

Chapter 7: Design Resolution

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.

JOHN HABRAKEN
(Habraken, 2008: 6)



Illus: 136 Conceptual model exploring possible forms of incremental growth in context (Author, 2011)

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.

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

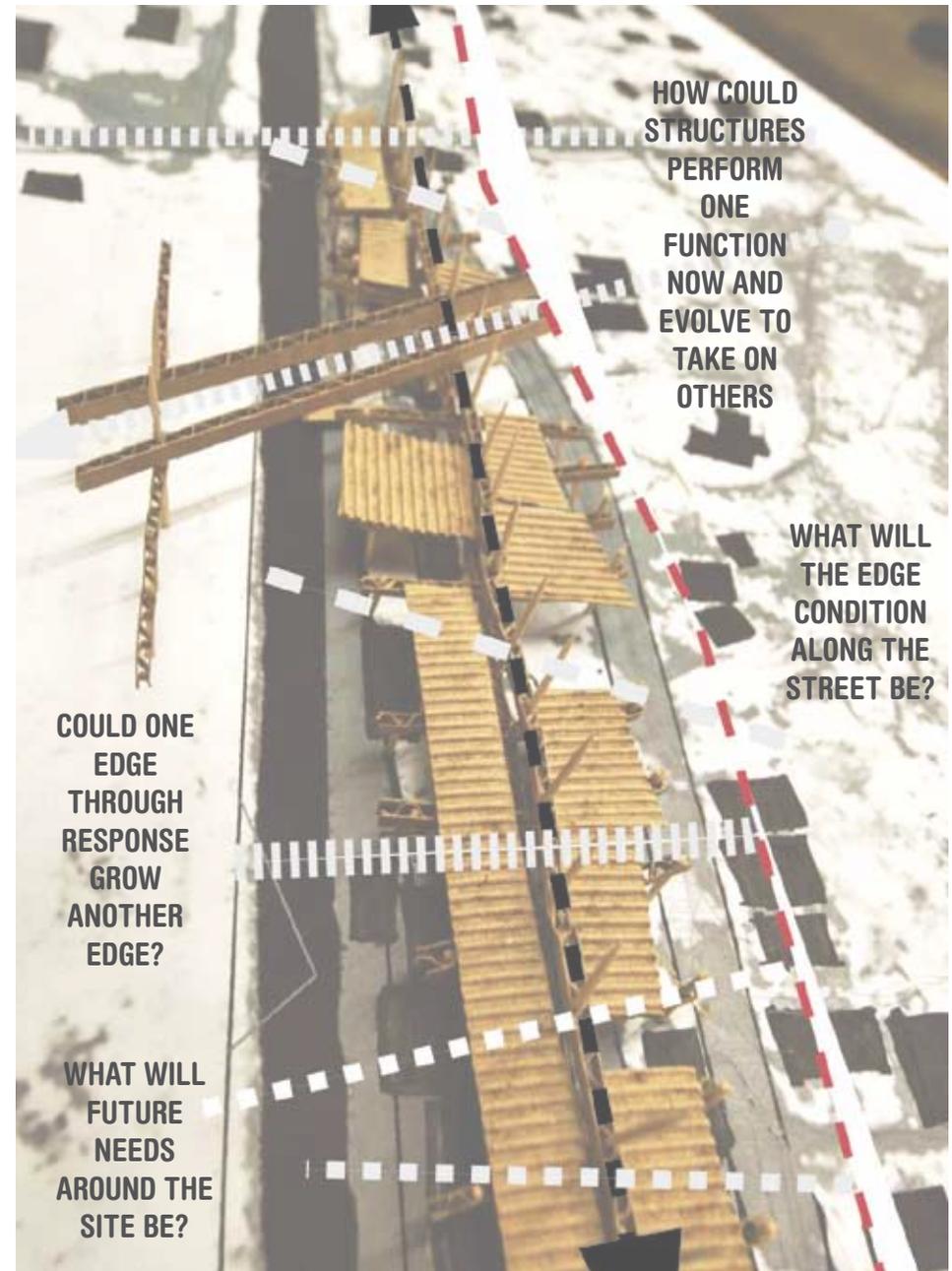
To explore this possibility, an interactive process of future speculation and current needs was required. This process revealed how the master plan should function as well as defining the requirements of the unit of growth.

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*)



Illus: 137 Speculative sketched inquiring into Pienaarspoort's future (Author, 2011)



Illus: 138 Conceptual model of form, spatial and structural interventions on-site (Author, 2011)

7.3 MASTER PLAN AT PHASE 3

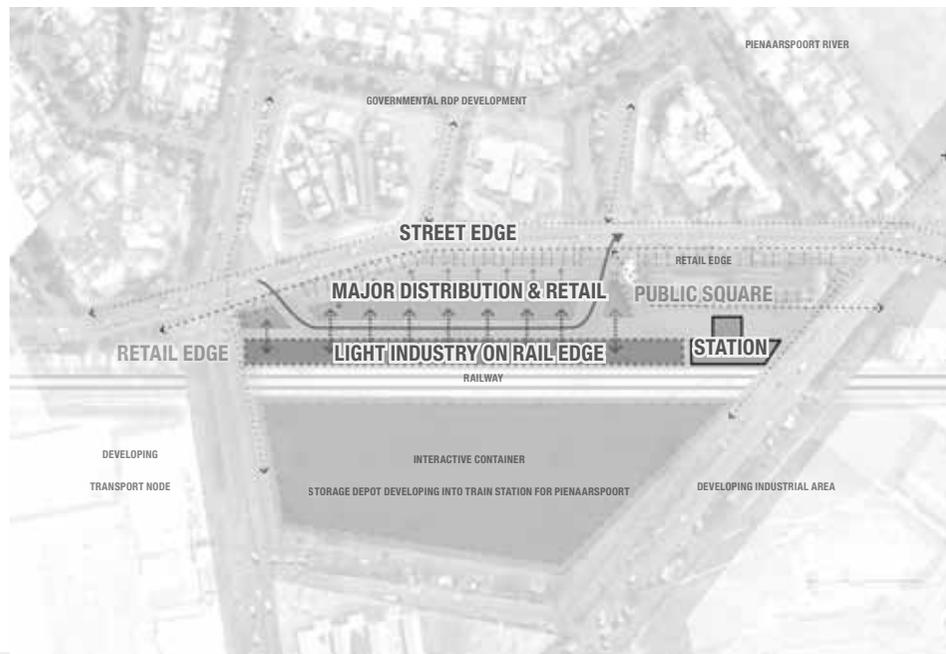
Considering the current processes of growth analyzed and observed on-site, it can be assumed that the government subsidized housing will take precedent over the residential housing patterns in the area.

The nature of the unit and its edge response in this context ((see Illus: 134) 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. (see Illus: 139)

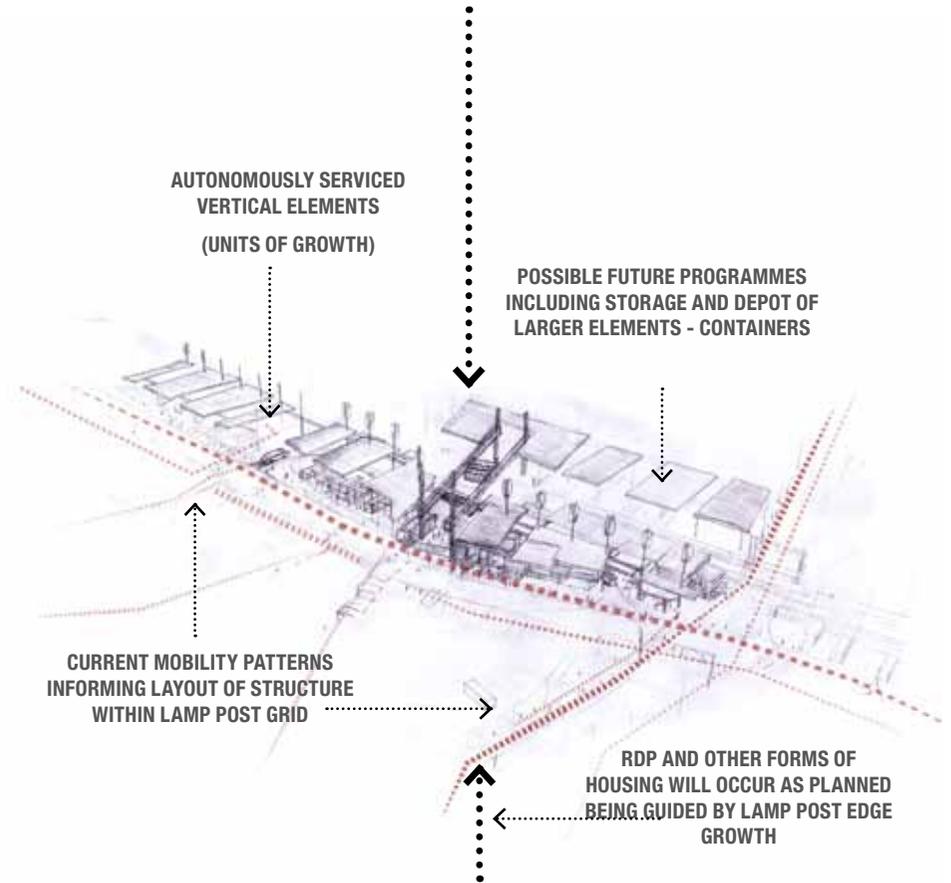
This light industry edge would then support the retail zone between the two roads, thus forming the 'front of house' to the now active street edge. (see Illus: 139)

At this point the area around the Pienaarspoort station would have become a public square with retail activities on its street edges. (see Illus: 139)



