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site selection

S I T E S E L E C T I O N

The principle aim with the selection of site is to identify a location that not only acts as a connection between the various departments and professional bodies but enhances accessibility by the public.

Since the facility envisioned is there to generate public awareness and opinion on the subject of architecture, it would not suffice to locate it outside of the main routes of the city. Doing so, would result in the building becoming merely another symbol of the practice of architecture and not the crucial link between the public and built professions as hoped for.

Similarly there is little justification for placement of this facility directly on main routes through the city which have been identified as positions for government departments, formal administrative corridors and high density economic development. The selection of site will thus seek to find a median between these criteria.

B U I L D I N G R E Q U I R E M E N T S

Pragmatic concerns and site constraints dictate the feasibility of building construction and erection. In order to assess the suitability of the site thus the building's requirements and functionality must be determined. The following have been identified as such:

01_Location near main routes

Transport routes to and from the site as well as pedestrian pathways through the city will determine the level of accessibility and hence use of the facility.

02_Sufficient site space

The final design whilst looking to inhabit previously

disregarded city space, must acknowledge the need and requirement for suitable space in which to develop. Building codes and standards must be adhered to in addition with suitable space for an unimpeded design.

03_Access to services

Electrical, water and sewerage connections are readily available through most of the inner city sites. Air intake and exhaust for ventilation should be unobstructed and not create uncomfortable pedestrian atmospheres. The ability to perform maintenance on the building must be considered.

04_Possible future expansion

The future addition of parking or the creation of extra storage areas once an increase in capacity is required are a minor concern yet due thought has been given to this matter and proposals will be developed through the design stages.

Z O N I N G

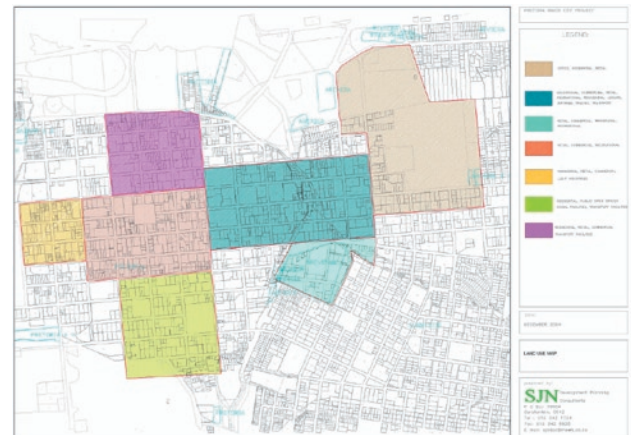


Fig.5_01.City precinct zoning, TICP SDF 2005

The zoning of the site thus falls along the boundary between two zone types. The northern urban zone focuses development on residential, retail and commercial activities while the Church Square zone seeks office, residential and retail spaces primarily. The multi-use nature of the design will thus comply with these criteria, establishing the office spaces for the councils as well as the public educational and commercial environments.

“This area should be characterized by an agglomeration of high-density buildings, mostly with retail at street level and offices above street level...”

TICP ISP Phase 2: 80

Increasing the density of the urban fabric remains a core objective of the design which will be accomplished by the utilization of functionless space. The lower floors in the building will become the accessible public realm with the upper floors restricted to semi-private office space.

“The development of the area as a government core supported by offices of parastatals, transnational public agencies, Non Governmental Organizations (NGOs)...”

TICP ISP Phase 2: 80

The positioning of CUBE on this site relates to the urban framework objectives for the Church Square area. The statutory councils implemented through government acts which will inhabit the CUBE structure are such an example of government agencies. Whilst the main corridors of Church Street and Paul Kruger Street will be the preferred areas for government departmental buildings, the close proximity of CUBE to the formal government structures, correctly portrays the administrative hierarchy spatially.

B U I L T E N V I R O N M E N T N E T W O R K

The aspect of integration of the project with the city occurs on multiple levels. The establishment of the built environment network seeks to build connections between government departments and organisations charged with the design and construction of the city. Two key examples of this are the Department of Public Works and Munitoria, the city authorising body responsible for the review and adherence of planned works to the local building regulations.

