take place there? What are you actually going to do to realize that ambition?”.

Gert Jan Meijer
Verstegen (2009: 73)

08



Project Brief

The project will utilize a number of educational institutions present within the eastern part of the inner city, specifically the city block edged by Church Street, Du Toit Street, Pretorius Street and Nelson Mandela Drive, to act as catalysts for the development of an urban educational campus. The proposed campus will contain a rich mix of educational institutions, residential, office and retail functions, which will act as the context for this project.

The Apollo Centre, located on the corner of Church and Du Toit Street, will be adaptively re-used to function as a communal educational facility, and will accommodate a small primary school. The traditional notion of school as a horizontally orientated process will be challenged in its vertical axis. This vertical challenge will partially guide an alternative pedagogic approach towards the potential of urban education.

Design Intervention

The nature of the proposed intervention is an ambitious one. A number of light industrial/automotive building types are proposed to be demolished in order to open up and ease movement to and through the city block. These open spaces will make way for either new mixed use developments, aimed at the inclusion of educational functions, or public spaces that will facilitate educational life within an urban context.

The Apollo Centre, with its visually prominent location on the corner of Du Toit and Church Street, is proposed to be developed into an educational landmark development, that will resonate a contemporary educational process.



fig.8.1. Staff of DANSA International College

Chapter 8

Brief Development

Project Intentions

John Dewey states that much of present education fails because it neglects the fundamental principle of the school as a form of community life. "It conceives the school as a place where certain information is to be given, where certain lessons are to be learned, or where certain habits are to be formed". He continues to suggest that the value of these is conceived as lying largely in the future; "the child must do these things for the sake of something else he is to do; they are preparations. As a result they do not become a part of the life experience of the child and so are not truly educative" (McDermott: 1973).

- The first intention of this project is to establish an educational environment that is integrated with its urban context
- The second intention is to utilize this integration as an educational aspect and promote contextual learning
- The third intention is to investigate the opportunities that vertical education in the urban context offers
- The fourth intention is to investigate the potential of an existing structure to facilitate this vertical, integrated educational process

The project will thus explore the commonalities within the educational spectrum and the everyday life of urban dwellers and attempt to create connections between the two ends of the spectrum.



fig.8.2. Urban dwellers

The Users

The primary users of this project will be children attending the proposed Apollo Primary School (fig.8.3). Additional to this will be the adult staff facilitating the pedagogic process.

Secondary and tertiary students from educational institutions located in close proximity of the Apollo Centre, will be capable of utilizing facilities within the building on a cross-programming basis (fig.8.4).

As the primary intention of this project is to integrate 'real life' situations with the educational process, the general public will thus either be active or passive users (fig.8.2). Public facilities provided will be open to public use on a cross programming basis.

The users of this project thus include the whole spectrum of urban dwellers. It allows for educational interaction between students, working individuals, the elderly or just the odd individual exploring the city or wondering around.



fig.8.3. Primary school children



fig.8.4. Tertiary students from Tshwane North College, opposite the Apollo Centre



Client (s)

The initiator of this project has been identified as Denver Technical College, a Private Further Education (FET) institution, currently located on 210 Du Toit Street.

The client has expressed a need to establish an independent school within the inner city of Pretoria. The client has recognized that their institution is located within a prominent educational precinct, and wants to make use of this quality to provide a school that plugs into the educational processes present within the precinct.

The author has identified the Apollo Centre, located on the corner of Church and Du Toit Street, currently owned by City Property, as only being partially utilized and suitable for the proposed adaptive re-use intervention.

However, the scale of the proposed design intervention within the city block and Apollo Centre itself, and the variety of users that will be affected by this project, requires the political and financial support from the Department of Education as well as Public Works. The Department of Education will thus be nominated as the primary client of this project, supported by the Department of Public Works.

In addition to the clients above, it is also proposed that Public Private Partnership (PPP) be included as secondary clients.

Educational retail functions within the facility will be owned by private companies but managed in collaboration with the Apollo School. CSI (Corporate Social Investment) is thus proposed, and is a way in which companies can give back to communities that they work in. In a recent newspaper article, Beeld (2010: 8), CSI Solutions claimed that an investment done with the heart at the right place, might stabilize the corporate and economic context, help to derive new business ideas and often to public interest of the particular company's business.



fig.8.5. Potential Clients



Required Accommodation Schedule

In 2008 the Minister of Education, Grace Naledi Mandisa Pandor, released a document in the Government Gazette, 21 November 2008, which contains the National Minimum Uniform Norms and Standards for School Infrastructure. This document will be used as a guideline for setting up an appropriate accommodation schedule for the proposed program. It has to be reiterated that it will only be used as a guideline, keeping in mind the intentions of this project and the proposed outcomes.

The document states that a Small Primary School generally consist of 310 students, 7 groups of 40 learners, and 1 group of 30 Grade R learners, @ 1 Group per grade.

The amount and size of accommodation spaces that are required for a typical small primary school are stated in the document referred to as shown in fig.8.6.

An accommodation schedule will be drafted at the end of the project to form part of the analysis as to the result of the project according to the author.

Small Primary School							
Education Spaces	Functionality Norms				Effectiveness Norms		
	No. Units	Unit Size (sqm)	Sub-Total		No. Units	Unit Size (sqm)	Sub-Total
Core Education Spaces							
Classrooms	7	60	420		7	60	420
Grade R Facility	1	75	75		1	75	75
Multimedia Centre	1	120	120		1	120	120
Multipurpose Classroom	0	120	0		1	120	0
Toilets for learners							
Storage Areas	0	15	0		0	15	0
Sub-Total			615				615
Administrative Spaces							
Principal	1	20	20		1	20	20
Administration Office	1	20	20		1	20	20
Reception Area	0	15	0		0	15	0
Toilets for Teachers							
Storage Areas	1	15	15		1	15	15
Strong Room	1	10	10		1	10	10
Printing Room	0	15	0		1	15	15
Staff Room	1	60	60		1	60	60
Pastoral Care. 1. Counseling	0	15	0		1	15	15
2. Sick Rooms	0	15	0		1	15	15
HODs Offices	0	15	0		0	15	0
Kitchenette	1	20	20		0	20	0
Sub Total			145				170
Education Supporting Spaces							
Food Garden	0	20	0		1	20	20
Kitchen	1	20	20		1	20	20
Nutrition Centre	1	15	15		1	15	15
Dining Room	0	120	0		0	120	0
Security/Guard Room	0	6	0		1	6	6
Multipurpose Centre (Indoor Sport)	0	180	0		1	180	180
Sports Grounds							
Parking Space							
Caretaker Room	0	15	0		1	15	15
Storage Areas	0	15	0		1	15	15
Sub-Total			35				265
Total Net Areas							
			795				1050
Circulation and Walls (30%) hall included							
			239				315
Total Gross Areas							
			1034				1365
Learners							
			320				320
Unit Area							
			3.2				4.3

fig.8.6. Minimum Space Norms and Standards of Small Primary School Prototype



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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA



“Learning is increasingly becoming active learning and is no longer strictly tied to a fixed time or place. The standard school design with its rows of classrooms connected by corridors, a main hall and a teachers’ room, is no longer satisfactory. Relatively open learning domains and work places are emerging that are connected with places for study and work and areas for social interaction and relaxation”.

Tom Verstegen
Verstegen (2009: 9)

09

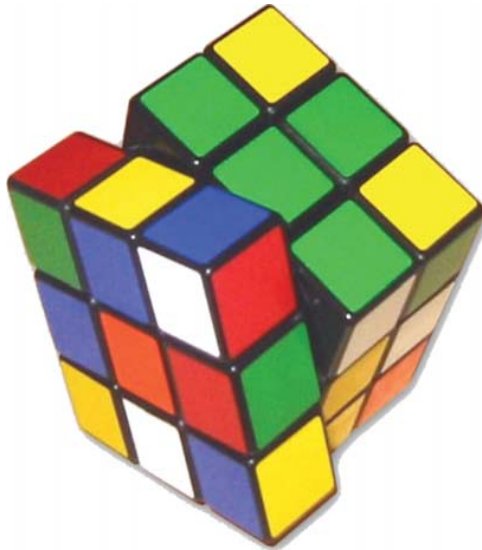


fig.9.1. Rubik's Cube

Introduction

The design development was done in an iterative manner. From the start the author did not have a clear vision of what the result should be. Instead he set out to explore a multitude of design interventions that addressed specific issues that could potentially lead to the wanted result. Each design intervention was explored, investigated, discussed and considered in its various aspects as well as in its relationship to the whole. The result of the numerous explorations lead to a final proposal that contained the qualities seen most fit as a result of the investigation that followed.

The design development will thus be presented as a series of design explorations that will ultimately reveal an evolution towards the final design proposal. The explorations will be referred to as different phases.

The final design proposal will be presented as a series of abstract interventions that will give a vision of the proposed whole. The final design proposal will then be resolved in the Technical Development chapter.

Chapter 9

Design Development

Phase 1

The functional zoning of the vertical structure was conceptually investigated (fig.9.3 and fig.9.4). A library on ground floor was proposed to be the public interface for the mixed-use building. A section of the building was proposed to be dedicated to educational spaces (classrooms). Another section of the building was proposed to be rentable office space. A multi-purpose sport and recreation hall was envisioned to be added to the rooftop space. The two basement levels were proposed to be left as is. A mixed-use building was thus proposed that starts to blur the boundaries of the surrounding urban activities and that of an urban school within a vertical structure.

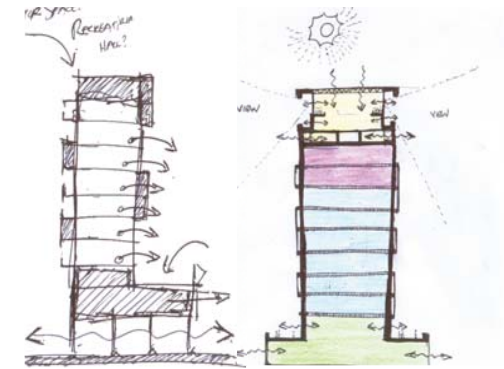


fig.9.5. Exploration sketches



fig.9.2. Existing Structure



fig.9.3. Proposed Functional Zoning



fig.9.4. Functional Zoning (model by author)

- Multi-Purpose Sport + Recreation Hall
- Office Space
- Educational Space (Classrooms)
- Public Library
- Basement Parking (2 levels)

The idea of a mixed-use environment within a vertical structure was investigated (figs.9.6). It was investigated how this mixed-use environment could be arranged in a seemingly random way. A "Rubik's Cube" was initially used as the concept for this. A multitude of interrelationships of public, semi-public, semi-private and private spaces exist within this arrangement (fig.9.7).

Different ways of treating vertical circulation was investigated (figs.9.9). Although the project deals with an existing structure, additional circulation might be required. It could potentially contribute to the proposed quality of educational environment that is envisioned. Not only singular systems was investigated, but also combinations of different systems.

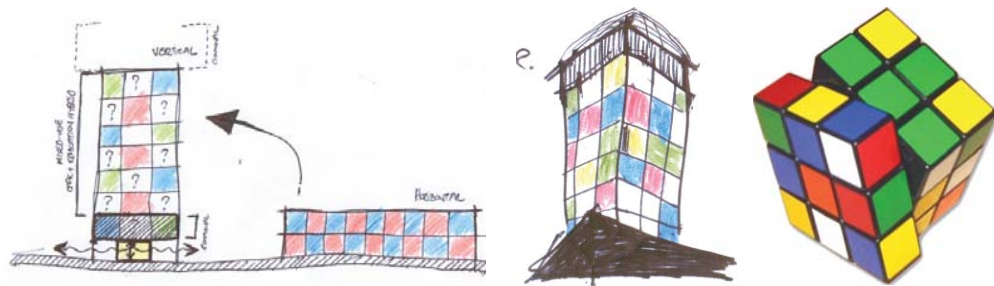


fig.9.6. Horizontal to vertical schooling in a mixed-use environment

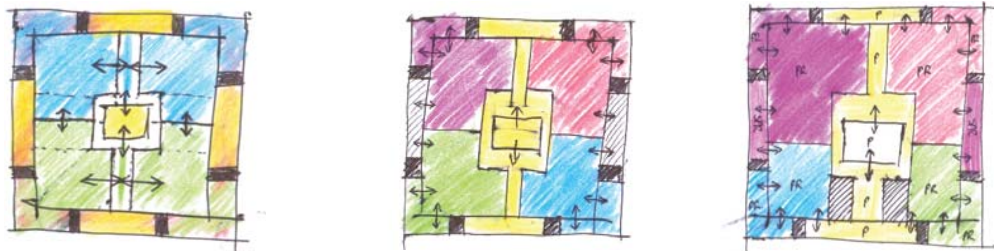


fig.9.7. Different relationships between the public and private realms

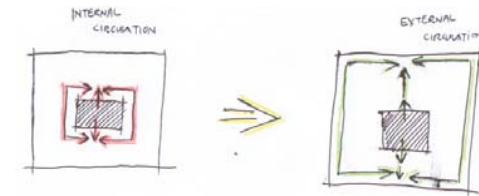
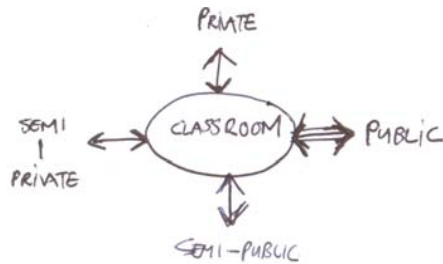


fig.9.8. Internal vs External circulation

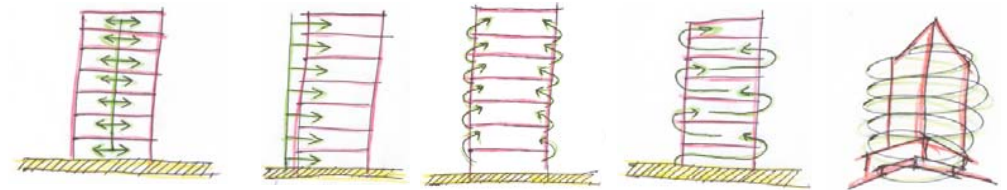


fig.9.9. Different ways of treating vertical circulation

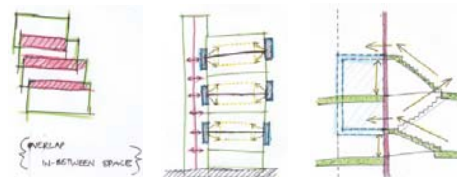


fig.9.10. "In-between" spaces that exist between two levels of varying height

Phase 2

Different plan variations were explored, individually as well as their relationship to the whole. A play started to happen between inside and outside, public and private, and open and closed spaces (figs.9.12). Different positions for new vertical circulation areas were also explored. Different usages for the rooftop space was explored (fig.9.14).

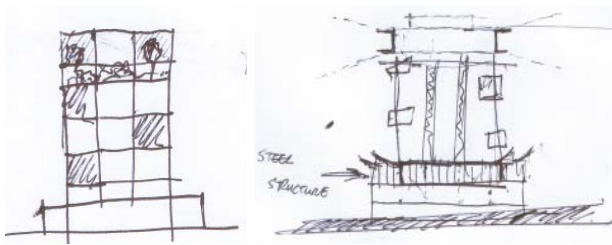


fig.9.11. A vertical environment containing a rich mix of interior and exterior spaces

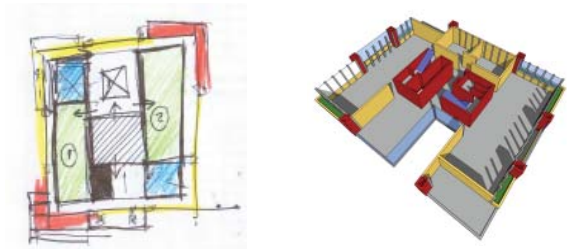


fig.9.12. Shifting similar spaces at different levels could lead to playful facades

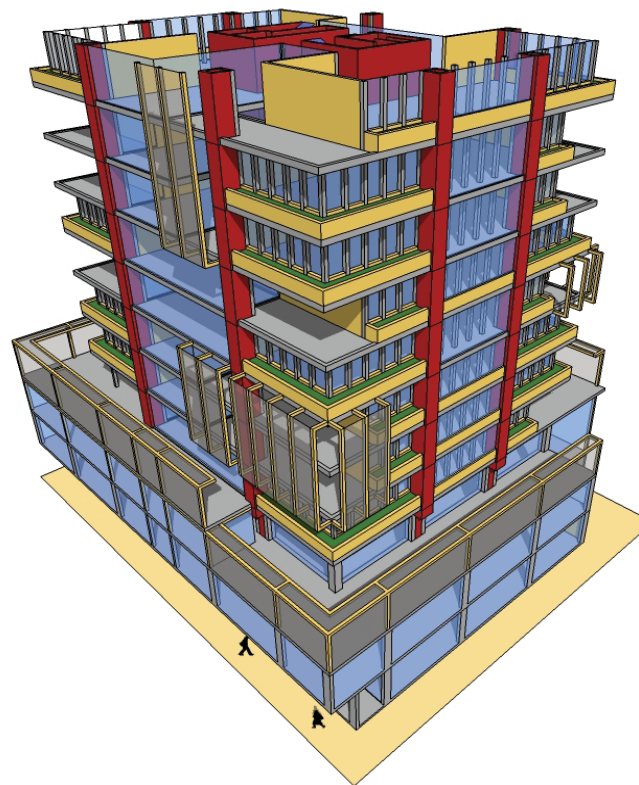
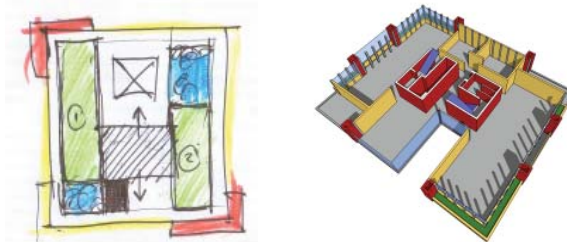


fig.9.13. Proposed 3-Dimensional structure

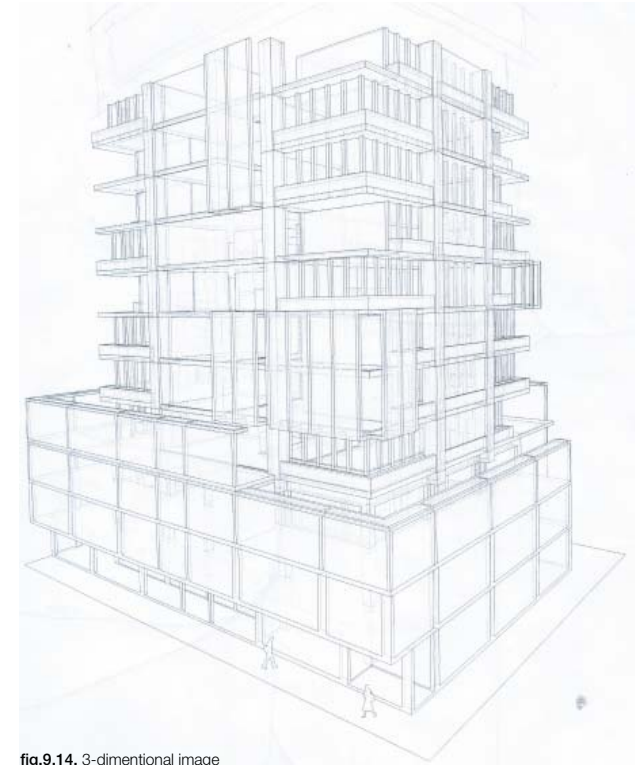


fig.9.14. 3-dimensional image



fig.9.15. Model testing different rooftop usage variations

Phase 3

The rooftop space was continually being explored in terms of its height, its required volume, the various functions that it might offer the community and the proposed school, as well as its structural requirements (fig.9.16). The idea of vertical gardening was also explored on the eastern and western facades to act as sunscreen devices (figs.9.19). The north eastern corner of the ground floor of Apollo Centre was structurally opened (fig.9.17). This had the implication of increased pedestrian activity from the proposed pedestrian arcade into and past the entrance of the proposed school.

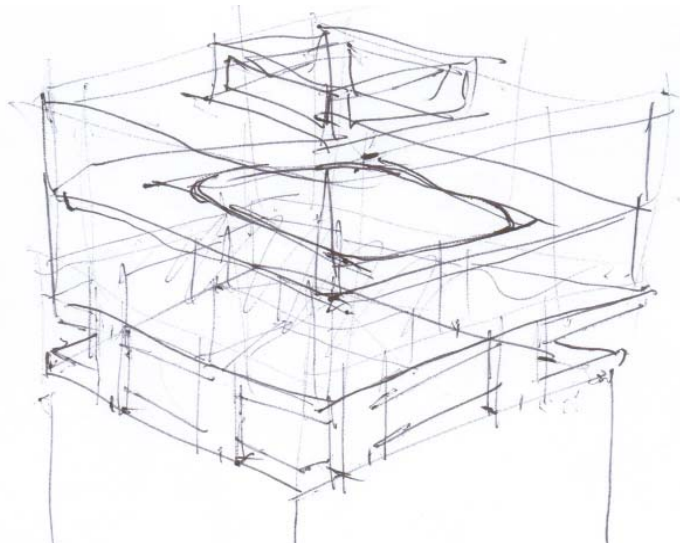


fig.9.16. Exploration of rooftop usage



fig.9.17. Model showing North Eastern corner of the Apollo Centre structurally opened

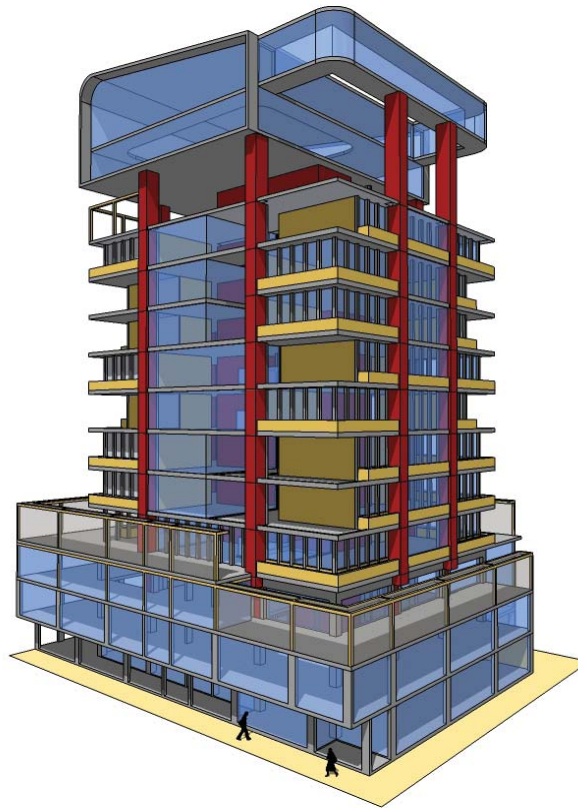


fig.9.18. 3-Dimensional image of proposed structure

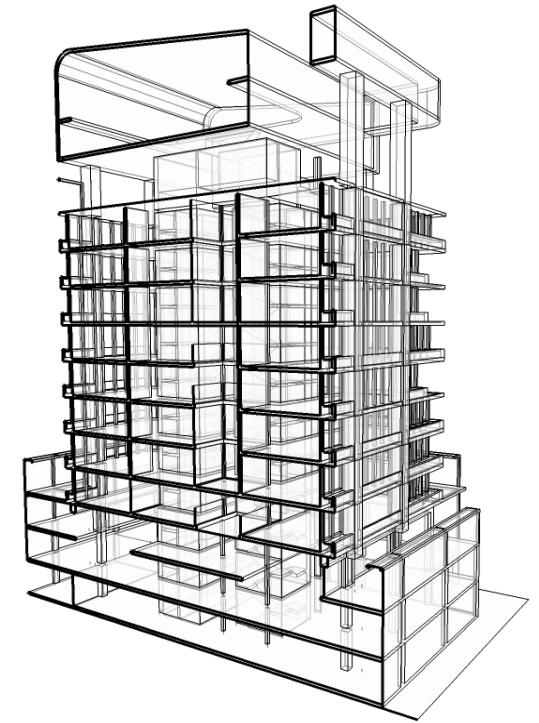


fig.9.20. 3-Dimensional section



fig.9.19. Model showing multi-purpose rooftop hall as well as the use of vertical screens on the eastern and western facades



Phase 4

Sectional explorations lead to the creation of various volumes within the existing structure (figs.9.21). Different levels were now starting to spatially connect and interact with each other. The layering of plans lead to the creation of x-ray like images, and revealed the intricate composition of all the individual parts of the proposed design to form a whole (figs.9.22).

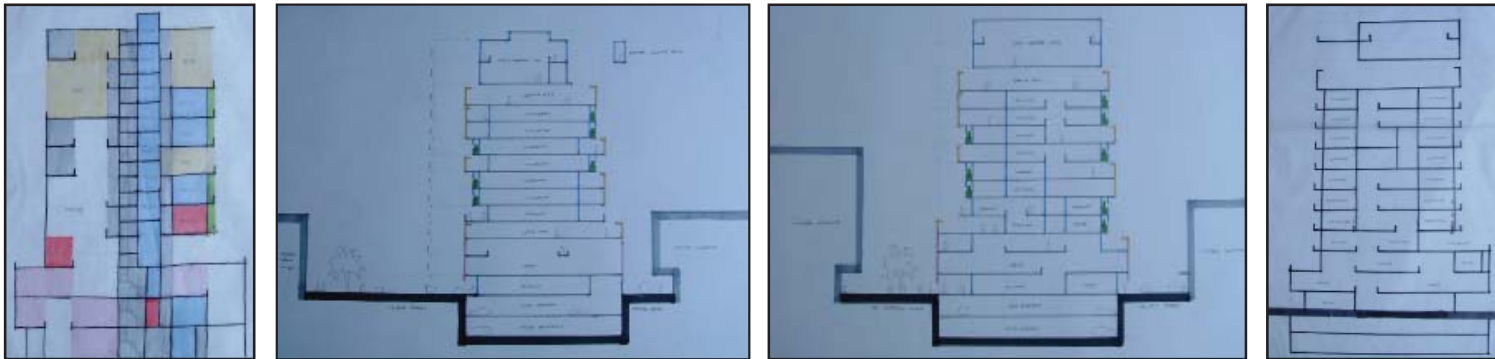


fig.9.21. Sectional explorations of internal volumes, exterior spaces, edge conditions, and relationships to the surrounding context and the scale thereof.

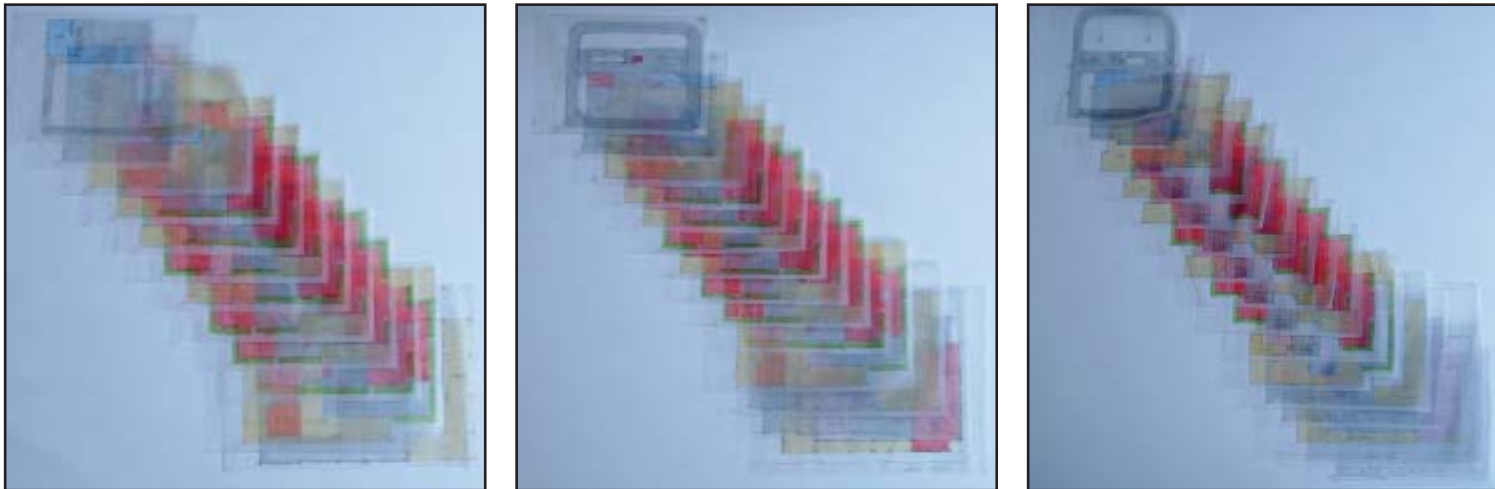


fig.9.22. Layering of all the floor plans lead to x-ray like images



fig.9.23. Model exposing the internal functioning of all the proposed floor plans stacked vertically

Phase 5

The rooftop space was continually being explored and developed. A cantilever running track at the rooftop space was investigated (fig.9.25 and fig.9.37). The urban framework proposal was revisited, re-developed and the proposed structure contextualized into the city block design (fig.9.28 - fig.9.30). The pedestrian arcade and its link with the proposed Apollo school was explored and developed (fig.9.30). New circulation was introduced on the northern facade (fig.9.24). The idea of expressing movement and activity on the interior to the exterior, and visa versa was explored. Classroom spaces for the upper floors were reconsidered. The relationship of the proposed structure towards the existing context was investigated.



fig.9.24. 3-Dimensional image of proposed structure

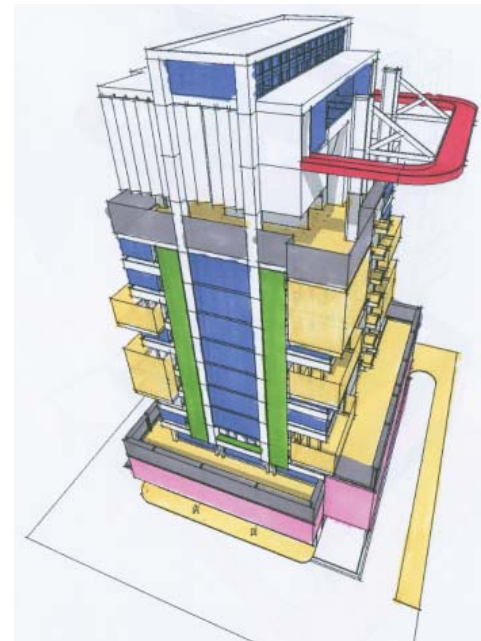


fig.9.25. 3-Dimensional image of proposed structure



fig.9.26. 3-Dimensional image of proposed structure



fig.9.27. Proposed structure within the proposed context

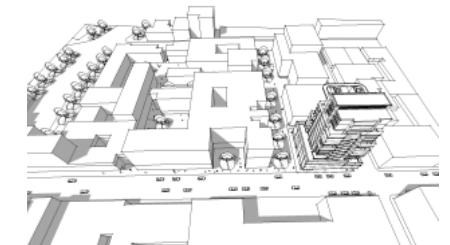


fig.9.28. Proposed structure within the proposed context



fig.9.29. Proposed pedestrian arcade connecting Church and Pretorius Street

Phase 5 (continued)

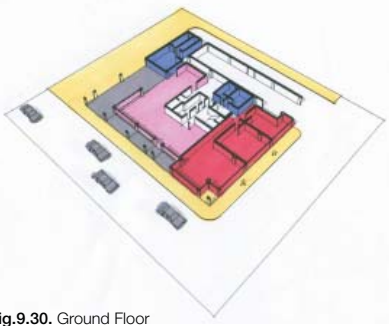


fig.9.30. Ground Floor
Proposed Retail, Semi-Public Restaurant, Kitchen, Pedestrian Arcade, Opened north eastern structure.

