Chapter 7: Design Resolution

7.0.1 Elements of Incremental Growth

During the dissertation it emerged that the design question was to be answered by three seemingly separate but interlaced elements in the design process:

**The Unit of Growth**

**The Speculative Master Plan of Growth**

**The Architectural Manifestation of the Unit in the Master Plan**

The unit and its development are covered in Chapter Six, while Chapter Seven is aimed at exploring how the unit will grow and what architectural ramifications are possible in the context of Pienaarspoort with the cement retailer as users.

7.0.2 Phase 3 - The Zenith of Growth and Engagement

Phase Three was selected for the focal point in the dissertation as this point is far enough into the future to see what the precinct could be, but close enough to still feel the connection to the site as it is now.

While the entire precinct is expected to evolve and grow over time it is speculated that the agents involved will have assistance from larger bodies at certain stages.

This speculation of growth is conceptually illustrated and then focused around the cement retailer at a specific phase in their development. The eventual architectural intervention becomes an exercise in roofing and planning of the larger construction elements, but still aims to retain the ethos of the incremental self-build.

The built environment is a complex game, played by far more players on a more complex board for a long period of time. The goal is to allow large numbers of inhabitants and other active agents to coexist in peace and mutual well being. We build to live together.

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**John Habraken**

(Habraken, 2008: 6)
7.1 THE PLATFORM OF ENGAGEMENT

By applying the rules and patterns of growth described in Chapter Six, the possible manifestations and forms of growth were explored in the context of Pienaarspoort.

As described earlier in (see Illus: 130) a speculative set of scenarios based around the cement use in the area were put down and a narrative of growth over time was illustrated.

In order to explore this growth architecturally, the focus had to be drawn on one particular agent in this complex process as well one particular phase that best captured the possibility of architectural spatial, structural and programmatic intervention.

7.2 FACTORS IN MASTER PLAN SPECULATION

To explore this possibility, an interactive process of future speculation and current needs was required. This process revealed how the master plan should function as well as defining the requirements of the unit of growth.

The most stable factors in the process became the Pienaarspoort Station and the edge conditions created by the mobility routes, the rail and the station building.

Taking these factors into account with GAPP’s proposal discussed in Chapter Five, the design revealed the conditions of the site and its larger context. (see Illus: 138)
7.3 MASTER PLAN AT PHASE 3

Considering the current processes of growth analyzed and observed on-site, it can be assumed that the government subsidized housing will take precedence over the residential housing patterns in the area.

The nature of the unit and its edge response in this context is expected to work with the deliminal space around the edges and crossing. By responding to the mobility routes the area between the rail crossing and the Pienaarspoort station will become a major retail zone.

It is expected that the road closest to the rail edge will become a service road and serve the light industry that develops along the rail edge side.

This light industry edge would then support the retail zone between the two roads, thus forming the ‘front of house’ to the now active street edge.

At this point the area around the Pienaarspoort station would have become a public square with retail activities on its street edges.
Illus. 141 Sketch Speculation of Possible processes of development and growth in Pienaarspoort (Author, 2011)
7.4 EARLY INCREMENTAL PHASES

EXISTING

EXISTING SITE AS PREVIOUSLY ANALYZED

MOVEMENT A

PLACEMENT OF PUBLIC INFRASTRUCTURE UNIT: ABLUTION

PUBLIC INFRASTRUCTURE UNIT ATTRACTS USE AND BEGINS PROCESS OF ENGAGEMENT

MOVEMENT B

PLACEMENT OF PUBLIC INFRASTRUCTURE UNIT: POLICE POST

LOCAL RETAILERS ENGAGE WITH MUNICIPAL OFFICIALS TO RENT UNITS.

THEY GAIN ACCESS TO BASIC SERVICES AND STRUCTURAL SUPPORT

Existing site as previously analyzed

Pienaarspoort Station

Placement of public infrastructure unit: ablution

Railway track

Existing temporary housing

Existing retail

Placement of public infrastructure unit: police post

Infill with lamp post units & rent out

Local retailers engage with municipal officials to rent units.

They gain access to basic services and structural support
7.4 Early Incremental Phases

Infill with lamp post units & rent out

Retailers rent out spaces in between to less economically resilient retailers.

Cement retailers use units to make loading platform.

Growth and appropriation continues by retailers attracted to energy of area.

Cement retailers use infrastructure to make extended loading platform.

Speculation of Pienaarspoort growth - incremental phases (Author, 2011)
7.5 MAJOR DEVELOPMENT PHASES

**MOVEMENT F**

**PHASE 1**

**PHASE 2**

Cement retailers establish foothold in area - Pienaarspoort becomes known as building material depot.

Loose retail elements are intermixed with cement retail.

De-centralised cement depot is major element in Pienaarspoort.