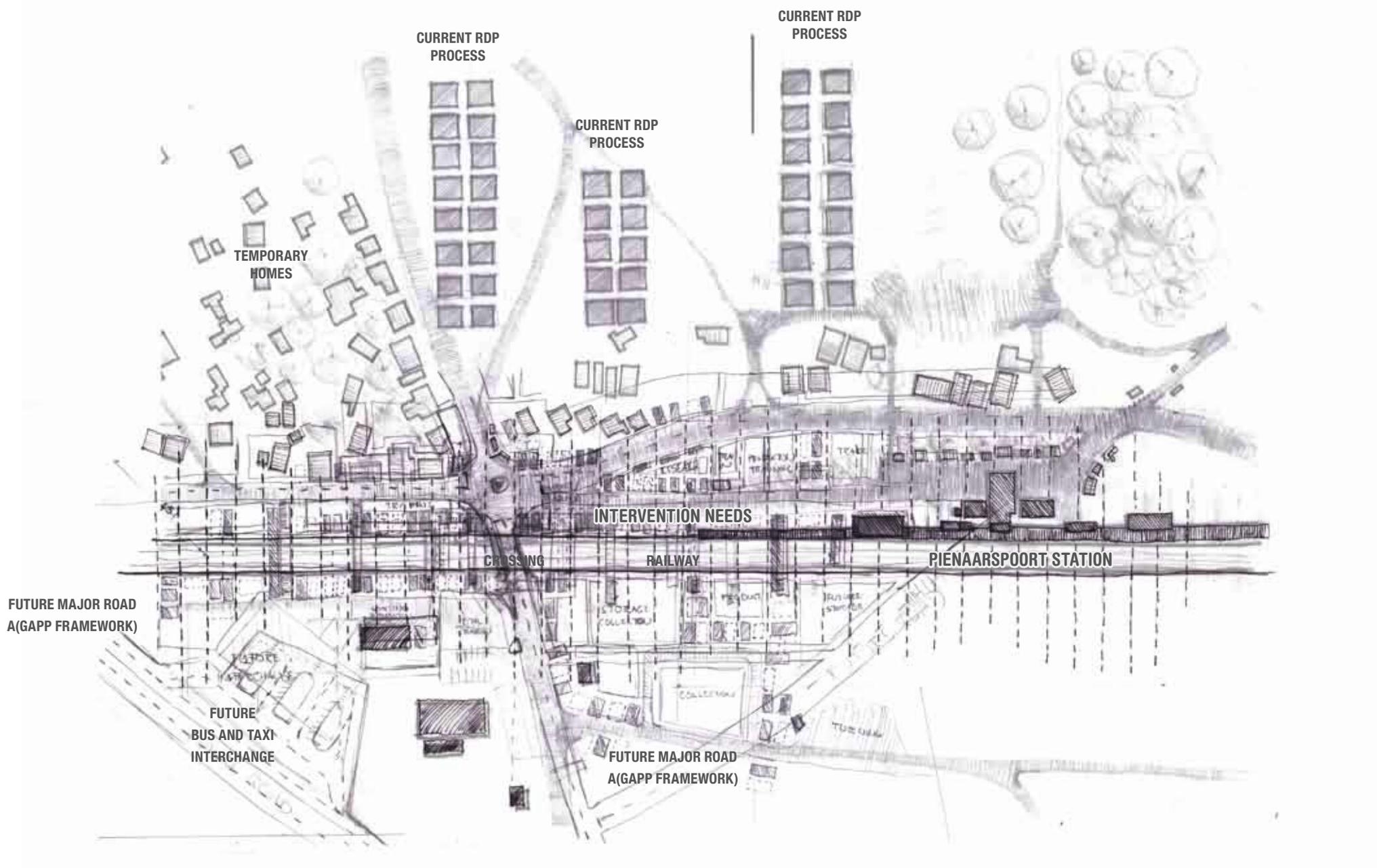
Illus: 139 Diagrammatic functional process of Pienaarspoort at Phase 5 (Author, 2011)

POSSIBLE FUTURE PROGRAMMES INCLUDE: TRAIN STATION, MAJOR RETAIL DEPOT, PUBLIC SQUARE AND EVENTUAL TRANSPORT NODE DEVELOPMENT



MOBILITY AND TEMPORALITY FORMING THE PRIMARY PRINCIPLES OF GROWTH

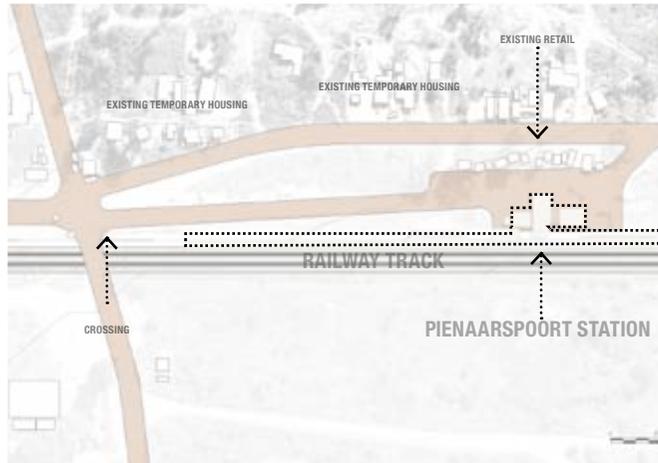
Illus: 140 Phase 3 development in its context, possibilities of future edge response (Author, 2011)



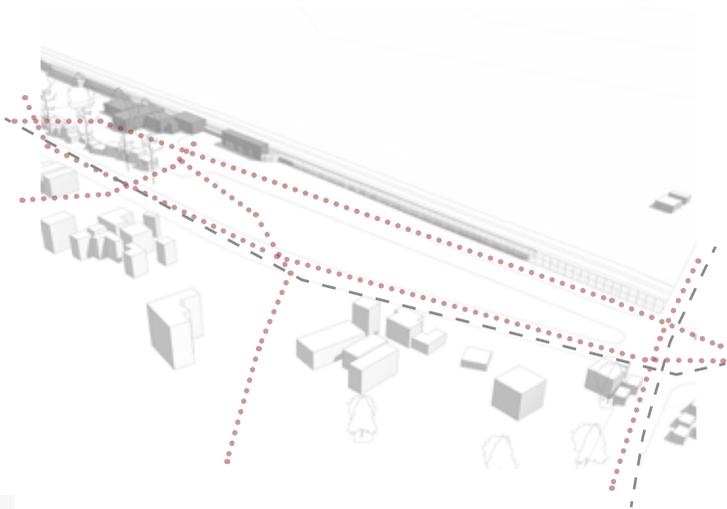
Illus: 141 Sketch Speculation of Possible processes of development and growth in Pienaarspoort (Author, 2011)

7.4 EARLY INCREMENTAL PHASES

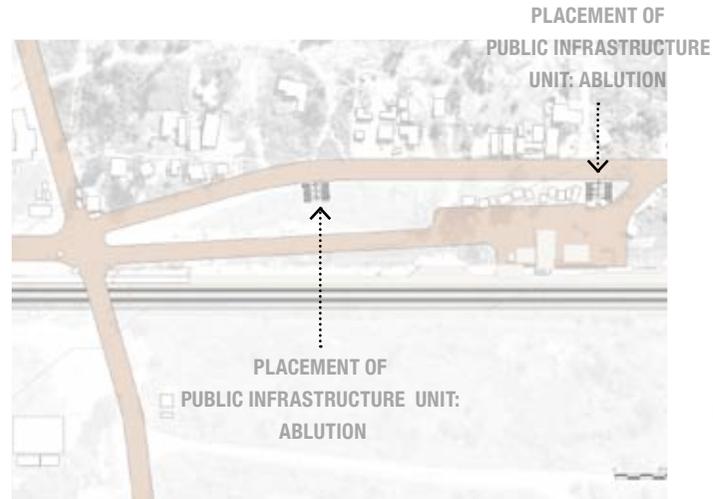
EXISTING



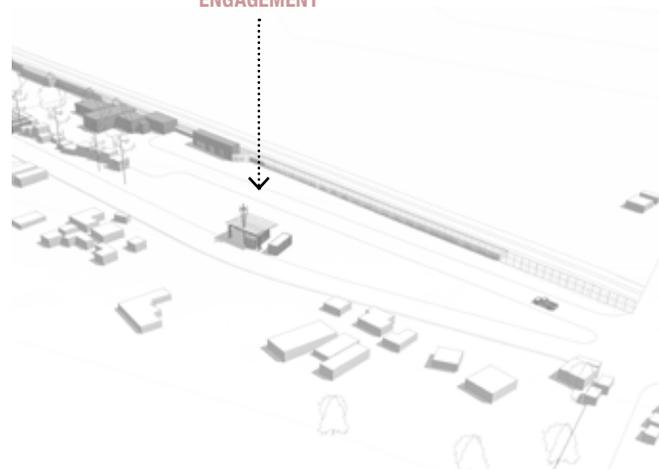
EXISTING SITE AS PREVIOUSLY ANALYZED



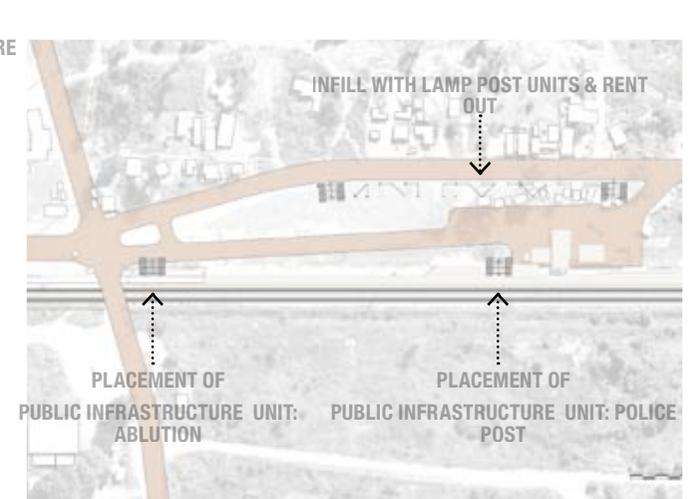
MOVEMENT A



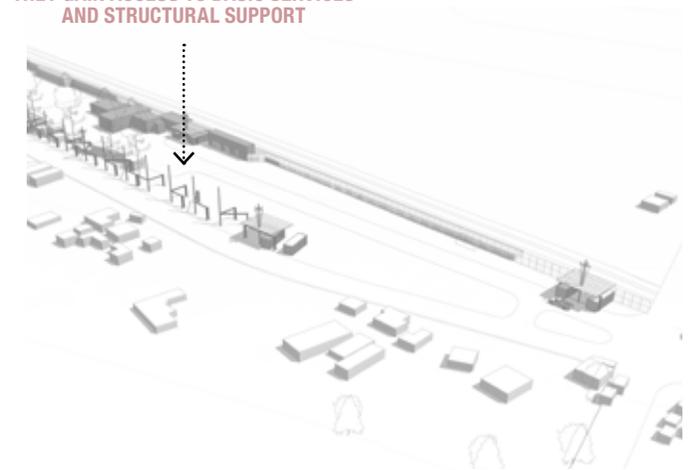
PUBLIC INFRASTRUCTURE UNIT ATTRACTS USE AND BEGINS PROCESS OF ENGAGEMENT



MOVEMENT B



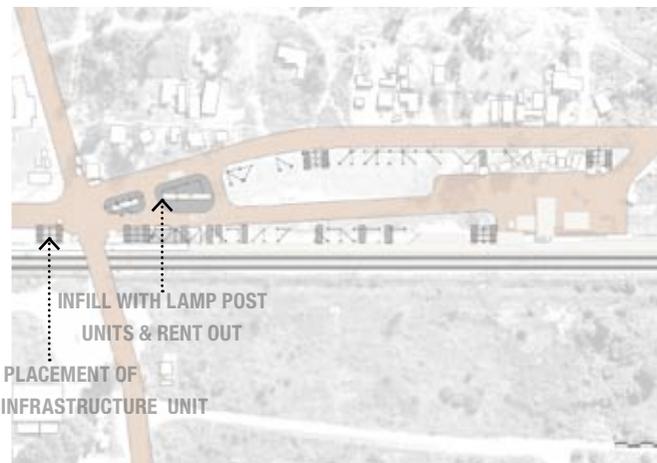
LOCAL RETAILERS ENGAGE WITH MUNICIPAL OFFICIALS TO RENT UNITS. THEY GAIN ACCESS TO BASIC SERVICES AND STRUCTURAL SUPPORT