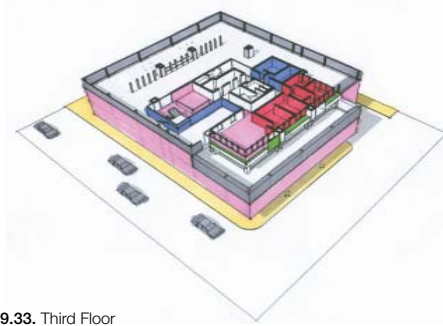


fig.9.33. Third Floor
Proposed School Reception, school offices, and exterior recreation area

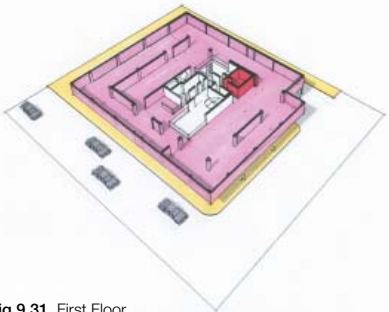


fig.9.31. First Floor
Proposed Semi-Public Library



fig.9.34. Typical Upper Floor
Proposed Educational Spaces (classrooms), communal spaces, and exterior spill out spaces for classrooms

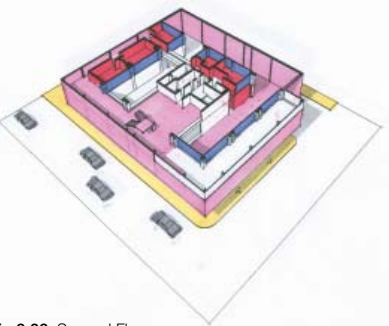


fig.9.32. Second Floor
Proposed Semi-Public Library and Semi-Public Offices. Double volumes connection to floor below



fig.9.35. Rooftop
Proposed Multi-Purpose Sport and Recreation Hall, with cantilevering running track on southern side

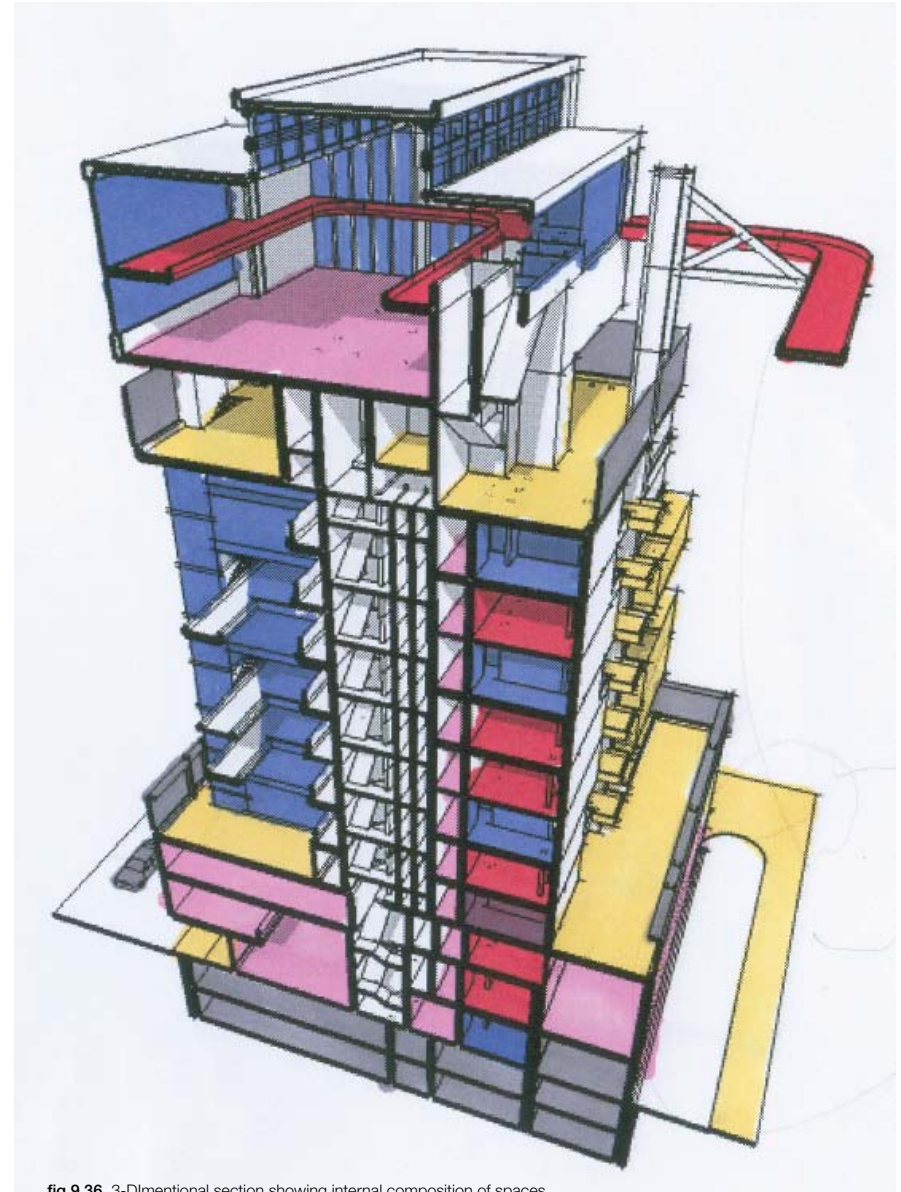


fig.9.36. 3-Dimensional section showing internal composition of spaces

Phase 6

The multi-purpose rooftop hall was reconsidered. The idea of adding a multi-purpose transparent auditorium over the proposed pedestrian arcade was explored (fig.8.39). A gathering space that is large enough to accommodate all of the students was required. Exterior recreational spaces on top of the proposed auditorium were explored (fig.9.39). New vertical circulation was explored in terms of how it is expressed on the facade, its function of translating interior to exterior activity and visa versa, as well as its role in connecting interior and exterior spaces on each level was investigated (fig.9.40). Classroom spaces for the upper floors were reconsidered. The idea of adding a new “skin” on the lower floors of the existing structure, that connects the floors to read as one continuous element was explored (fig.9.42). Vertical gardening as eastern and western sunscreens was further explored in terms of the lightweight structure that would support the growth of the particular plants, and the way in which it could become sculptural elements expressed on the facades (fig.9.42). The physical connection of the proposed structure to the surrounding buildings was investigated (fig.9.42).



fig.9.37. Conceptual addition of auditorium to the upper levels

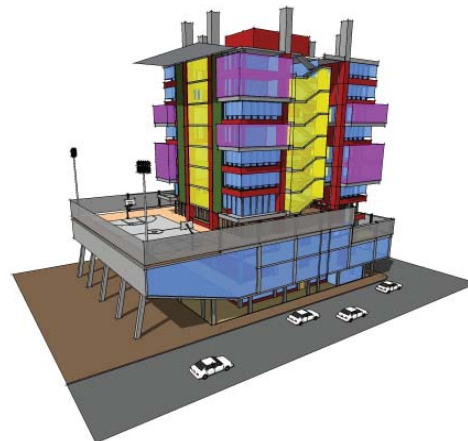


fig.9.38. Addition of auditorium over pedestrian arcade, with recreational space on its rooftop

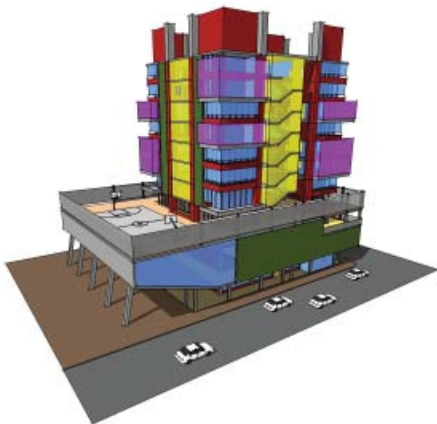


fig.9.39. Wrapping the recreational space around the existing structure



fig.9.40. New vertical circulation on northern facade

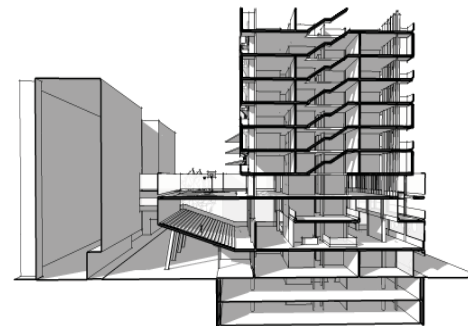


fig.9.41. 3-Dlmental section



fig.9.42. 3-Dlmental image of proposed structure with playful north and western screens

Phase 7

The addition of a transparent auditorium over the proposed pedestrian arcade was further explored (fig.9.46). Access to the auditorium from ground floor level by means of a ramp was explored, acting as a secondary entrance on the first floor for students (fig.9.46). The addition of two concrete staircases within the existing double volumes connecting the first and second floor levels was explored (fig.9.48). A running track, on the same level as the proposed basketball court, located on top of the rooftop space of the proposed auditorium that surrounds the existing structure was proposed (fig.9.47 and fig.9.48). A multi-purpose gathering space on the rooftop was revisited (fig.9.51). New vertical circulation with a atrium connecting all of the upper floors was explored (fig.9.50). Classroom spaces for the upper floors were reconsidered. The relationship of the proposed structure to the surroundings was investigated.

fig.9.43. 3-Dimensional image of proposed structure

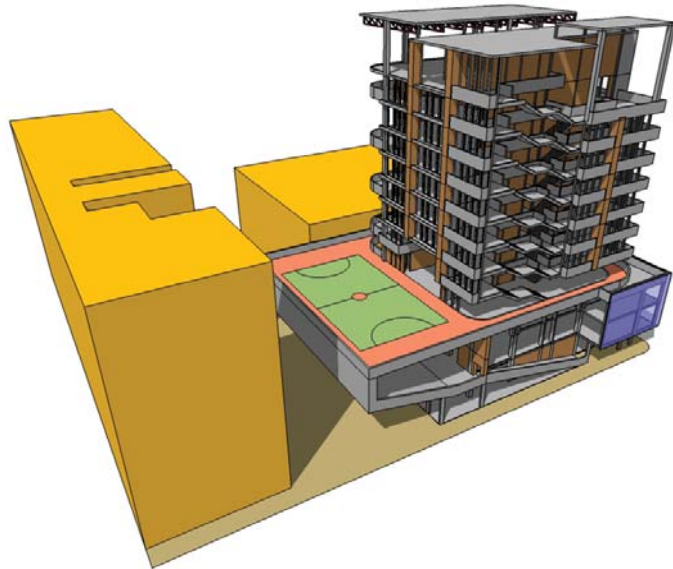


fig.9.44. 3-Dimensional image of proposed structure



fig.9.45. 3-Dimensional image of proposed structure

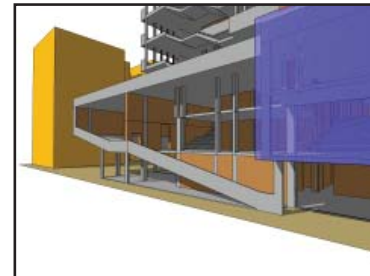


fig.9.46. Proposed ramp to auditorium over pedestrian arcade

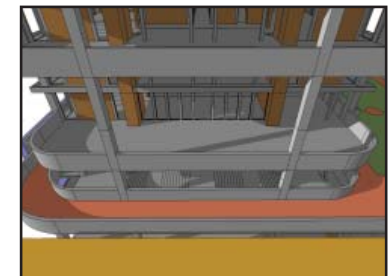


fig.9.49. Proposed running track around the building



fig.9.47. Proposed running track around the building

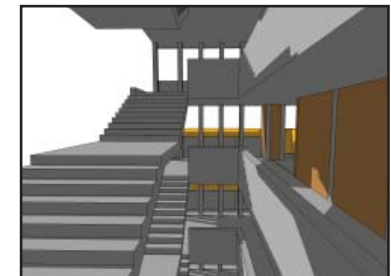


fig.9.50. New vertical circulation with central atrium



fig.9.48. Proposed staircases within existing double volumes



fig.9.51. Proposed rooftop gathering space

Phase 7 (continued)

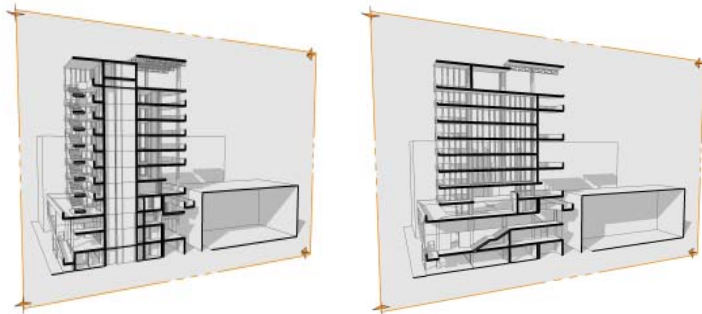
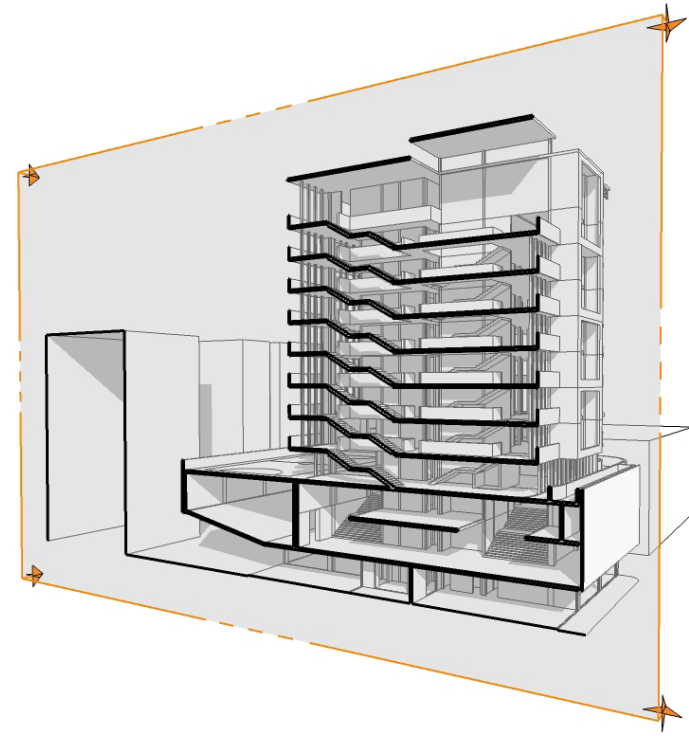
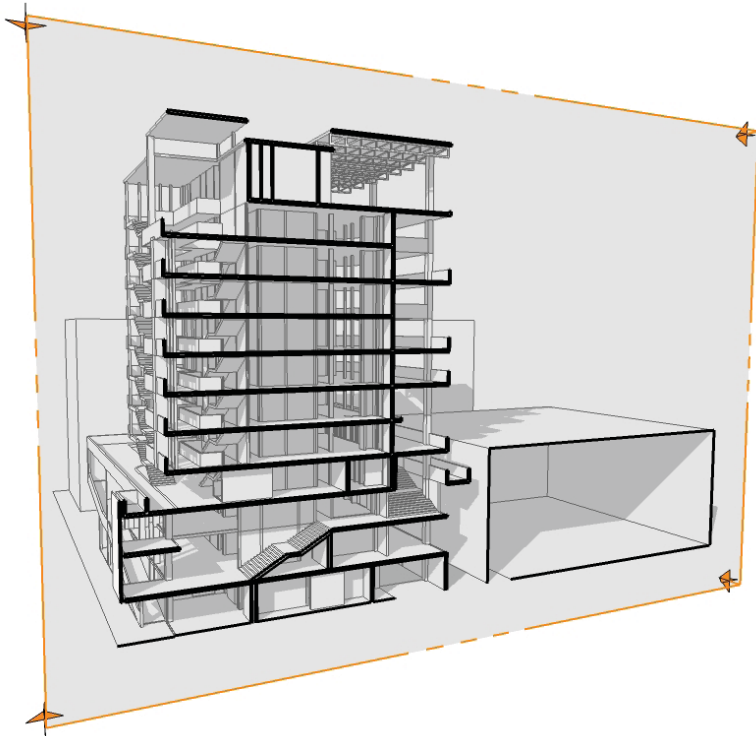


fig.9.52. 3-Dimensional sections of proposed structure (north-south)

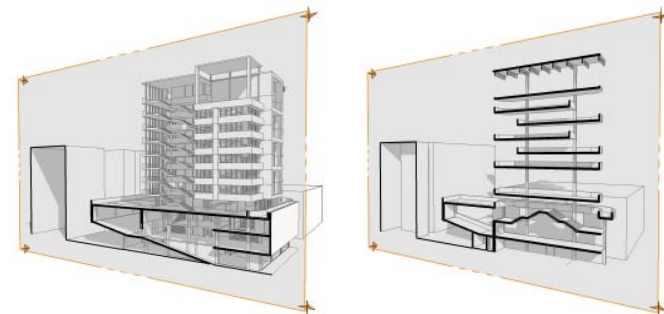


fig.9.52. 3-Dimensional sections of proposed structure (east-west)

Phase 8

The addition of a multi-purpose indoor sports hall on top of the proposed auditorium was explored (fig.9.56). This indoor sports hall consists of three volumes with a running track on the second level of the hall (fig.9.56). The ramp leading up towards the first level was further explored (fig.9.58). Inserting an urban amphitheater in the proposed pedestrian arcade was investigated (fig.9.56). The proposed staircases within the existing double volumes were further developed (fig.9.59). A screen that envelops the first and second floor levels on the western facade was investigated (fig.9.58). New circulation for the lower floors was proposed on the southern facade that might become future connection points with the adjacent vacant warehouse structure (fig.9.60). A new main vertical circulation shaft was proposed on the eastern side of the structure (fig.9.57). The use of steel, colored glazing and transparency was explored for this prominent feature of the building. A screen that could potentially accommodate multi-functional plug-on panels, consisting of solar panels or vegetation panels that envelops the northern and western facades of the upper floors was investigated (fig.9.61). Sectional explorations led to a better understanding of the interior volumes proposed (fig.9.63). An educational greenhouse/nursery was proposed for the rooftop space (fig.9.61). Rainwater collection and a translucent roof were explored. Classroom spaces for the upper floors were reconsidered.

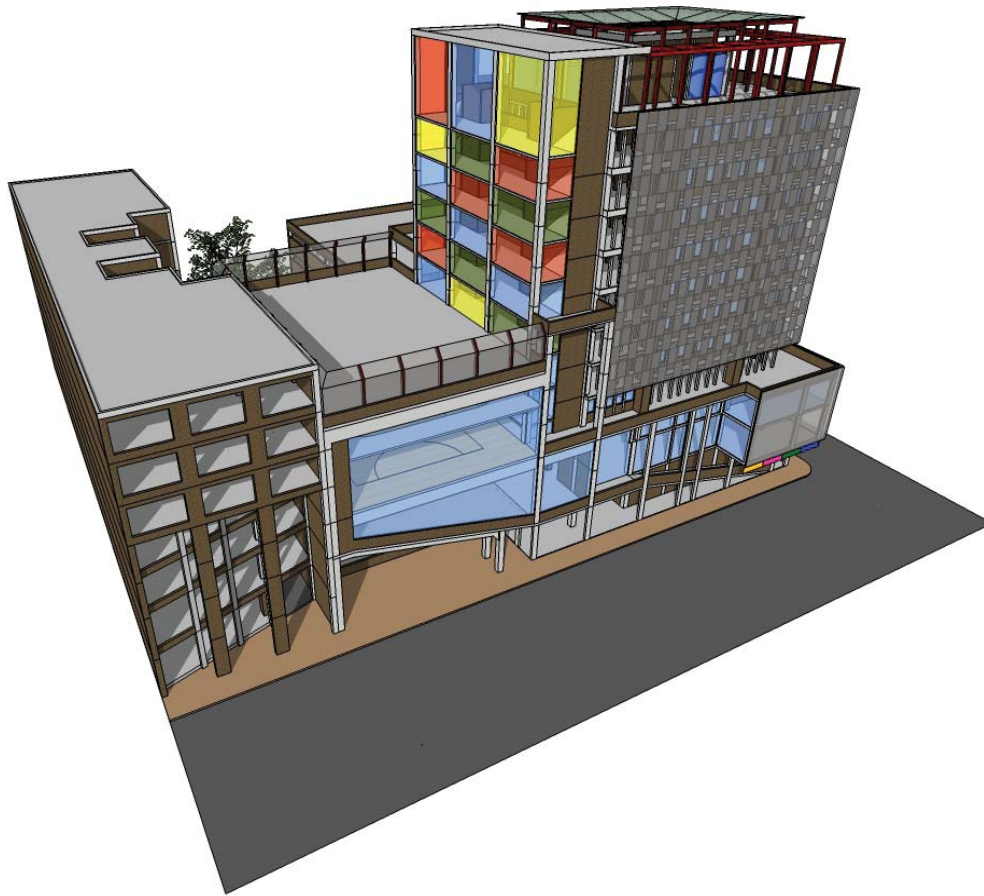


fig.9.53. 3-Dimensional image of proposed structure

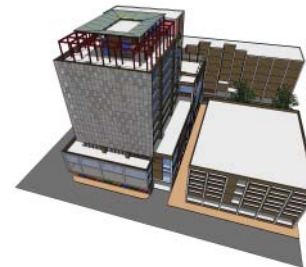


fig.9.54. 3-Dimensional image of proposed structure

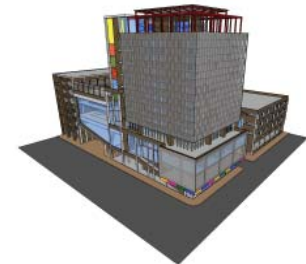


fig.9.55. 3-Dimensional image of proposed structure



fig.9.56. Proposed auditorium with indoor sports hall on-top

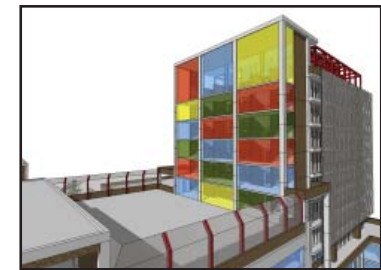


fig.9.57. New vertical circulation and rooftop recreation area



fig.9.58. Proposed western screen, connecting two levels

Phase 9

The proposed transparent auditorium was replaced by a multi-purpose indoor sports hall that could double-up as communal gathering space (fig.9.70). The idea of transparency in the urban environment was continually pursued (fig.9.68). The insertion of an urban amphitheater in the proposed pedestrian arcade was further explored (fig.9.67). The idea of physically connecting the proposed structure to the vacant warehouse structure on the southern facade was further explored (fig.9.73). The screening of the lower floors on the western facade and the use of a solid edge on the second floor that would function as office space investigated (fig.9.71). New vertical circulation was proposed (figs.9.69). This circulation would function like a spiral on the exterior of the structure, continuing upward to the rooftop space (fig.9.74). This would be constructed of a steel and treated as a plug-on structural element (fig.9.64 - fig.9.66). The rooftop space was being further developed as an educational greenhouse/nursery that is fully glazed with openable sections (fig.9.74). Classroom spaces for the upper floors were reconsidered. The idea of interior circulation and transparency to the classroom environment was investigated. Openings in the slab were proposed that would offer visual access to activity down into the classroom and up towards the interior circulation route (figs.9.72).



fig.9.64. 3-Dimensional image of proposed structure



fig.9.66. 3-Dimensional image of proposed structure

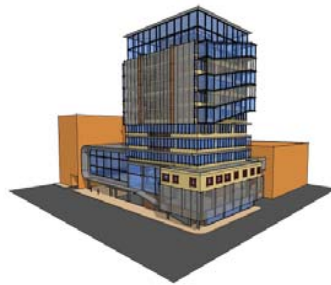


fig.9.65. 3-Dimensional image of proposed structure

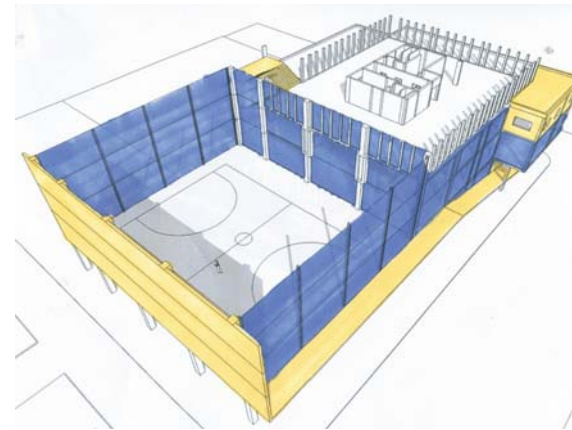


fig.9.68. Proposed transparency of indoor sports hall makes recreational activity visibly to the urban context



fig.9.69. Proposed new system for vertical circulation (exterior series of ramps connecting all the levels)

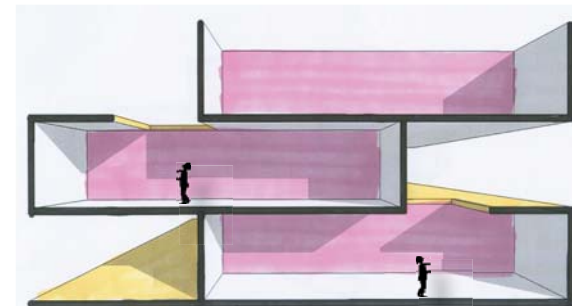
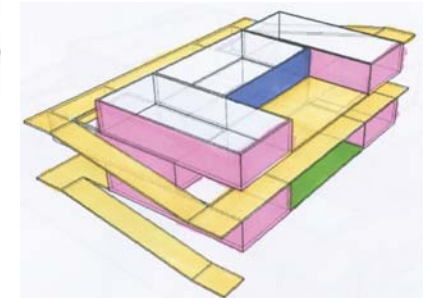


fig.9.72. Proposed classroom environments that step back on-top of each other to not only increase natural daylighting and ventilation conditions but also to create views to the various educational spaces

Phase 9 (continued)



fig.9.71. Proposed western screening and solid edge



fig.9.73. Proposed new circulation for lower floors and potential future connection area



fig.9.74. Proposed new circulation on the exterior as well as proposed educational greenhouse/nursery on the rooftop

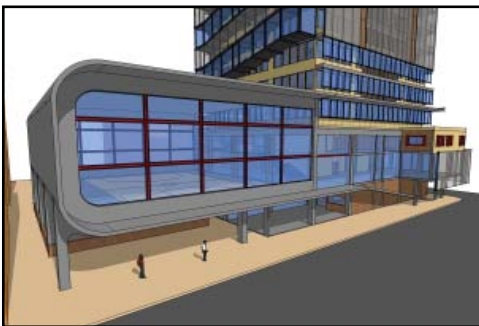


fig.9.70. Proposed multi-purpose indoor sports hall

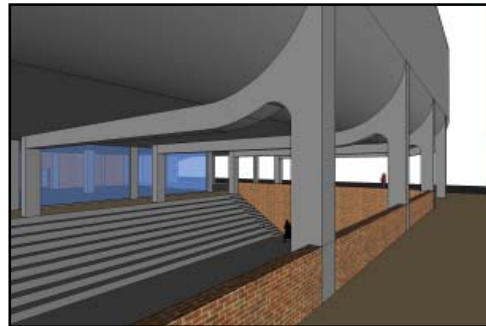


fig.9.67. Proposed urban amphitheater



fig.9.75. Model of proposed interventions in relation to the whole

Phase 10

The proposed multi-purpose indoor sports hall was further developed. Natural lighting was playfully controlled to enter the proposed gathering space from various directions (fig.9.81 and fig.9.88). An outdoor playing space was proposed for the rooftop of the hall, which offered views from the rooftop into the hall (fig.9.80). The back of stage was proposed to act as a potential background, but have openings that allow for transparency to the urban context (fig.9.81). The public space in front of the proposed Apollo School was defined by sculptural concrete work overhead (fig.9.80). The proposed pedestrian arcade running underneath the hall was further developed and more natural light allowed to reach it (fig.9.82 and fig.9.92). The urban amphitheater was further developed. The ramp leading to the student entrance on the first level was further developed (fig.9.79 and fig.9.90). The main visitor entrance to the school was defined by opening up the existing facade and stepping back the user interface of the building (fig.9.85 and fig.9.91). This effectively widened the Church Street pedestrian route. This space became visually and physically controlled from the interior and acted as a safe waiting area for students awaiting their guardians.

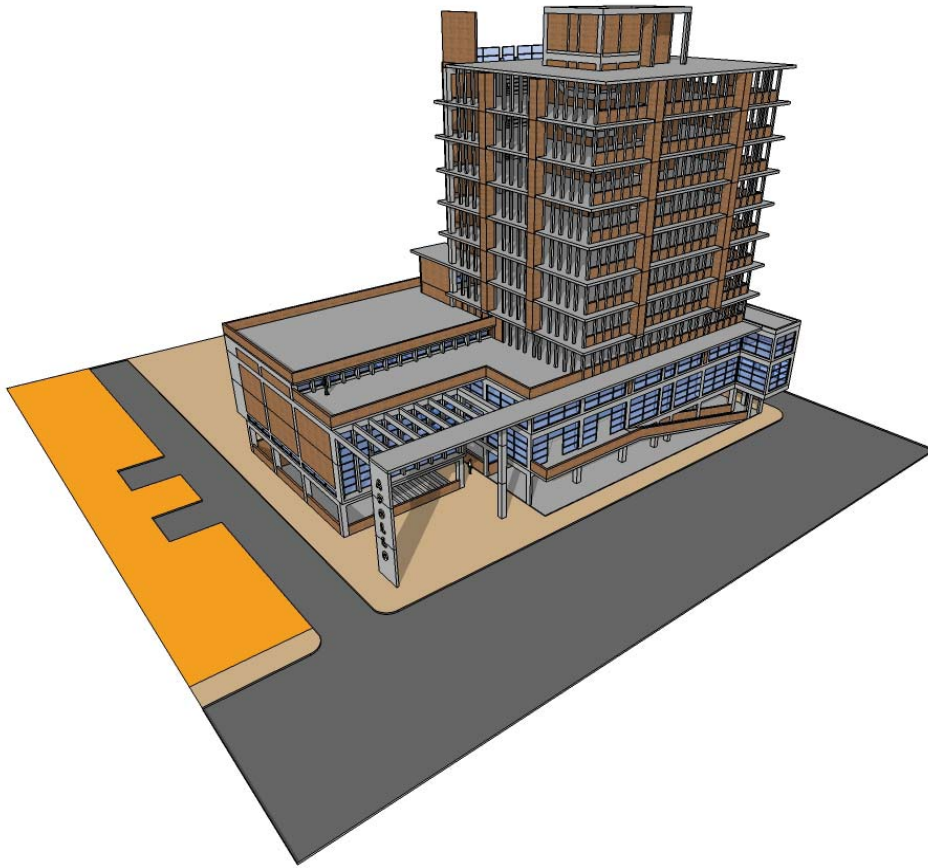


fig.9.76. Bird's eye view of 3-dimensional proposed structure from the north-eastern direction



fig.9.77. Bird's eye view of 3-dimensional proposed structure from the north-western direction



fig.9.78. Bird's eye view of 3-dimensional proposed structure from the south-western direction



fig.9.82. Increased volume allows more natural light to reach pedestrian arcade on ground floor



fig.9.80. Sculptural concrete work overhead defines the quality of pedestrian space below

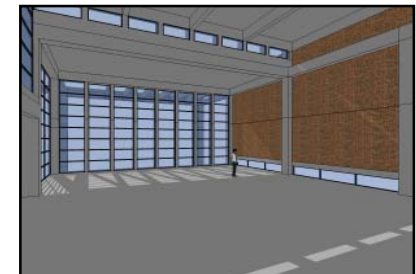


fig.9.81. Natural light playfully entering the multi-purpose hall from different directions and heights

Phase 10 (continued)

Concrete staircases proposed for the double volumes of the first to second floor were further developed to offer opportunities for formal and social seating (fig.9.87 and fig.9.90). Openings in the first floor slab, below the proposed staircases, allowed for visual contact to the ground floor (reception), as well as the exterior waiting area proposed (fig.9.90). Circulation on the lower floors of the southern facade was further developed to become partial cantilevering glass boxes (fig.9.84 and fig.9.90)). The boxes were proposed to be future connection areas to the adjacent vacant warehouse structure. New vertical circulation for the upper floors was proposed on the southern facade. Social staircases entered each level from the south and edged a communal gathering space on each classroom level (fig.9.86). The social staircases offered opportunities for formal and social seating.

