

# -----[ VIII ]----- T E C H N I F I C A T I O N



## **TECHNIFICATION**

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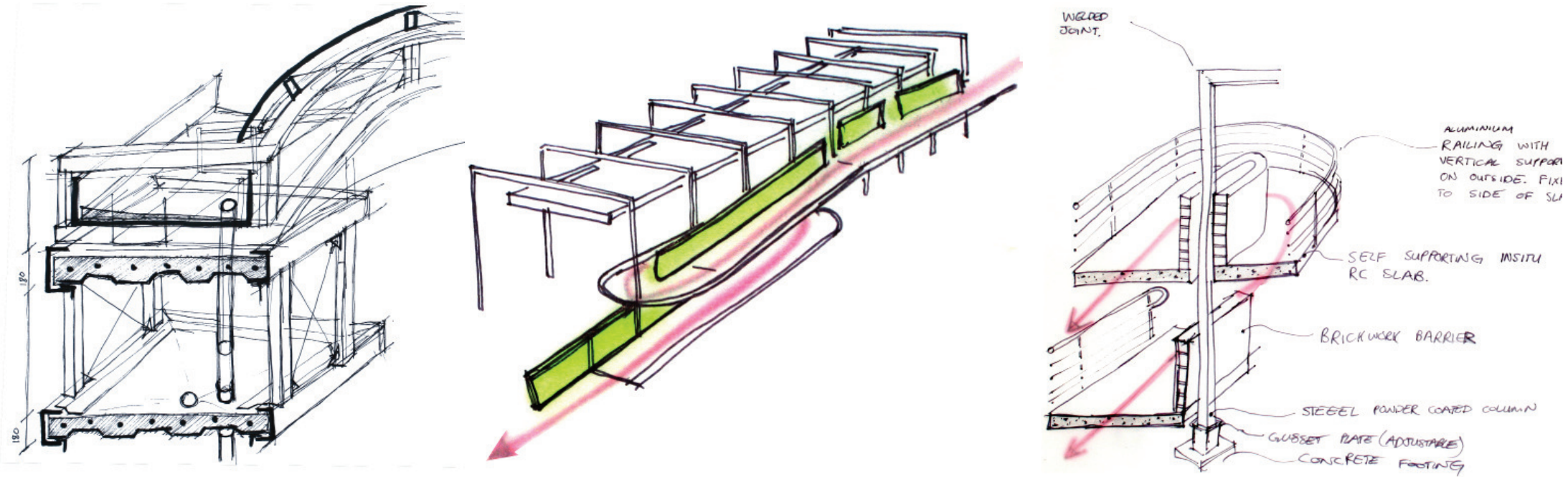


Fig. 8.1 Technical sketches (Author, 2017)