Fig. location of interest parties

Fig. spatial connections between places

S E L E C T I O N

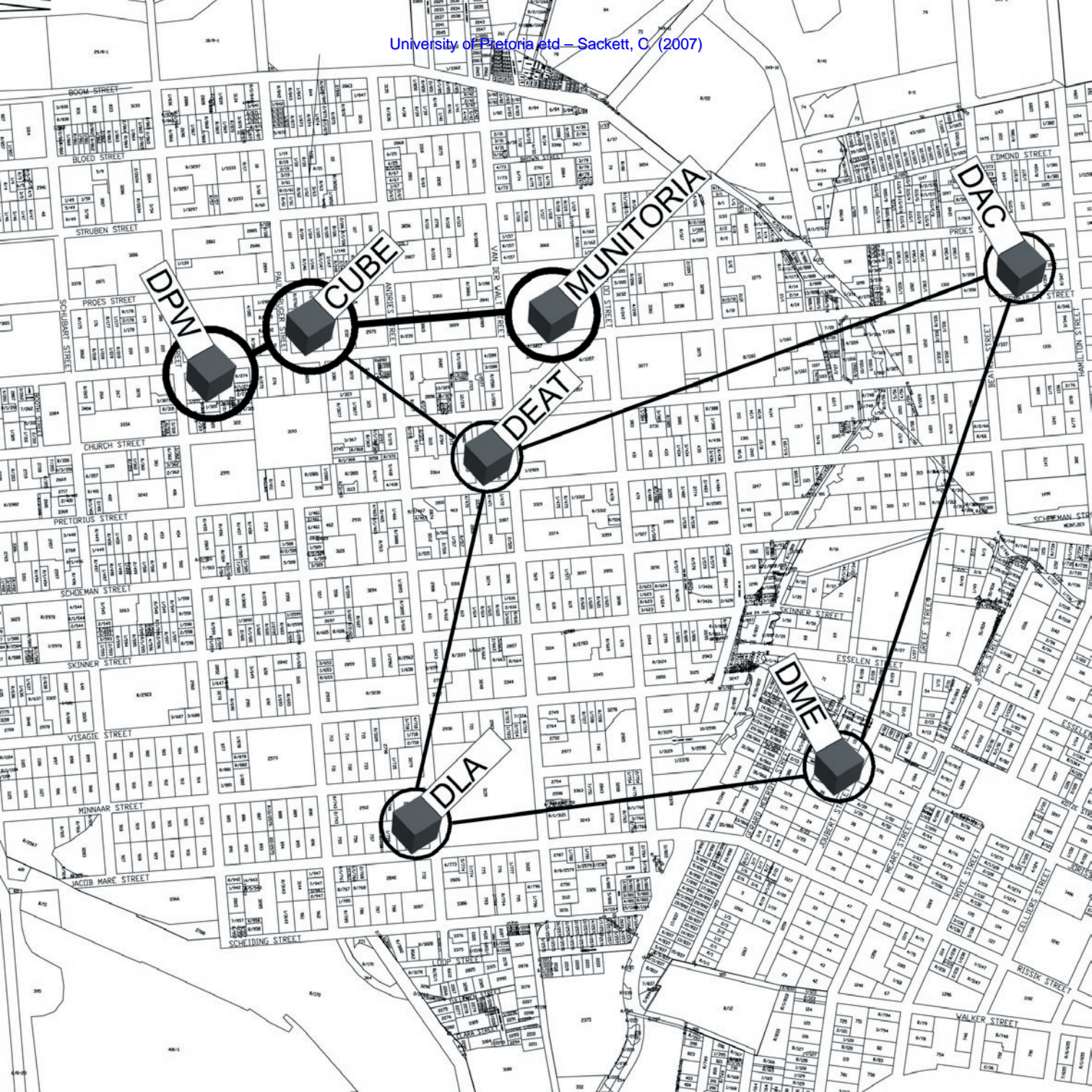
The building is seen primarily as not being a destination in itself but rather a point along a path through the city. In this manner, large numbers of people may pass by and view the displays held within the structure without overloading the facility.

Naturally those employed within the building and those seeking information, help or merely curious will access the building as the destination.

Yet for the passer-by and the commuter, the building is just another element within the city fabric. By providing the possibility of interaction with the building, the chances that these pedestrians may begin to experience the facility and not merely view it as another street façade, is increased.

From this it becomes self evident that this idea of pedestrian interaction has developed into a design objective and thus the site must cater for this and offer up possible ways in which this can be achieved.

The second part of the site criteria relates to the connection and locality in relation to existing and



future locations of the various government planning departments and professional bodies.