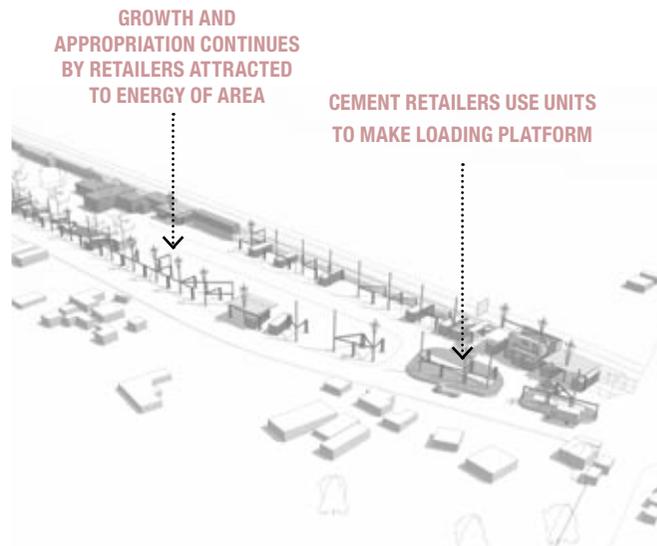
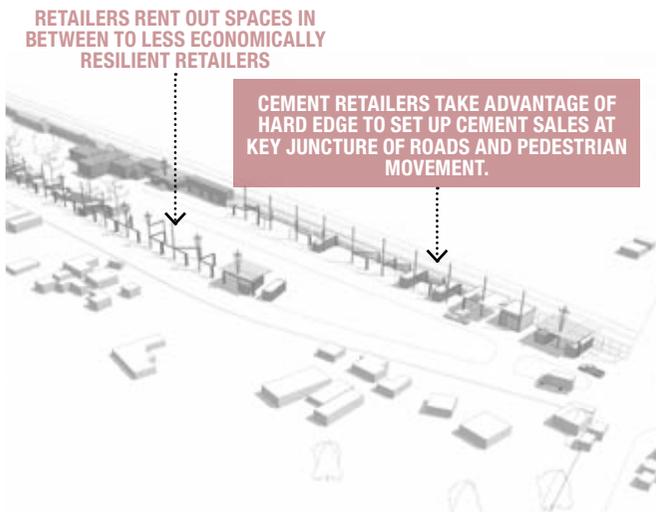
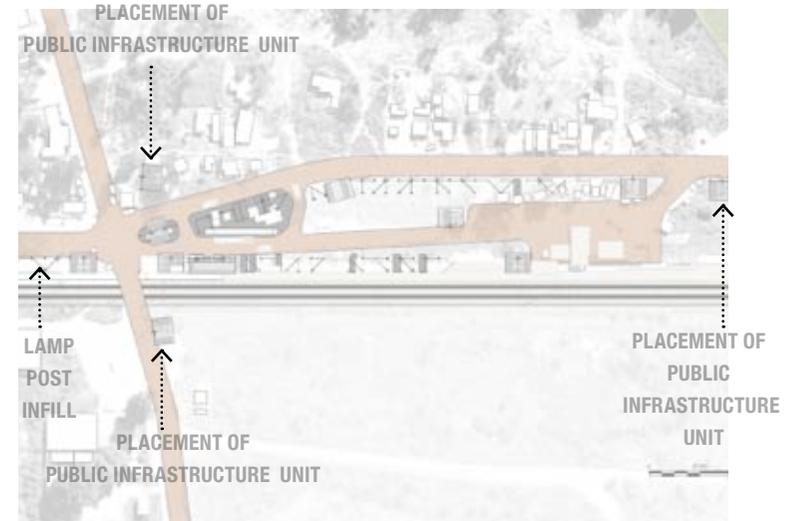
MOVEMENT C



MOVEMENT D



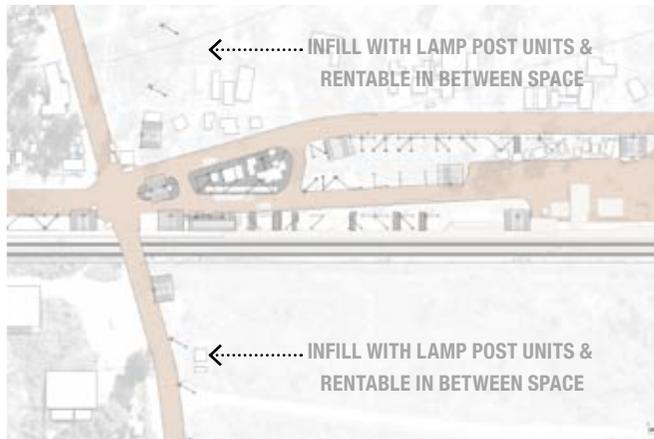
MOVEMENT E



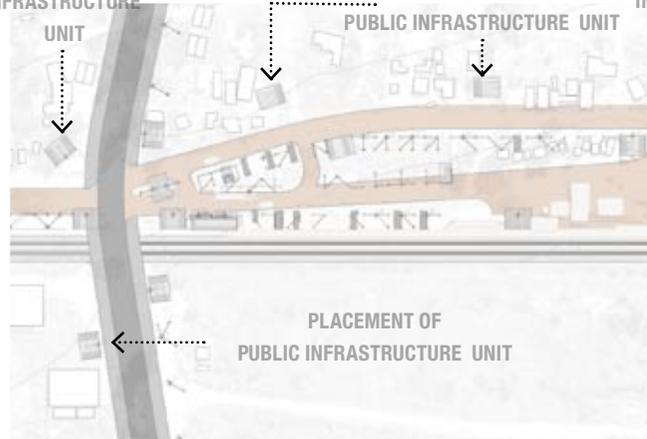
Illus: 145 Speculation of Pienaarspoort growth - incremental phases (Author, 2011)