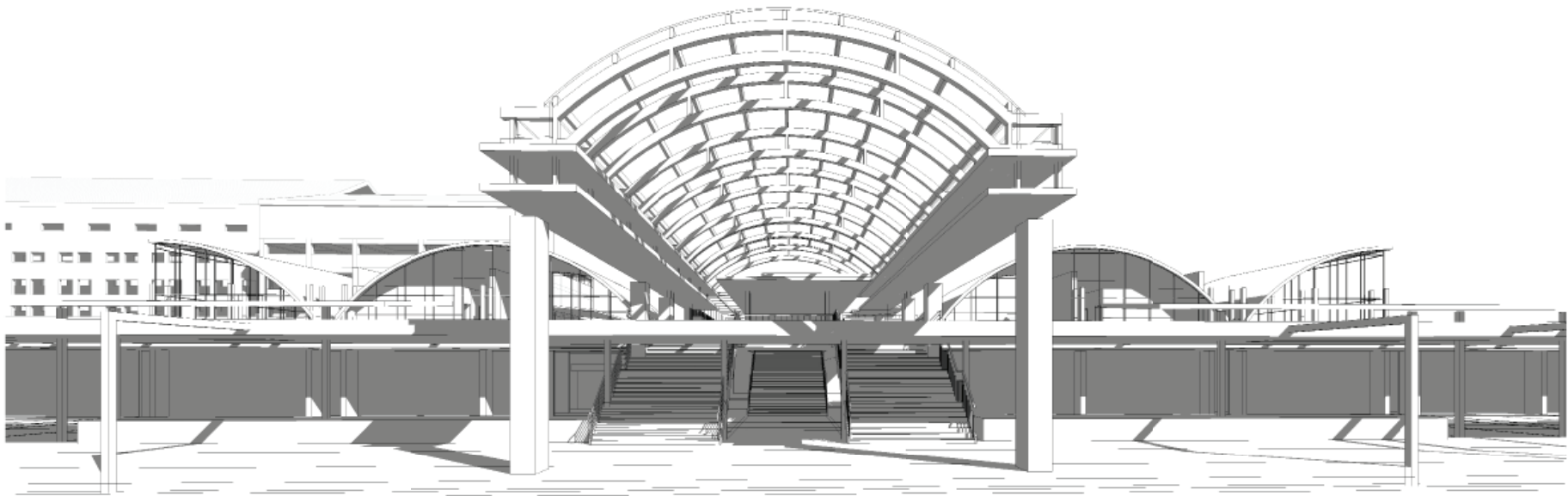


Fig. 8.2 Solar Study (Author, 2017)