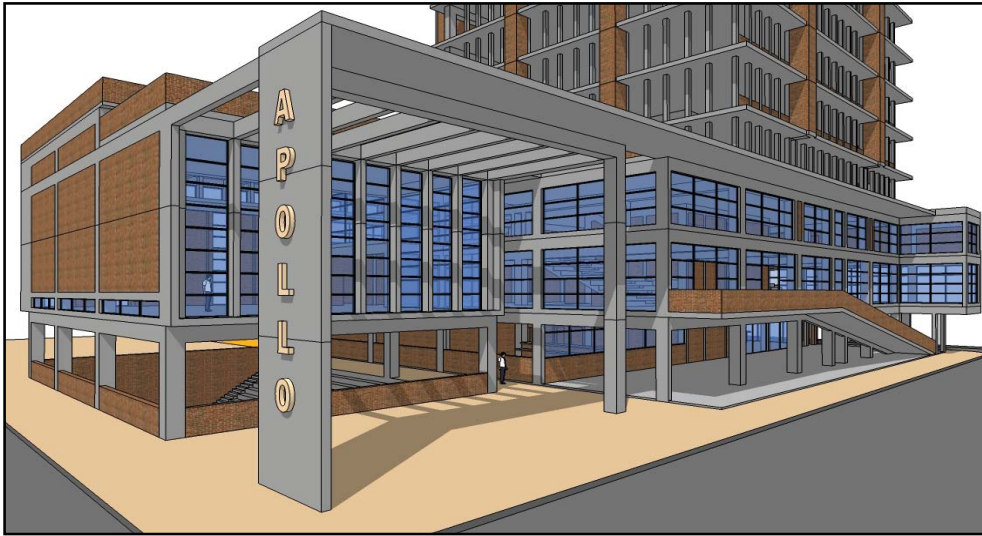


fig.9.79. Proposed public interface of the Apollo School with sculptural concrete work framing the transparent facades visible from the pedestrian routes and spaces on ground floor



fig.9.84. New vertical circulation introduced at the lower floors on the southern facade

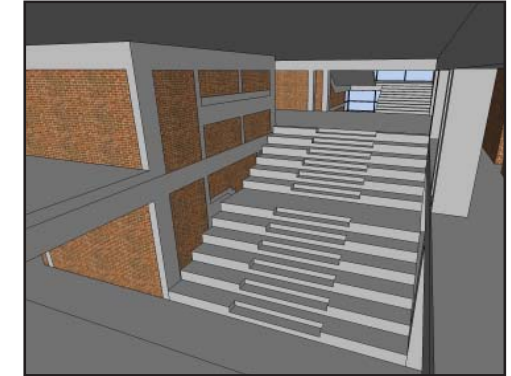


fig.9.87. New concrete staircases in existing double volumes that become socializing spaces



fig.9.85. Opening of structure to widen pedestrian route at Church Street interface to create safe passive surveillance area



fig.9.83. Proposed back of stage on southern facade

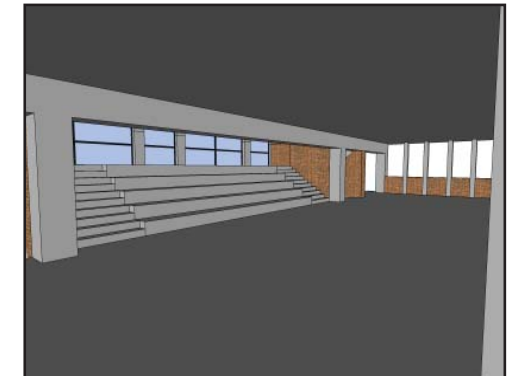


fig.9.86. Social seating area that edges communal gathering space

Phase 10 (continued)

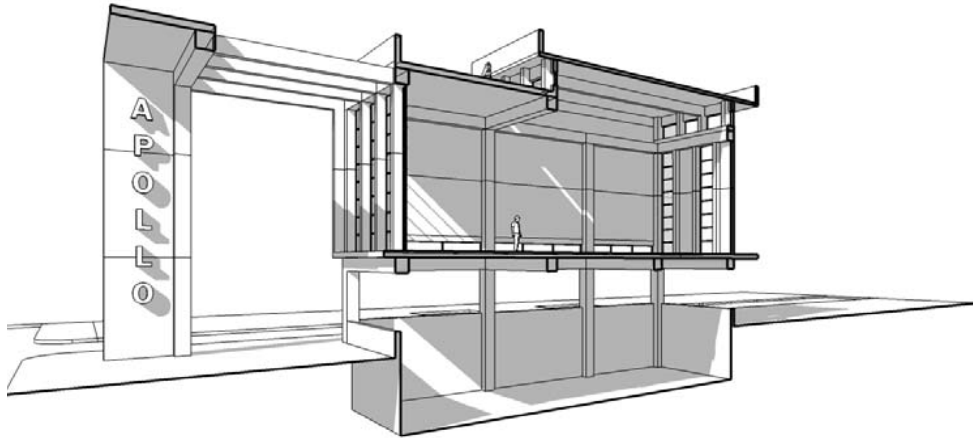


fig.9.88. 3-Dimensional Section (north-south) showing multi-purpose indoor sports hall with rooftop playground above and informal performance space below

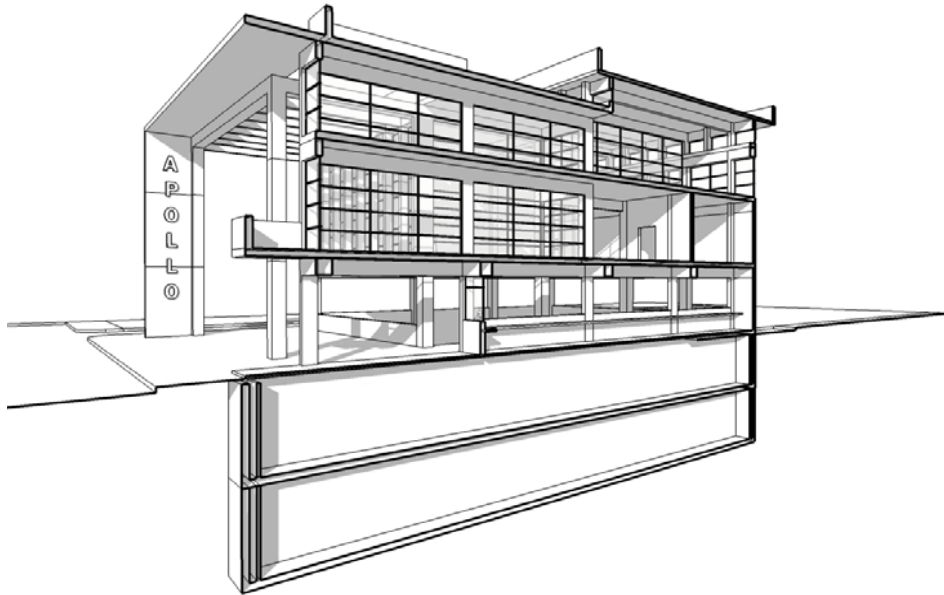


fig.9.89. 3-Dimensional Section (north-south) showing indoor playing areas, ground floor cooking school interface and basement levels below

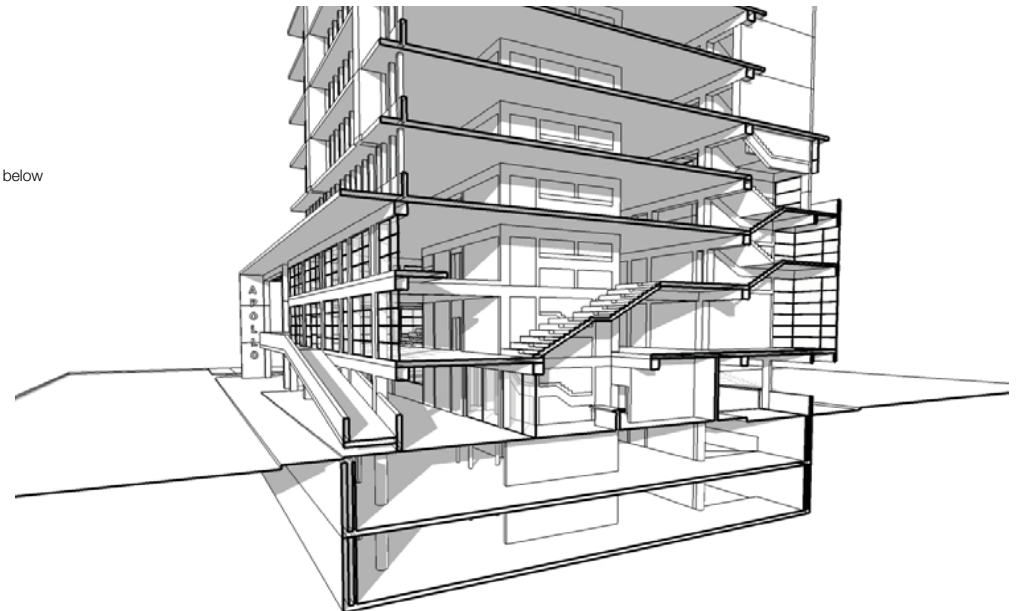


fig.9.90. 3-Dimensional Section (north-south) showing ramp leading to first floor student entrance, social staircase connecting the first and second floor indoor playing areas, reception area on ground floor and indoor volumes that has views to the reception area and extended Church Street pedestrian route

Phase 10 (continued)

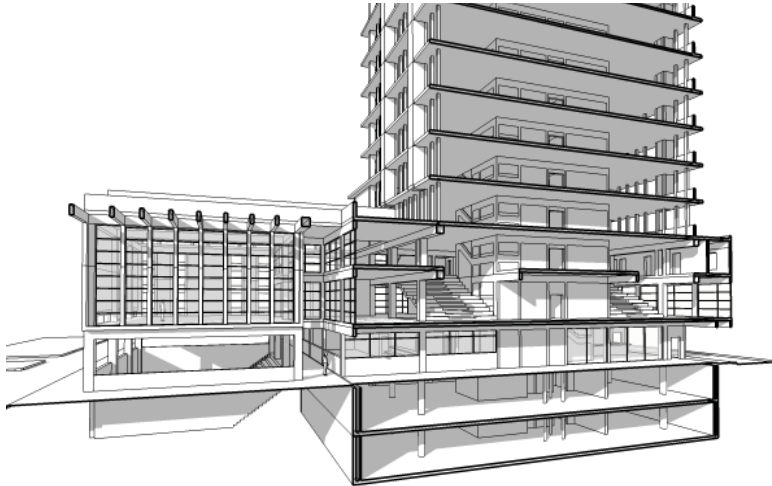


fig.9.91. 3-Dimensional Section (east-west) showing sculptural concrete work overhead, increased volume of pedestrian walkway, indoor playing areas and social staircases, basement levels below and educational spaces above

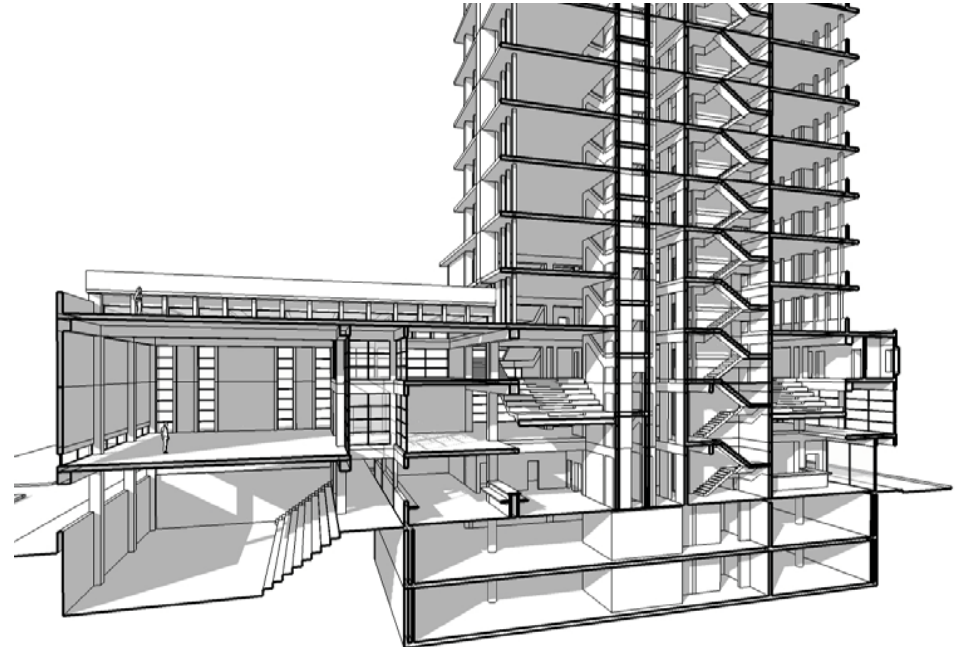


fig.9.92. 3-Dimensional Section (east-west) showing multi-purpose indoor sports hall with rooftop playground above it offering views into the gathering space, urban amphitheater below it, cooking school interface on the eastern ground floor, reception interface on the western ground floor and vertical circulation within the concrete service core of the existing structure

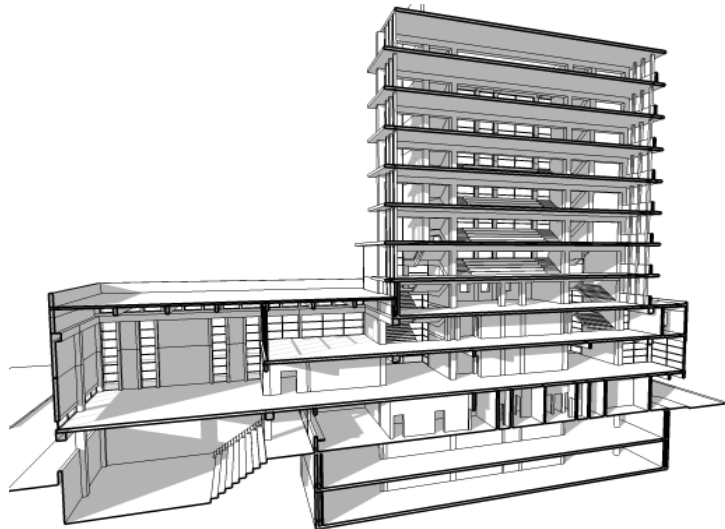


fig.9.93. 3-Dimensional Section (east-west) showing multi-purpose indoor sports hall with rooftop playground above it, urban amphitheater below it, basement levels below street level and educational spaces on the upper floors

Phase 11

The proposed multi-purpose indoor sports hall was replaced by a semi-transparent auditorium over the pedestrian arcade (fig.9.97 and fig.9.108 - fig.9.110). The orientation of the auditorium was altered. The sloped seating offered views below from the interior to the pedestrian arcade (fig.9.98). It was also proposed that views into the auditorium would be possible from the socializing and library spaces (fig.9.110). Informal seating was arranged in the pedestrian arcade for socializing and views towards the informal performance platform proposed (fig.9.98 and fig.9.107). The proposed ramp was developed to continue and connect to the backstage area (fig.9.99 and fig.9.108). The western screening of the lower floors was further explored in terms of its materiality (fig.9.100 and fig.9.108 - fig.9.109). The proposed cantilevering glass boxes for circulation of the lower floors on the southern facade was further developed (fig.9.101 and fig.9.111). The parapets in the middle of these staircases were stepped to form arm-resting platforms and offer views into the social activity of the lower floors. The rooftop space of the auditorium was developed as a full size exterior basketball court (fig.9.102 and fig.9.111). The edges were proposed to be roofed with seating provided all round. Each level was proposed to consist of a transitional space

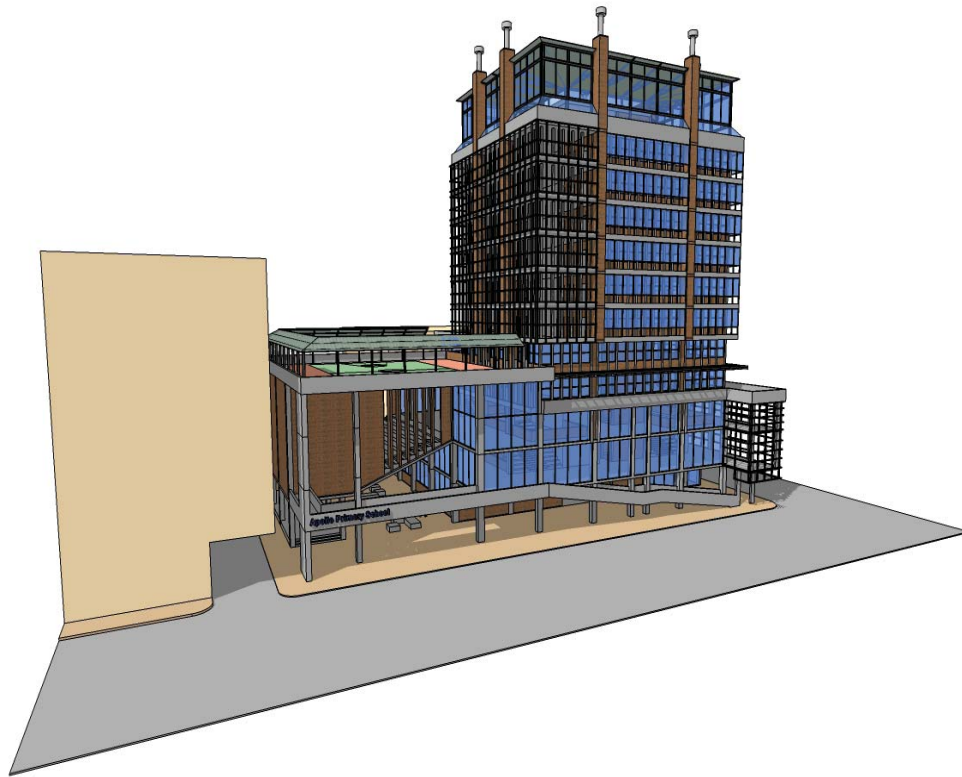


fig.9.94. 3-Dimensional image of proposed structure



fig.9.95. 3-Dimensional image of proposed structure



fig.9.96. 3-Dimensional image of proposed structure

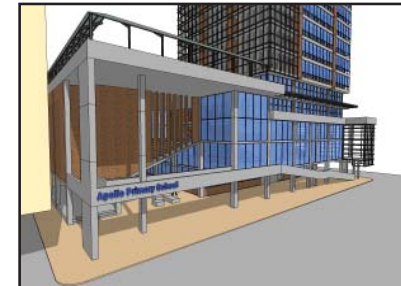


fig.9.97. New public interface and semi-transparent auditorium



fig.9.98. Sloped seating area offers views from inside outward



fig.9.99. Proposed ramp for students to entrance on first floor

Phase 11 (continued)

from the central circulation on the northern and southern sides, two formal classroom areas on the western side, a communal group learning area in-between the classrooms, and a communal open-air learning environment on the eastern side (fig.9.112). This open-air learning environment was proposed to be edged by a steel mesh, that would not only secure a safe environment, but also offer the opportunity for vertical gardening (fig.9.103). Existing glazed sunscreen devices on the northern, western and southern was proposed to be left in place (fig.9.104). The rooftop space was further developed as an educational greenhouse/nursery (fig.9.105 and fig.9.113), with rainwater collection proposed to provide the grey water needs of the structure. Angled glazing on the perimeter allowed more natural light to enter onto the proposed work surfaces. Existing brick columns on the perimeters of all the upper floors, was opened to act as natural ventilation ducts. At the rooftop level they were extended, and “whirly bird” devices placed on top to extract warm air from all of the classroom spaces (fig.9.105).

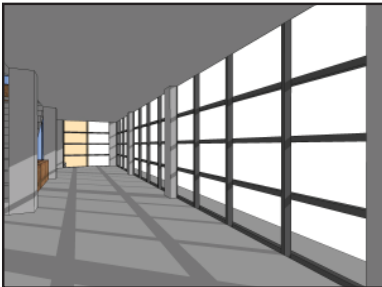


fig.9.100. Western screening of lower floors



fig.9.103. Eastern screening of open-air learning spaces



fig.9.101. Cantilevering glass boxes and stepped parapets



fig.9.104. Existing glazed sunscreen panels

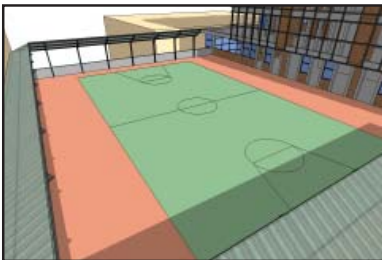


fig.9.102. Rooftop basketball court



fig.9.105. Proposed rooftop greenhouse/nursery

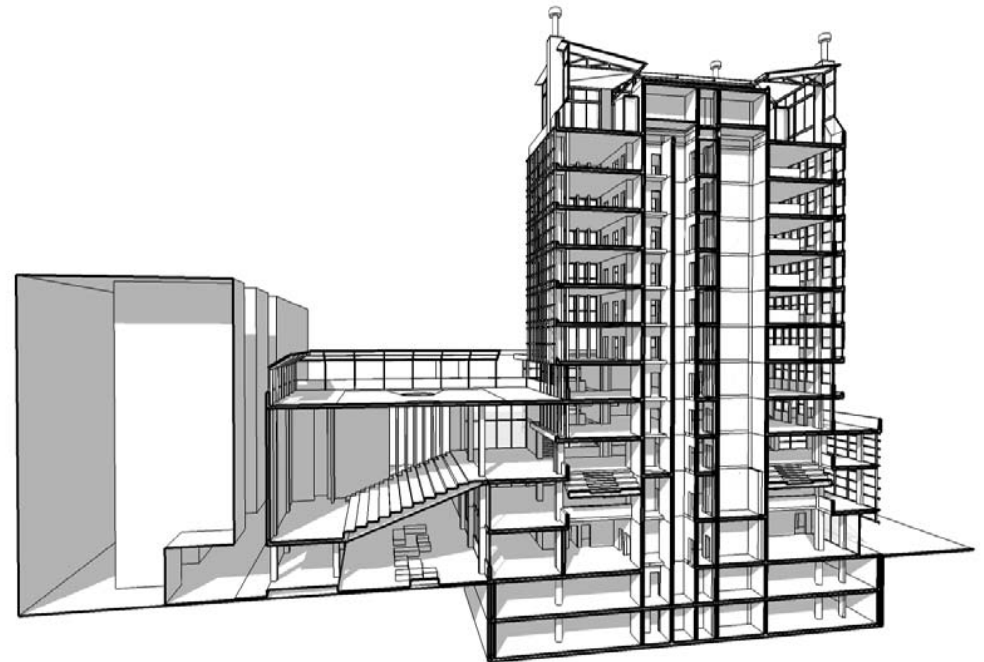
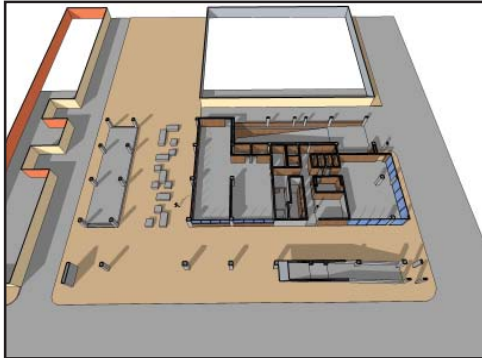


fig.9.106. 3-Dimensional Section (east-west)



Phase 11 (continued)

fig.9.107. Ground Floor



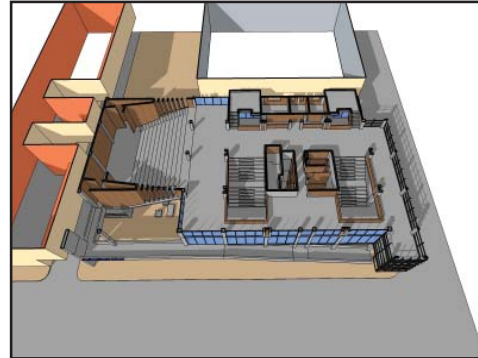
Proposed Reception on western side and Cooking School on the eastern side. Informal seating provided for pedestrian arcade.

fig.9.108. First Floor



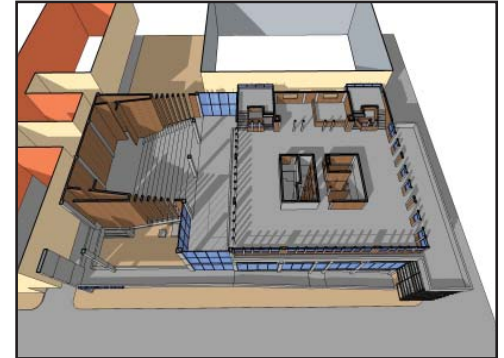
Proposed student entrance from ramp, indoor socializing area, rest rooms, and backstage area.

fig.9.109. Second Floor



Proposed auditorium entrance, personnel room, administration offices, and indoor socializing space.

fig.9.110. Third Floor



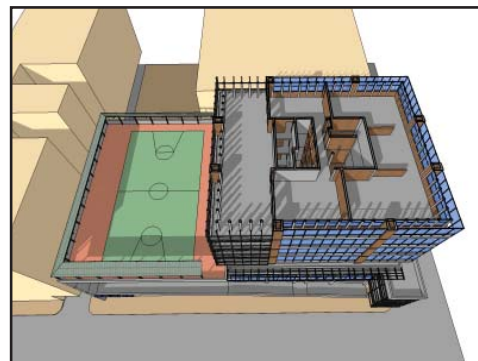
Proposed library level with views into the auditorium and socializing spaces below.

fig.9.111. Fourth Floor



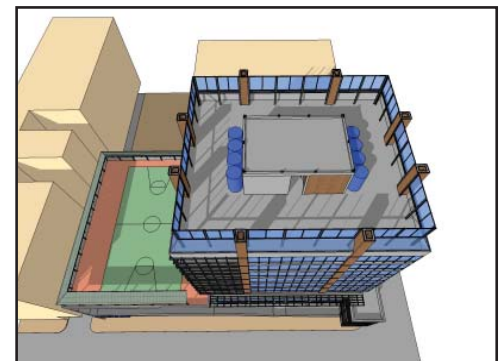
Proposed rooftop playground, roofed seating area, a tuck shop, and rest rooms.

fig.9.112. Typical Upper floors



Proposed transitional, classrooms, group learning, and open-air learning spaces.

fig.9.113. Rooftop



Proposed educational greenhouse/nursery, and rainwater collection and storage space.



Phase 11 (continued)

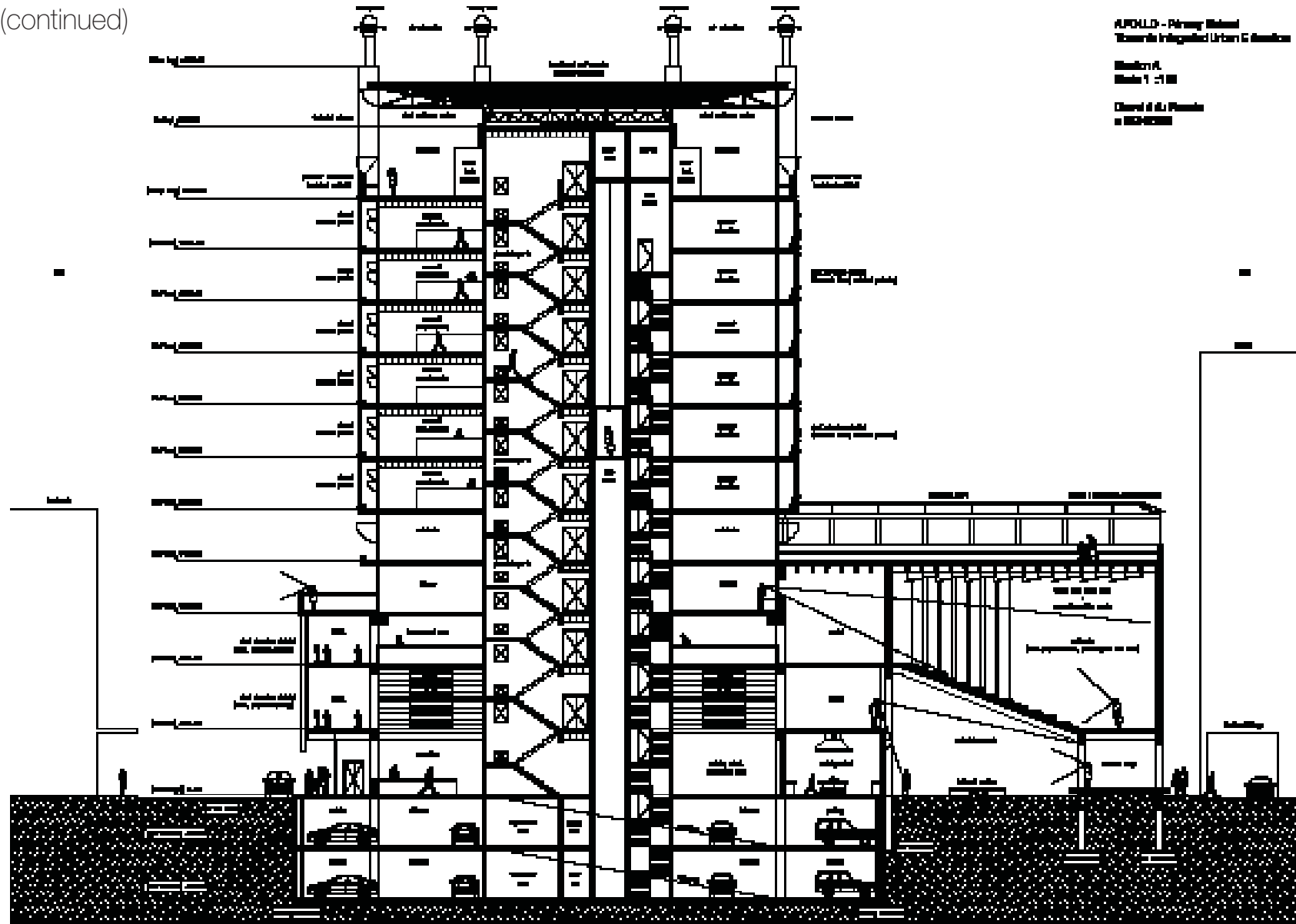


fig.9.114. Section of proposed structure

Phase 11 (continued)

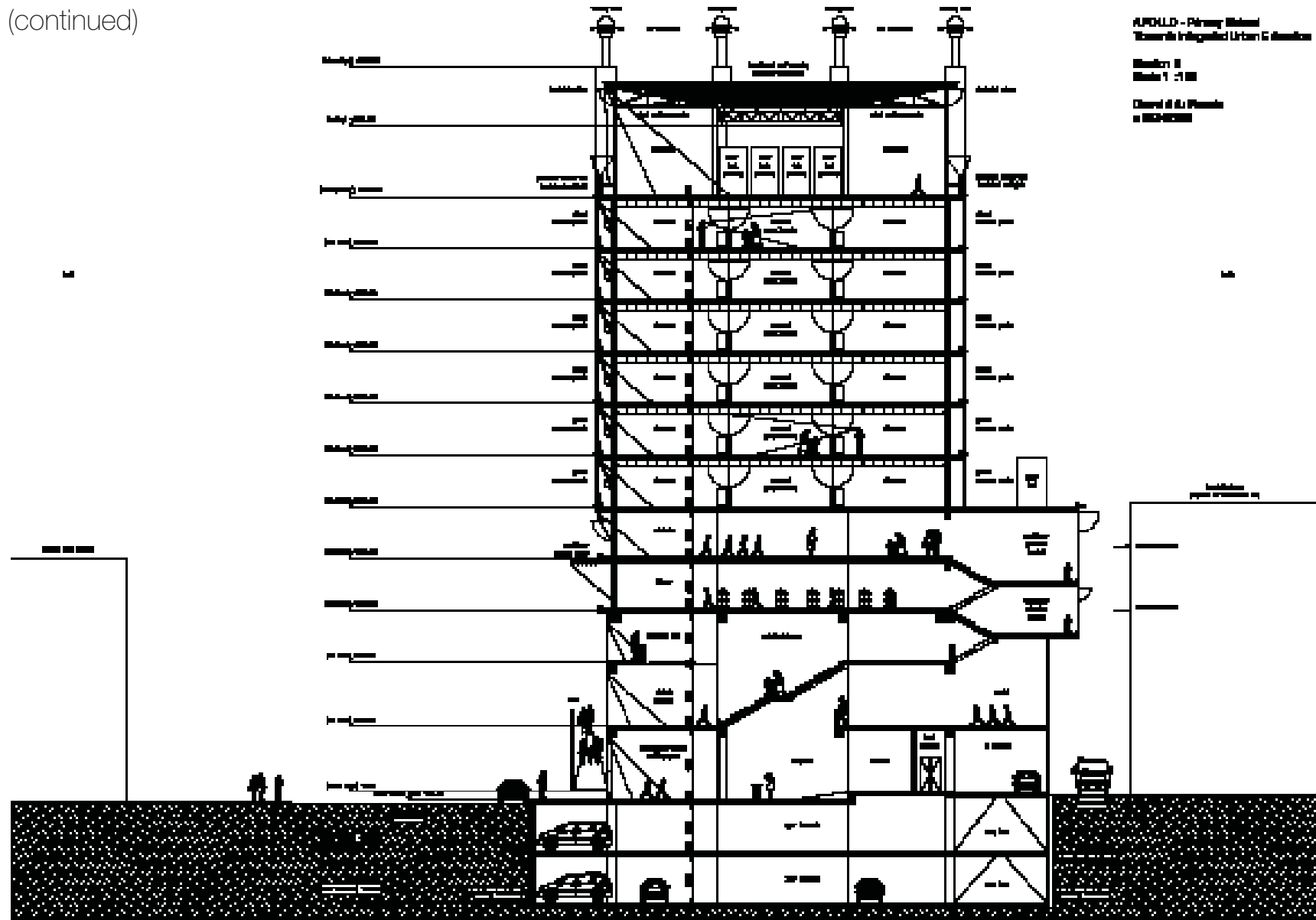


fig.9.115. Section of proposed structure

Final Design Proposal

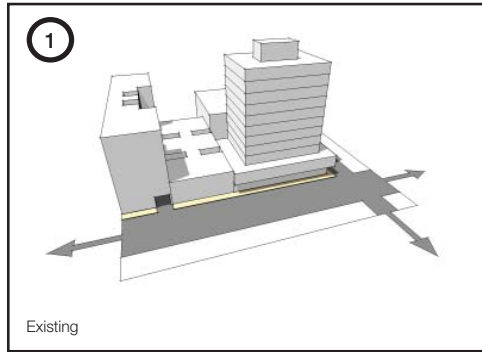


fig.9.116. Existing building adjacent to the Apollo Centre

1. Demolish adjacent structure

The structure adjacent to the Apollo Centre is proposed to be demolished. It is in a visible poor condition and contextually out of scale. Although it is being occupied by a tertiary educational institution, it is proposed that its function should be relocated to remain within the educational precinct.