The latest TICP ISDP shows the intended conversion of the scattered departments throughout the city into condensed units and locations to enhance public service. This needs to be taken into consideration when deciding on site location and if the future relocations may impact negatively on the role of the CUBE facility.

S I T E I D E N T I F I C A T I O N

01_African Window (Berea) Area

Advantages

- The area is already established as a cultural area within the city and would suit the role of CUBE.
- The streetscapes in this precinct are some of the best in the city, creating well developed pedestrian movement routes
- Home and Land Affairs government departments are nearby acting as the anchors within the precinct from which development will spring.

Disadvantages

- Even though the streets are well designed there is very little pedestrian movement through the streets due to the position of Nelson Mandela road to the west acting as a barrier to pedestrian flow.
- Berea is far removed from the city centre where the most public movement and government related structures are situated.
- The ability to develop connections with other buildings involved in the built environment fields, is difficult due to the degree of separation in the fabric.

Fig.5_02.Built Environment Network (left)

Fig.5_03.Berea site proposal (top right)

Fig.5_04.Church Square site proposal (right)



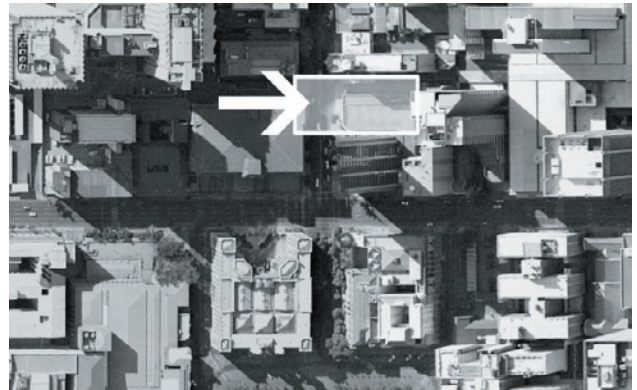
02_Church Square

Advantages

- The site is located on main transport routes and adjacent to the future pedestrian boulevard.
- There are a number of nearby facilities which deal with the built environment and can develop a built environment network in the city.
- The chosen site has undeveloped inner city space which can communicate ideas on densification.

Disadvantages

- Inner city land is considerably more valuable which could be used for commercial activities.
- The existing commercial activity on-site would need to be relocated or removed entirely.



03_Cultural Circle Area

This area within the city extends upwards and along Nelson Mandela drive, encompassing the Pretoria Art Museum in the north eastern corner and connecting with the State Theatre in the western edge. This area houses within it most of the cities cultural arenas and places.

Advantages

- Falling into this area ensures that CUBE will become a place with cultural focus for the people of the city.
- It is well situated within the city context to be accessible on a larger than city scale. Ie. With Centurion, Midrand and Johannesburg.

Disadvantages

- High speed and high volume road infrastructure and vehicular routes restrict the pedestrian interaction with the project site.

C H O S E N S I T E

The site upon which the project was decided to be established is the site adjacent to Church Square, in the very heart of the Pretoria city. With the proposed pedestrianisation of both Paul Kruger and Church Street, the element of public interaction sought for by the project will be achieved through the utilisation of this site due to its immediate proximity to these routes.

The argument for densification of the city fabric also finds grounding here through the under-utilisation of an inner city site which already contains existing buildings and a tight urban fabric.

These characteristics are seen to be challenges that may be difficult to overcome but are ones which face any development within the city context and in order to illustrate ideas on densification, public interaction, building as spatial composition and connecting pathways through the city, this site offers up possible scenarios for illustrating such arguments as will be shown through the design.

Fig.5_05.West view of chosen site



S I T E L I M I T A T I O N S

Whilst densification of the urban fabric is an objective of the project, such a process becomes highly problematic in trying to improve the city spaces made redundant by the surrounding structures.

The challenge to design such an 'infill' building is a great one with the possible creation of an incredibly unique space in the city. Yet not only must the designed structure remain functional, serviceable and accessible but so too must the neighbouring buildings remain able to operate without hindrance.

The project site has several limitations which have influenced and altered the design of the CUBE facility. These limitations have been listed and examined as to the manner in which they have had design influence.

01_ SITE DIMENSIONS

The project site is the remains of a larger site area on which the LVW Sentrum building is located on the corner of Paul Kruger and Vermeulen Streets, north of Church Square.