# PRODUCTIVE CORRIDOR<sup>®</sup> AS BINDING ELEMENT TO TSHWANE MARKET, SILOS AND PRETORIA SHOW GROUNDS

CONTINUING AN AESTHETIC OF ELEMENTS IN THE LANDSCAPE DRAPED OVER THE FUNCTION AS A BINDING ELEMENT

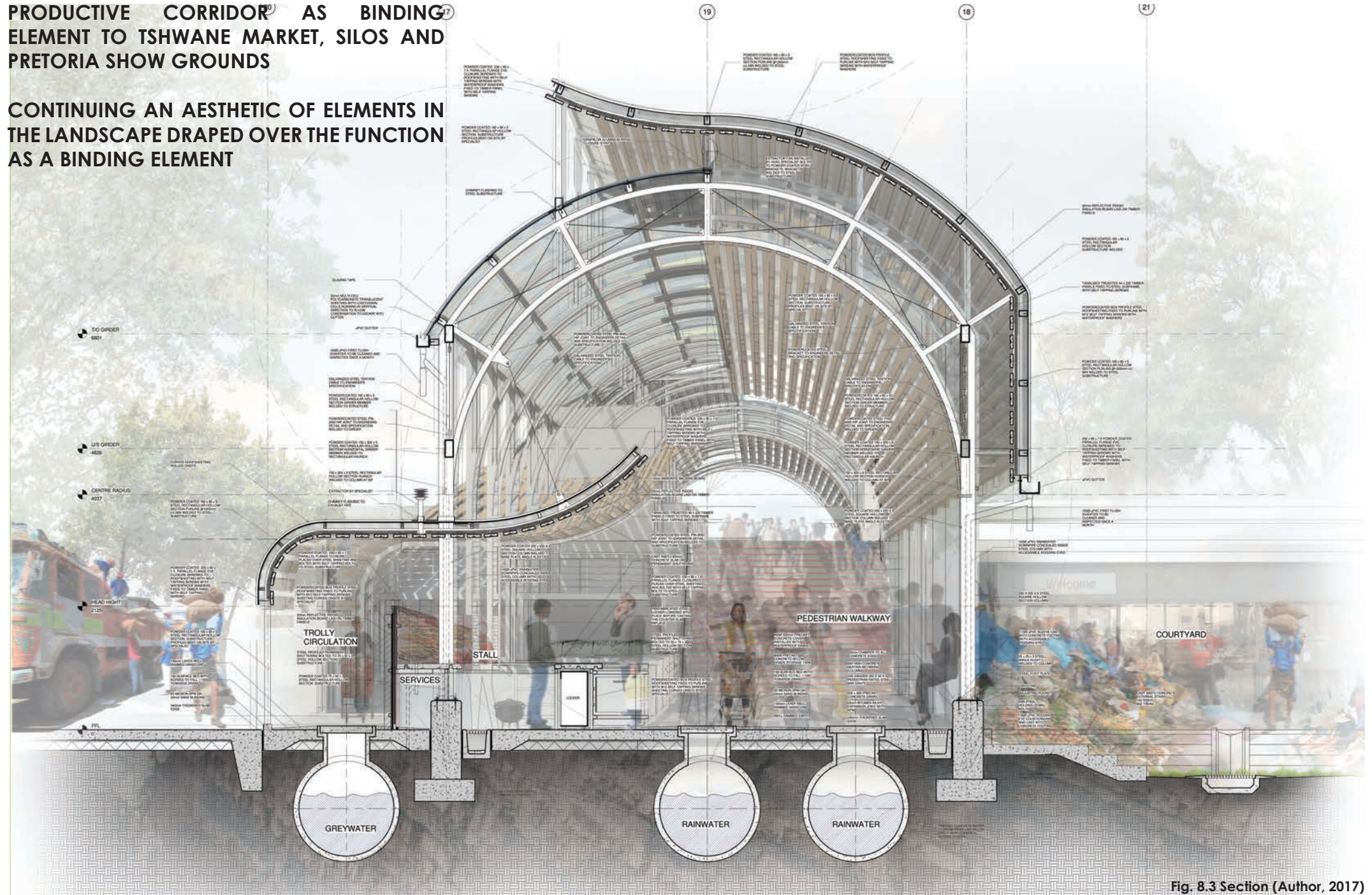


Fig. 8.3 Section (Author, 2017)



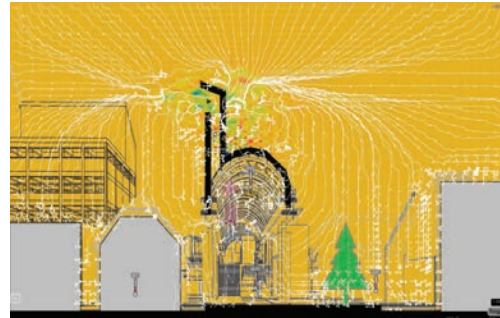
Iteration 1



Iteration 2



Iteration 3



Iteration 4



Fig. 8.4 Ventilation Iterations (Energy 2D by Author, 2017)

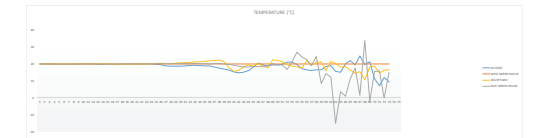
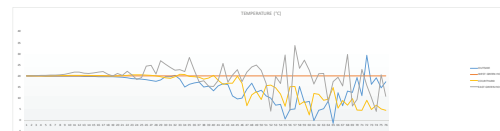
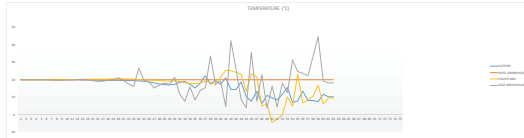
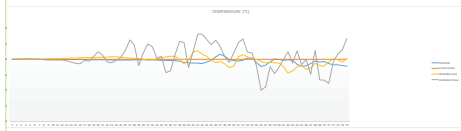
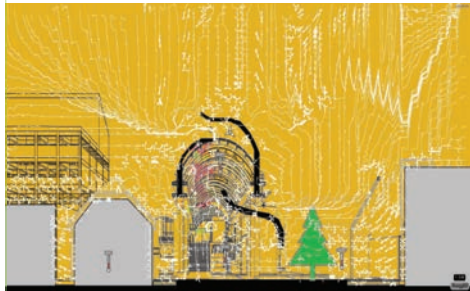