A pedestrian arcade is proposed that connects Church Street with Pretorius Street. It is additionally proposed that the main entrance to the school will be directly from the proposed arcade.

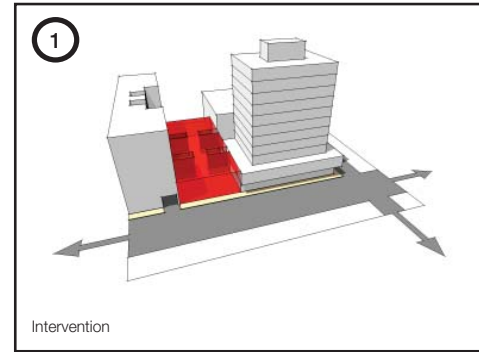


fig.9.117. Building proposed for demolition

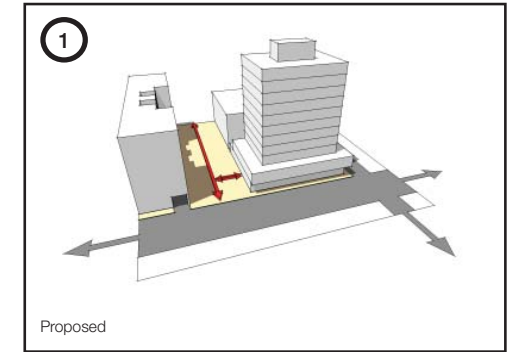


fig.9.118. Introduction of pedestrian arcade

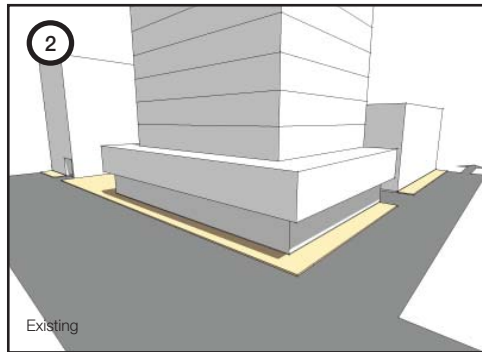


fig.9.119. Existing pedestrian interface of the Apollo Centre

2. Increase Pedestrian Scale of Church-and Du Toit Street

It is proposed that the pedestrian scale be enlarged at the Church-and Du Toit Street interface. At Church Street the existing ground floor facade is opened and stepped back, the cantilevering first floor demolished, and the second and third floor extended to the previous cantilevering line of the first floor. At Du Toit Street the existing ground floor facade is opened and stepped back, the cantilevering first floor kept, and the second floor extended to the cantilevering line of the first floor.

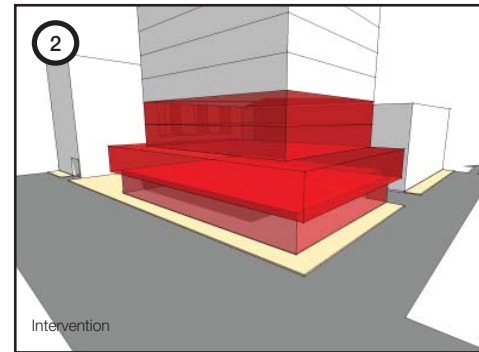


fig.9.120. Proposed area of intervention

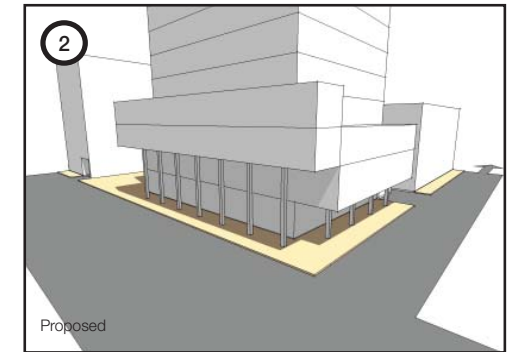


fig.9.121. Proposed new pedestrian interface

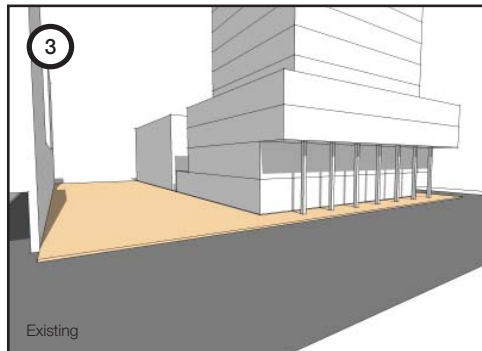


fig.9.122. Existing eastern facade and proposed pedestrian arcade

3. Add Auditorium over Pedestrian Arcade

It is proposed that a multi-purpose auditorium/theater be added above the proposed arcade. The enlarged Church Street pedestrian scale is continued to form the northern facade of the proposed auditorium. Backstage entry is located to the south on the first floor, and audience entry located to the north on the second floor.

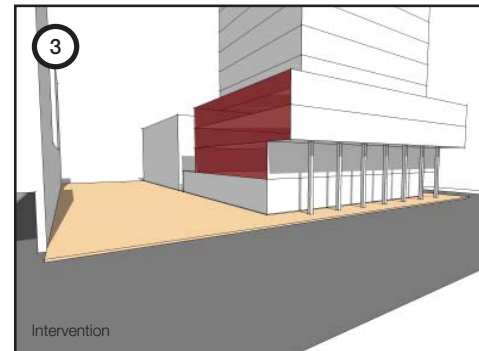


fig.9.123. Proposed area of intervention

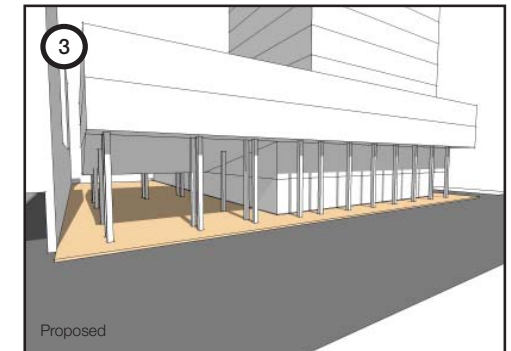


fig.9.124. Proposed multi-purpose auditorium over pedestrian arcade

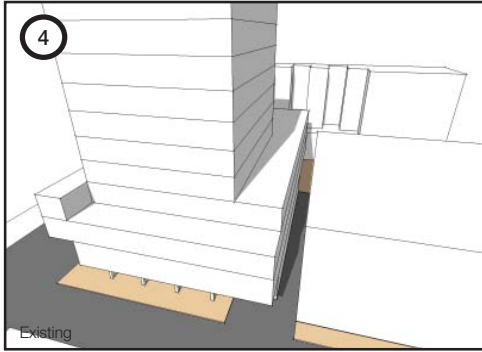


fig.9.125. Existing western and southern facades

4. Add new (southern) Circulation

It is proposed that new circulation be added to the southern facade of the structure, in the form of cantilevering glass boxes. These stairs will connect the social spaces of the second to fourth floors.

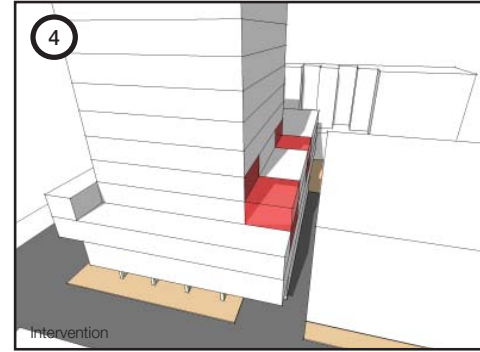


fig.9.126. Proposed areas of intervention

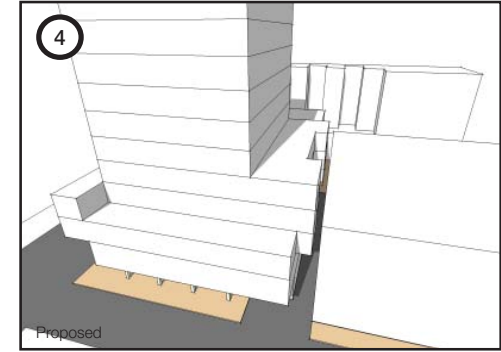


fig.9.127. Proposed new circulation areas on the southern facade

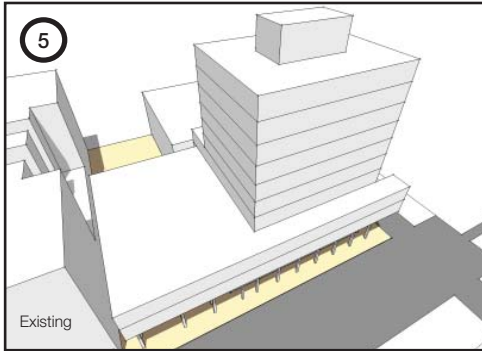


fig.9.128. Existing rooftop of proposed auditorium

5. Add Rooftop Recreation Space

The rooftop of the proposed auditorium and altered Apollo structure is proposed to be used for outdoor recreational activity. A roofing structure is proposed that will provide shading to the proposed outdoor spaces. A full-size basketball court is proposed with covered seating provided on the eastern side. Structural fencing is proposed on the periphery to safeguard the rooftop space.

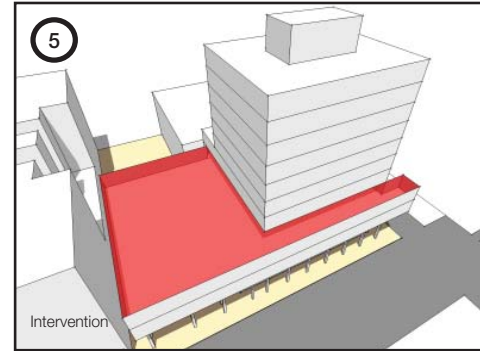


fig.9.129. Proposed area of intervention

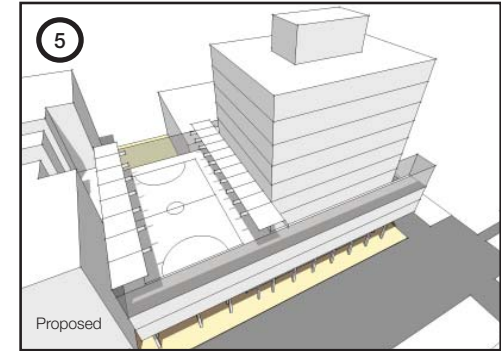


fig.9.130. Proposed rooftop playground and roof covering

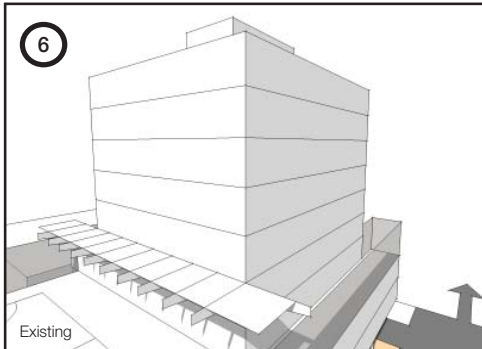


fig.9.131. Existing upper floors proposed for classroom areas

6. Create Open-Air Educational Spaces

It is proposed that from the seventh floor upwards, the eastern side of each floor be opened to create open-air educational environments. Two outdoor double volumes are hereby created. These spaces may be used for formal or informal education purposes.

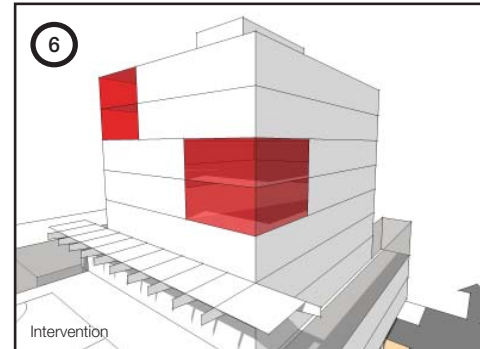


fig.9.132. Proposed areas of intervention

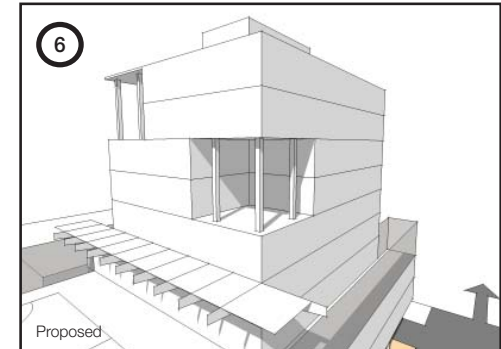


fig.9.133. Proposed exterior double volume areas

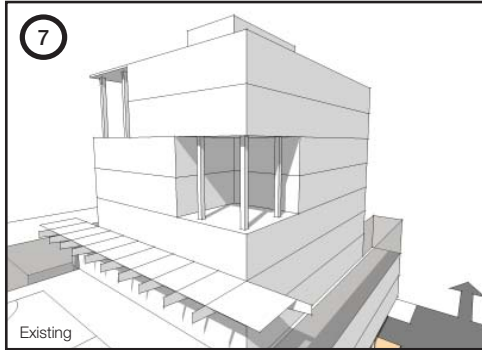


fig.9.134. Existing upper floors with double volumes proposed

7. Add Eastern Vertical Gardening Screen

It is proposed that a vertical structural screen is added to the eastern side of the structure. Vertical gardening will be encouraged to grow the full area of the screen.

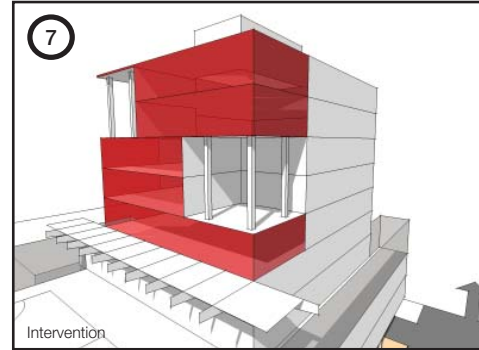


fig.9.135. Proposed area of intervention

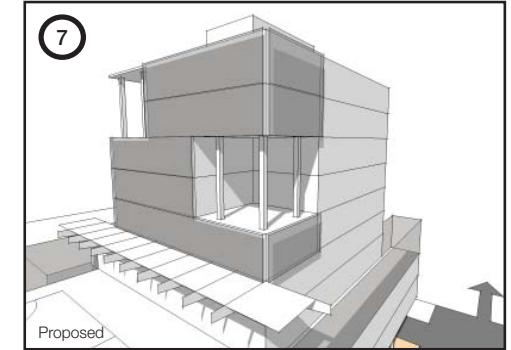


fig.9.136. Proposed vertical gardening screen on eastern side

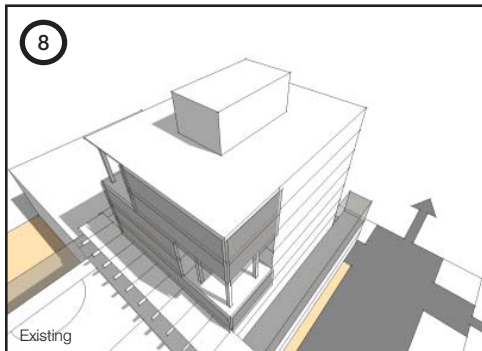


fig.9.137. Existing rooftop of the Apollo Centre

8. Add Rooftop Natural Sciences Room

An Natural Sciences Room is proposed for the rooftop space. A translucent roof surface is proposed that will harvest rainwater, and be available for use for the watering of plants, the proposed vertical gardening screen,

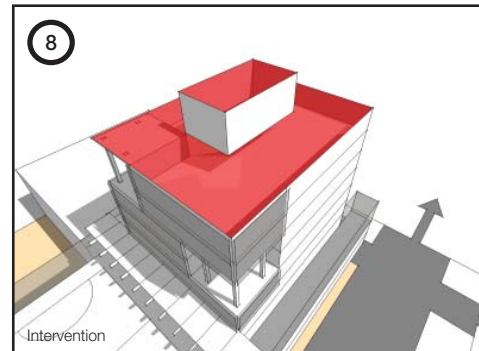


fig.9.138. Proposed area of intervention

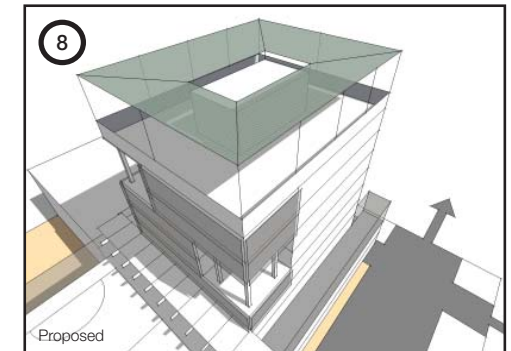


fig.9.139. Proposed Natural Sciences Room for the rooftop space



Proposed Accommodation Schedule

- Reception/Security

The main pedestrian entrance to the building will be situated on the eastern side of the ground floor, directly from the proposed pedestrian arcade. A visitors waiting area will be located close to the reception desk.

Secure access to the basement levels from Du Toit Street, will be controlled separately from the reception area.

- Culinary Classroom

A culinary classroom will be situated on the western side of the ground floor, directly against the pedestrian walkway of Du Toit Street. The class will be able to accommodate twenty students and one teacher at a time. The edges of the room will mostly be transparent in order to make the educational process visible to the public passing the activity. A visual connection will also be established with the socializing area of the school on the first floor. Cold, dry and cutlery storage areas will be provided.

- Circulation

The main circulation will take place in the service core of the Apollo School. An existing ventilation duct makes way for a larger circulation shaft. This circulation shaft will continue from ground floor to the rooftop space. Strategic openings in the new circulation shaft will allow visual access to activity on each floor.

Broad socializing staircases will be added from the ground to the fourth floor. These staircases are will connect all of the indoor socializing spaces of the lower floors, but are in themselves socializing spaces with seating provided.

The existing elevator shaft will be kept as is with its three elevator booths. These are for the exclusive use of staff, except in the case of emergencies. An existing fire escape route will also be kept as is with only staff allowed to use it, except in the case of

emergencies.

- Multipurpose Auditorium

A Multipurpose Auditorium is proposed to be added to the eastern side of the existing structure, over the newly introduced pedestrian arcade. The Auditorium will host school gatherings and school plays.

It is proposed that the Auditorium be available for use by the community and tertiary colleges in the area as a lecturing and performance venue on a cross-programming basis.

- Socializing/Recreational Spaces

Indoor socializing spaces are proposed to occupy the first and second floor areas with its double volume spaces. It will be of an open and adapting nature with moveable, playful elements and objects scattered throughout the area.

A roofed indoor/outdoor area is proposed for the fourth floor of the Apollo School that will establish the transitional space between indoor and outdoor socializing and recreation. This area is proposed to be used as a seating area with a tuck shop available.

An outdoor recreational area is proposed for the rooftop of the multipurpose auditorium. This recreational area will consist of a full size basketball court with covered seating on the periphery of the rooftop space.

- Library

A library will be situated on the third floor of the Apollo School. It will overlook the indoor socializing spaces. Areas will be allocated for book shelves, individual and group working areas, as well as computer and printing facilities.

It is proposed that the library be open to the community and tertiary colleges in the area on a cross programming basis.

- Personnel Room

A personnel room will be situated on the northern platform of the second floor, overlooking the indoor socializing areas. The edges will be treated mostly transparent to allow for maximum visibility and control. Sound proofing will provide privacy for the staff.

- Principals Office

The principals office will be situated on the same floor as the personnel room. Access to the principals office will happen through the administration room.

- Administration Room

The administration room will be situated on the same floor as the personnel room, and directly next to the principals office. Access to the principals office will happen through the administration room. Access to the sick room will also happen through the administration room.

- Sick rooms

A sick room will be situated next to the administration room. Access to it will through the administration room. The sick room will be able to accommodate two children and will feature an inclusively designed ablution facility.

- Ablution Facilities

Ablution Facilities is situated on various places throughout the structure. Existing ablutions are situated on the landing space of the main circulation shaft, as well as the fire escape circulation shaft. New ablution facilities are proposed for the ground floor, the first floor, the sick room on the second floor, and the socializing area on the fourth floor. Staff will make use of the ablution facilities located within the fire escape route.

- Classrooms

Six floors of the Apollo School will be dedicated to classroom areas. The fifth and sixth floor will accommodate two classrooms spaces for two grades each. The seventh to tenth floors will all accommodate two classroom spaces for one grade per floor, with the aging children moving to the higher floors.

It is proposed that every floor upwards from the seventh one, will consist of a transitional space between the circulation shaft and the classroom space, an instructional area, an individual/group working area, an outdoor learning area, and an outdoor double volume space that will either spatially connect it to the floor above or the one below.

- Rooftop Natural Sciences Room

A Natural Sciences Room will be situated on the rooftop. A glazed structure with corrugated roof-sheeting will be constructed that collects rainwater and allow for an abundance of natural lighting and ventilation conditions. This will be an educational space that will act as a laboratory for science, biology and urban agriculture. Food that is harvested here can potentially be used in the culinary school situated on the ground floor. Rainwater is proposed to be used for the vegetation, but potentially also for grey water.

Diagrammatic indication of vertical functions in the Apollo School

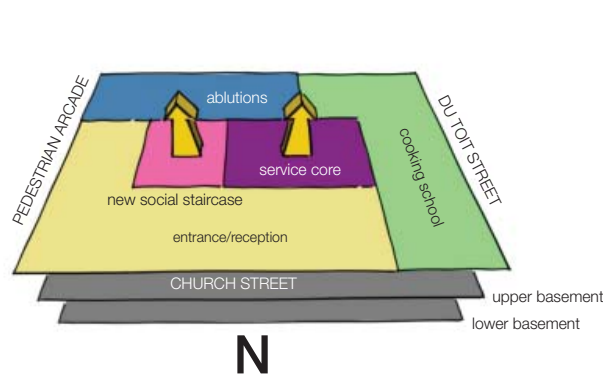


fig.9.140. Ground Floor - The main entrance to the Apollo School will happen from the proposed pedestrian arcade on the eastern side. A reception area is provided together with a waiting area for visitors. Studying areas are provided in the reception space. A social staircase is proposed that will be used as the main access for students to the school, as well as visitors to the auditorium. Ablution facilities for both genders as well as the disabled are provided. A cooking school is located on the western side with visual access to the public but physical access only possible from the inside.

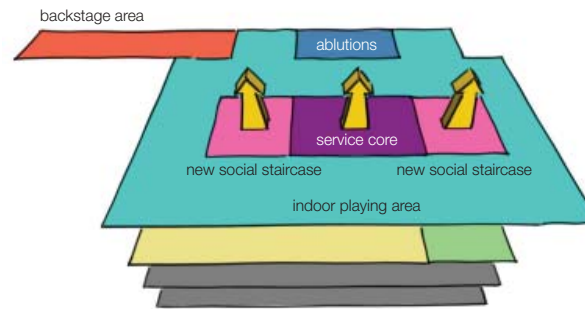


fig.9.141. First Floor - Access to the first floor will mainly take place from the newly proposed social staircase, but is also possible from the increased circulation shaft in the service core as well as the elevators. The predominant function of the first floor is to accommodate informal indoor recreation. Ablutions are provided. Access to the backstage area will also happen from this level.

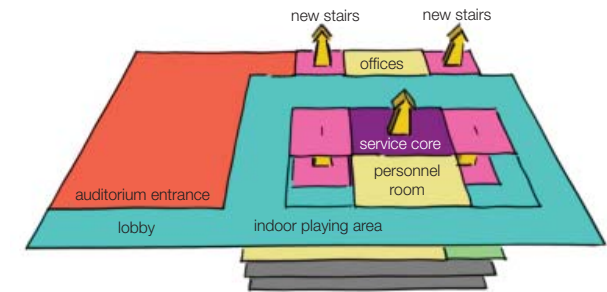


fig.9.142. Second Floor - Access to the second floor will mainly happen from the newly introduced social staircases on either side of the service core, but is also possible from the increased circulation shaft or elevators. This floor also accommodates space for informal indoor recreational activities. A personnel room is placed centrally to have views into the indoor socializing areas. An administration room, principal's office and sick room are placed near the personnel room. Two new staircases are proposed on the southern facade that will protrude from the facade and appear as cantilevering glass boxes. The main entrance to the auditorium is located on this floor. Part of the indoor playing area will function as the lobby for the auditorium.

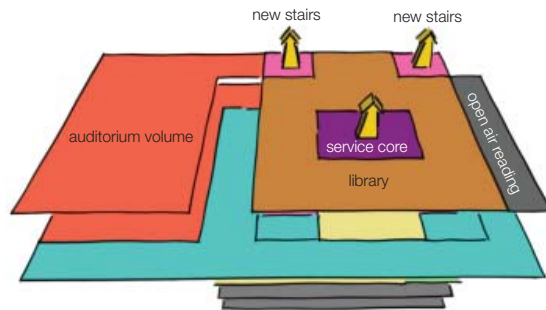


fig.9.143. Third Floor - Access to this floor will mainly happen from the new staircases introduced on the southern facade, but is also possible from the increased circulation shaft and elevators. This floor will accommodate a library with an outdoor reading area. The library will be spatially connected to the informal indoor playing areas below. The upper volume of the auditorium will occupy the remainder of space on this floor.

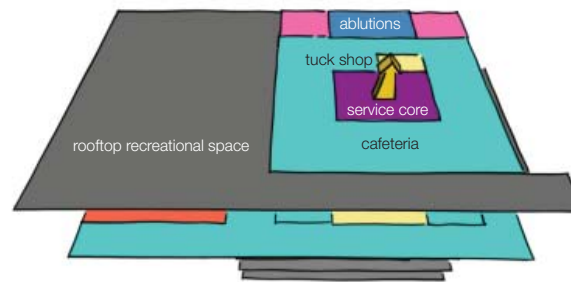


fig.9.144. Fourth Floor - Access to this floor will mainly happen from the newly introduced staircases on the southern facade, but is possible from the service core. This floor accommodates a cafeteria that is served by a tuck shop. Ablutions are provided. The permeable cafeteria space leads to an outdoor recreational area. This area consists of a full-size exterior basketball court. A roofing structure on the eastern perimeter of this rooftop space will provide shade and seating. Seating will be located all round the perimeter of the rooftop recreational space.

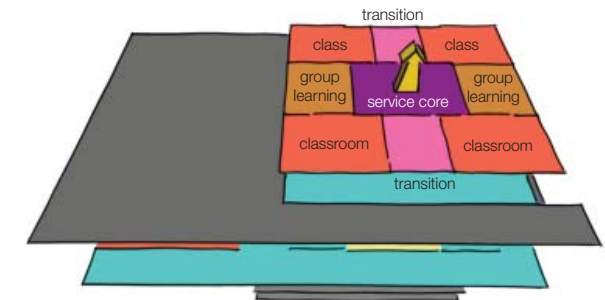


fig.9.145. Fifth Floor - Access to this floor will be only possible from the service core with its increased circulation shaft and existing elevators. This floor accommodates two pairs of classroom spaces, both which share communal group learning areas. Transitional areas provide a practical space for students to enter and exit the classrooms into the service core and visa versa. This floor will host two Grade R and two Grade 1 classes with 20 students proposed to be accommodated per class, thus 40 students per grade and 80 students per floor.

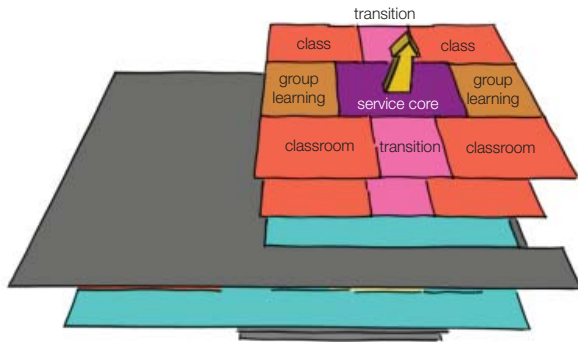


fig.9.146. Sixth Floor - Access to this floor is only possible from the service core with its increased circulation shaft and existing elevators. This floor accommodates two pairs of classroom spaces, both which share communal group learning areas. Transitional areas provide a practical space for students to enter and exit the classrooms into the service core and visa versa. This floor will host two Grade 2 and two Grade 3 classes with 20 students proposed to be accommodated per class, thus 40 students per grade and 80 students per floor.

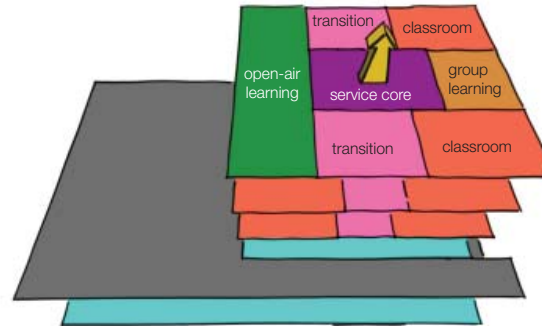


fig.9.147. Seventh Floor - Access to this floor is only possible from the service core with its increased circulation shaft and existing elevators. This floor accommodates one pair of classroom spaces which share a communal group learning area. Transitional areas provide a practical space for students to enter and exit the classrooms into the service core and visa versa. The structure is opened at the eastern side to create a communal outdoor, open-air learning environment. This space's edges will host vertical gardening. This floor will host two Grade 4 classes with 20 students proposed to be accommodated per class, thus 40 students per grade and 40 students per floor.

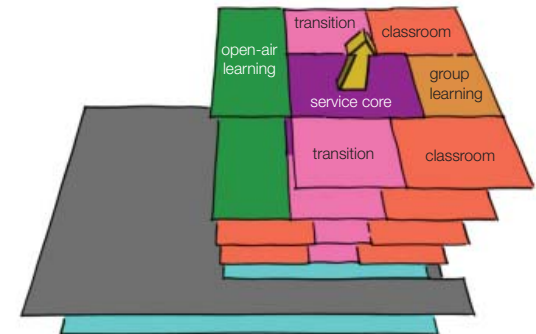


fig.9.148. Eighth Floor - Access to this floor is only possible from the service core with its increased circulation shaft and existing elevators. This floor accommodates one pair of classroom spaces which share a communal group learning area. Transitional areas provide a practical space for students to enter and exit the classrooms into the service core and visa versa. The structure is opened at the eastern side to create a communal outdoor, open-air learning environment. A part of the northern slab is cut away to create an exterior volume that spatially connects the floor with the one below. This space's edges will host vertical gardening. This floor will host two Grade 5 classes with 20 students proposed to be accommodated per class, thus 40 students per grade and 40 students per floor.

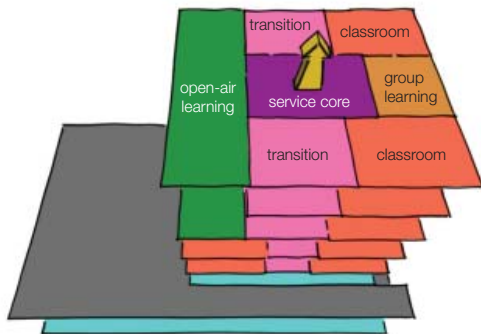


fig.9.149. Ninth Floor - Access to this floor is only possible from the service core with its increased circulation shaft and existing elevators. This floor accommodates one pair of classroom spaces which share a communal group learning area. Transitional areas provide a practical space for students to enter and exit the classrooms into the service core and visa versa. The structure is opened at the eastern side to create a communal outdoor, open-air learning environment. This space's edges will host vertical gardening. This floor will host two Grade 6 classes with 20 students proposed to be accommodated per class, thus 40 students per grade and 40 students per floor.