Cement retailers gain assistance from Afrisam and grow their establishment within the area.

Cement retailers move into new area, selling their old site to other retailers, they seek help to expand their business, gain an identity and become more than just sidewalk salesman.

Who use the infrastructure put down by them to grow their own business.

Infill with lamp post units & rent out.

Infill with lamp post units & rentable in between space.
PHASE 3

CEMENT DEPOT HAS PUSHED OTHER RETAIL TO UPGRADE - PIENAARSPOORT IS NOW A MAJOR RETAIL CENTRE FOR ALL GOODS

AN INTERVENTION IS PROPOSED TO PROVIDE SHELTER FOR THE CEMENT RETAILERS, THAT COLLECTS WATER, STORES ENERGY AND THROUGH ITS TECTONIC PROCESS GIVES AN IDENTITY TO THE GROUP.

PHASE 4

STORAGE OF RETAIL GOODS AND DISTRIBUTION INTERMIXED WITH RETAIL TAKES OVER

YEARS LATER, THE CEMENT GROUP TAKE OWNERSHIP OF THE PRECINCT AND SET UP A DEVELOPMENT AGENCY THAT REVAMPS THE ‘OLD CONTAINER’ STORE YARD TO THE NEW PIENAARSPOORT STATION

PHASE 5

STORAGE MOVES AWAY, LAYING FOUNDATION STRUCTURE FOR FUTURE TRAIN STATION AND TRANSPORT NODE.

THEY CONVERT THE ‘OLD’ CONTAINER GANTRY INTO A PEDESTRIAN BRIDGE PROVIDING A FOCAL POINT OF IDENTITY THAT PIENAARSPOORT IS SYMBOL OF INCREMENTAL GROWTH BY THE PEOPLE FOR THE PEOPLE.

Infill with lamp post units & rent out

Illus: 146  Speculation of Pienaarspoort Growth - Major Phases (Author, 2011)
7.6 PHASE 3 - CAPTURED IN A MOMENT

Illustration 147: Phase 3 - plan - captured in a moment (Author, 2011)
PIENAARSPROORT STATION
THE MAJOR ELEMENT IN THE PRECINCT. THE STATION AREA BECOMES A PUBLIC SQUARE USED FOR MEETINGS, RALLIES AND OTHER LARGE SCALE GATHERINGS.

DISSERTATION FOCUS AREA
CEMENT RETAILER COALITION FACILITY FOR DISTRIBUTION, COLLECTION AND RETAIL OF CEMENT.
DOUBLES AS FACILITY OF ENGAGEMENT FOR AFRISAM TO GAIN MARKET INFORMATION.
INTRODUCE NEW TECHNOLOGIES IN CEMENT USE: I.E BRICK MAKERS, HOME BUILDERS AND OTHER CEMENT USERS.

CONTAINER & GOODS STORAGE YARD
CONTAINERS IN AREAS SUCH AS MAMELODI PROVIDE A MAJOR ROLE IN DEVELOPING RETAIL. ALTHOUGH LIMITED THEY ARE KEY IN DEVELOPMENT PROCESSES
THE INFRASTRUCTURE IN THIS AREA LATER FORMS THE STRUCTURE FOR THE TRAIN STATION

LAMP POSTS
THE LAMP POSTS ACT AS BOTH URBAN STRUCTURAL ORDER AS WELL AS REACTING TO URBAN ORDER IN FACILITATING CURRENT AND FUTURE MOBILITY ROUTES.

THE CROSSING
THE KEY ELEMENT IN MOTOR AND PEDESTRIAN MOVEMENT DRIVING THE PRECINCT AT THIS MEETING POINT.

STREET EDGE - PUBLIC RETAIL

RDP HOUSING
WHILE RDP IS NOT CONSIDERED THE MOST appropriate FORM OF MASS HOUSING, IT IS EXPECTED THAT THE VERTICALITY INTRODUCED BY THE LAMP POSTS WILL INSPIRE VERTICALITY AND DENSITY IN THE UPGRADES TO THESE HOMES.

ILLUS: 148  Phase 3 - perspective - captured in a moment (Author, 2011)
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7.6 Phase 3 - Captured in a Moment
Phase 2 - Site section - phase A - C (Author, 2011)
Chapter 7: Design Resolution

7.6 Phase 3 - Captured in a Moment
Phase 2 - Site section - phase 1 - 5 (Author, 2011)
Illus 151 Phase 2 - site perspective - view from cross roads (Author, 2011)
7.7 THE CEMENT DEPOT

The depot is the head of a much larger more de-centralised network. From this point the cement is brought in, stored, sold and distributed.