Fig. 8.5 Ventilation Graphs (Author, 2017)

Iteration 5



Iteration 6



Iteration 7



Iteration 8



Fig. 8.6 Ventilation Iterations (Energy 2D by Author, 2017)

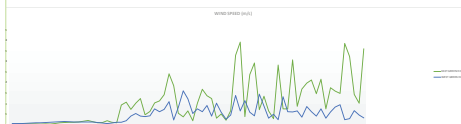
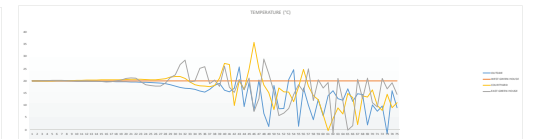
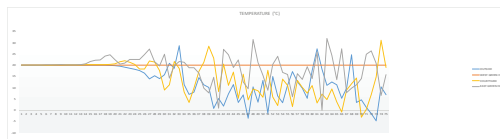
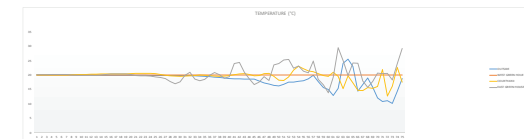
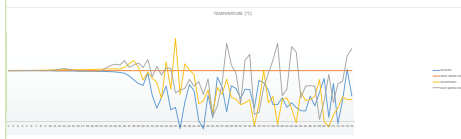


Fig. 8.7 Ventilation Graphs (Author, 2017)



## TECTONIC CONCEPT:

A roof superimposes a grid that organizes and unifies various interdependent elements. These interdependent elements can be described as a series of layers that make up the building. From the onset of the design the intentions were to imply an open outline for architecture rather than creating a sealed and controlled environment. Thus, instead of isolating the user from the environmental factors, elements such as direct sunlight is used as a dynamic device that influences the habits of users during the specific times of the day. Thermal Comfort of users is addressed in specifically zoned and controlled areas, whilst the majority of the intervention is kept open. Relating to the intentional openness of the space, is the lightness of the architecture that accompanies it. The openness of space contrasts the closed, and isolated nature of the existing industrial buildings.

## ENVIRONMENTAL STRATEGY

This open air nature of the street market that superimposes itself onto the food production activities taking place below dictates the environmental strategy. Due to the open air nature of the design, a Greenstar design rating was utilized instead of energy modelling techniques that rely on enclosed climate control. Construction depends on the sourcing of materials from surrounding industries whilst the running demand on resources depends on a cyclical system that reuses greywater, extracts bio-diesel from food scraps and generates electricity. Programmatically the informal industries reduce waste generated by the formal industries by incorporating human activities into the process of producing food. The symbiotic relationship encourages reduction in waste and simultaneously shortens the supply chain. The transportation of goods between industry and market