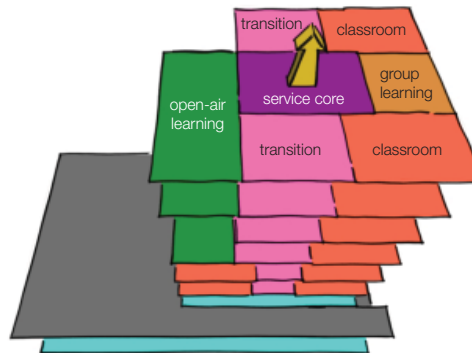


fig.9.150. Tenth Floor - Access to this floor is only possible from the service core with its increased circulation shaft and existing elevators. This floor accommodates one pair of classroom spaces which share a communal group learning area. Transitional areas provide a practical space for students to enter and exit the classrooms into the service core and visa versa. The structure is opened at the eastern side to create a communal outdoor, open-air learning environment. A part of the southern slab is cut away to create an exterior volume that spatially connects the floor with the one below. This space's edges will host vertical gardening. This floor will host two Grade 7 classes with 20 students proposed to be accommodated per class, thus 40 students per grade and 40 students per floor.



fig.9.151. Rooftop Greenhouse/Nursery - Access to this floor is only possible from the service core with its increased circulation shaft and existing elevators. This floor accommodates an educational greenhouse/nursery where students will have the opportunity to grow vegetables and experiment with everything related to plants and agriculture. Water will be harvested here and the water available for use by the students, as well as the ablution facilities below. 40 Students will be accommodated.



fig.9.152. Bird's eye view of model showing structural composition of first three floors of the proposed altered structure



fig.9.153. View of model from the corner of Church and Du Toit Street



fig.9.154. Bird's eye view of model from a north western direction



fig.9.155. Bird's eye view of model from a south-eastern direction



fig.9.156. View of model from Du Toit Street



fig.9.157. Proposed pedestrian space at Church Street interface



10



Introduction

This chapter will start with presenting the final design proposal. Each floor of the proposed design will be presented individually with key interventions applicable to the specific floor separately shown.

Key areas of the proposed Apollo Primary School will finally be technically resolved.

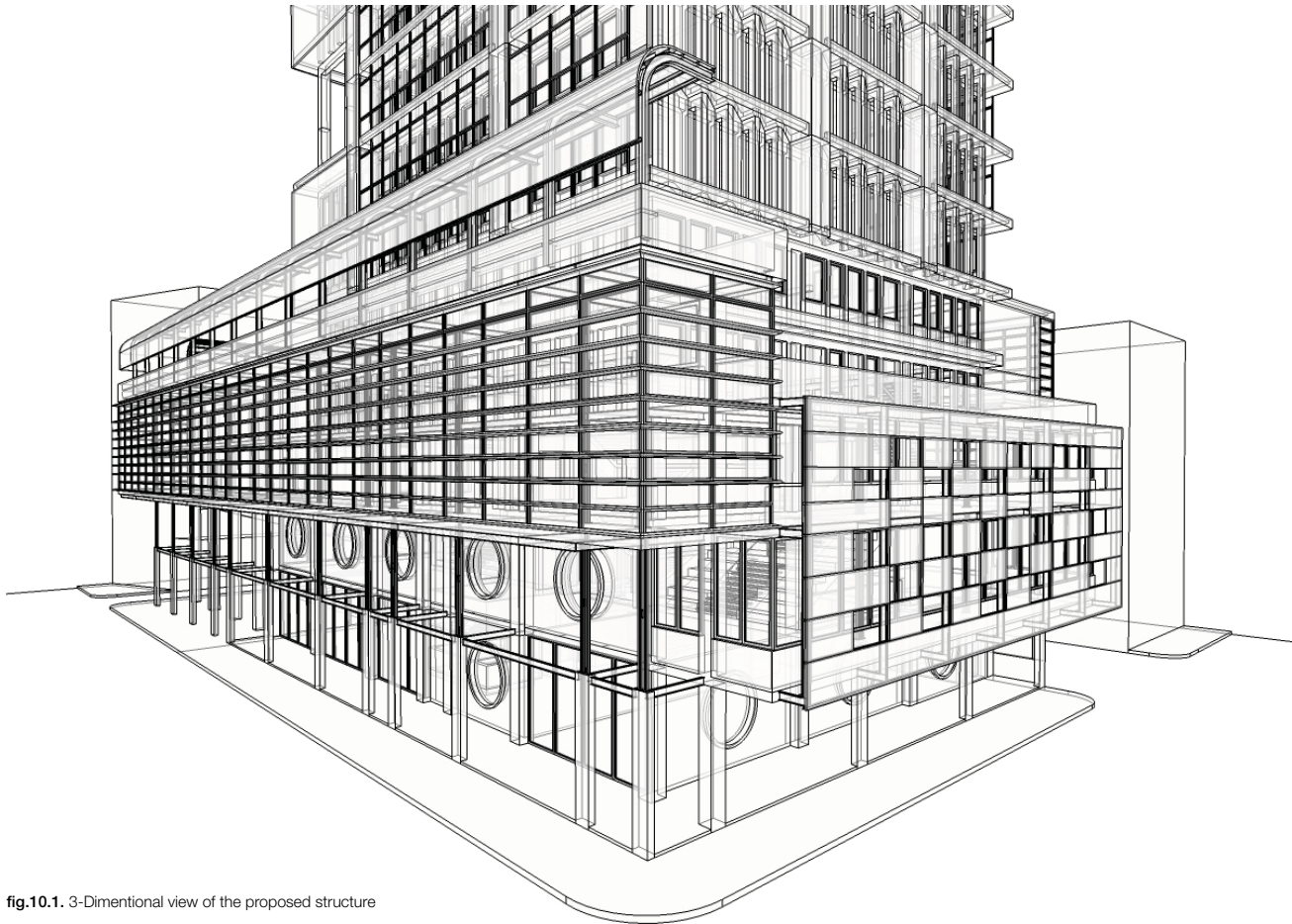


fig.10.1. 3-Dimensional view of the proposed structure

Chapter 10

Technical Development

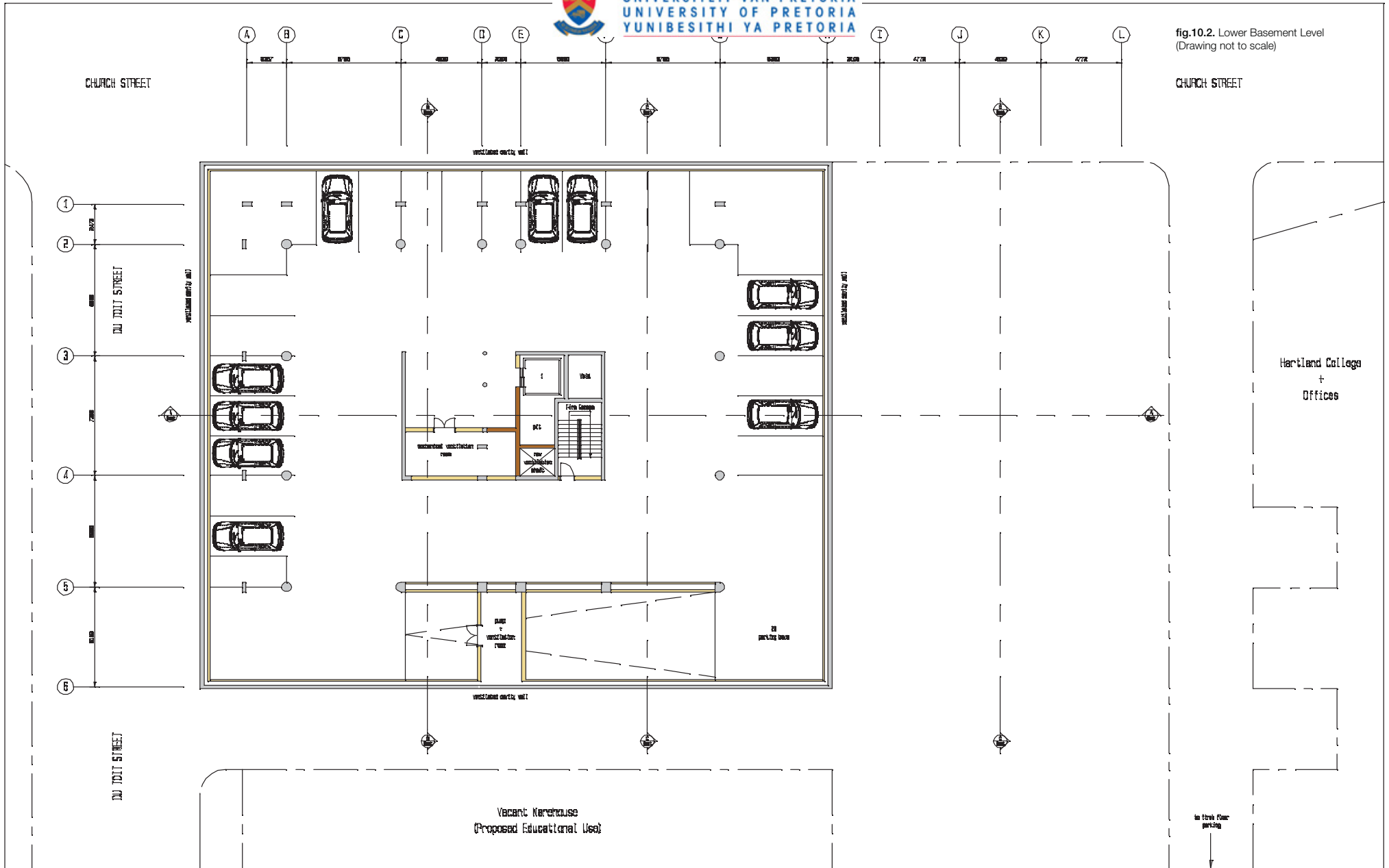


fig.10.2. Lower Basement Level
(Drawing not to scale)



Escal. Structure	Non Structural
Escal. Concrete	Non Concrete
Escal. Balustrade	z
David du Plessis - MichPret 2010	

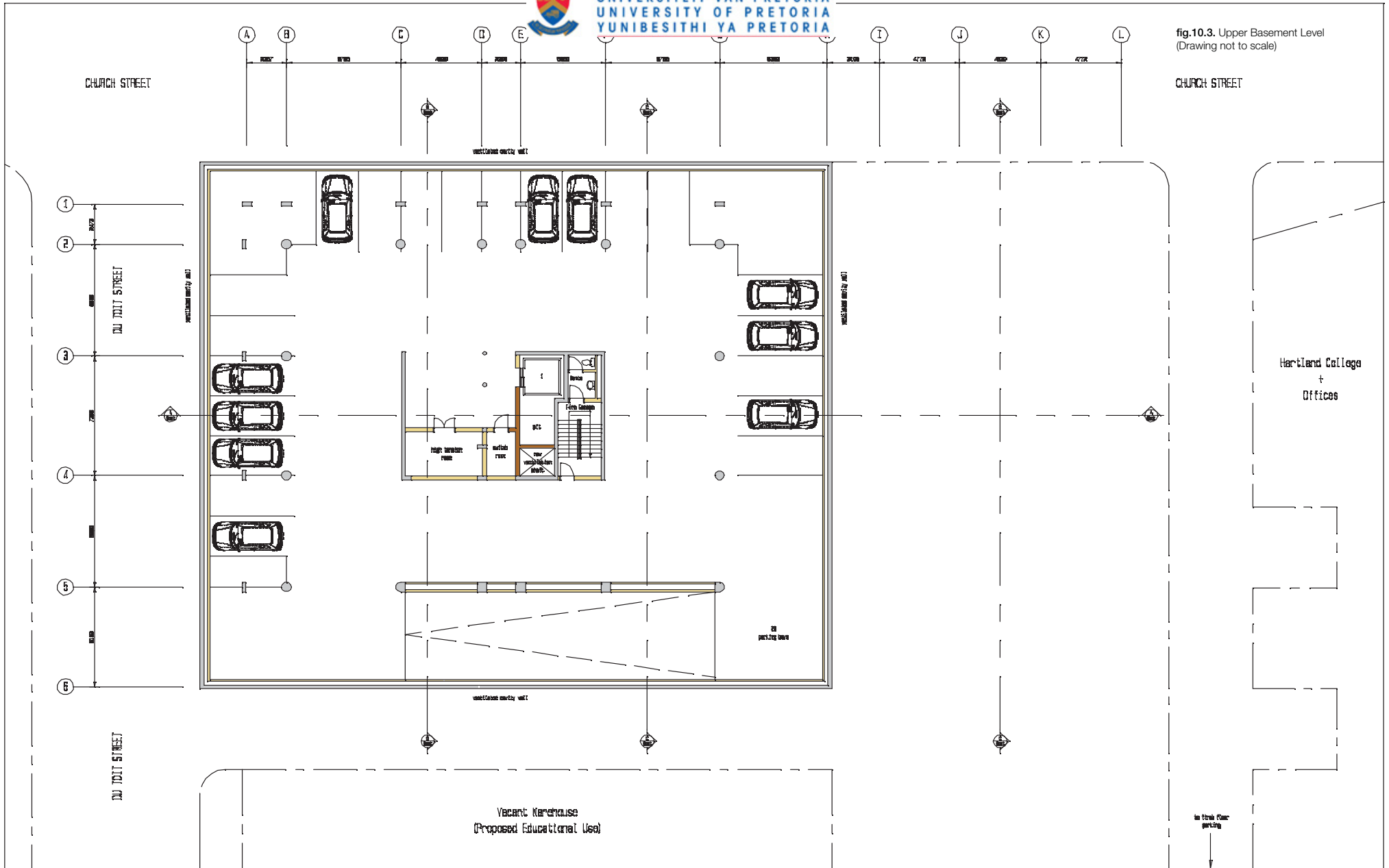


fig.10.3. Upper Basement Level
(Drawing not to scale)

CHURCH STREET

Hartland College
+
Offices

to their plan
parking

Vacant Warehouse
(Proposed Educational Use)



Existing Structure	New Structure
Existing Concrete	New Concrete
Existing Steel/Alloy	New Steel/Alloy
Drawn by Pless - MArch (Prof) 2010	

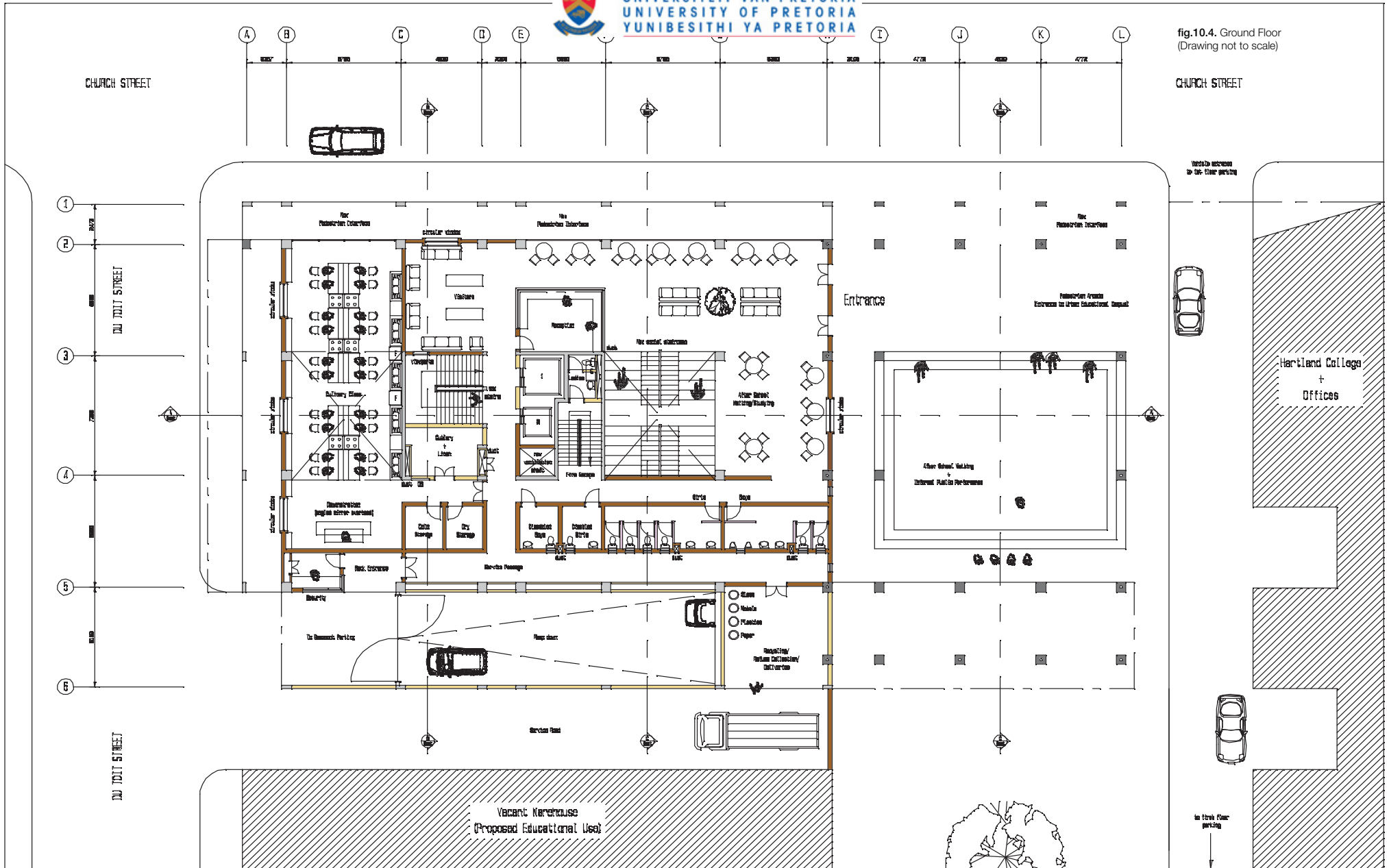


fig.10.4. Ground Floor
(Drawing not to scale)

CHURCH STREET

Vehicle entrance
to 2nd floor parking

Hartland College
+
Offices

in third floor
parking



Symbol: Classroom	Color: Yellow	Symbol: New Classroom	Color: Orange
Symbol: Classroom	Color: Grey	Symbol: New Classroom	Color: Grey
Symbol: Bad Library	Color: White	Symbol: Bad Library	Color: White
David du Plessis - March/Pril 2010			

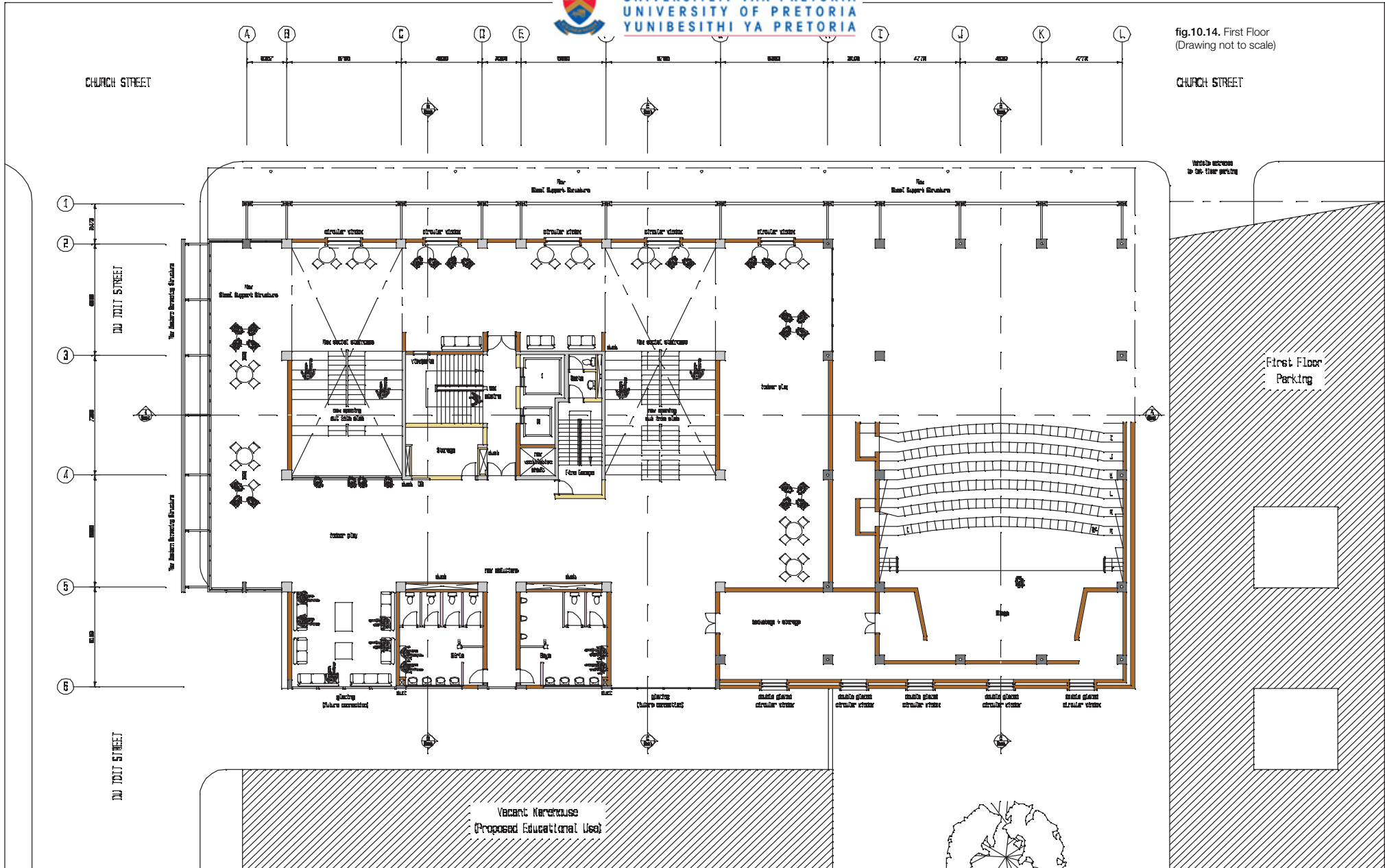


fig.10.14. First Floor
(Drawing not to scale)

CHURCH STREET

Vertical extension
to 1st floor parking

First Floor
Parking

Vacant Warehouse
(Proposed Educational Use)

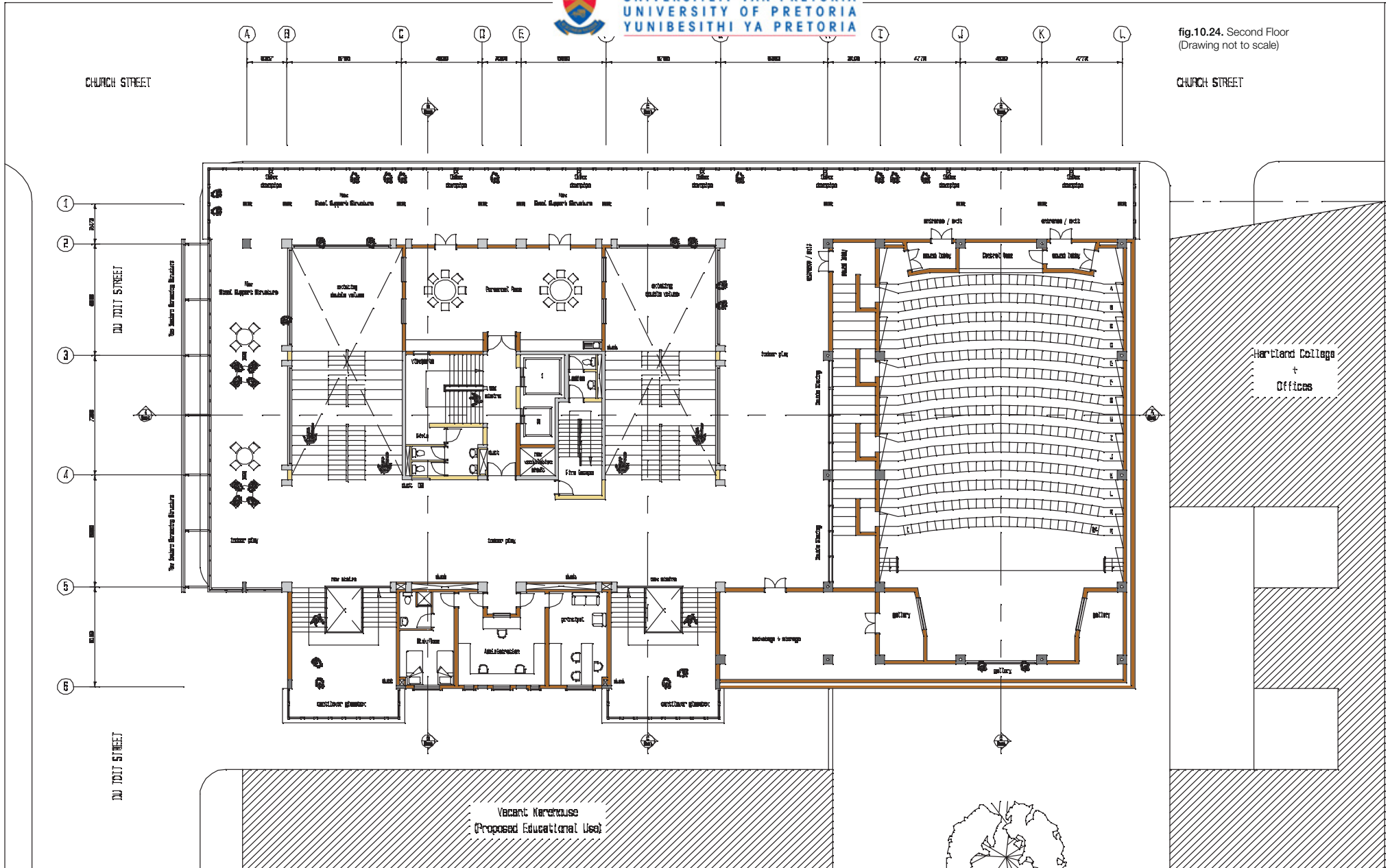


Struct. Columns	New Structure
Struct. Beams	New Structure
Struct. Balustrade	New Structure
	New Detail

David du Plessis - Miché/Pret 2010



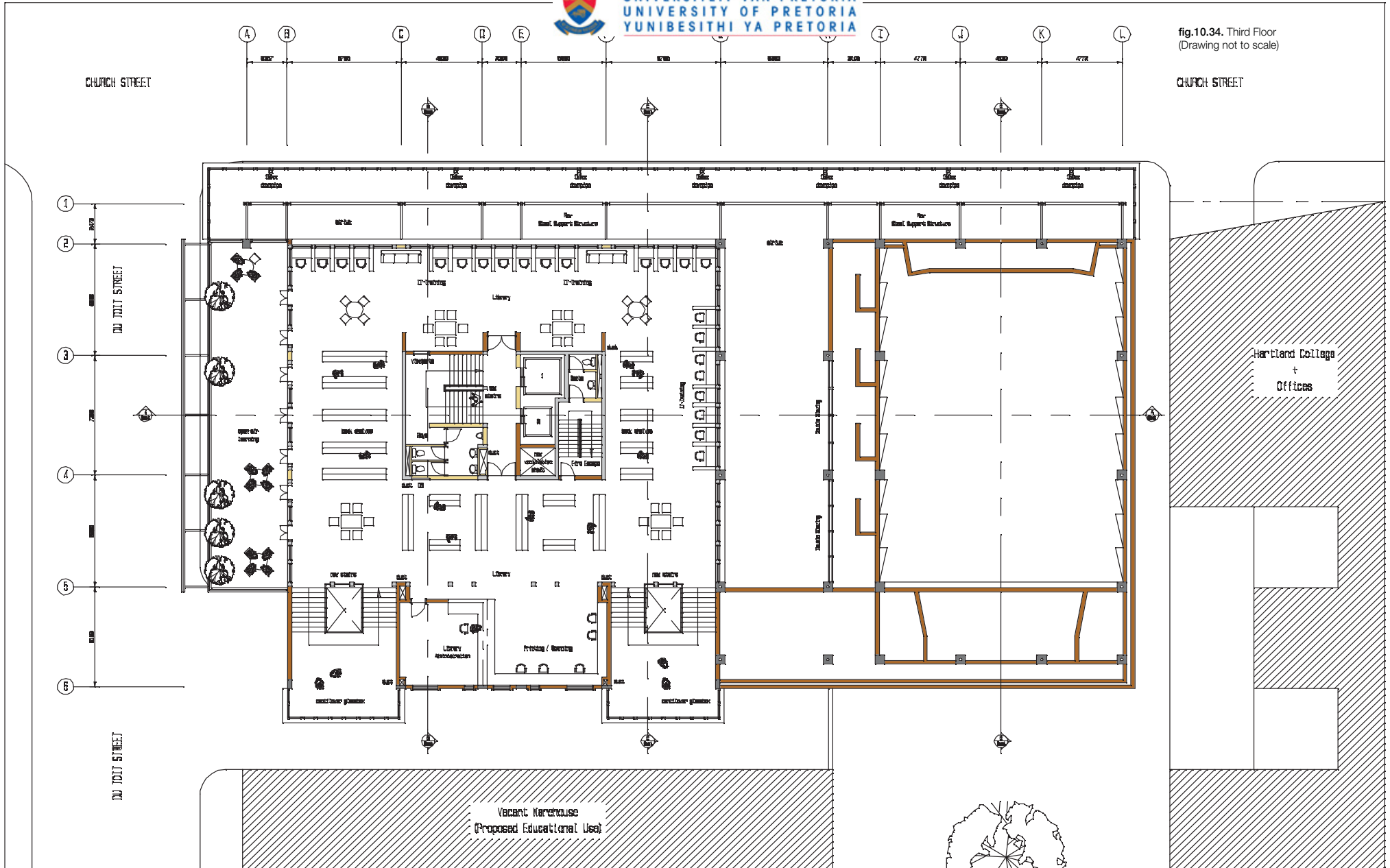
fig.10.24. Second Floor
(Drawing not to scale)



Existing Structure	New Structure
Existing Concrete	New Concrete
Existing Steel Structure	New Steel
Existing Glass	New Glass
David du Plessis - March/Prep 2010	



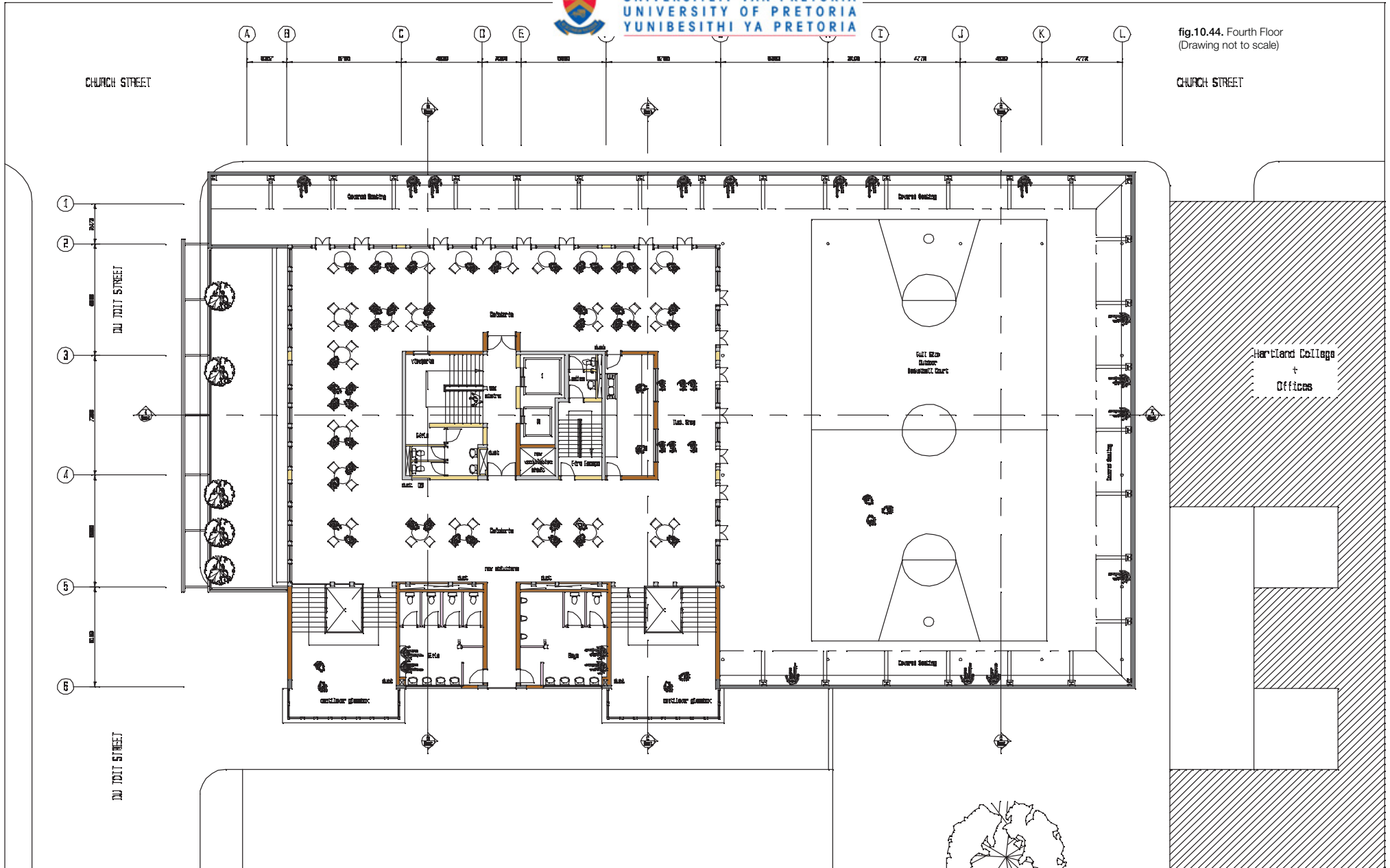
fig.10.34. Third Floor
(Drawing not to scale)