The site forms an L-shape, consisting of two 26m wide portions, one of which extends northwards from Vermeulen Street for 70m and the other which extends 76m west to connect onto Paul Kruger Street. Such a narrow and complicated site shape naturally generated a very linear building form but focus had to be placed on circulation through the building and site. With the extended path length for movement from one end of the building to the other, enhancing pedestrian and user flow through the structure became of highest importance and the starting point for design generation.

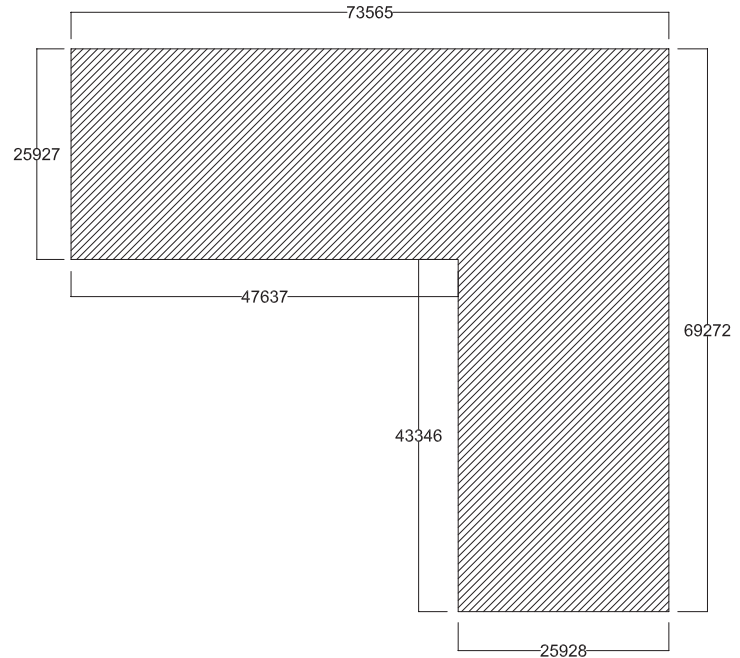


Fig.5_06.Site dimension diagram

02_ PARKING

Basement on site parking has become necessary for inner city buildings with the extensive private use of cars. Public transport systems within Pretoria do not cater sufficiently for the elimination of private transport just yet.

The project site was investigated into the possibility of providing parking for the users of the building. It must be noted that in the Spatial Development Framework analysis the development of parking garages to serve the parking requirement of the city was identified. Further the creation of one of these garages one block north of the project site meant that the CUBE facility would fall into the parking garages service zone area and allow the building occupants and visitors to utilise this parking facility.

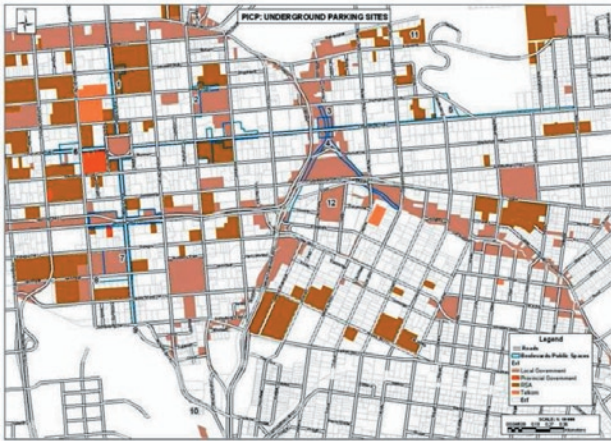


Fig.5_07.City parking strategy, TICP SDF 2005

Nevertheless, investigation into on site parking needed to be done in order to determine the possibility for it. Yet the main problem in developing a parking solution was in accessing the parking area.

Typical slopes for a parking garage ramp range from 1:10 and lower. In order to achieve an average 3m fall into the basement, the ramp would be a minimum of 30m in length. Considering a clearance height of 2.8m this meant that over 40m of ground floor space would be voided in order to cater for parking.

Parking layout was also investigated and sufficient structural requirements were met. However the parking solution only provided an estimated 40 bays. In order to construct the basement level at high cost for only an additional 40 parking bays was not deemed feasible.