7.5 MAJOR DEVELOPMENT PHASES

MOVEMENT F

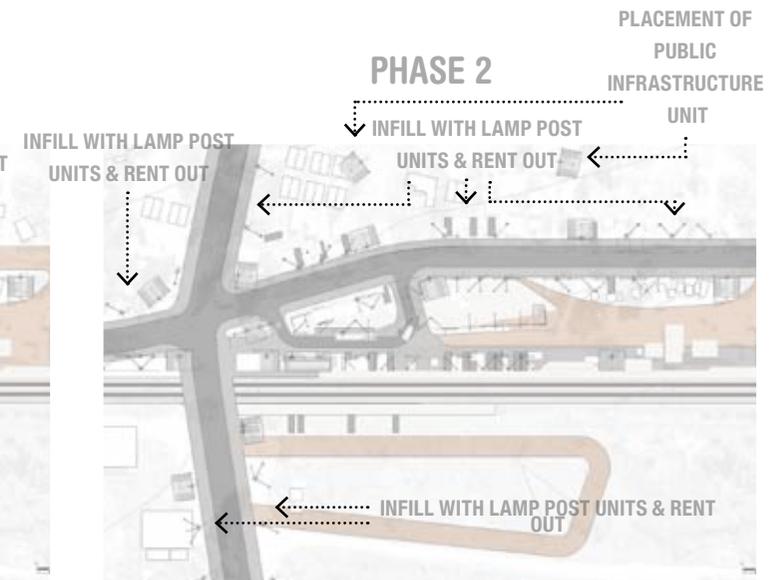


PHASE 1
PLACEMENT OF PUBLIC INFRASTRUCTURE UNIT



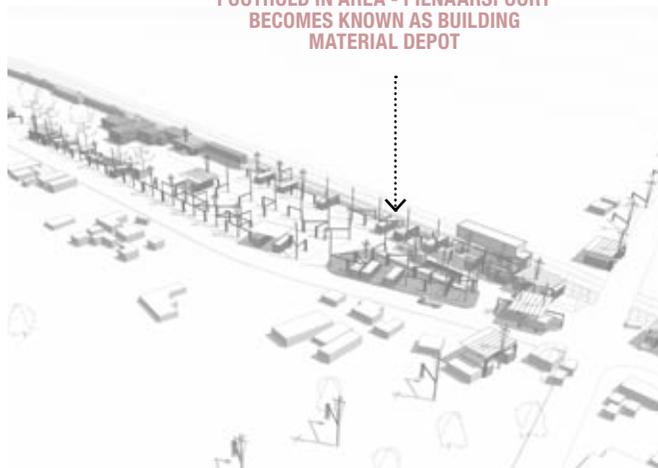
LOOSE RETAIL ELEMENTS ARE INTERMIXED WITH CEMENT RETAIL

PHASE 2

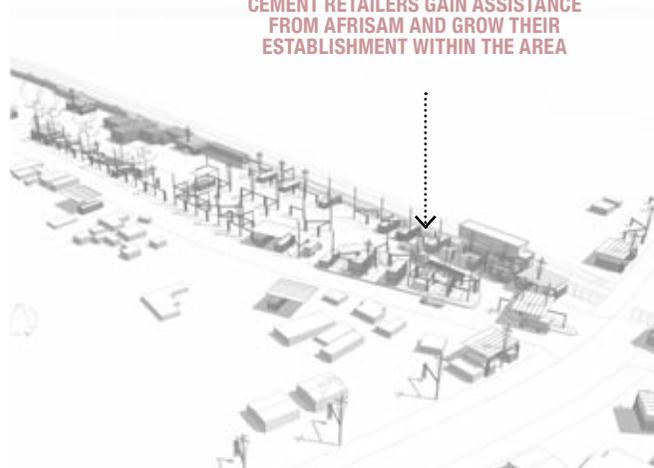


DE-CENTRALISED CEMENT DEPOT IS MAJOR ELEMENT IN PIENAARSPORT

CEMENT RETAILERS ESTABLISH Foothold IN AREA - PIENAARSPORT BECOMES KNOWN AS BUILDING MATERIAL DEPOT



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

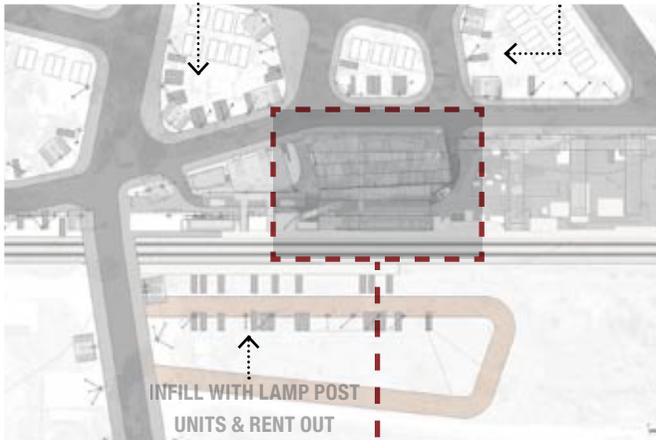


WHO USE THE INFRASTRUCTURE PUT DOWN BY THEM TO GROW THEIR OWN BUSINESS

PLACEMENT OF
PUBLIC
INFRASTRUCTURE
UNIT

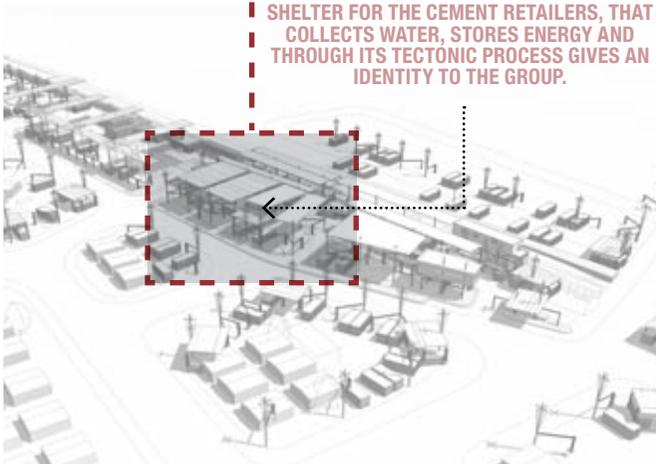
PHASE 3

INFILL WITH
LAMP POST
UNITS &
RENT OUT



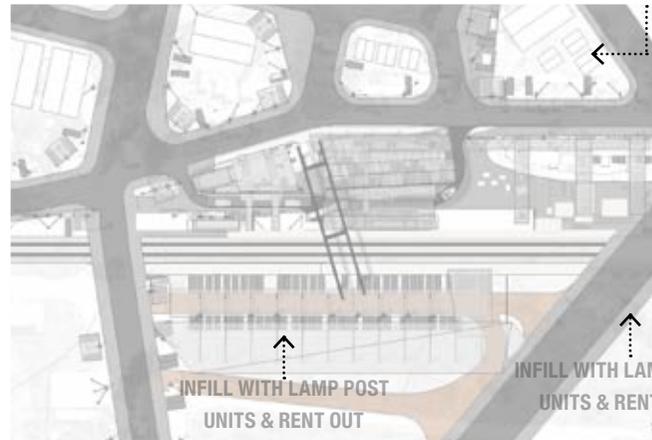
CEMENT DEPOT HAS PUSHED OTHER RETAIL TO UPGRADE - PIENAARSPORT IS NOW A MAJOR RETAIL CENTRE FOR ALL GOODS

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

INFILL WITH LAMP POST
UNITS & RENT OUT

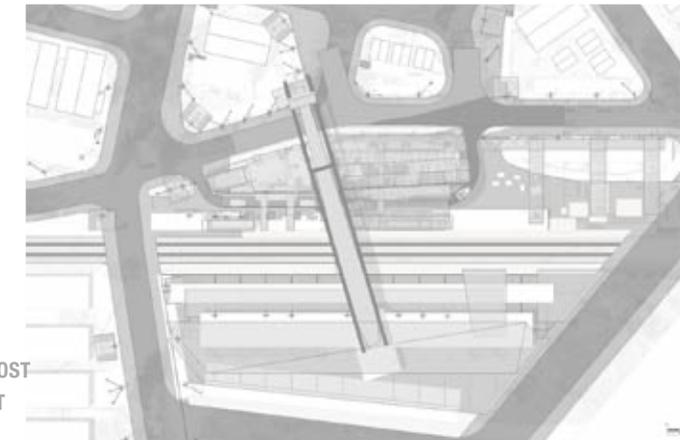


STORAGE OF RETAIL GOODS AND DISTRIBUTION INTERMIXED WITH RETAIL TAKES OVER

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 PIENAARSPORT STATION



PHASE 5



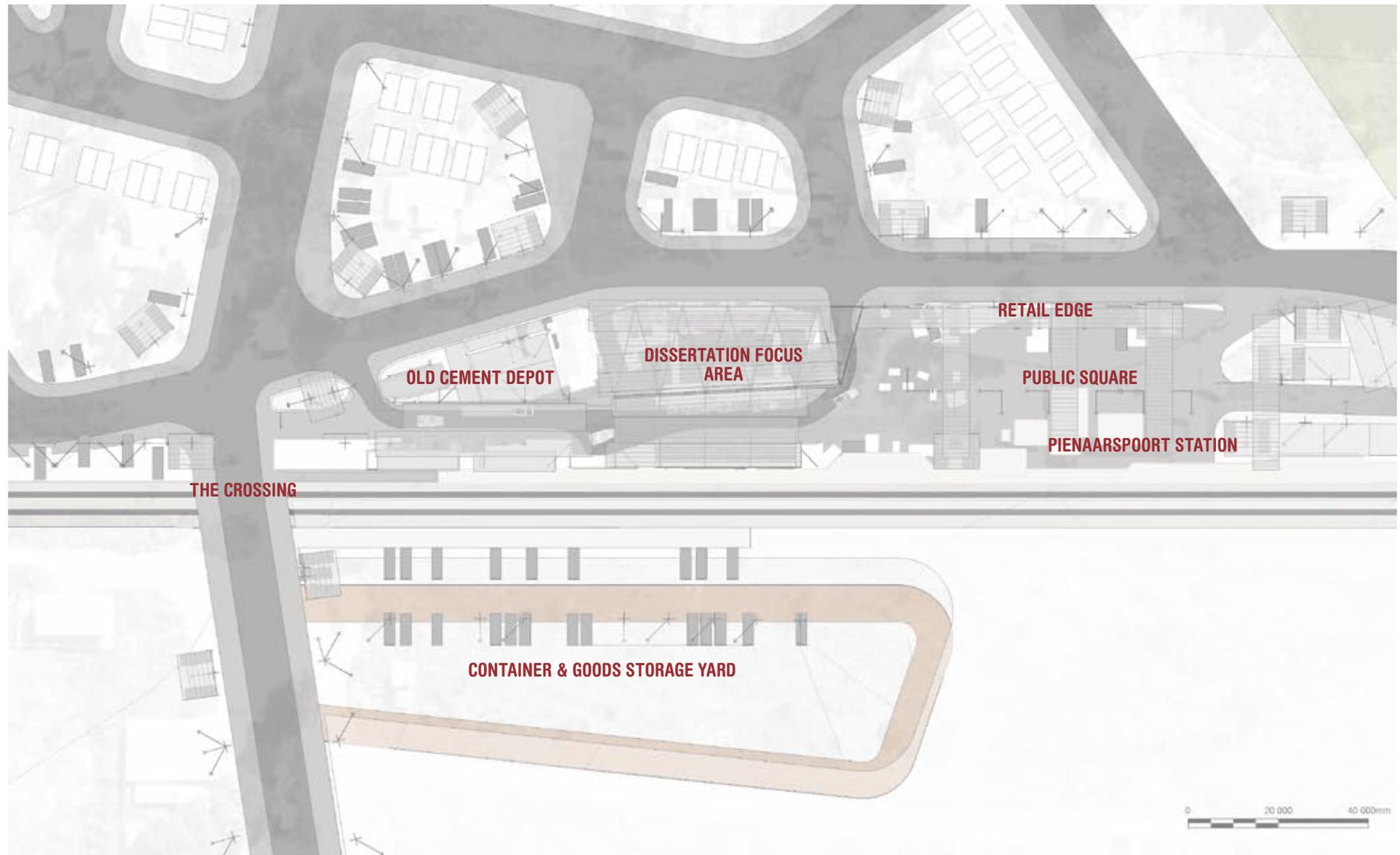
STORAGE MOVES AWAY, LAYING FOUNDATION STRUCTURE FOR FUTURE TRAIN STATION AND TRANSPORT NODE.

THEY CONVERT THE 'OLD' CONTAINER GANTRY INTO A PEDESTRIAN BRIDGE PROVIDING A FOCAL POINT OF IDENTITY THAT PIENAARSPORT IS SYMBOL OF INCREMENTAL GROWTH BY THE PEOPLE FOR THE PEOPLE

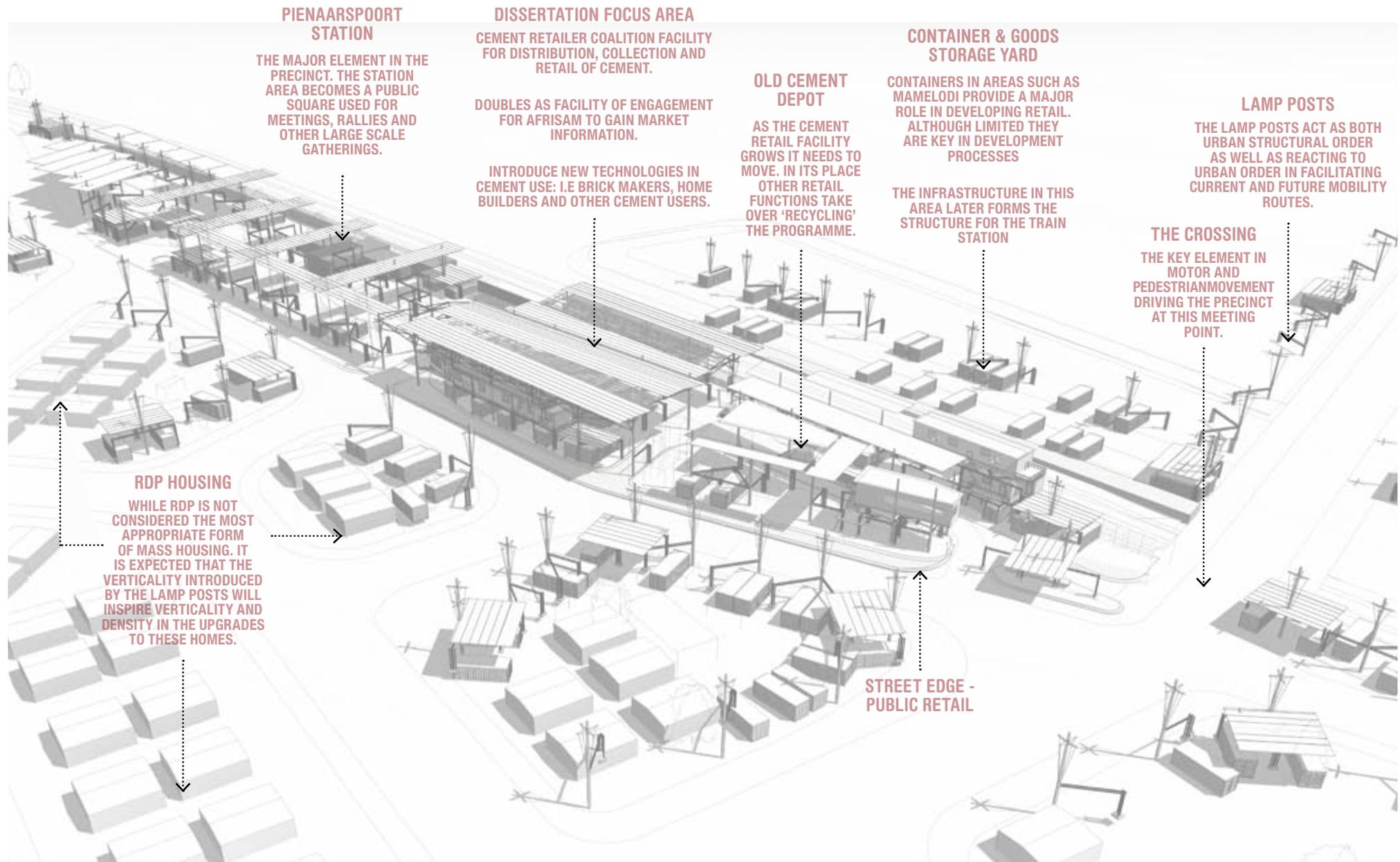


Illus: 146 Speculation of Piensaarspoort Growth - Major Phases (Author, 2011)