Existing Structure	New Structure
Existing Concrete	New Concrete
Existing Steel Structure	New Steel
David du Plessis - Michiel Pretorius 2010	



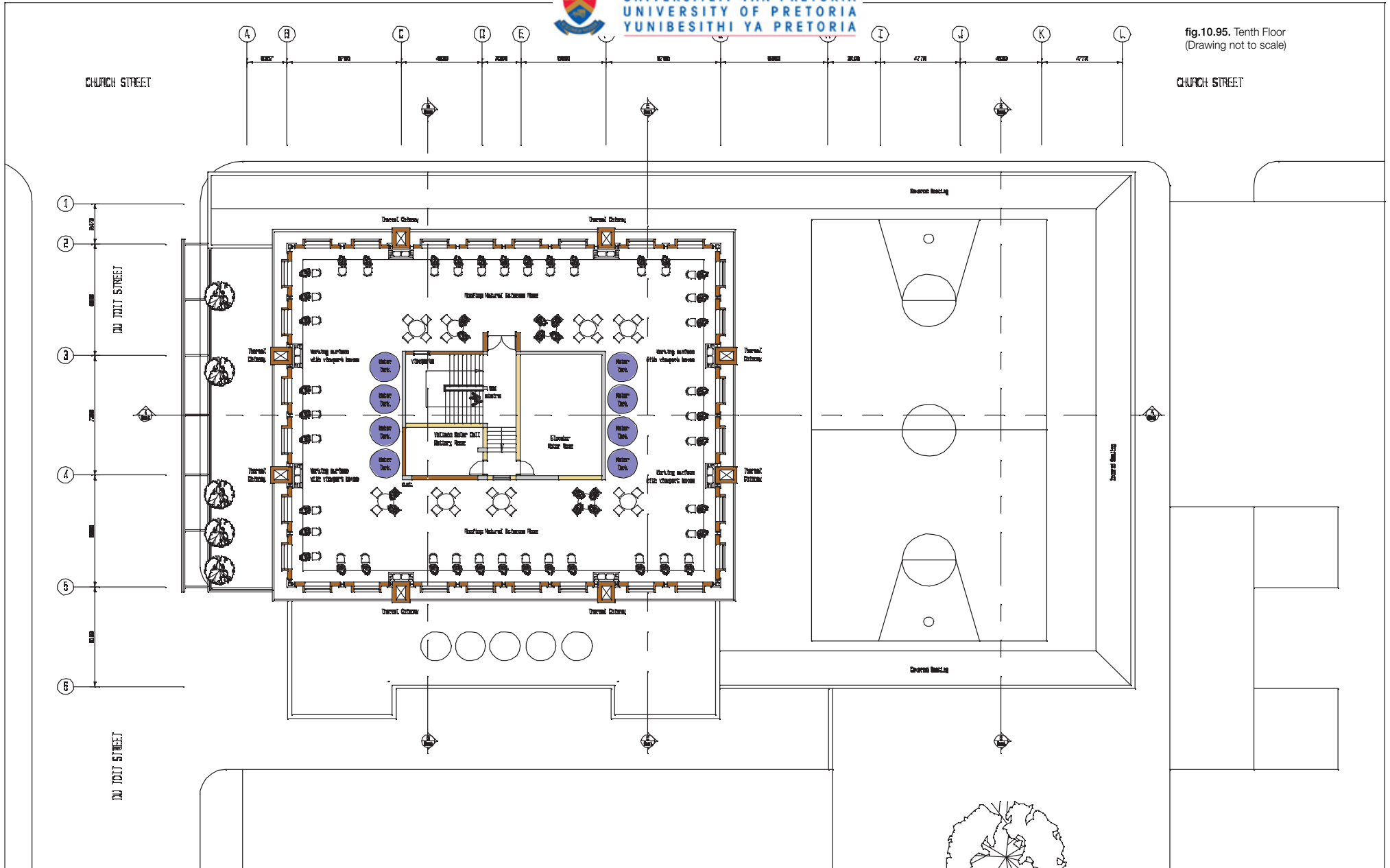
fig.10.44. Fourth Floor
(Drawing not to scale)



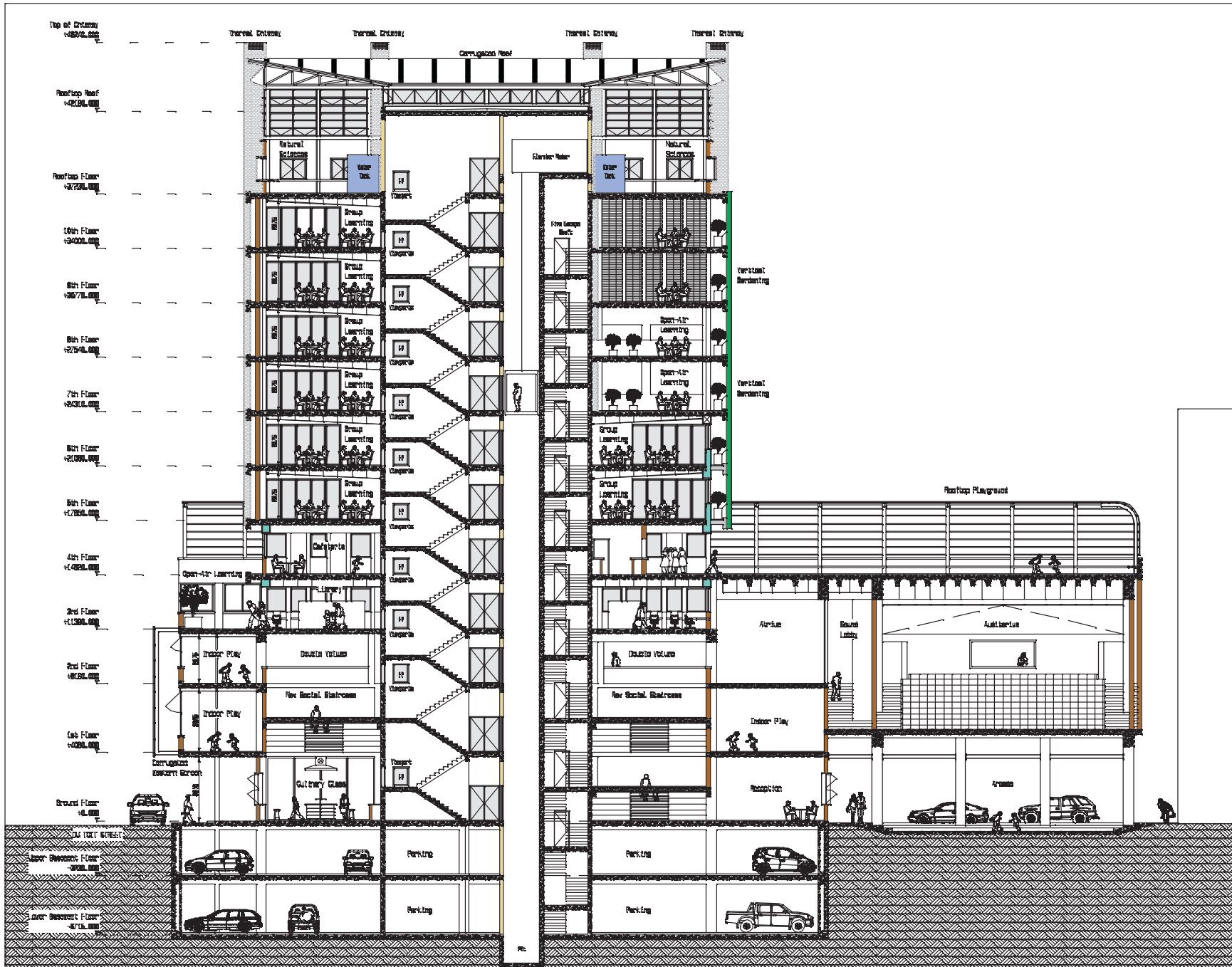
Existing Structure	New Structure
Existing Concrete	New Concrete
Existing Steel Structure	New Steel
David du Plessis - Michiel Pretorius 2010	



fig.10.95. Tenth Floor
(Drawing not to scale)



Excl. Brouwer	Alu Brouwer
Excl. Concrete	Alu Concrete
Excl. Balustrade	Alu Drywall
David du Plessis - MArch/Prof 2010	



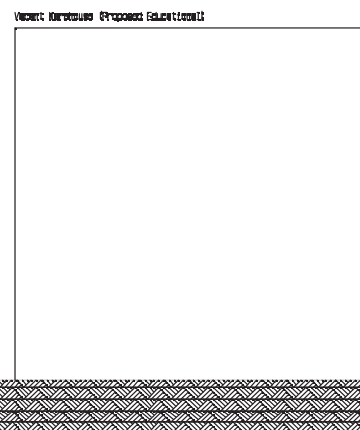
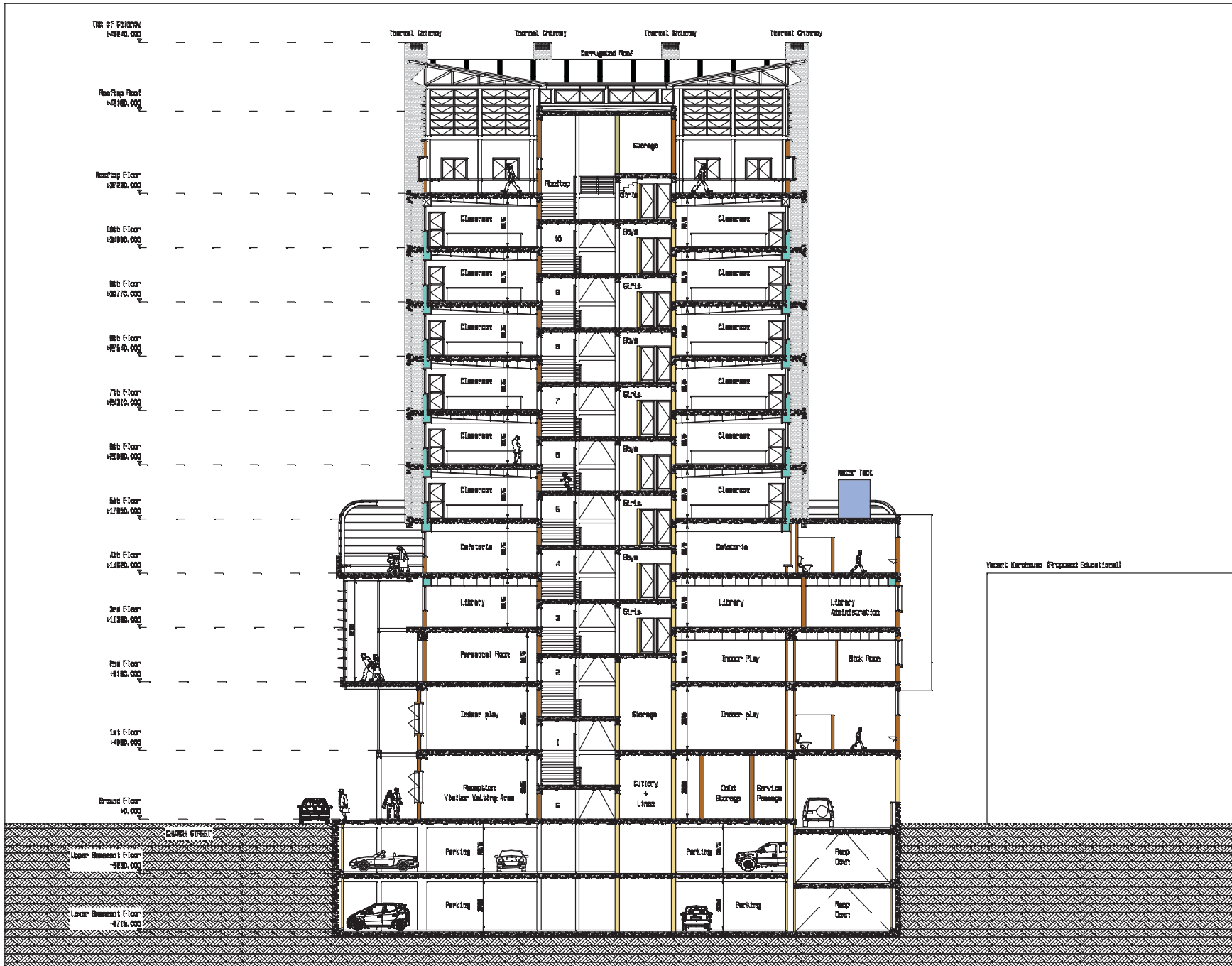
Apollo Primary School
Towards Integrated
Urban Education in
Pretoria

Section A-A - Scale 1 : 100

Existing Structure	New Structure
Existing Concrete	New Concrete
Existing Substructure	New Substructure

David du Plessis - March/Pre/2010

fig.10.102. Section A-A (Drawing not to scale)



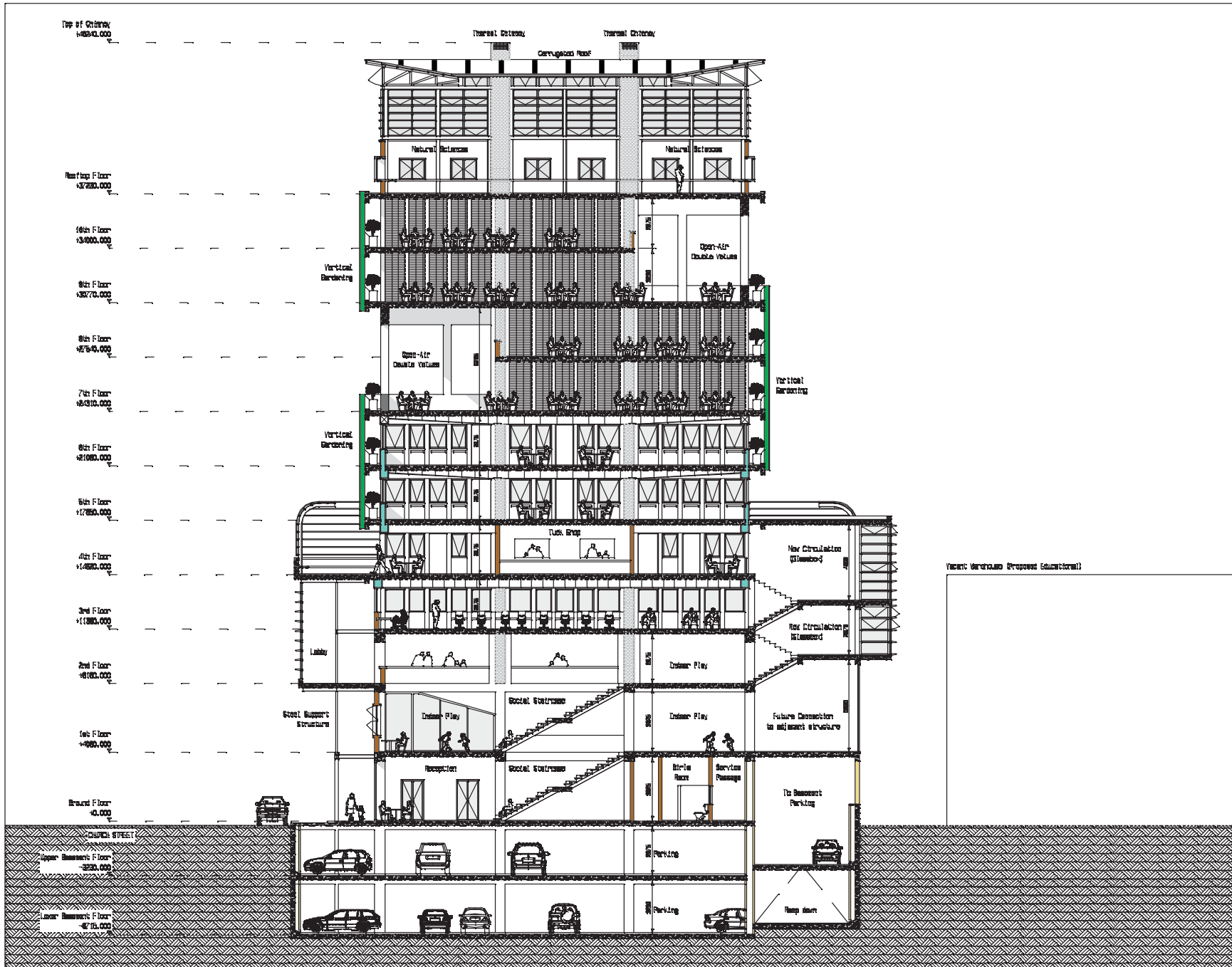
Apollo Primary School
Towards Integrated Urban Education in Pretoria

Section B-B - Scale 1 : 100

Struct. Reinforcement	Fin. Brickwork
Struct. Concrete	Fin. Concrete
Struct. Balustrade	Fin. Crystal

Drawn by Pless - Wroch (Prof) 2010

fig.10.103. Section B-B (Drawing not to scale)



Apollo Primary School

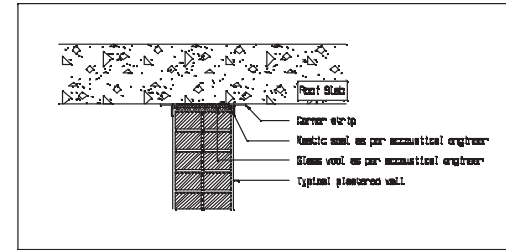
Towards Integrated
Urban Education in
Pretoria

Section C-C - Scale 1 : 100

Existing Structure	New Structure
Existing Concrete	New Concrete
Existing Steel Structure	New Steel

David du Plessis - March/April 2010

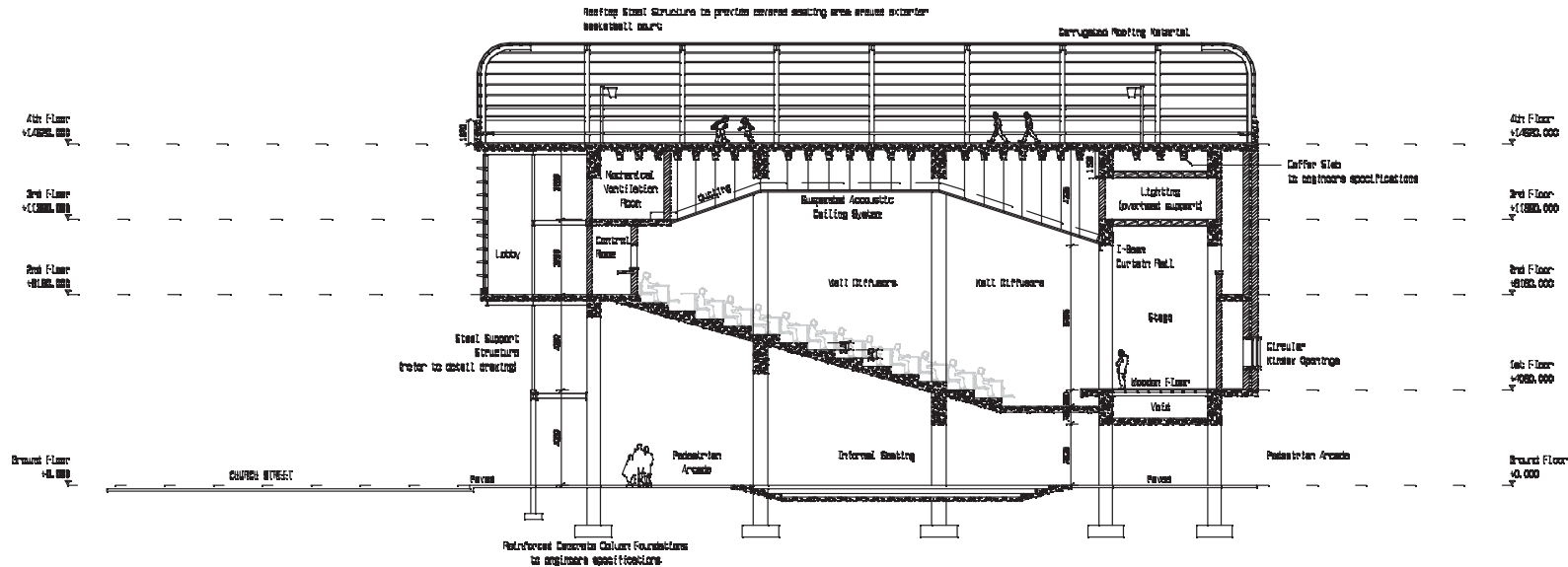
fig.10.104. Section C-C (Drawing not to scale)



Soundproofing wall-roof gap
Scale 1 : 10

NOTES

1. SEALING OF WALL JOINTS AND GAPS
(Refer to detail drawing)
- 1.1.1 Any joints between or gaps between walls and columns or walls and roof slabs cast in one placement at-right, must be immediately sealed off.
- 1.1.2 Joints less than 10mm to be plugged with glass wool, must be sealed on both sides of the wall with a general-purpose non-hardening acrylic or resinic mastic, applied with a hand gun or pressed into the gap.
- 1.1.3 Joints less than 10mm to be sealed by first plugging the gap thoroughly with the epoxy glass wool (Viscolit Insulative Paste gun), then mastic and resinic acrylic non-hardening acrylic mastic using a hand gun applicator and finally blanking off with a finishing strip such as a timber cleat, aluminium cover strip or cornice, depending on the visibility.

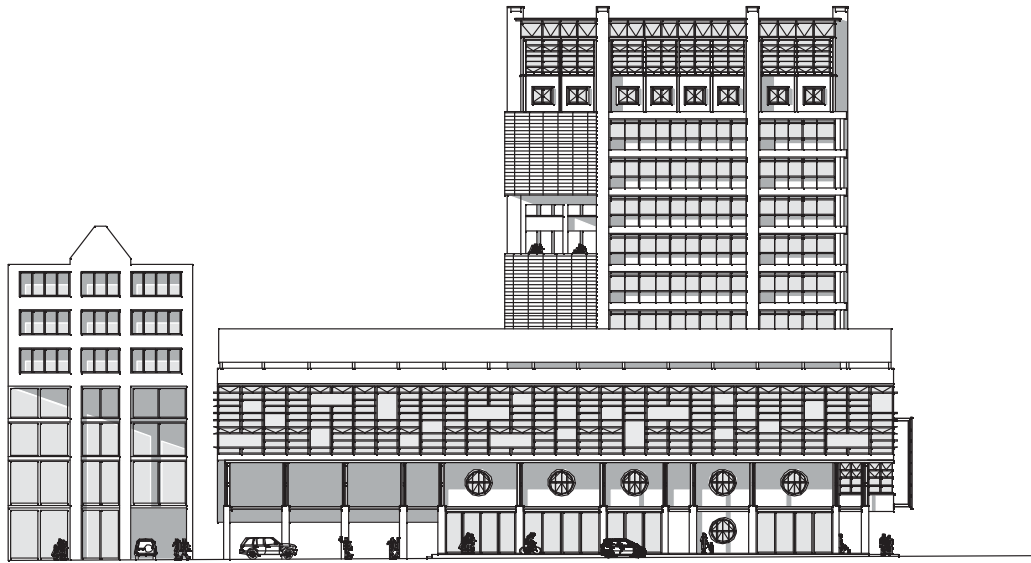


Apollo Primary School
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Urban Education in
Pretoria

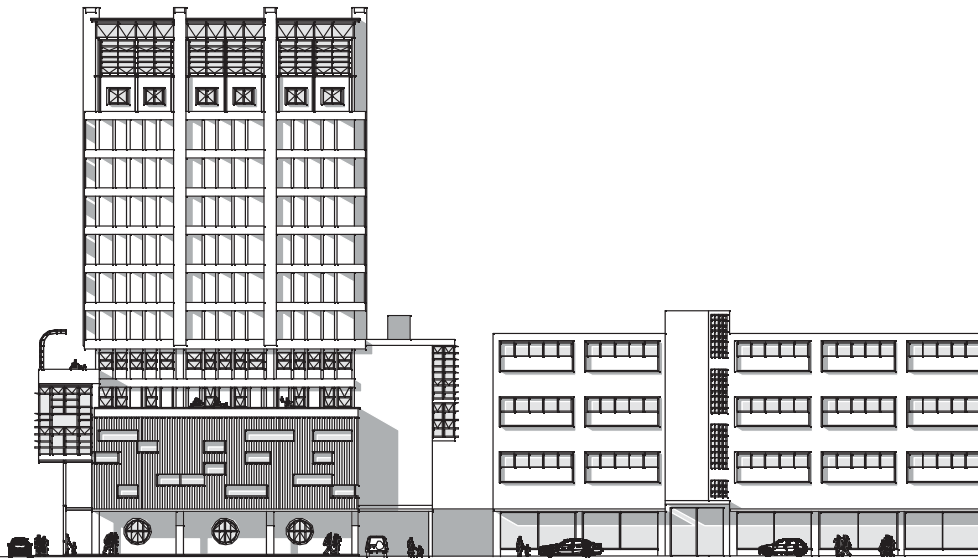
Section D-D - Scale 1 : 100

David du Plessis - March/Prof 2010

fig.10.105. Section D-D (Drawing not to scale)



Northern Elevation
Scale 1 : 200



Western Elevation
Scale 1 : 200

Apollo Primary School

Towards Integrated
Urban Education in
Pretoria

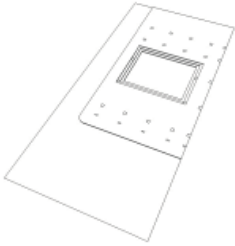
Elevations
Scale 1 : 200

David du Plessis - MArch(Prof) 2010

fig.10.107. Elevations (Drawing not to scale)

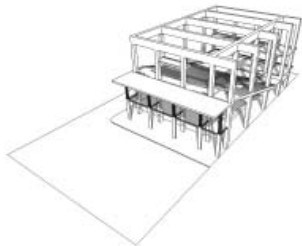
Auditorium Construction Process

1



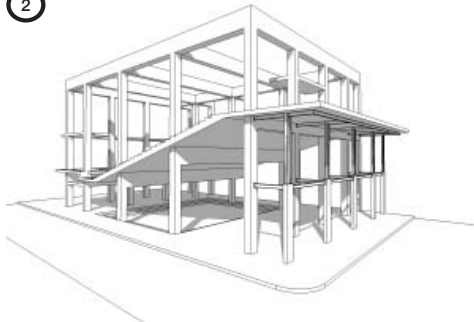
As indicated in the final design proposal, the structure east of the Apollo Building is proposed to be demolished. An auditorium is proposed to be built overhead of a pedestrian arcade that is introduced. An informal seating area will be provided for children to not only safely wait for their parents, but also allow for informal performances.

2



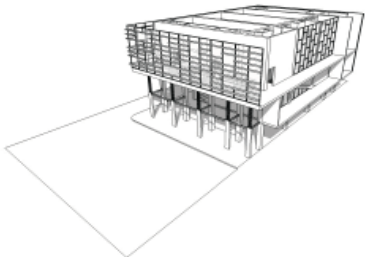
The auditorium will mainly consist of a concrete frame structure, with the northern foyer area consisting of a composite concrete and steel ("H" and "T" Beam) structure that will support a cantilevering concrete platform that is part of the second floor level. Deep concrete beams will span the width of the auditorium, with a coffer-slab system above that will support the rooftop playground. A sloped concrete floor will increase the natural volume of the pedestrian arcade below.

2



Here it can be seen how the sloped concrete floor increases the pedestrian volume below. The proposed composite concrete and steel support structure can also be seen on the northern part. The structural frame of the auditorium is mainly composed of a concrete column and beam system.

3



The foyer on the northern part of the auditorium will be sealed off from the exterior by a fully glazed facade. The horizontal mullions will have deep aluminum extrusions fixed to it to provide the necessary shading for the interior. The glazed facade will not be monotonous, but rather playfully expressed by differing sized aluminium frames.

3



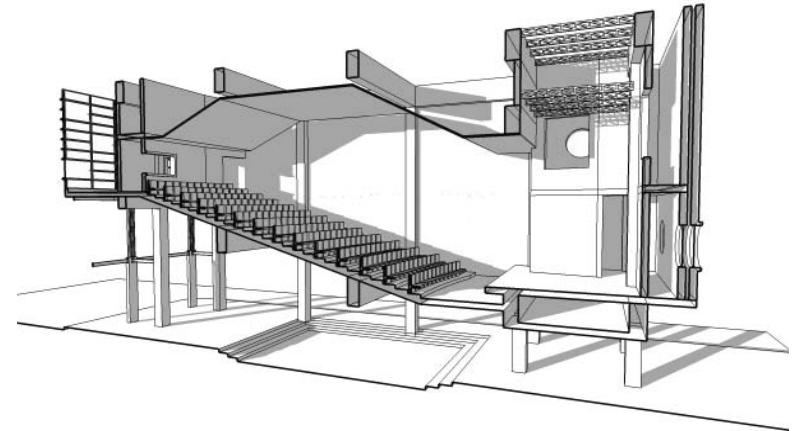
The sound-lobby on the eastern part of the auditorium will be sealed off from the proposed Apollo Primary School by a double glazed curtain wall. Children will thus be able to observe audience members participating in the auditorium moving in and out of the venue. Audience members will thus also be able to see into the schooling environment while entering or exiting the auditorium. The curtain wall is playfully expressed by offset aluminium frames.

3



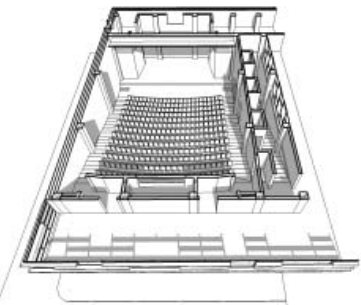
The northern glazed facade will express the differing sized aluminium frames by making the larger glazed sections various colours.

4



A 3-dimensional view of the interior shows the seating arrangement facing the stage area. An acoustical suspended ceiling is proposed that will reflect sound produced to the audience. Steel girders above the stage area will support lighting requirements therefor. A control room at the rear of the auditorium will control all of the electrical and mechanical ventilation equipment. Entrance to the auditorium happens through sound lobbies at the rear and at the side. Walls will consist of an uneven brick surface with acoustical wall panels to reflect sound to the audience.