## SOLAR STUDY

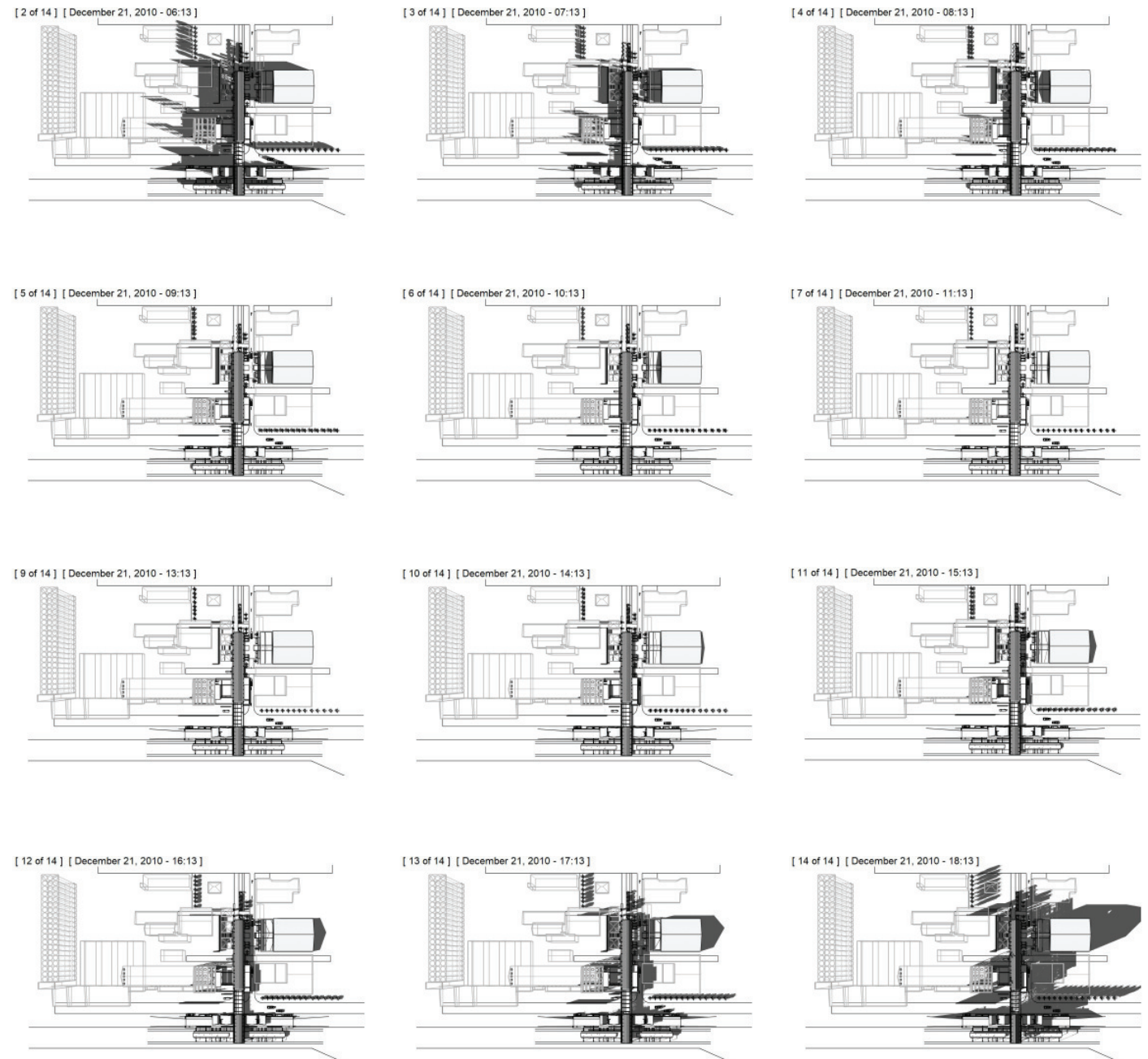


Fig. 8.8 Solar Study (Revit 2016 by Author)

# SHADING DESIGN

# GBCSA - GREENSTAR RATING 5 STARS RATING WITH 70 CREDITS (6 STAR RATING WITH 5 POTENTIAL AD- DITIONAL CREDITS)

Refer to Apendix B for a detailed description of the credits that were achieved in each catagory

