Apollo Primary School
Towards Integrated Urban Education in Pretoria

Section A-A - Scale 1:100

Top Level Diagram

10th Floor

9th Floor

8th Floor

7th Floor

6th Floor

5th Floor

4th Floor

3rd Floor

2nd Floor

1st Floor

Ground Floor

Rooftop Diagram

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

Technical Development
Soundproofing wall-roof gap
Scale 1 : 10
Fig. 10.106. Detailed Roof Section (Drawing not to scale)

Apollo Primary School
Towards Integrated Urban Education in Pretoria

Detailed Roof Section
Scale 1:20
Northern Elevation
Scale 1 : 200

Western Elevation
Scale 1 : 200
As indicated in the final design proposal, the structure east of the Apollo Building is proposed to be demoli-
ished. An auditorium is proposed to be built overhead of a pedestrian arcade that is introduced. An informal
waiting area will be provided for children to not only safely wait for their parents, but also allow for informal
performances.

The auditorium will mostly consist of a concrete frame structure, with the northern foyer area consisting of
a composite concrete and steel “H” and “I” beam structure that will support a cantilevering concrete plate
forming a 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.

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 at the northern part. The structural frame
of the auditorium is mainly composed of a concrete column and beam system.

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 aluminium 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.

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 participat-
ing in the auditorium moving in and out of the venue. Audience members will thus also be able to see elec-
trical and mechanical ventilation equipment. Children to the auditorium happen through sound barriers of the rear and at the side. Walls will consist of an uneven brick surface with acoustical
wall panels to reflect sound to the audience.

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

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. Stairshades across is provided on the first and second floor.
Towards Integrated Urban Education in Pretoria

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
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. Thermal chimneys extracts heated air from 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 mechanical ventilation unit is located in the basement of the structure. Cold air is regulated and forced upward in a ventilation shaft. From here the cold air is directed to the appropriate spaces by means of ducting under the floor slab and returns to the mechanical ventilation unit in the basement of the structure. Thermal chimneys assist in heating the air as it returns past the periphery of the floor. Thermal chimneys extract heated air from the roof surface.

**Figure 10.110.** Diagram of proposed Water System

**Table 6**: Amount of Sanitary Appliances required in relation to population

<table>
<thead>
<tr>
<th>Month</th>
<th>Male Toilet</th>
<th>Female Toilet</th>
<th>Male Urinal</th>
<th>Female Urinal</th>
<th>Handwash Basins</th>
<th>Water Closets</th>
<th>Total</th>
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<tr>
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<td>7</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>12</td>
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<td>February</td>
<td>7.7</td>
<td>4.7</td>
<td>2.7</td>
<td>0.7</td>
<td>1.7</td>
<td>1.7</td>
<td>12.1</td>
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<td>March</td>
<td>7.9</td>
<td>4.9</td>
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<td>0.9</td>
<td>1.9</td>
<td>1.9</td>
<td>12.7</td>
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<tr>
<td>April</td>
<td>8.1</td>
<td>5.1</td>
<td>3.1</td>
<td>1.1</td>
<td>2.1</td>
<td>2.1</td>
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<tr>
<td>May</td>
<td>8.3</td>
<td>5.3</td>
<td>3.3</td>
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<td>3.5</td>
<td>1.5</td>
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<td>2.5</td>
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<td>July</td>
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<td>5.7</td>
<td>3.7</td>
<td>1.7</td>
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<td>2.7</td>
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<td>5.9</td>
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<td>1.9</td>
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<td>3.1</td>
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<td>6.3</td>
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<td>2.3</td>
<td>3.3</td>
<td>3.3</td>
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<td>6.5</td>
<td>4.5</td>
<td>2.5</td>
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<td>December</td>
<td>9.7</td>
<td>6.7</td>
<td>4.7</td>
<td>2.7</td>
<td>3.7</td>
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<td>7.9</td>
<td>12.9</td>
<td>12.9</td>
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**Rainfall (mm)**

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<tr>
<th>Month</th>
<th>Rainfall (mm)</th>
<th>Cubic meters</th>
<th>Litres Usage (pm)</th>
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<tr>
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<td>78.9</td>
<td>0.0789</td>
<td>136.69425</td>
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<td>19.1125</td>
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<tr>
<td>June</td>
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<td>0.0007</td>
<td>1.21275</td>
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<tr>
<td>July</td>
<td>3.4</td>
<td>0.0034</td>
<td>5.8905</td>
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<td>August</td>
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<td>December</td>
<td>6.3</td>
<td>0.0063</td>
<td>10.91475</td>
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Cost 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 out of horizontally orientated ventilation slots located at waist high level. A sloped suspended ceiling directs the rising air to the periphery of the floor. A mechanical ventilation unit extracts the heated air from the space through a ventilation grill located at the "stack effect."
Apollo Primary School

fig.10.115. 3-D Views of the proposed Apollo Primary School
Final Model (Scale 1 : 200)
Final Model (Scale 1 : 200)