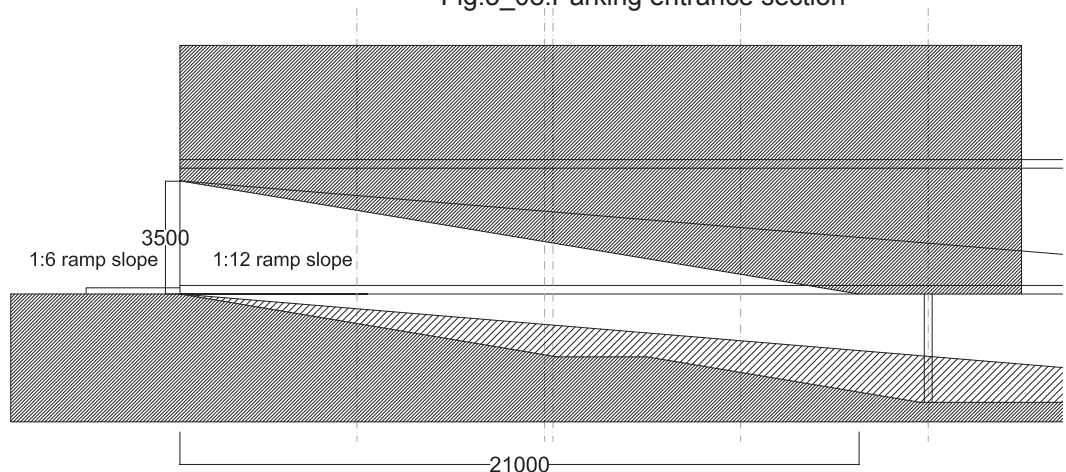
Another factor to consider with access was the impact to the building façade. A two way access road requires a minimum of 6m in width (most likely 8m would be required) and with circulation through the centre of the structure it meant the removal of the central portion of the building façade.

Variations on the parking system were developed and are identified below.

1. Initial two way access
2. Single road access at single point
3. Single road access at opposite ends
4. Combine basement level with neighbouring structure

In the first three variations, no feasible or sufficient solution could be developed. The fourth and final proposal would be the only proposal worth consideration although the impact of the access route as mentioned above would then require careful handling.

Fig.5_08.Parking entrance section



The fourth proposal however is not without its own constraints, the most relevant being the functional use of the basement level at present. The VWL Sentrum structure houses offices with ground floor shop access. However this structure has been identified through the new SDF to become the location of the Supreme Justice. With this in mind, it is doubtful whether possible office space would be relegated for parking and if it were, the problem of structural layout remains a large obstacle.

Considering all the above it has become decided that no parking will be provided on site and instead all parking requirements will be met by the installation of the parking garage to be constructed on the neighbouring northern city block. The parking proposals have been included for inspection but will not be taken any further through the development of the design.

03_SERVICING SURROUNDINGS

The eastern edge of the site running in the north-south direction faces onto the Pretoria News building which at present receives service access from the project site. Deliveries are sent and received here although the newspaper production and distribution is done elsewhere. Refuse removal and additional building servicing are preformed through this entrance.

In order that this design does not impede the operation of the surrounding structures, this aspect requires attention and a solution through the design.

At present, a fire escape stairwell is built on the site boundary, set back 5m from the Vermeulen street edge. The remainder of the building is set back 2m from the site edge and an additional 5m at the northern part of the site where the service access doors are located.

This provides a fortuitous form when considering a suitable response from the facilities design. Indeed a

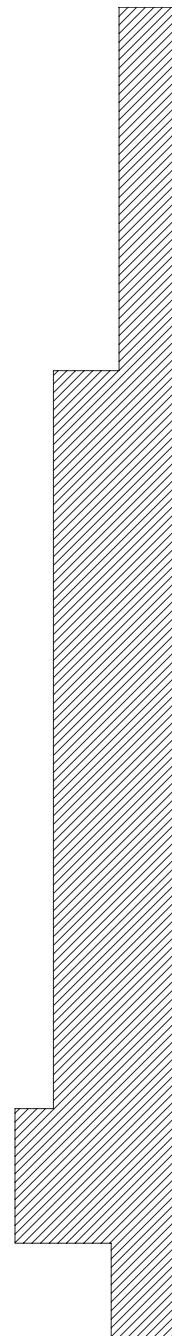


Fig.5_09.Eastern site edge plan

built edge along the site boundary would not restrict the accessibility of the service area but access to this narrow service road does need to be provided.