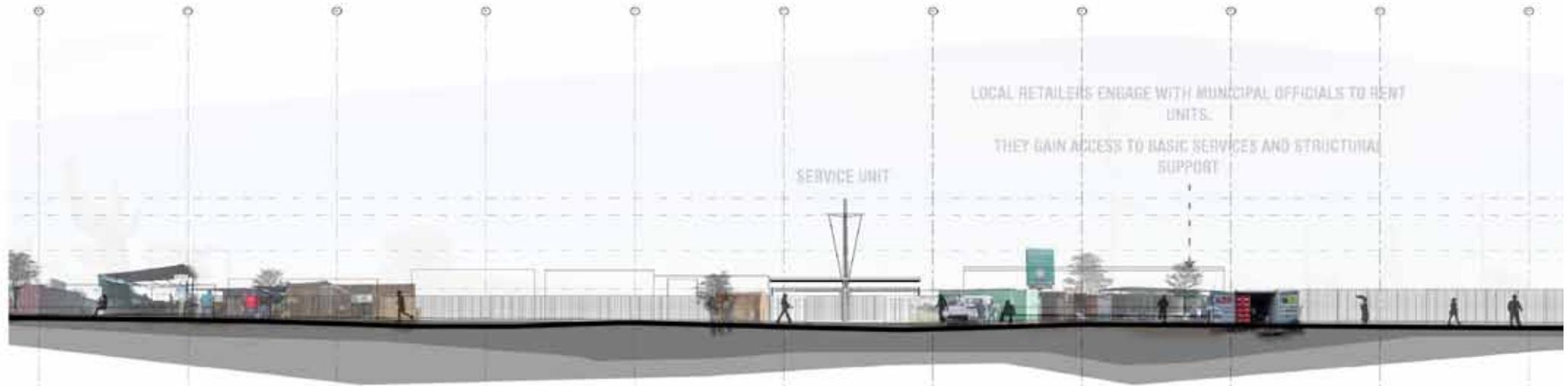
7.6 PHASE 3 - CAPTURED IN A MOMENT



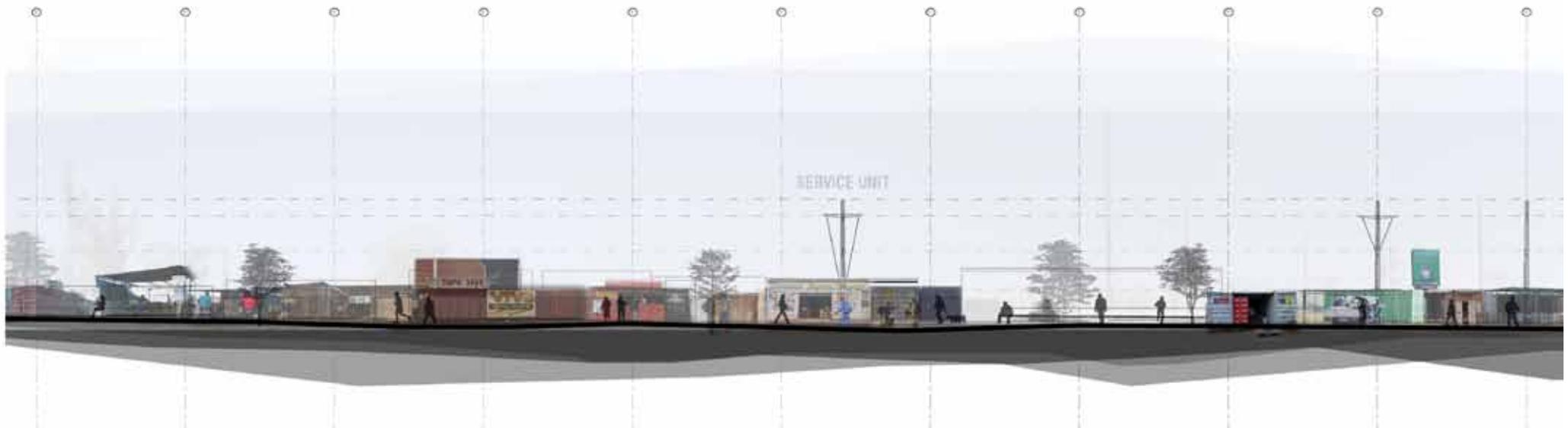
Illus: 147 Phase 3 - plan - captured in a moment (Author, 2011)



Illus: 148 Phase 3 - perspective - captured in a moment (Author, 2011)



PHASE C - SCALE 1:200

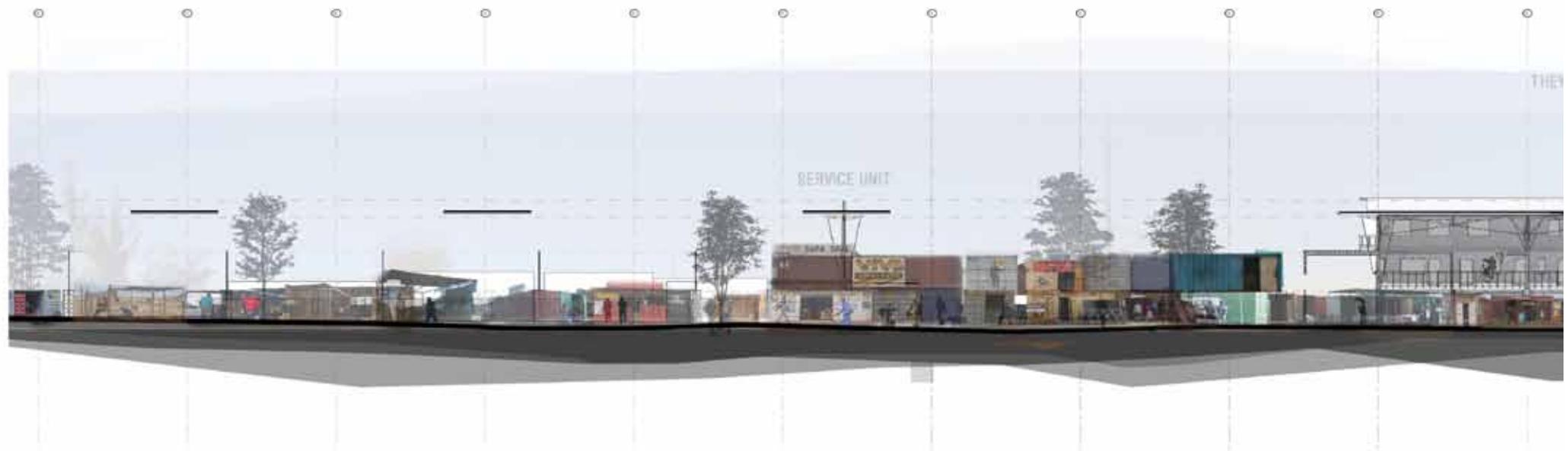




Illus: 149 Phase 2 - Site section - phase A - C (Author, 2011)



PHASE 1 - SCALE 1:200





Illus: 150 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.