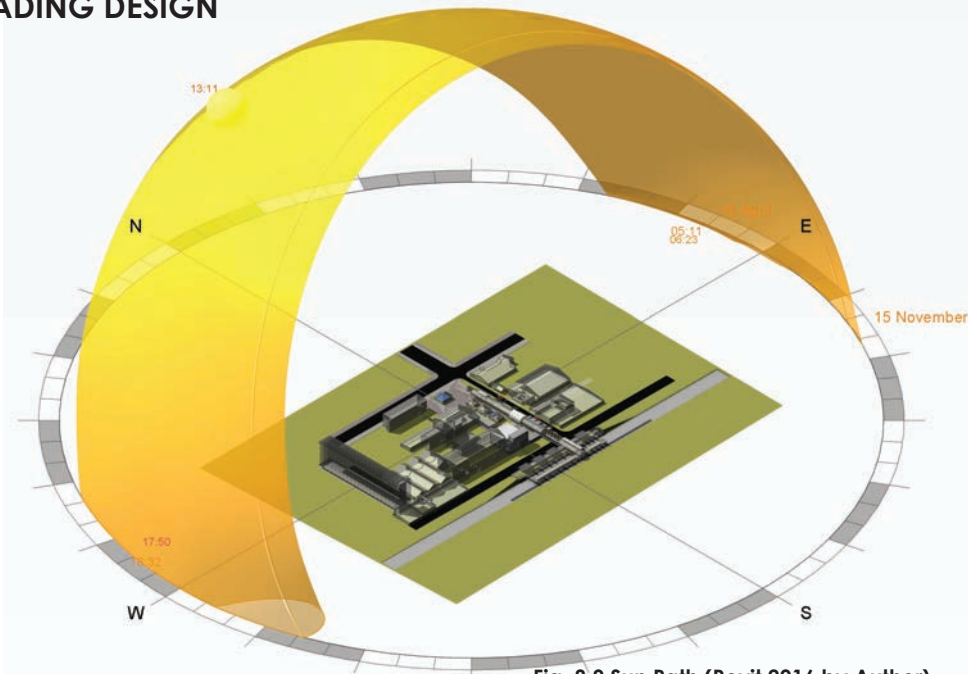


Fig. 8.9 Sun Path (Revit 2016 by Author)

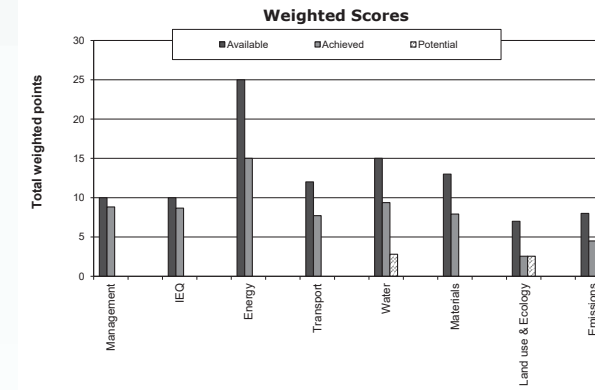
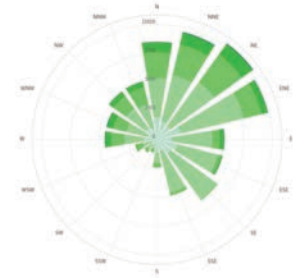


Fig. 8.10 Greenstar Rating Credit Categories (GBCSA, 2017)

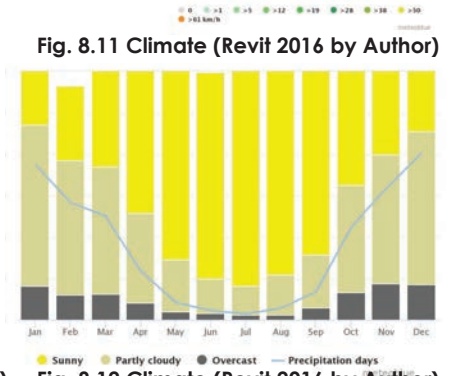


Fig. 8.11 Climate (Revit 2016 by Author)

Fig. 8.12 Climate (Revit 2016 by Author)