Hence a service gate has been created which arose from the shifting of building edges not apart horizontally but vertically on plan. With the setback of the building edge behind the fire escape stairs, enough space was provided for the access gate to the service road. This would not be able to accommodate vehicles however so a parking/service bay was needed from which deliveries could be made with trolleys and forklifts for heavy loads. The parking bay was suitably accommodated beneath the overhang of the lecture room on the first floor.

04_VWL SENTRUM ACCESS

The redevelopment of the arcade route between the two structures was initially designed to be a route in isolation. This basis required revision when it was found that the two main entrances into the office tower were not from the street facing edges but from within the arcade. The structural system for the arcade thus required revision to achieve the doorway openings in the steel and glasswork to allow access into the building.

A structural solution was found by forming a steel portal that supported the perpendicular arcade portals, allowing the loads to be carried to either side of the doorway opening and down to the foundations. Since the glasswork had to be removed to allow movement into the VWL building there was no necessity for any increased amount of supporting steelwork and the door portal frame sufficed.

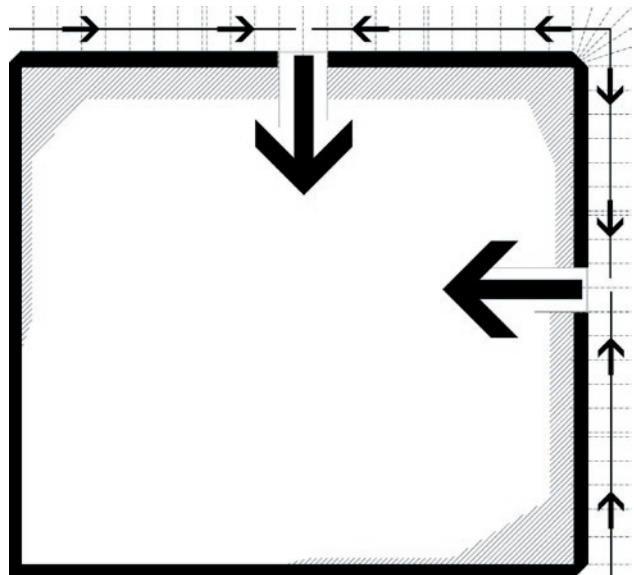


Fig.5_10.Access routes of VWL Sentrum

05_BUILDING FACADES

The close proximity of the CUBE facility to the neighbouring structures, whilst a sought for objective of the project, presented problems with the construction and articulation of the building facades. Indeed the relevance of façade detailing and design was put in question. Naturally for the street facing facades, design remained important as these would be the representative faces of the building. But the buildings sides hidden beside existing structures would not receive visible attention.

In addition, future construction of existing or new buildings in the immediate area could alter the manner in which the building is viewed, hiding or revealing parts in contrast to as how they would be seen.

Whilst this may not be a true limitation of the site, this aspect of the site does require a change in thinking as to how the building is perceived and where this focus is placed.

Hence, external focus on the buildings appearance was exchanged for an internal focus on the spatial quality in the building. Since this fell in line with the design theory for the project and the elevated status which internal space would receive, this shift is deemed appropriate.

06_CONSTRUCTION AND STRUCTURE

One of the greatest concerns this project faces is in the construction process. There is an increased level of difficulty building within the confines of an existing built environment. Consideration and protection must be given to the surrounding structures and design of the building to be constructed must be continually aware of the manner and order in which construction must proceed to avoid complications.

Since the project site is bordered on three sides by existing structures right up to the site boundary line, certain precautions must be considered.

01_Excavation work for the laying of foundations has the possibility of exposing and damaging the existing foundations of the neighbouring buildings. Adequate shoring and stabilisation of existing foundations needs to be done prior to commencement of construction.

02_The casting of reinforced concrete columns and slabs require that dimensions of shuttering be considered, especially where the slab edge approaches the existing buildings around the site.

03_Construction and expansion joints must be considered and planned. The L-shape of the site and thus building form, presents the problem that expansion will happen along both arms but in perpendicular directions. The structure must be able to accommodate this with special focus at the central connecting part of the structure.

04_Protection of the surrounding structures must be provided during the construction period through either netting or chipboard panels supported on scaffolding.

05_Services and drainage routes to the surrounding buildings may require temporary re-direction during the construction process. Provision has already been made to establish service routes beneath the arcade which will be put into use upon completion.

Fig.5_11.Expansion joint positions