CEMENT GOODS



MACHINE LIFTING MOVING FROM TRUCK

HAND MOVEMENT



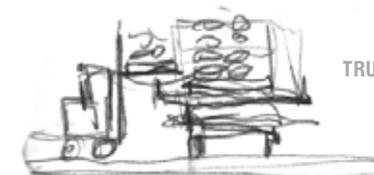
MANUAL FORKLIFT



WHEELBARROW



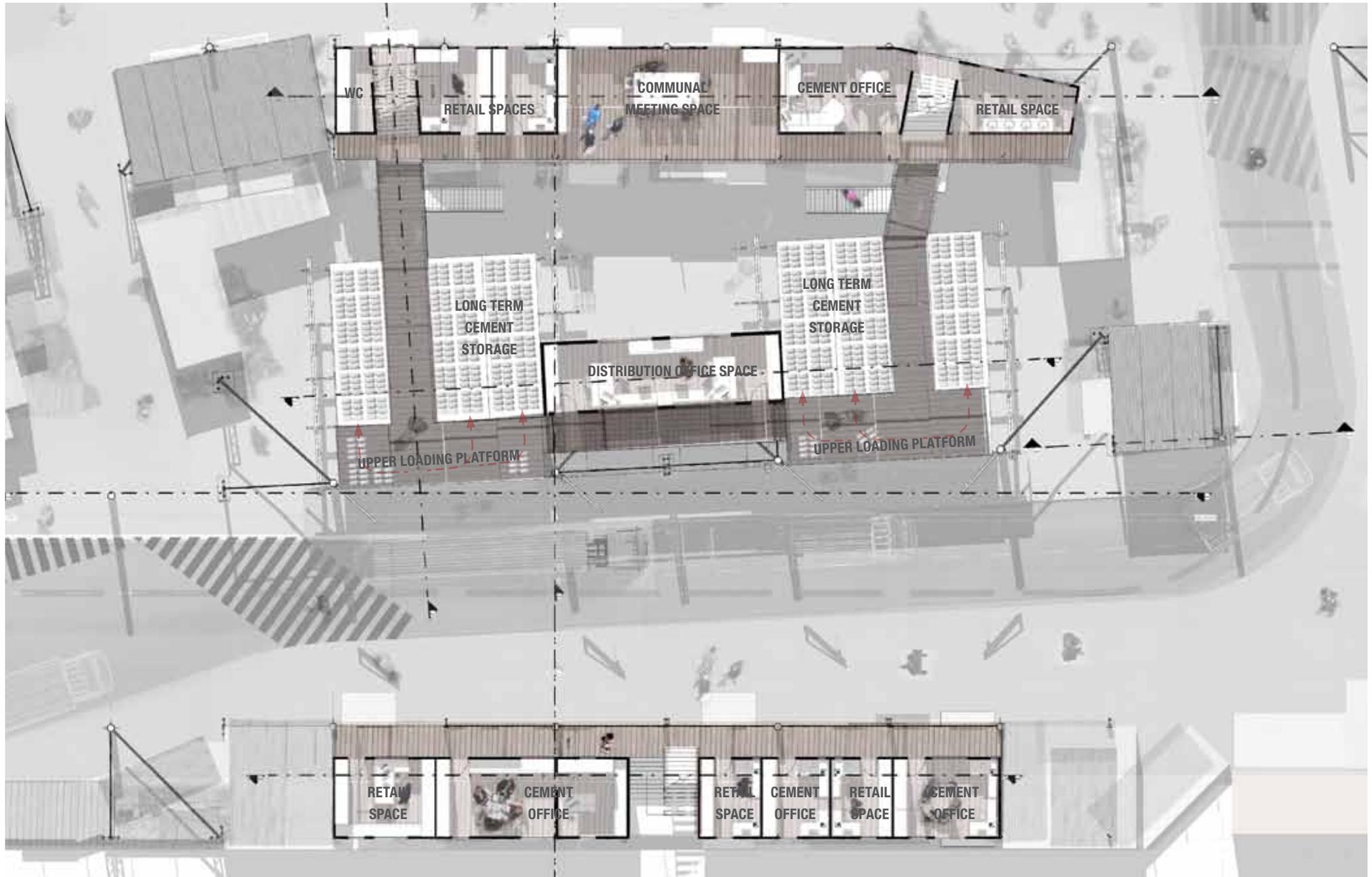
TRUCK FORKLIFT



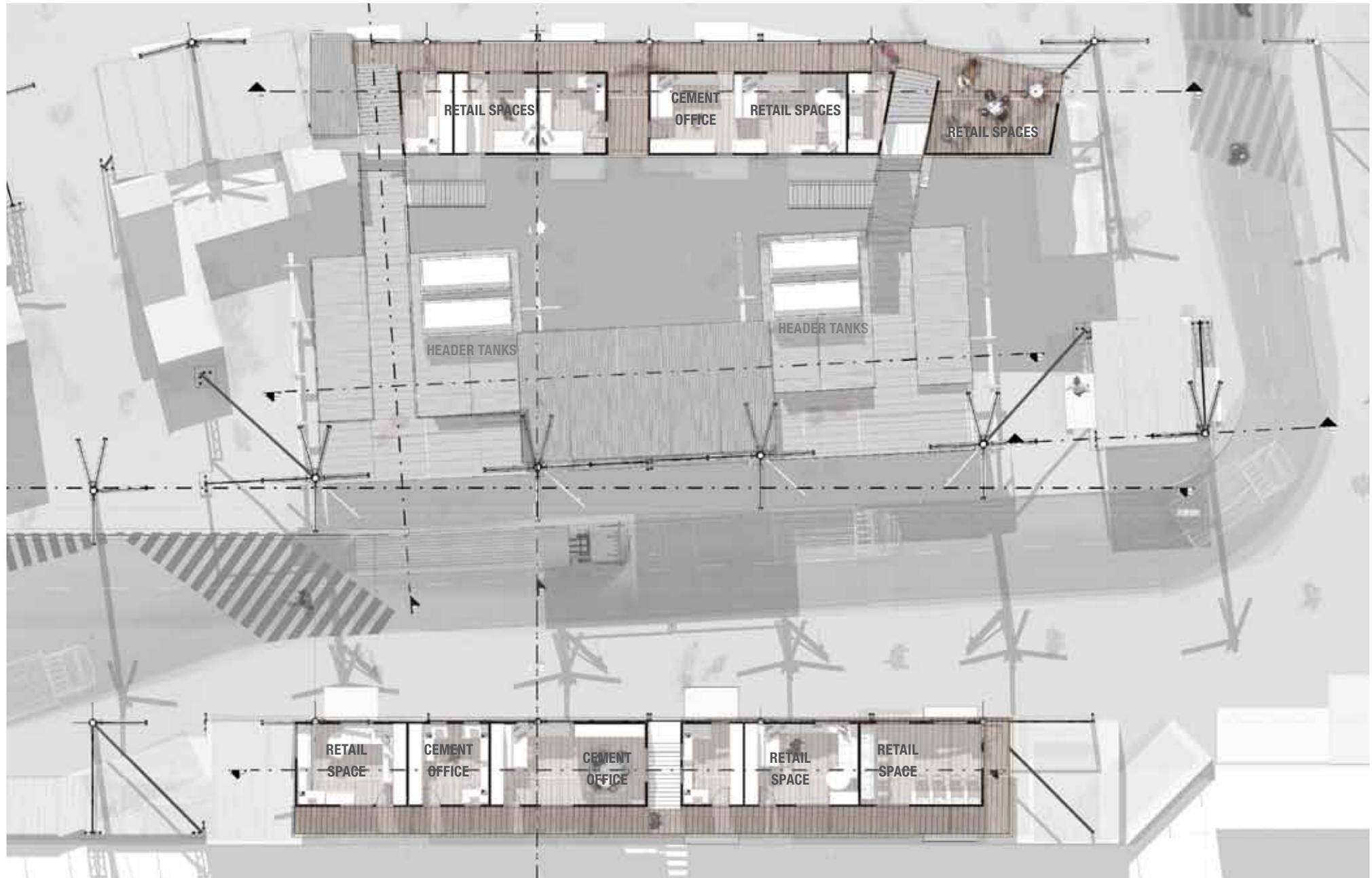
Illus: 152 Design elements in loading platform (Author, 2011)



Illus: 153 The Cement Depot in Phase 3 - Loading Platform Design (Author, 2011)



Illus: 154 The Cement Depot in Phase 3 - Level 1 (Author, 2011)



Illus: 155 The Cement Depot in Phase 3 - Level 2 (Author, 2011)

7.8 PROVIDING SHELTER

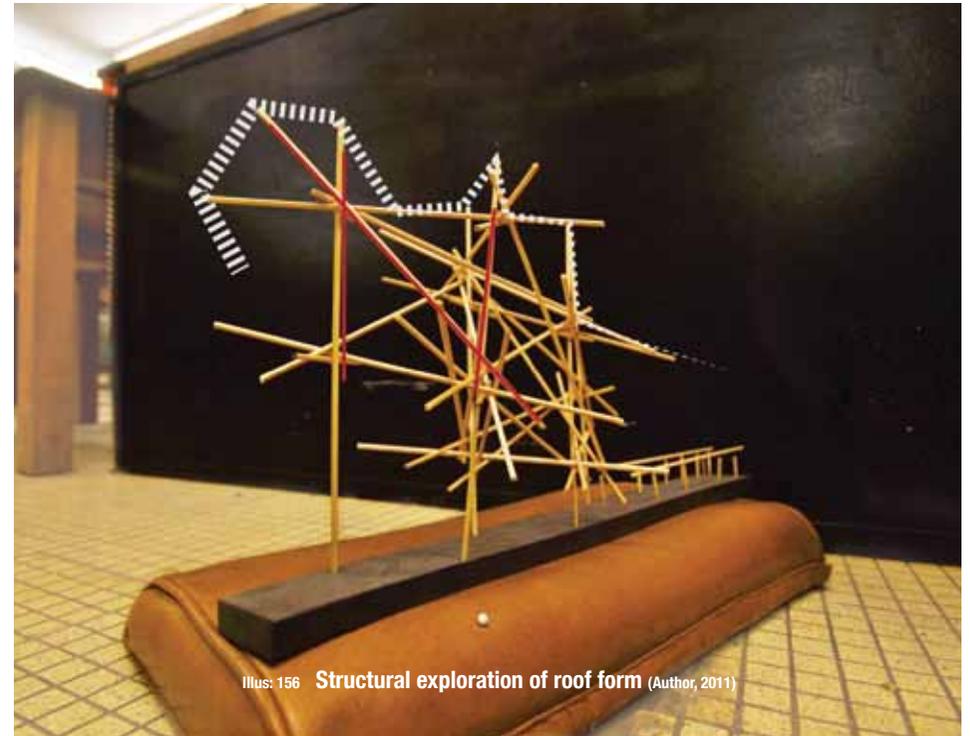
Through the process of designing the unit and its projected patterns of growth it emerged that certain elements in the process could not be facilitated by self-build.

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.

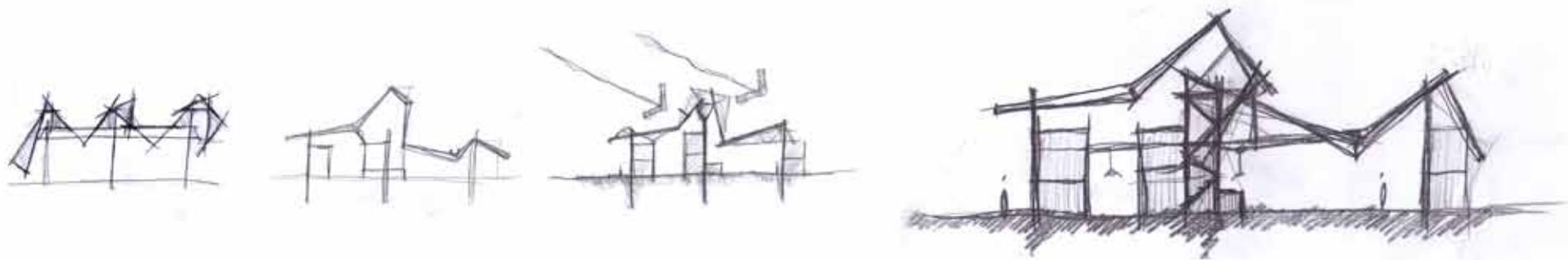
In the form of the cement retailers, the requirements for a facility that enhances their business are simple: a raised point for collection and distribution, a means to move these goods easily, environmentally comfortable administrative spaces and most rudimental a shelter to keep the goods dry.

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.