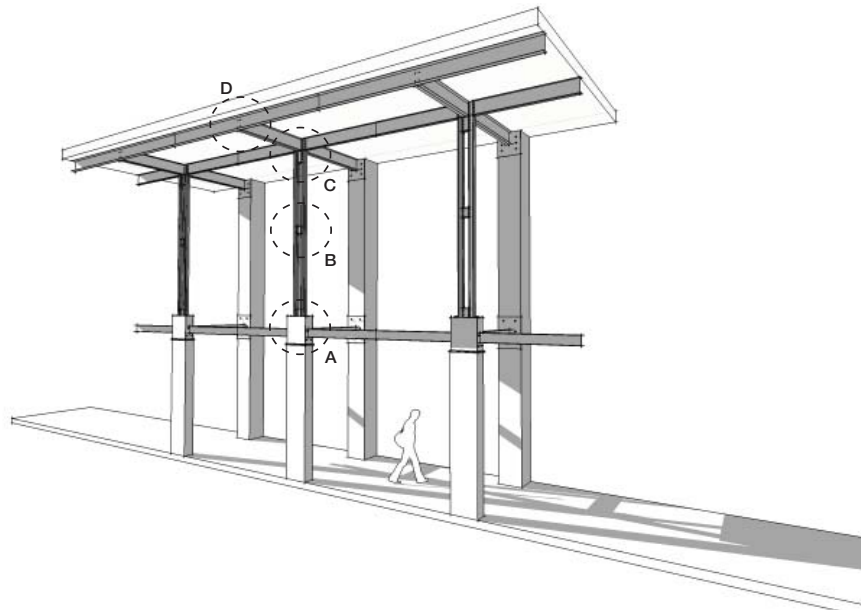
4



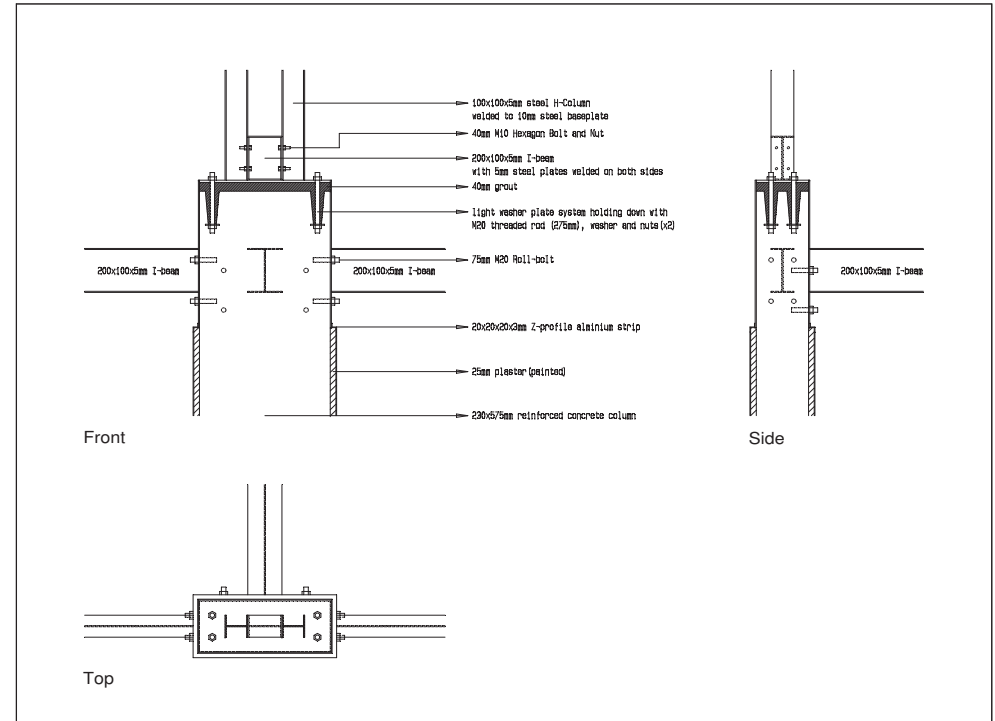
The interior walls will consist of facebricks that are stepped back from each other in a consistently varying manner. This is done for acoustical purposes. Entrance to the auditorium will mainly happen from the rear and from the side. Backstage access is provided on the first and second floor.

fig.10.108. Auditorium Construction Process

New Church Street Concrete and Steel Composite support structure



Detail Drawing of composite steel column connection to concrete column base



A - Base of column connection

B - Intermediate Column Support Connection

C - Top of column connection

D - Front Edge of supporting beams connection

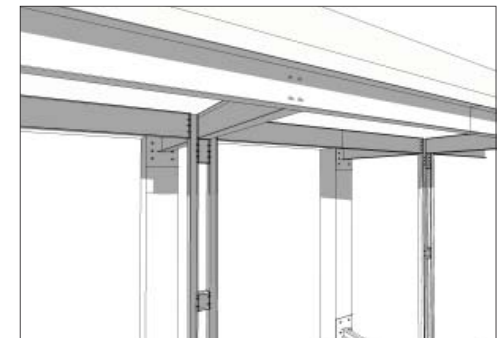
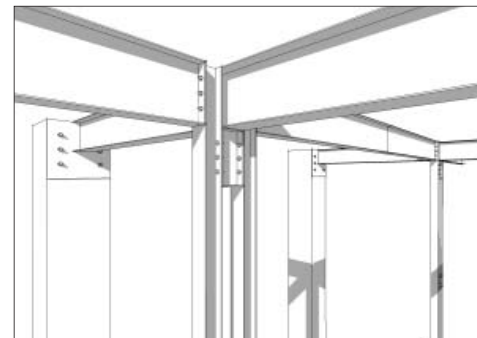
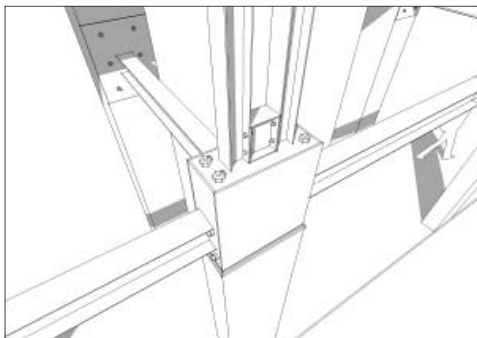


fig.10.109. New Church Street Concrete and Steel Composite Support Structure

Diagram of Water System

Rainwater is collected from the roof surface. The rainwater is stored in "Jojo" tanks at rooftop level. The rainwater is intended to assist in the water supply that is required for flushing toilets in the structure. The water flows to the water closets through gravity. A secondary storage system is located lower in the structure. These storage tanks use the exact same principle to supply the toilets located on the lower levels. Municipal water provision will ensure that all of the tanks have enough water at all times to supply the required water.

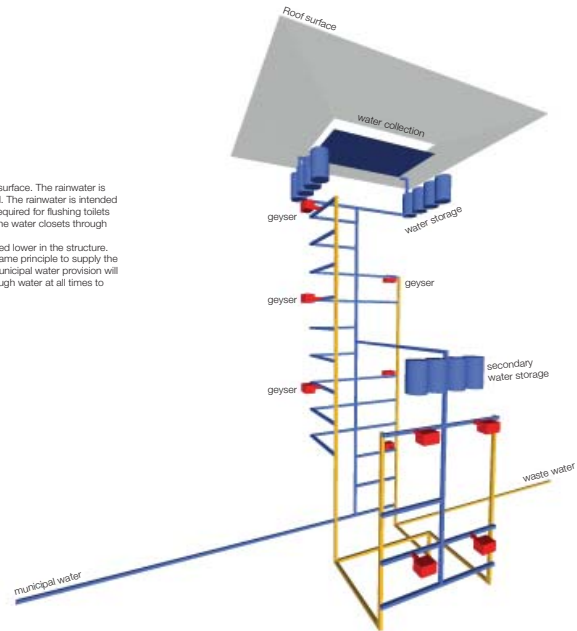
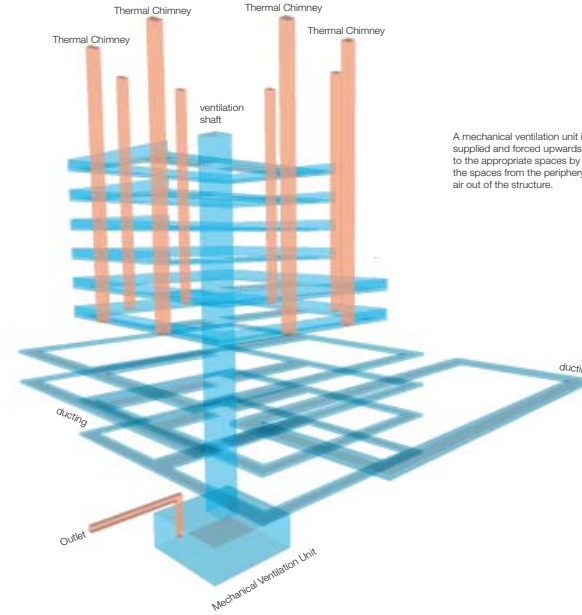


fig.10.110. Diagram of proposed Water System

Diagram of Air-Flow System



A mechanical ventilation unit is located in the basement of the structure. Cold air is supplied and forced upwards in a ventilation shaft. From here the cold air is directed to the appropriate spaces by means of ducting underneath the floor slab and enters the spaces from the periphery of the floor plan. Thermal chimneys extract heated air out of the structure.

fig.10.113. Proposed Air-Flow System in the structure

RAINWATER STORAGE CALCULATOR (FOR IDEAL SELF-SUSTAINED SYSTEM)

by Dewald du Plessis (rainfall data from <http://weather.za.msn.com>)

	Rainfall (mm)	Cubic meters	Water harvested (cub.M)	Litres	Usage (pm)	How much in unknown storage?
January	78.9	0.0789	136.69425	136694.25	61200	75494.25
February	93.3	0.0933	161.64225	161642.25	61200	175936.5
March	77.7	0.0777	134.61525	134615.25	61200	249351.75
April	34.5	0.0345	59.77125	59771.25	61200	247923
May	10.8	0.0108	18.711	18711	61200	205434
June	6.3	0.0063	10.91475	10914.75	61200	155148.75
July	0.7	0.0007	1.21275	1212.75	61200	95161.5
August	3.4	0.0034	5.8905	5890.5	61200	39852
September	12.6	0.0126	21.8295	21829.5	61200	481.5
October	50.1	0.0501	86.79825	86798.25	61200	26079.75
November	76.8	0.0768	133.056	133056	61200	97935.75
December	86.8	0.0868	150.381	150381	61200	187116.75
Total	531.9	0.5319	921.51675	921516.75	734400	(Tank must have water all times!!!)

1925	Min Roof Area req (sqm)
61200	Monthly Water Usage (L)
249351.75	Required Storage (L)

Water Usage	Per Day		Per Month (L)		Per Year (L)	
	Water consumption (L)	Uses per day (Times)	Water consumption Total (L)	People*	Water consumption Total (L)	People*
Flush Toilet	6	1	6	2040	61200	734400
Hand Basin	0.7	2	1.4	476	14280	171360
				2516	75480	905760

(*People = 320 Students + 16 Teachers + 4 Miscellaneous = 340)

(Required Ideal Storage = 25 x 10000L or 12.5 x 20000L "Jojo" Tanks)

Table 6: Amount of Sanitary Appliances required in relation to population						
Population	MALE			FEMALE		
	Water Closets	Urinals	Handwash Basins	Water Closets	Urinals	Handwash Basins
15	1	1	1	2		1
30	1	2	2	3		2
60	2	3	3	5		3
90	3	5	4	7		4
120	3	6	5	9		5
For a population of more than 120, add 1 Water Closet, 1 Urinal and 1 Handwash Basin for every 100 additional people						
220	4	7	6	11		6
320	5	8	7	13		7
420	6	9	8	15		8
520	7	10	9	17		9
620	8	11	10	19		10
720	9	12	11	21		11
820	10	13	12	23		12
920	11	14	13	25		13
1020	12	15	14	27		14
1120	13	16	15	29		15
1220	14	17	16	31		16

fig.10.112. Required Sanitary Appliances

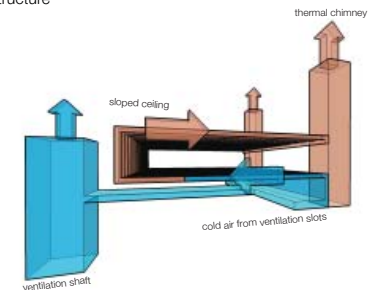
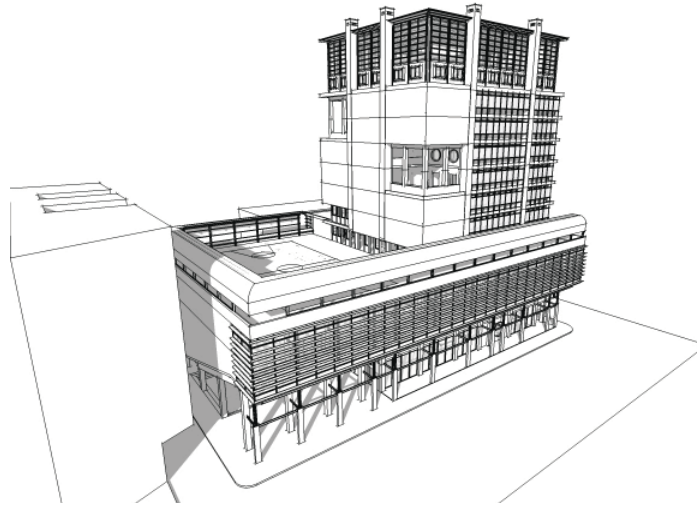


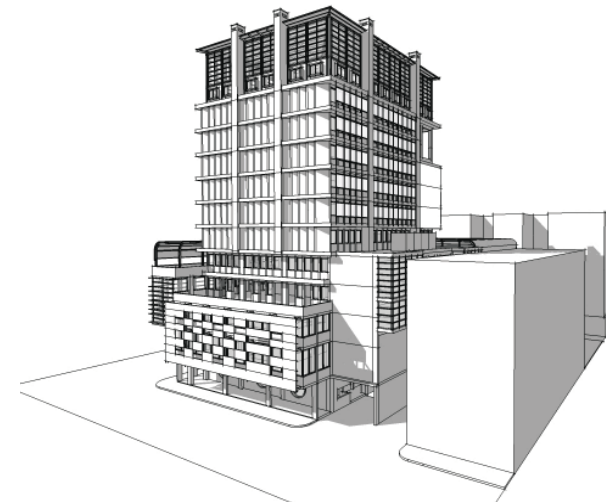
fig.10.114. Proposed Air-Flow in classrooms

Cold air from the ventilation shaft is distributed into the appropriate spaces by ducts underneath the floor slab, and on top of a suspended ceiling. These ducts go to the periphery of each floor and mechanically forces cold air upward and out of horizontally orientated ventilation slots located at waist high level. As air naturally gets heated by the occupants of the space the air starts rising. A sloped suspended ceiling directs the rising air to the periphery of the floor. A thermal chimney extracts the heated air from the space through a ventilation grill by means of the "stack effect".

Apollo Primary School



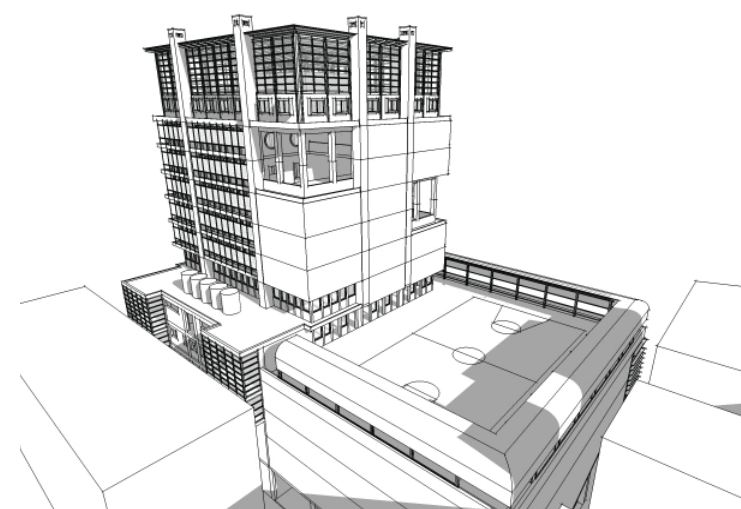
North Eastern View



South Western View



North Western View



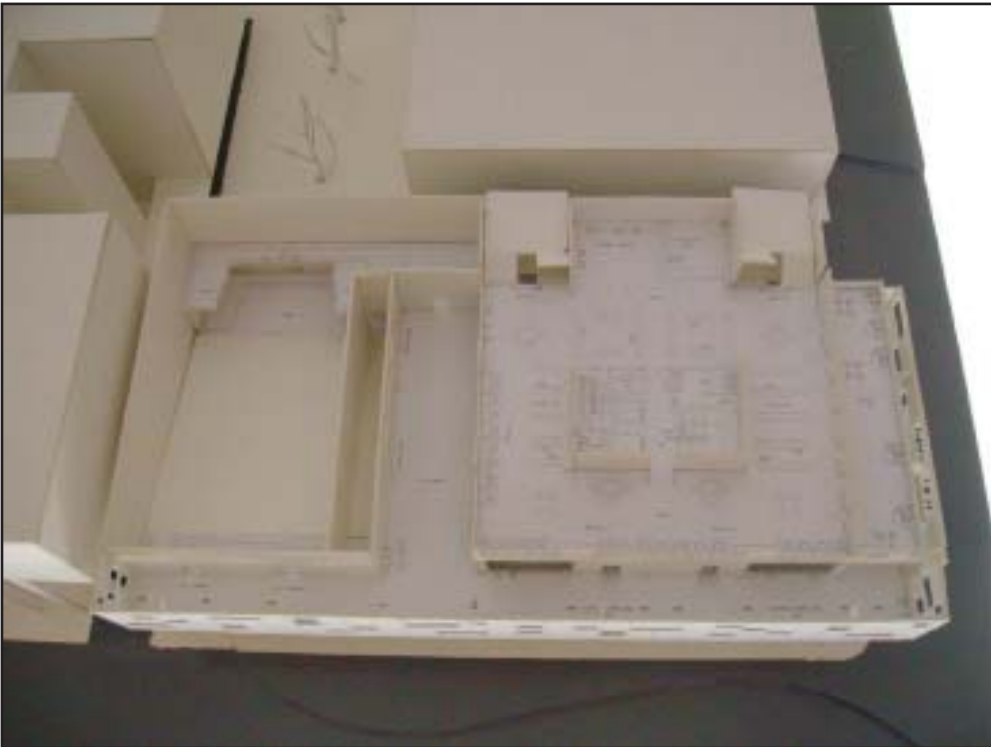
South Eastern View

fig.10.115. 3-D Views of the proposed Apollo Primary School

Final Model (Scale 1 : 200)



Final Model (Scale 1 : 200)



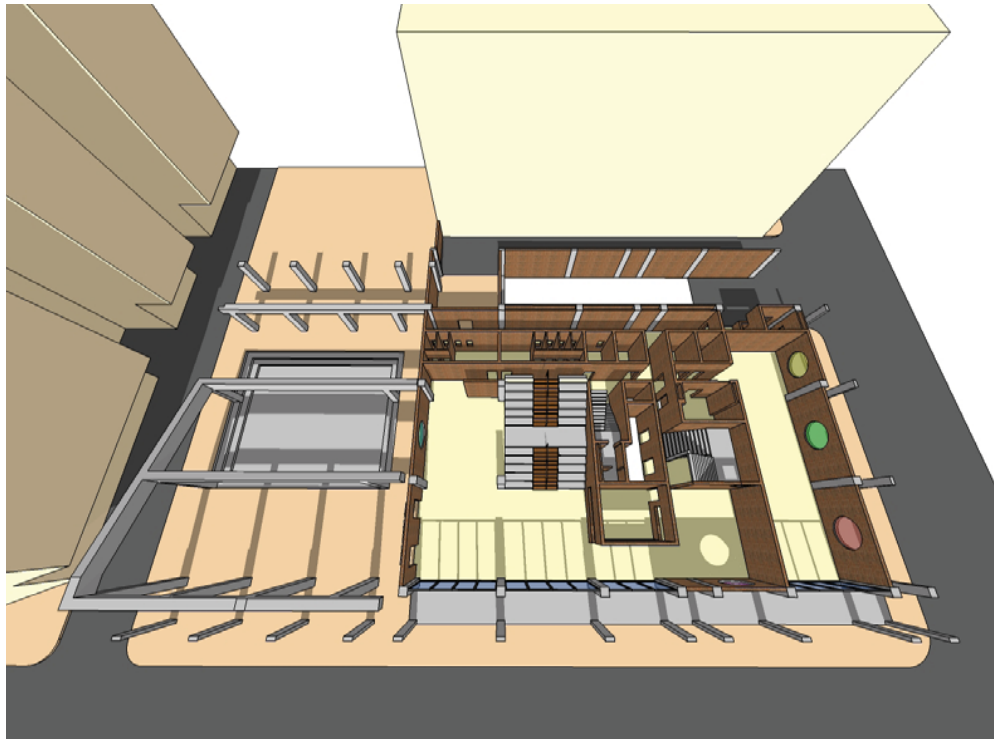


fig.10.5. Bird's eye view of Ground Floor



fig.10.8. Church Street pedestrian space



fig.10.11. Reception Area with social staircase to First Floor



fig.10.9. Cnr. Church and Du Toit Street pedestrian space



fig.10.12. Visitor Waiting Area with viewport to main staircase

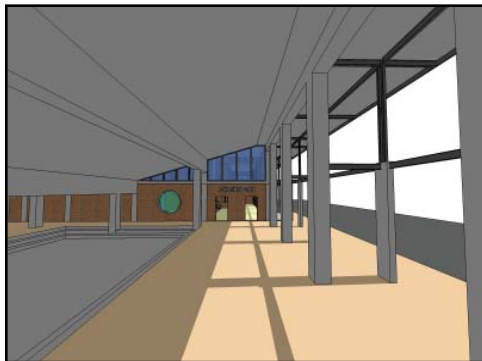


fig.10.6. Entrance to the Apollo Primary School

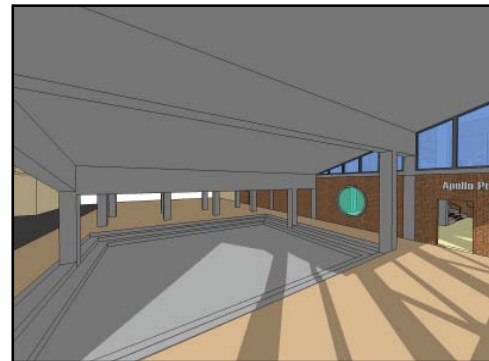


fig.10.7. Informal urban performance area



fig.10.10. Entrance to Basement from Du Toit Street



fig.10.13. Culinary School with circular windows to urban context



fig.10.15. Bird's eye view of First Floor



fig.10.18. I-Beam steel structure tied to building with corrugated iron sheets to form western screening device



fig.10.21. The space beneath the social staircase on the western side opens up with views to the cooking school below



fig.10.19. Circular windows create gathering places with social staircase to second floor



fig.10.22. The space beneath the social staircase on the eastern side connects to the ground floor reception area



fig.10.16. I-Beam steel structure tied to building and supports floors above



fig.10.17. I-Beam steel structure tied to building with corrugated iron sheets to form western screening device



fig.10.20. I-Beam column structure support floors above with social staircase to second floor



fig.10.23. Auditorium stage

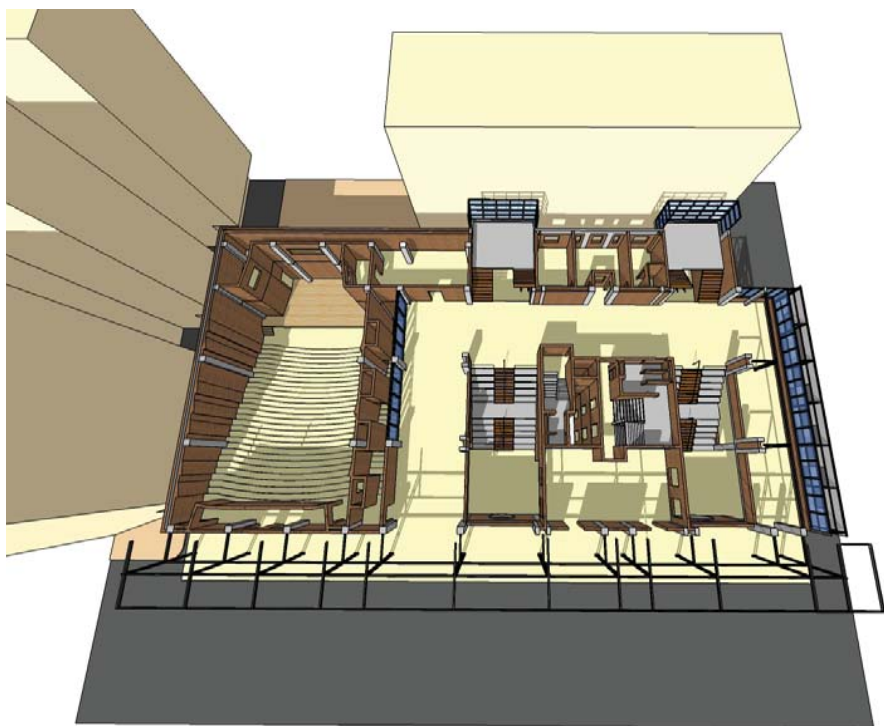


fig.10.25. Bird's eye view of Second Floor



fig.10.28. New circulation areas on the southern facade with protruding glass boxes



fig.10.31. New circulation areas on the southern facade with steel staircase structure

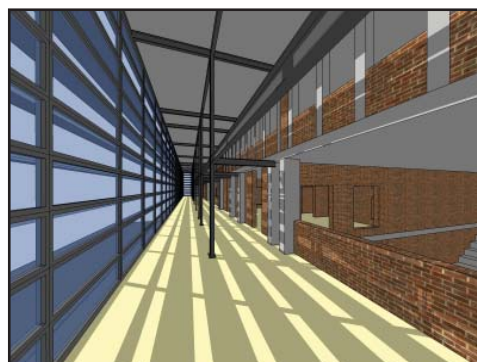


fig.10.29. Double volume lobby area continuing along the whole northern perimeter of the second floor

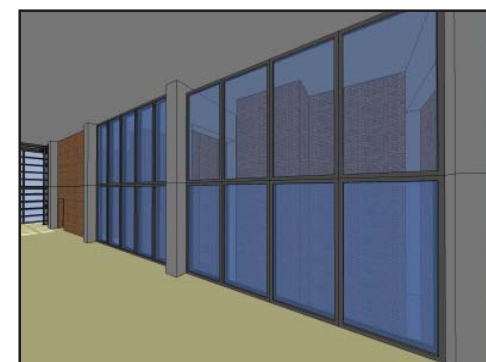


fig.10.32. View into transparent sound-lobby area alongside the auditorium

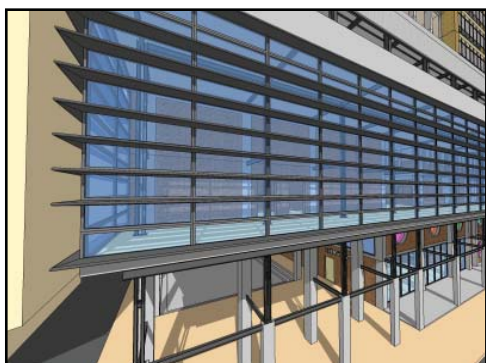


fig.10.26. Glazed northern facade with horizontal aluminium extrusions fixed to the structural window frame system



fig.10.27. Glazed facade wraps around to western side with the corrugated western screening continuing on the western facade



fig.10.30. Views from lobby and personnel room down to the socializing areas

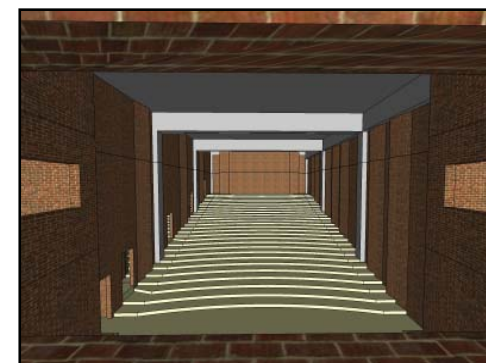


fig.10.33. View from stage gallery to seating area of auditorium

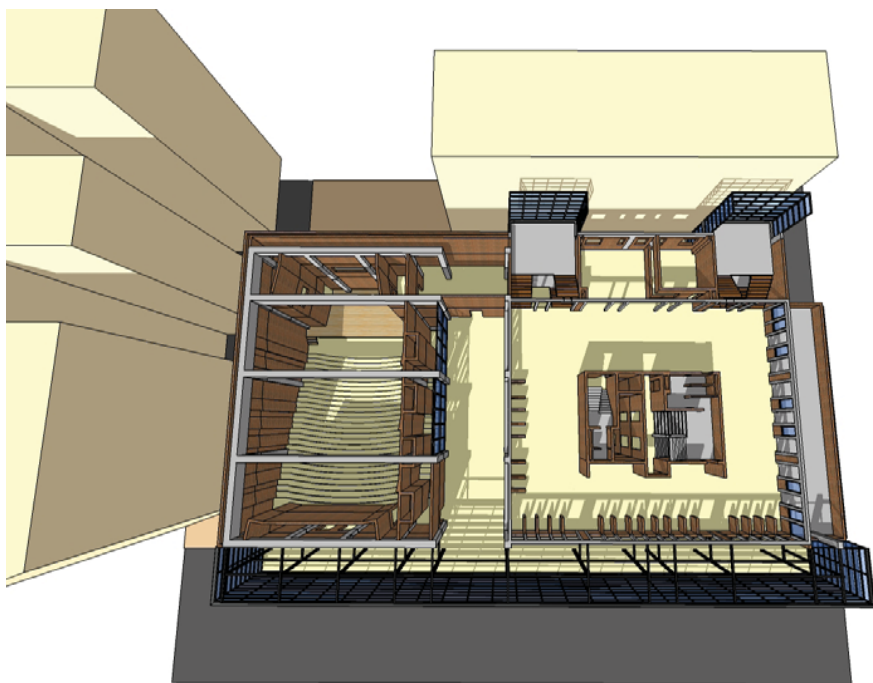


fig.10.35. Bird's eye view of Third Floor

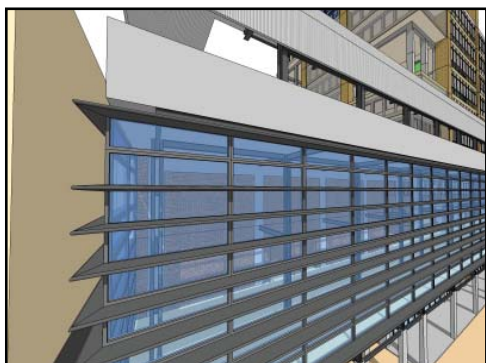


fig.10.36. Glazed northern facade with horizontal aluminium extrusions fixed to the structural window frame system



fig.10.37. Glazed facade wraps around to western side with the corrugated western screening continuing on the western facade



fig.10.38. Double volume lobby area with library above



fig.10.41. Library administration area located in-between the two new circulation areas on the southern facade

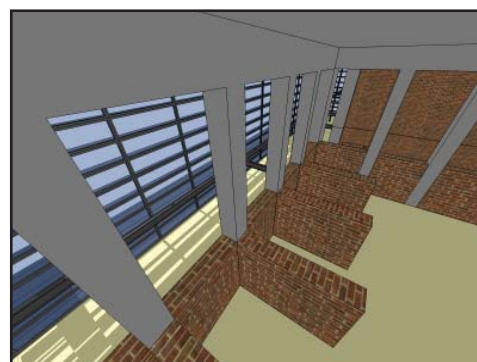


fig.10.39. View from library to lobby area below



fig.10.42. Steel staircase structure with protruding glass boxes on the southern facade



fig.10.40. The western side of the library opens up to the exterior with an open-air learning space provided outside



fig.10.43. View towards auditorium stage from rear entrance



fig.10.45. Bird's eye view of Fourth Floor



fig.10.48. Full size exterior basketball court



fig.10.49. Tuck Shop located within cafeteria area



fig.10.51. New circulation areas protruding from the southern facade



fig.10.46. Concrete edge of exterior recreation area

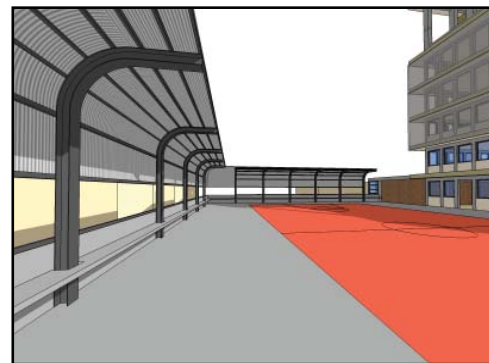


fig.10.47. Concrete edge with covered seating provided



fig.10.50. Cafeteria area with viewports to main circulation shaft



fig.10.52. New circulation areas ending on the fourth floor

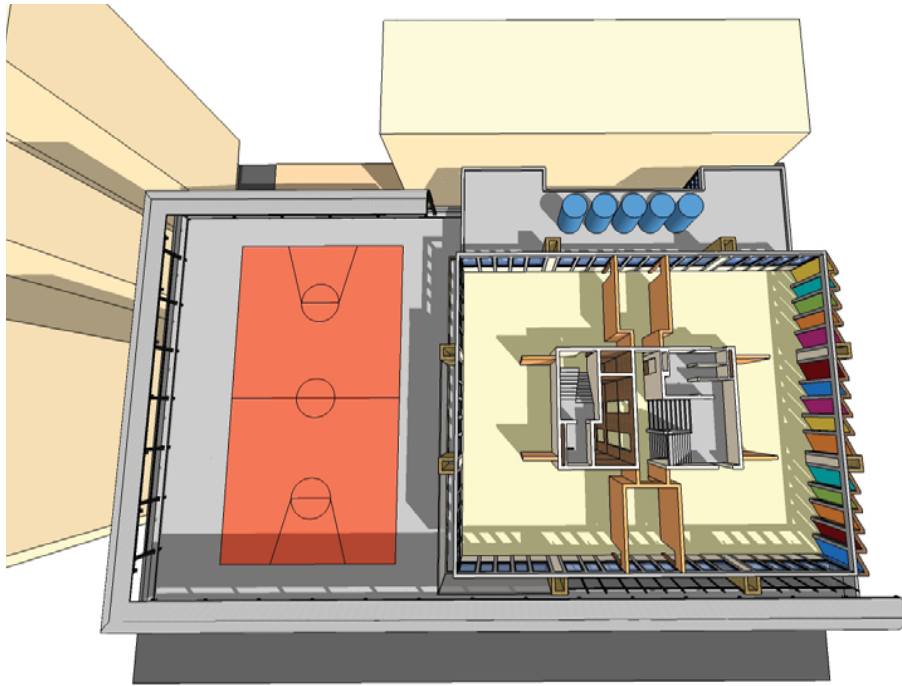


fig.10.54. Bird's eye view of Fifth Floor

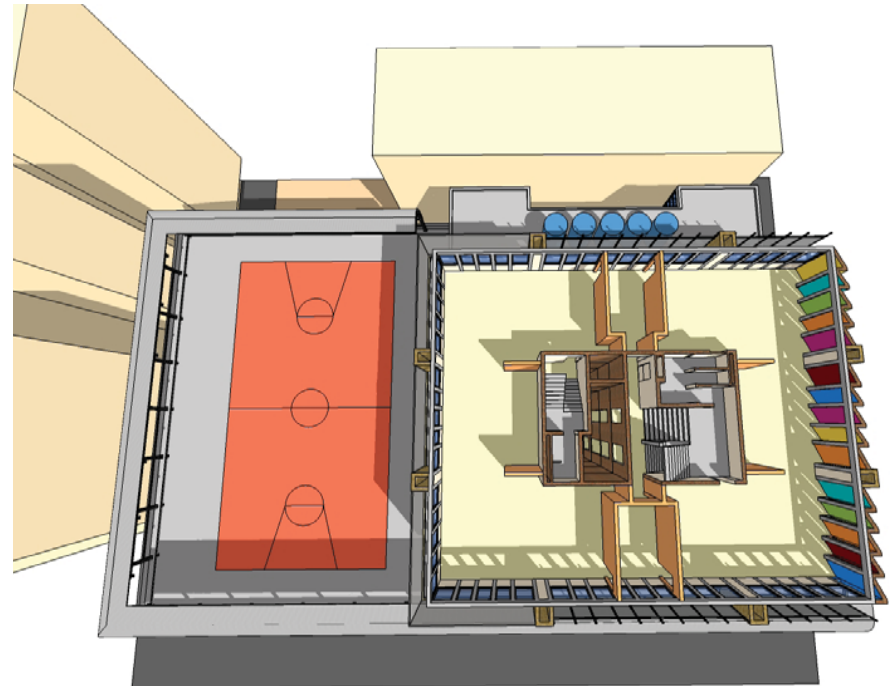


fig.10.55. Bird's eye view of Sixth Floor



fig.10.56. Structural steel mesh on eastern facade to allow for vertical gardening



fig.10.57. Water collection tanks to provide grey water for ablution facilities below



fig.10.58. Colorful angled walls to provide western screening. Northern screening provided by new glazed panels allowing for ventilation



fig.10.59. Typical interior of classroom with viewports to main circulation shaft