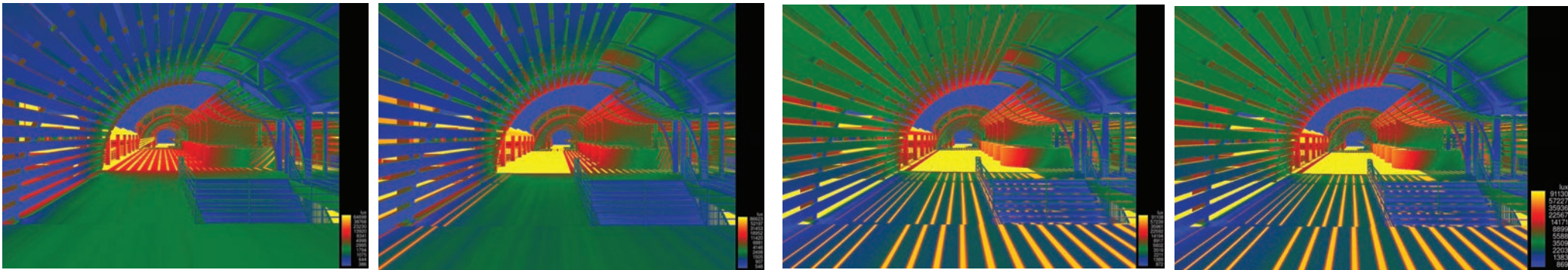
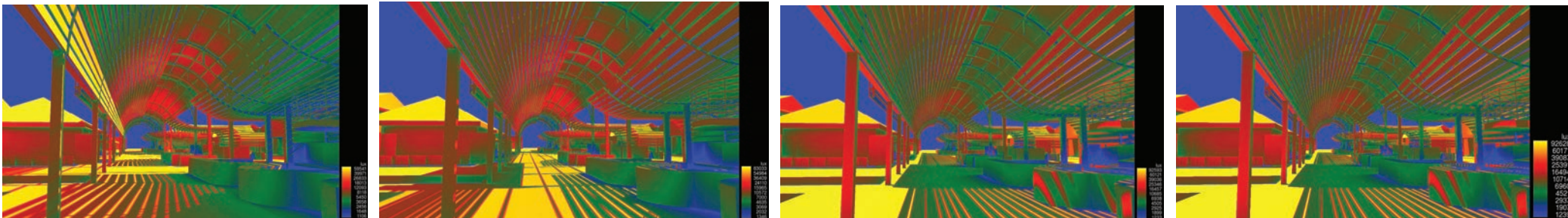


Fig. 8.13 Solar Study (Revit 2016 by Author)





is greatly reduced and economic opportunities are generated along the new market infrastructure.

## TECHNIFICATION OF AN [IN]FORMAL PROGRAM

By intensely programming a series of nodes with interactions between, informal programs could be catalysed to settle along the interactions between these nodes. The informal process is then free to change as the requirements of production change, whilst the formal (existing) nodes remain stagnant. By incorporating spill out spaces for informal programs that cannot be predicted, the existing programmes can serve as a host and be activated by the informal programs in a symbiotic relationship.

## EXTENDING THE OLD INTO THE NEW

The structural rhythm and order of the existing buildings is extended and expressed through the new additions, creating a unity in proportions between old and new. The extension of the old into the new aligns with the original architectural concept of the extending of existing functions towards the public. The illegible aesthetic of the existing structures is thus addressed (through the new additions) by highlighting the most prominent architectural system; the structural frame.

## OUTLINES

Various layers of the proposal depend on subtly implied boundaries and suggestions of space. Historic erf boundaries for instance forms distinct development patterns in the existing structures and form the broad proportional grid to which the new structure is ordered. These faint historic outlines are highlighted whilst the expected silhouette of the new building is blurred. The organisational grid thus becomes more important, and thus more prominent, than the roof that it carries.