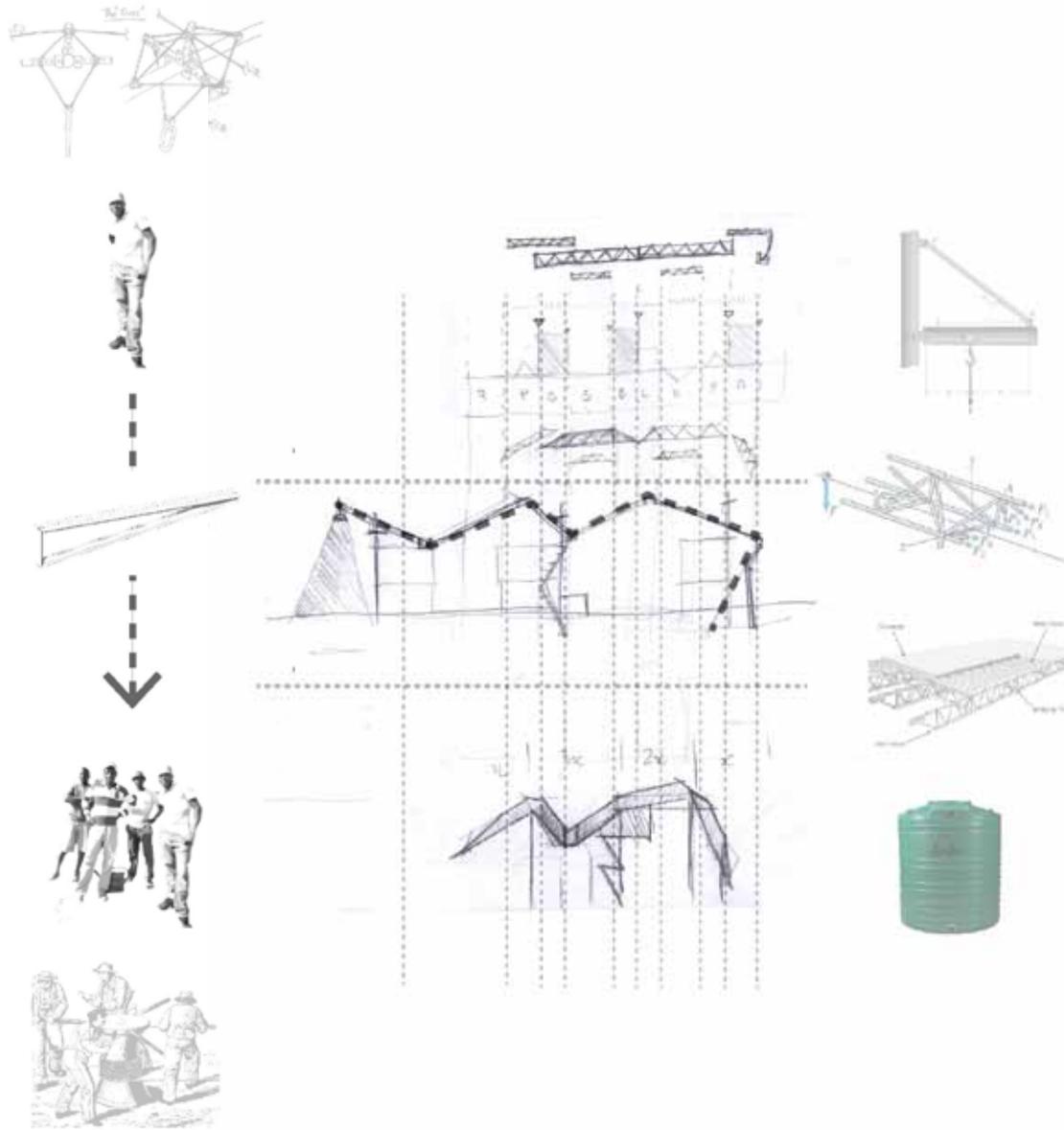
The roof construction, form and concept all lie in the possibilities that a simple unit of growth, in this case a truss member determined by a manageable size for a single or group of men to handle, can be used to span the required length and perform environmentally by collecting water, providing shelter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



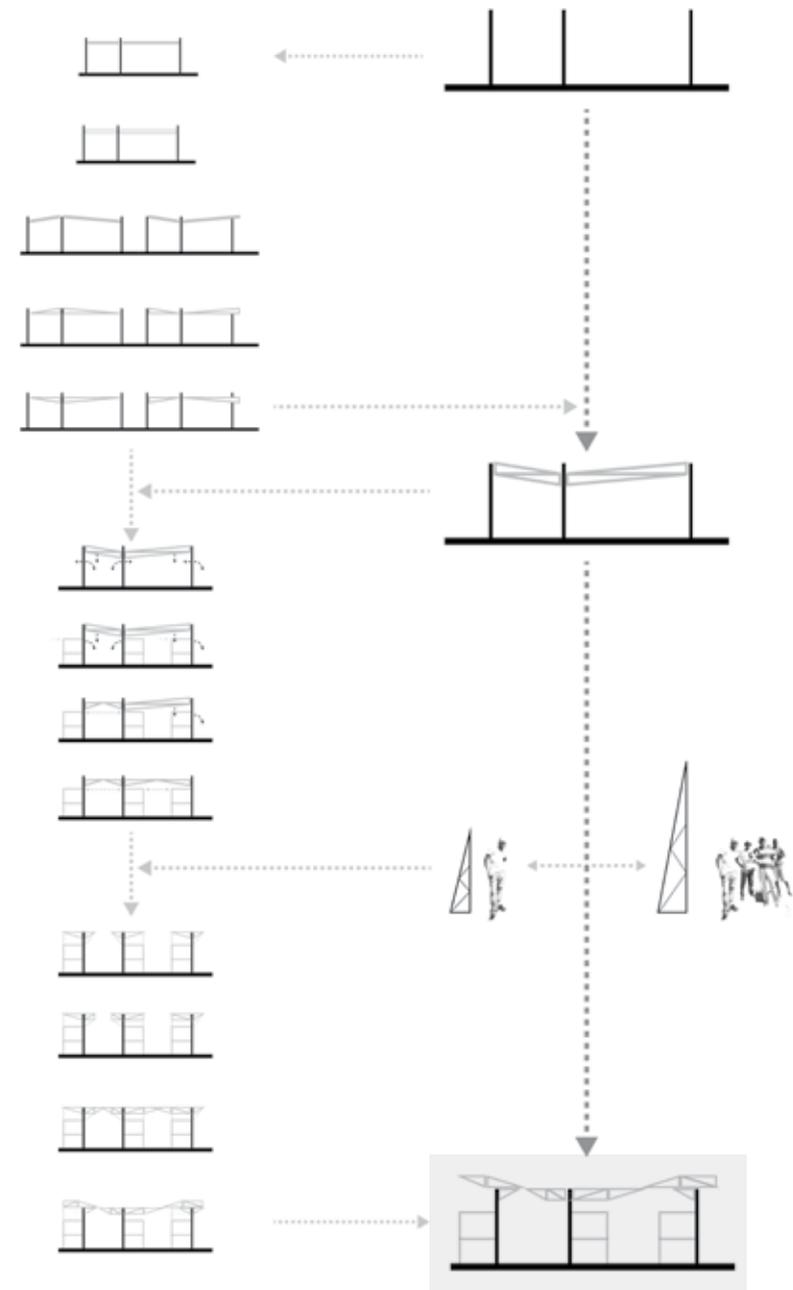
Illus: 156 Structural exploration of roof form (Author, 2011)



Illus: 157 Evolution of the roof form based on shelter requirements below and resource harvesting above (Author, 2011)



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



Illus: 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

Illus: 160 Proposal for Cement Facility, Using the roof to define the spatial quality (Author, 2011)

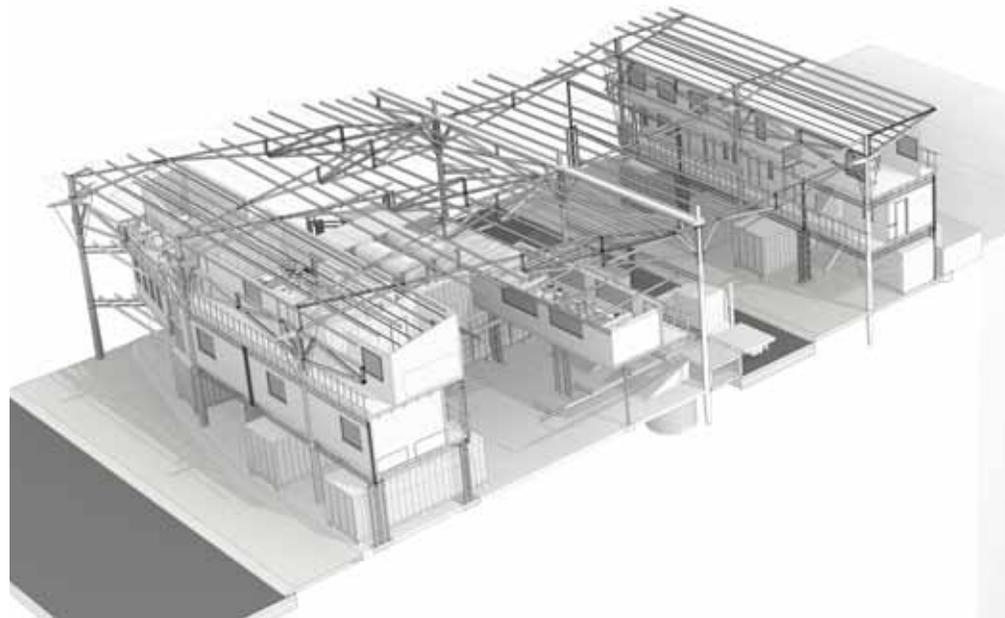
7.9 RATIONALIZING THE ROOF

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)

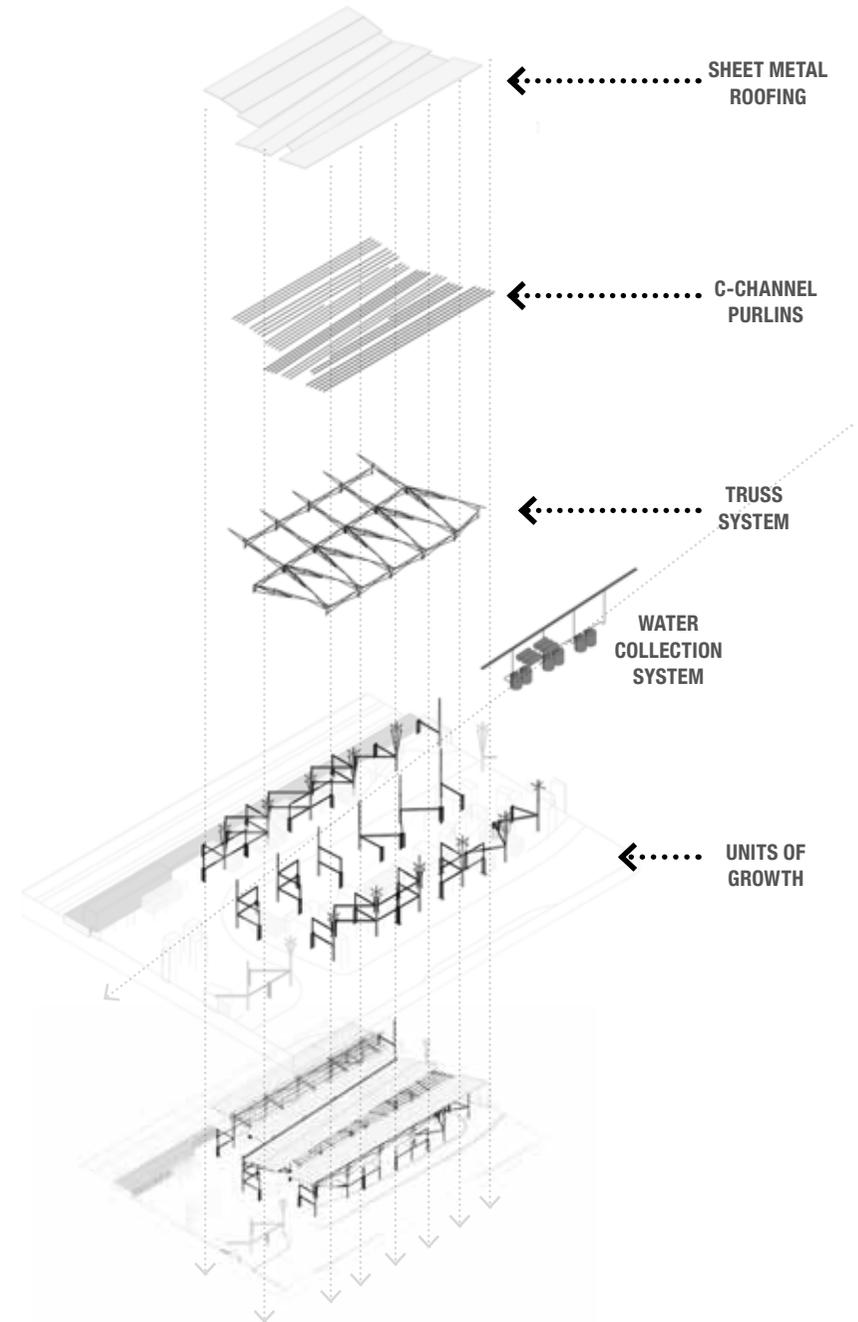
The roof system is intended to symbolize the power in the synergetic assemblage of the similar parts to create a coherent yet elegant element,