While the main driver of the form was movement of goods, either by fork lift (mechanical, or manual) wheel barrows or hand moving. (see Illus: 152)

The design of the loading platform is the key in arranging this space to work as a distribution and loading point. (see Illus: 153)

The facility also has an administrative and educational and administrative role. For this there is a multilevel floor plan to make space away from the busy ground floor activities, for meetings, offices, administration, lectures and possible retail to other smaller businesses. (see Illus: 154) & (see Illus: 155)

SPATIAL PROGRAMME

The primary component in the planning is the programming of the loading platform. This platform in its use will be the point of interface for the supply, distribution and collection of materials.

The importance of the platform is carried through by becoming the point from which meetings are held and chaired.

Systemically the platform also works as the service core for the facility, housing the pumps, water pipes and various other services that the facility needs. (see Illus: 166 , on page 128) The water faucets are supported and distributed through the platform as well as making the concrete form the key programmatic piece in the forming of the facility.

MATERIALITY

As Afrisam is the agent of control in the facility, the use of pre-cast cementitious products was considered appropriate. As the lamp posts formed the first wave of infrastructure, followed by the roads, the provision of culverts for drainage inspired the use of the same culvert design to be used as the platform base.

The culvert base is then used as the cover element, allowing for ease of access to the maintenance of the service elements below.
The Cement Depot in Phase 3 - Level 1 (Author, 2011)
The Cement Depot in Phase 3 - Level 2 (Author, 2011)
7.8 PROVIDING SHELTER

Through the process of designing the unit and its projected patterns of growth it emerged that certain elements in the process could not be facilitated by self-build.

At certain points in the projected growth, when the formation of groups of people performing similar functions reaches a critical point, it becomes necessary to share the collective energy between the available resources.

In the form of the cement retailers, the requirements for a facility that enhances their business are simple: a raised point for collection and distribution, a means to move these goods easily, environmentally comfortable administrative spaces and most rudimental a shelter to keep the goods dry.

The roof is simultaneously the strongest element in the identity of the retailers while being the most direct symbol of their need in an architectural form.

The roof construction, form and concept all lie in the possibilities that a simple unit of growth, in this case a truss member determined by a manageable size for a single or group of men to handle, can be used to span the required length and perform environmentally by collecting water, providing shelter from the sun and ventilating the space below. (see Illus: 159)
7.8 Providing shelter/Chapter 7: Design Resolution

Illustration 158: Sketched process of roof form based on structural, process and resource requirements (Author, 2011)

Illustration 159: Rationalization of roof form (Author, 2011)
THE SYSTEM ALLOWS FOR:

- INCREASES DENSITY THROUGH VERTICALITY.
- SUSTAINABLE SOLUTIONS THROUGH COLLECTIVE ENERGIES & SHARED RESOURCES.
- A LARGE SCALE DEVELOPMENTAL STRATEGY THAT WORKS THROUGH BOTTOM UP SYSTEM OF CONTROL AND OWNERSHIP.
- A MUTUALLY BENEFICIAL BUILDING SYSTEM THAT RELIEVES MUNICIPAL BODIES OF ADMINISTRATIVE RESOURCES.
7.9 RATIONALIZING THE ROOF

The construction of the roof is to be made by a small team of builders using the units along with scaffolding and truss ties to incrementally assemble the roof. Using temporary supports to stay members, while further members are added to hold the structure in place. (see Illus: 159)

The roof system is intended to symbolize the power in the synergetic assemblage of the similar parts to create a coherent yet elegant element.

The shape of the roof allows for the collection of rain water, while transparent panels of clear pvc allow light into deeper areas.

The roof spatially frames the space while giving the cement retailers a facility that embodies their activities and process in the parameters of temporality and flexibility around mobility routes.


Illus: 162 Axonometric explanation of Roof Structure (Author, 2011)
7.9 Rationalizing the Roof/Chapter 7: Design Resolution

Illus: 163  Spatial Programming of Cement Depot (Author, 2011)
7.10 DISTRIBUTION OF CEMENT

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illus: 164  Section CC  (Author, 2011)
illus: 165  Service street perspective looking East  (Author, 2011)
Illus. 166  Section AA (Author, 2011)

7.10 DISTRIBUTION OF CEMENT/CHAPTER 7: DESIGN RESOLUTION
7.9 RATIONALIZING THE ROOF

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Illus. 170  Street View (Author, 2011)
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7.9 Rationalizing the Roof

Figure: 17.1 Section EE (Author, 2011)
7.9 Rationalizing the Roof

Illus: 172  Section FF (Author, 2011)
Chapter 7: Design Resolution

7.9 Rationalizing the Roof

Illus. 173 Section BB (Author, 2011)
7.9 Rationalizing the Roof / Chapter 7: Design Resolution
Chapter 7: Design Resolution

7.9 Rationalizing the Roof

Illus: 174  Street View 2  (Author, 2011)