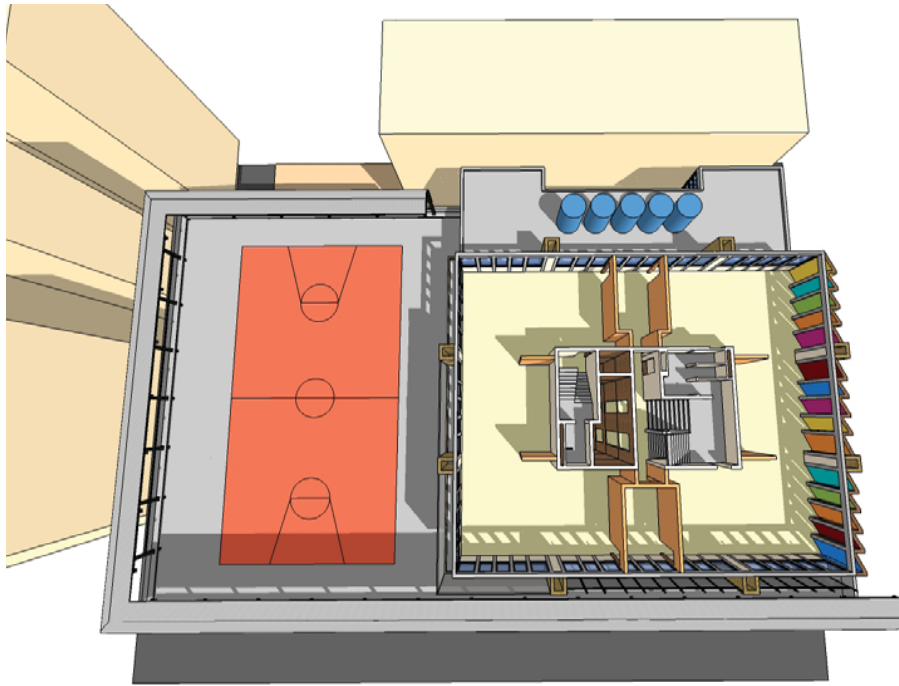


fig.10.61. Bird's eye view of Fifth Floor

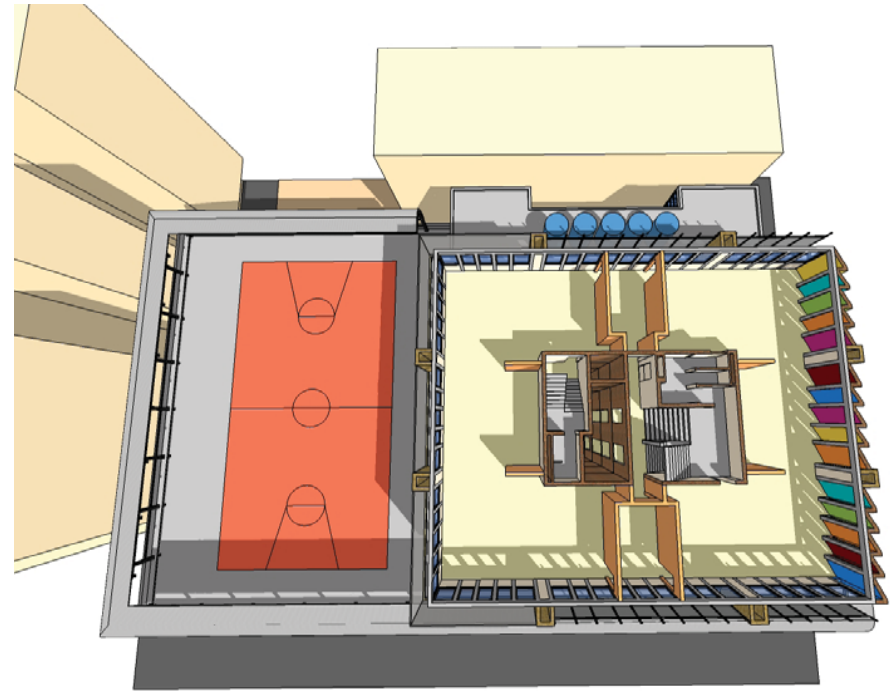


fig.10.62. Bird's eye view of Sixth Floor



fig.10.63. Structural steel mesh on eastern facade to allow for vertical gardening



fig.10.64. Water collection tanks to provide grey water for ablation facilities below



fig.10.65. Colorful angled walls to provide western screening. Northern screening provided by new glazed panels allowing for ventilation



fig.10.66. Typical interior of classroom with viewports to main circulation shaft

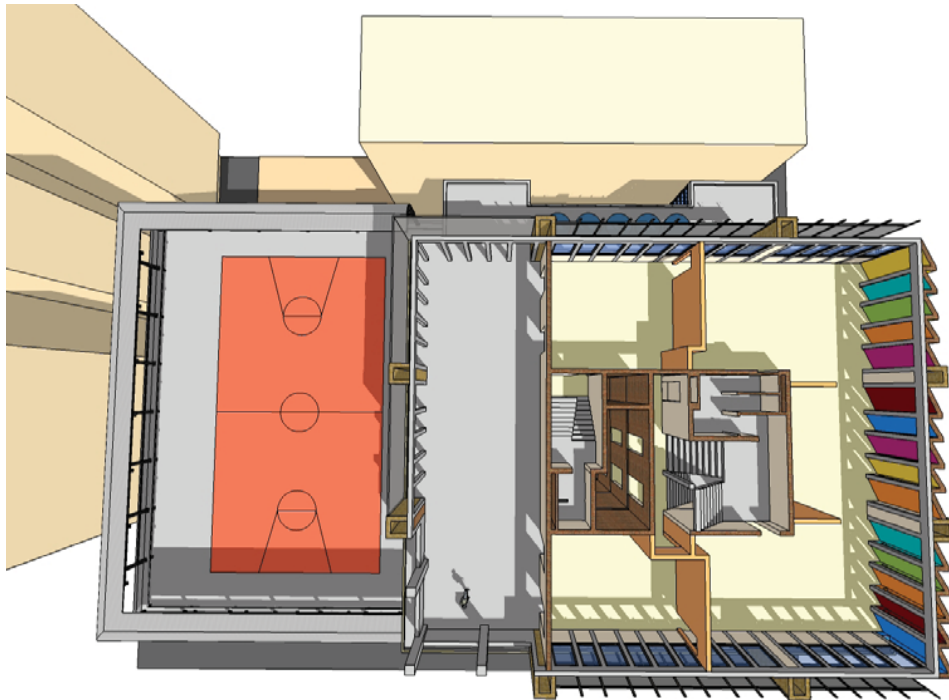


fig.10.68. Bird's eye view of Seventh Floor

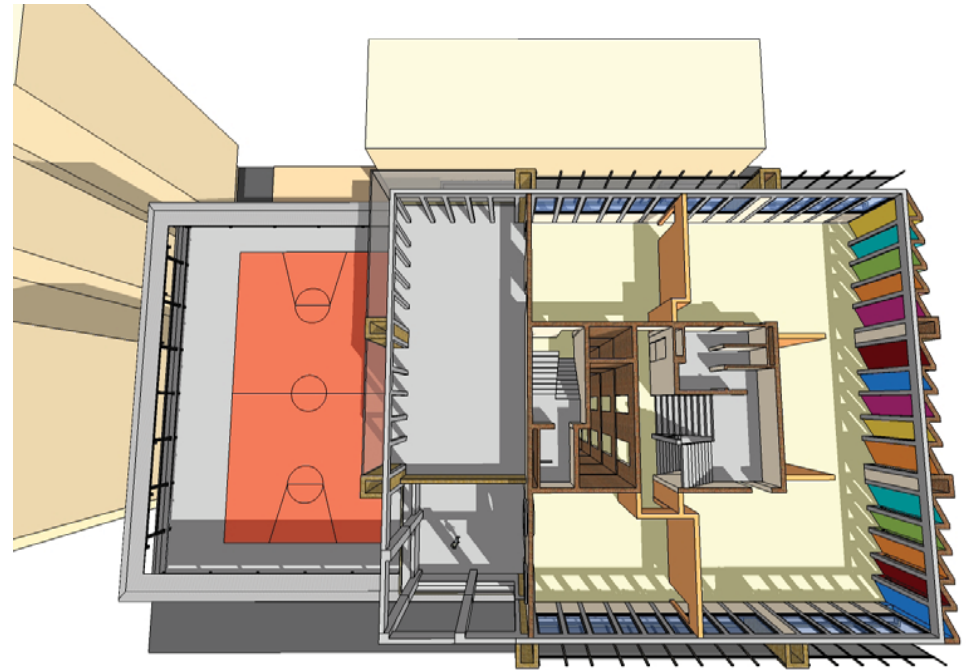


fig.10.69. Bird's eye view of Eighth Floor



fig.10.70. Structural steel allow for vertical gardening. The proposed double volume opening connects both open-air learning areas



fig.10.71. The proposed double volume opening connects both open-air learning areas

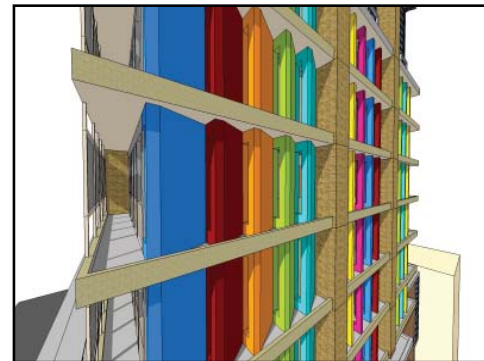


fig.10.72. Colorful angled walls to provide western screening. Northern screening provided by new glazed panels allowing for ventilation



fig.10.73. Typical interior of classroom with viewports to main circulation shaft

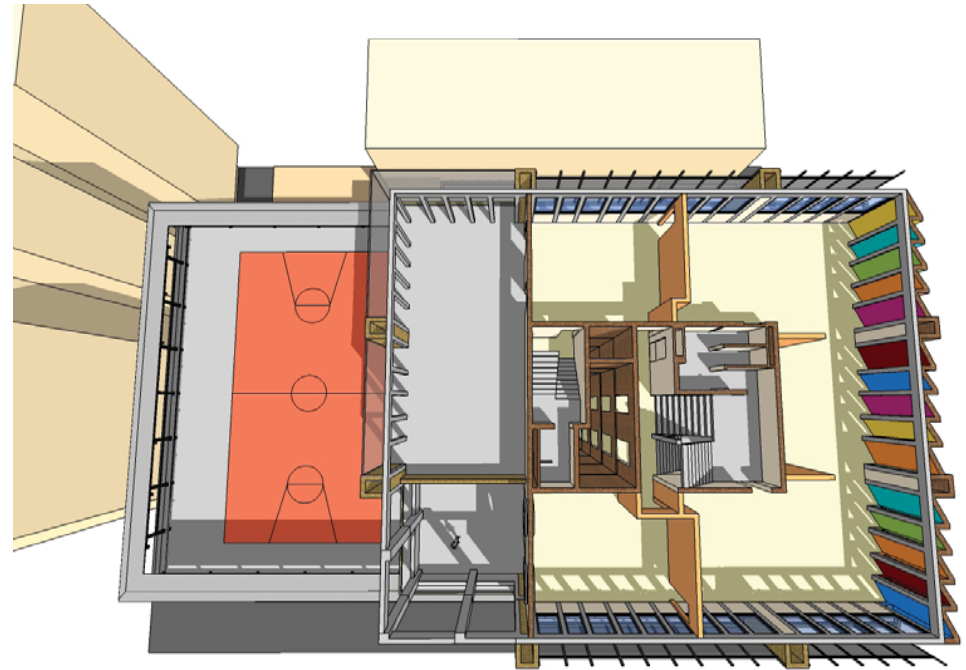
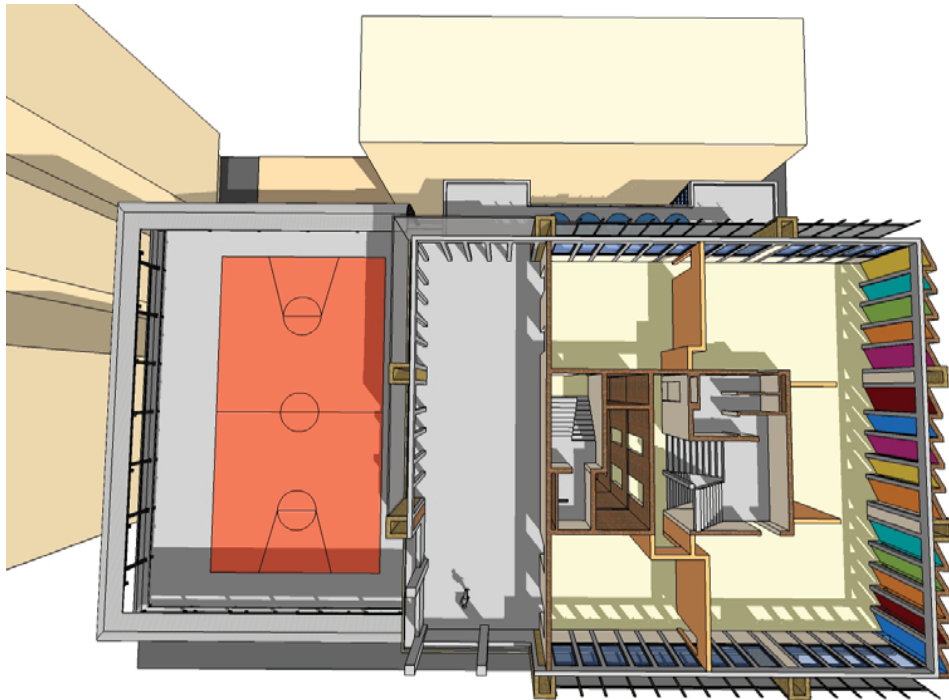


fig.10.75. Bird's eye view of Seventh Floor

fig.10.76. Bird's eye view of Eighth Floor



fig.10.77. Structural steel allow for vertical gardening. The proposed double volume opening connects both open-air learning areas



fig.10.78. The proposed double volume opening connects both open-air learning areas

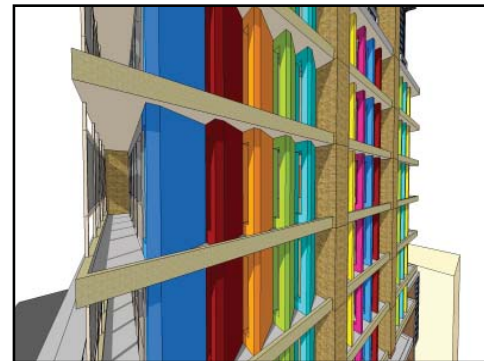


fig.10.79. Colorful angled walls to provide western screening. Northern screening provided by new glazed panels allowing for ventilation



fig.10.80. Typical interior of classroom with viewports to main circulation shaft

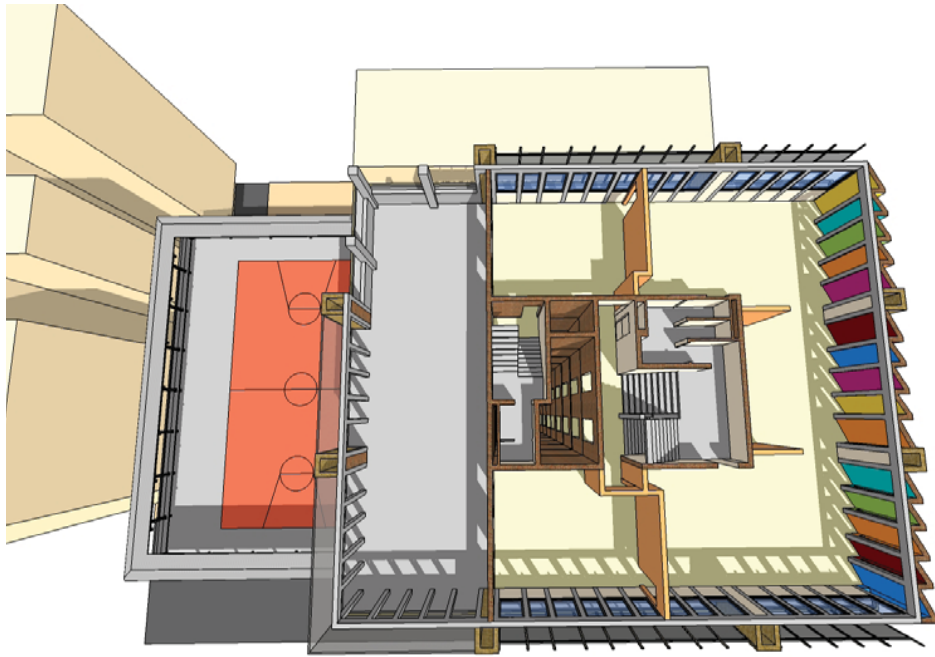


fig.10.82. Bird's eye view of Ninth Floor

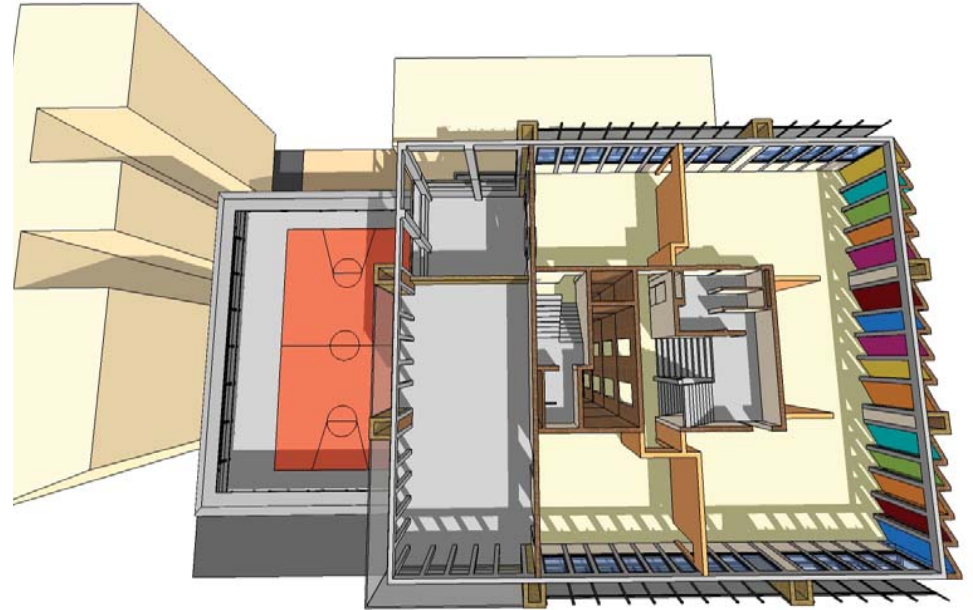


fig.10.83. Bird's eye view of Tenth Floor



fig.10.84. Structural steel allow for vertical gardening. The proposed double volume opening connects both open-air learning areas



fig.10.85. The proposed double volume opening connects both open-air learning areas



fig.10.86. Colorful angled walls to provide western screening. Northern screening provided by new glazed panels allowing for ventilation



fig.10.87. Typical interior of classroom with viewports to main circulation shaft

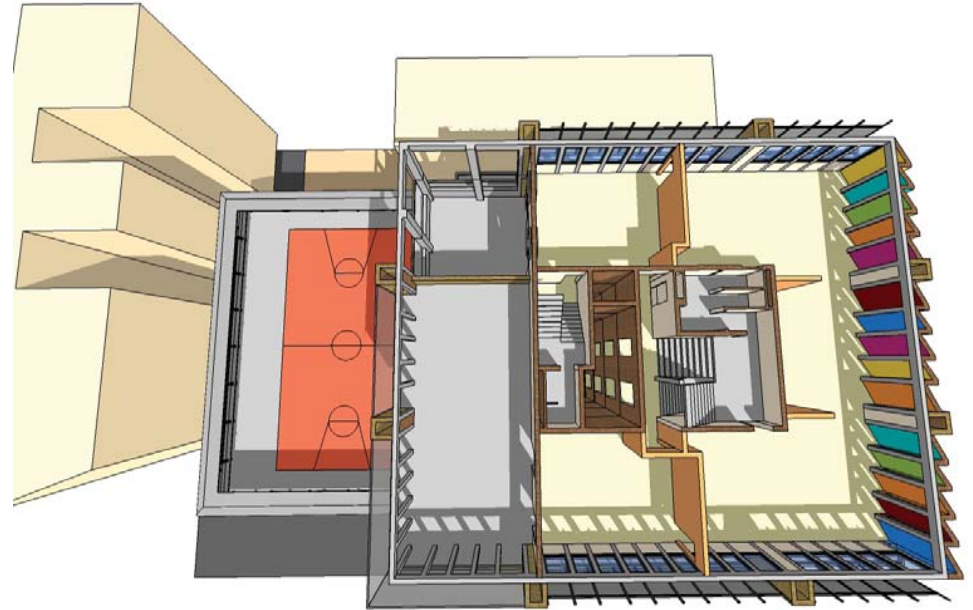
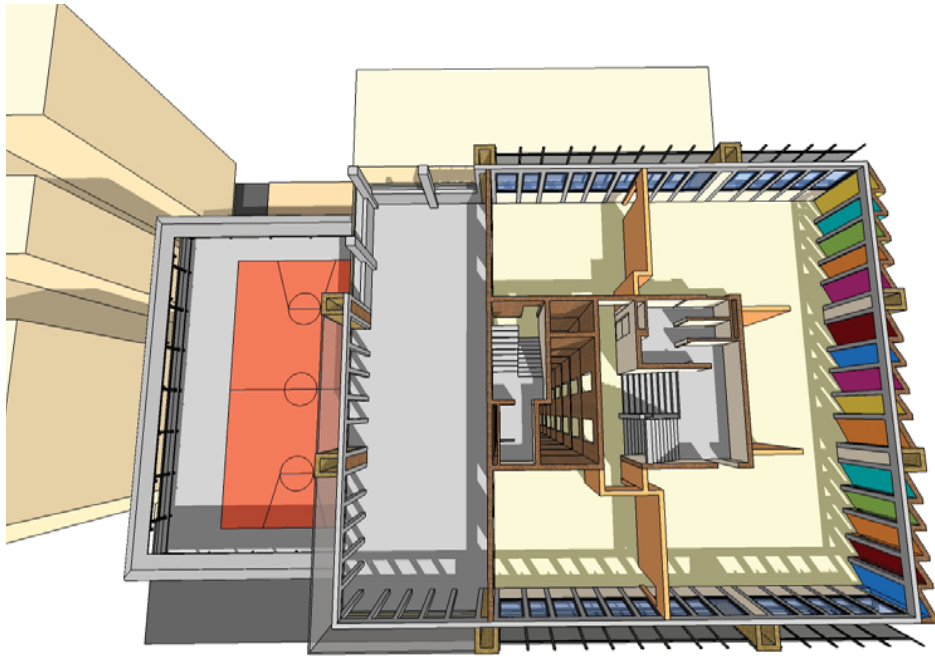


fig.10.89. Bird's eye view of Ninth Floor

fig.10.90. Bird's eye view of Tenth Floor



fig.10.91. Structural steel allow for vertical gardening. The proposed double volume opening connects both open-air learning areas



fig.10.92. The proposed double volume opening connects both open-air learning areas



fig.10.93. Colorful angled walls to provide western screening. Northern screening provided by new glazed panels allowing for ventilation



fig.10.94. Typical interior of classroom with viewports to main circulation shaft

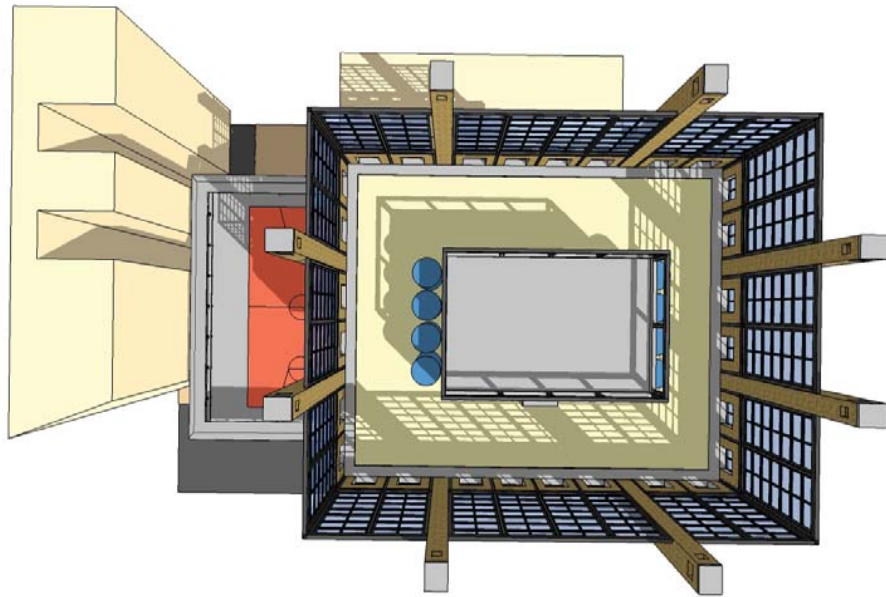


fig.10.96. Bird's eye view of Rooftop Floor

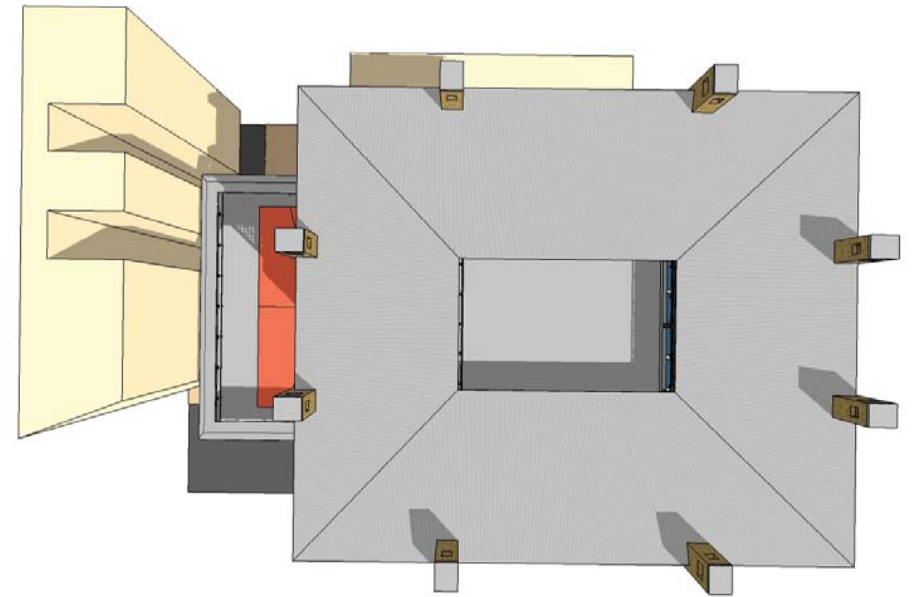


fig.10.97. Bird's eye view of Roof



fig.10.98. Solid walls with viewports to the urban context are topped with openable glazed facades

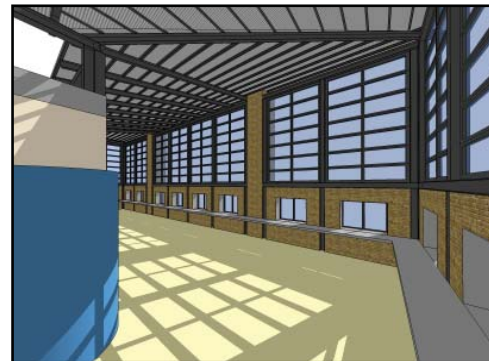


fig.10.99. Openable glazed facades allow for an abundance of natural lighting and ventilation. Water tanks store water collected from the roof



fig.10.100. Work surfaces are placed on the perimeter with viewports to the urban context



fig.10.101. Thermal Chimneys on the perimeter are provided with openings that will allow for hot air to escape by means of the stack effect





Conclusive Summary

The Apollo Project investigated the adaptive re-use of the existing, 10-storey office type Apollo Building, located on the southeastern corner of Church and Du Toit Street, as a multi-functional, vertical primary school.

The project attempted to realize the full potential of the existing structure as an educational facility through a series of explorations. Finally key interventions were derived from these explorations to formulate a number of proposed interventions that would convert the structure into an adequate, multi-functional, primary educational facility.

The project was initiated by a recent event by which the recent occurrence where urban educational facilities make use of existing structures within the inner city of Pretoria to fulfill their accommodation needs. Most of these projects cannot be regarded as successful, as a general lack of infrastructure restricts the capacity of programs offered. There is thus a real need for adequate educational facilities within the city. Adaptive re-use interventions that make use of under-utilized or vacant building stock for educational purposes offer a real solution to the identified problem.

Open land within the inner city is becoming all the more difficult to find. The densification of the inner city does not generally allow for the traditional, vast open playground and horizontally orientated educational building layout that is commonly the norm in suburbs. A shift to the vertical aspect of educational facility planning is thus required to meet the proposed densification of the inner city.

A mapping exercise revealed that a cluster of educational facilities exists in the southeastern part of Pretoria's inner city. An urban framework was developed that will enable all of these facilities that is located in close proximity of each other to share common resources and infrastructure. The result is proposed to be an urban education campus within the precinct.

The Apollo Project proposes that a combination of the three aspects discussed above can contribute to a potential solution that will address the problem identified. This proposed use of existing buildings as educational facilities might even trigger urban regeneration by acting as catalysts for new development. This project is thus an example of one such intervention that makes use of an adaptive re-use strategy to establish a vertically orientated primary education facility that is multi-functional in use and that is able to share its resources and infrastructure with surrounding institutions on a cross programming basis.

Conclusive Summary



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