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: 161 The Cement Depot - structural breakdown (Author, 2011)



Illus: 162 Axonometric explanation of Roof Structure (Author, 2011)



Illus: 163 **Spatial Programming of Cement Depot** (Author, 2011)

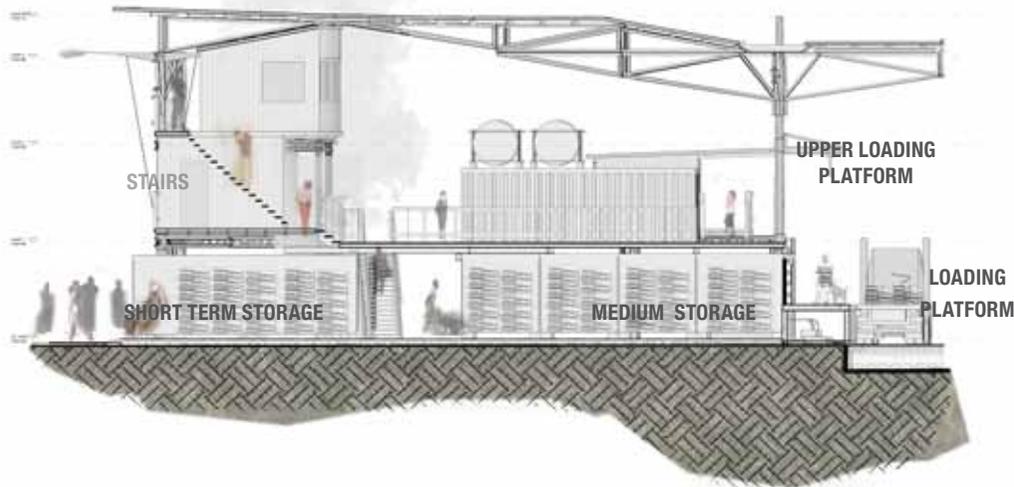
7.10 DISTRIBUTION OF CEMENT

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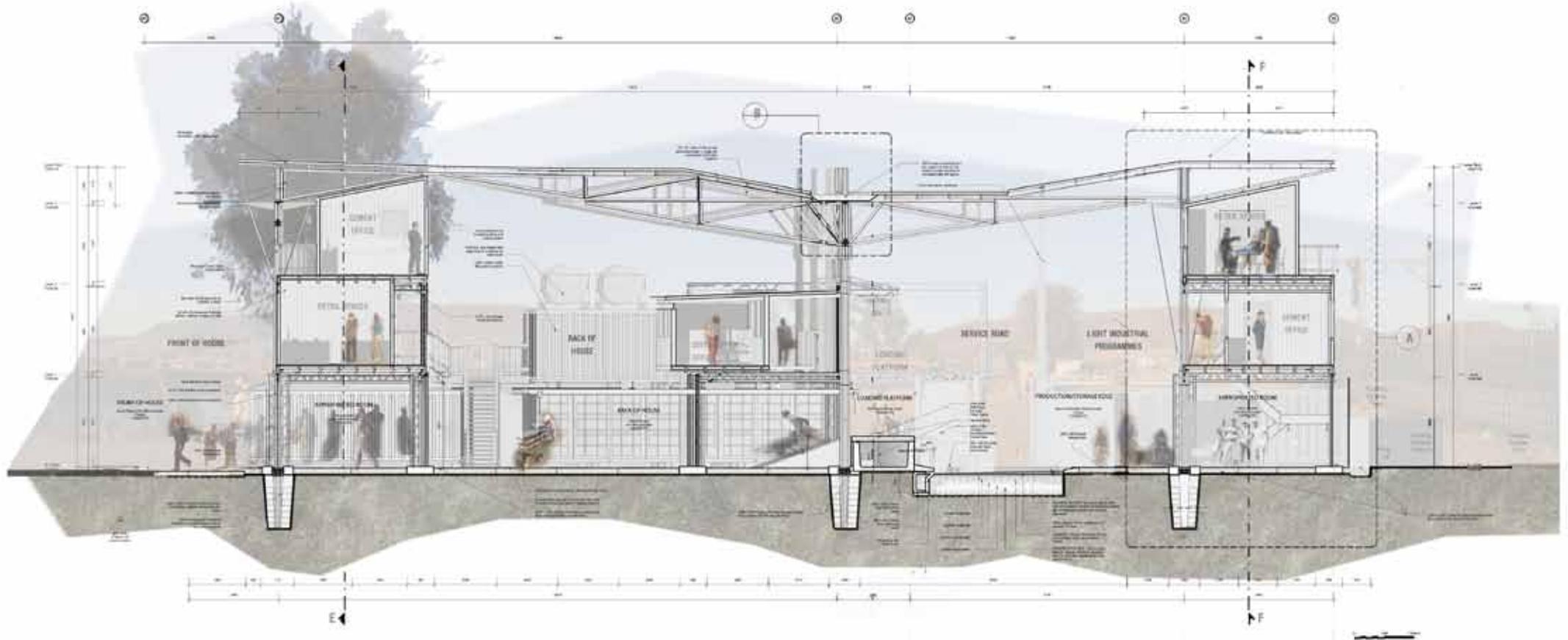
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Illus: 164 Section CC (Author, 2011)

Illus: 165 Service street perspective looking East (Author, 2011)



Illus: 166 Section AA (Author, 2011)

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Illus: 168 Service street perspective looking West (Author, 2011)



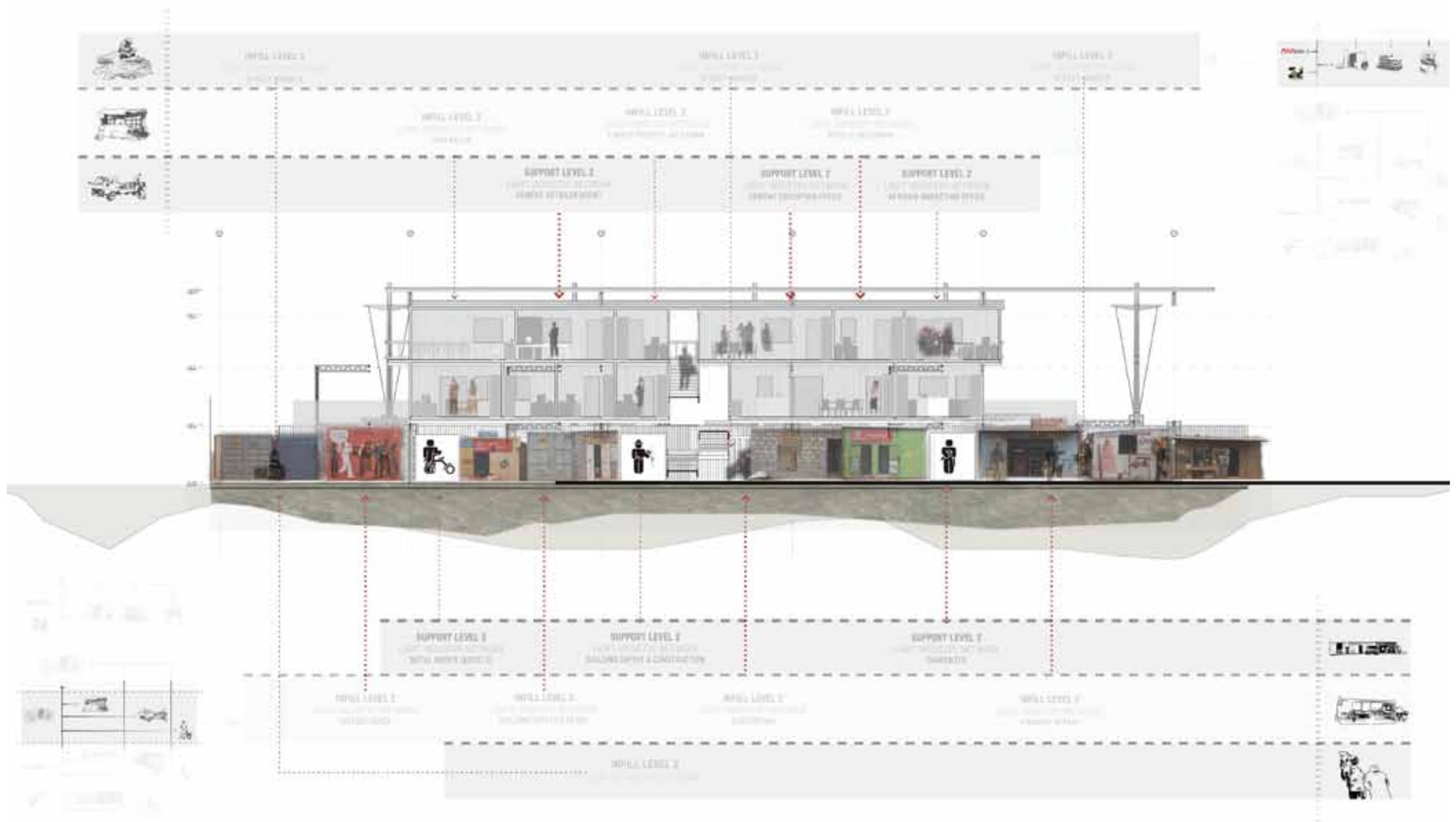
Illus: 167 Section DD (Author, 2011)



Illus: 169 Back of house perspective (Author, 2011)



Illus: 170 **Street View** (Author, 2011)



Illus: 171 Section EE (Author, 2011)



Illus: 174 **Street View 2** (Author, 2011)