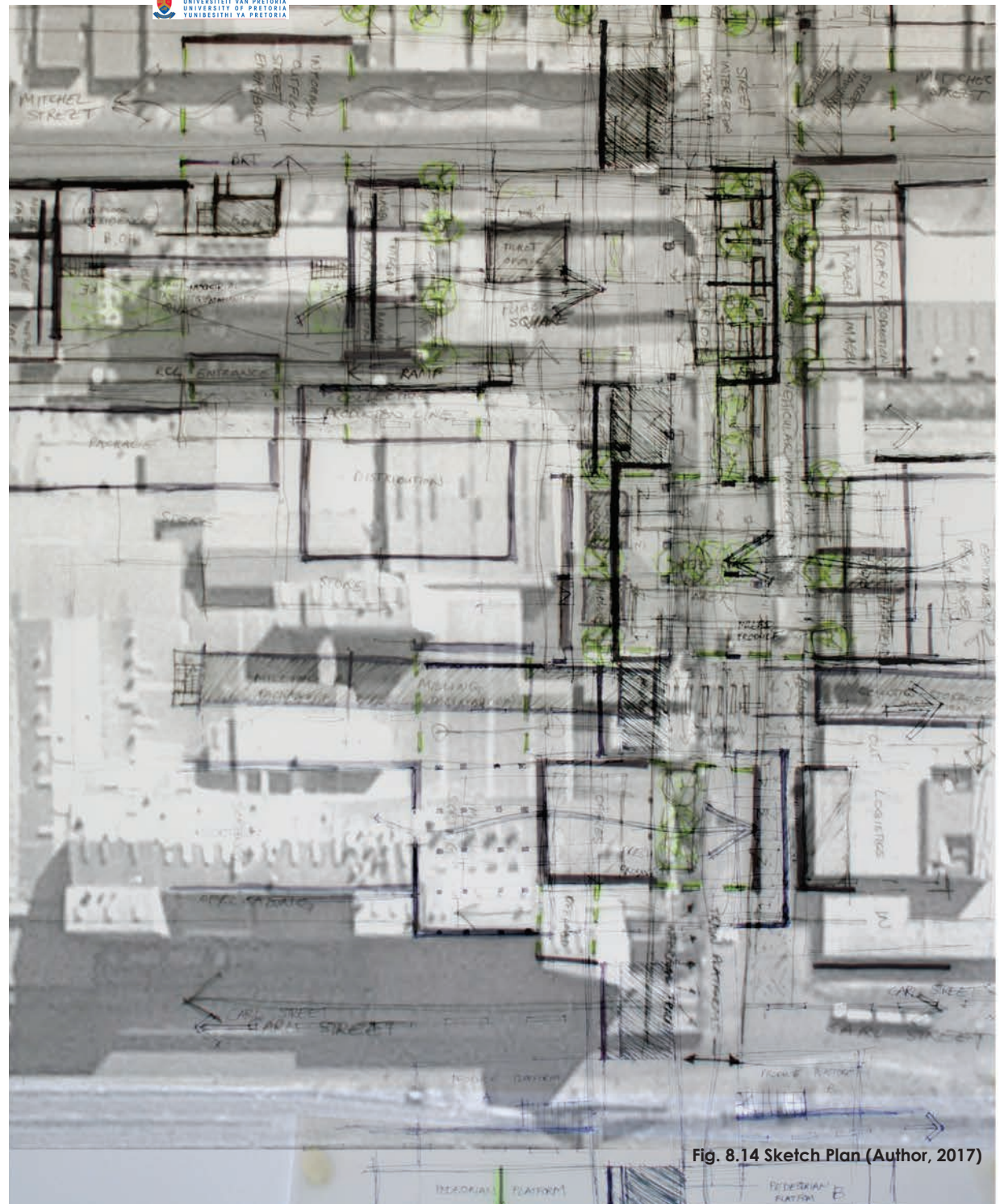


Fig. 8.14 Sketch Plan (Author, 2017)







TRAIN STATION PLANS

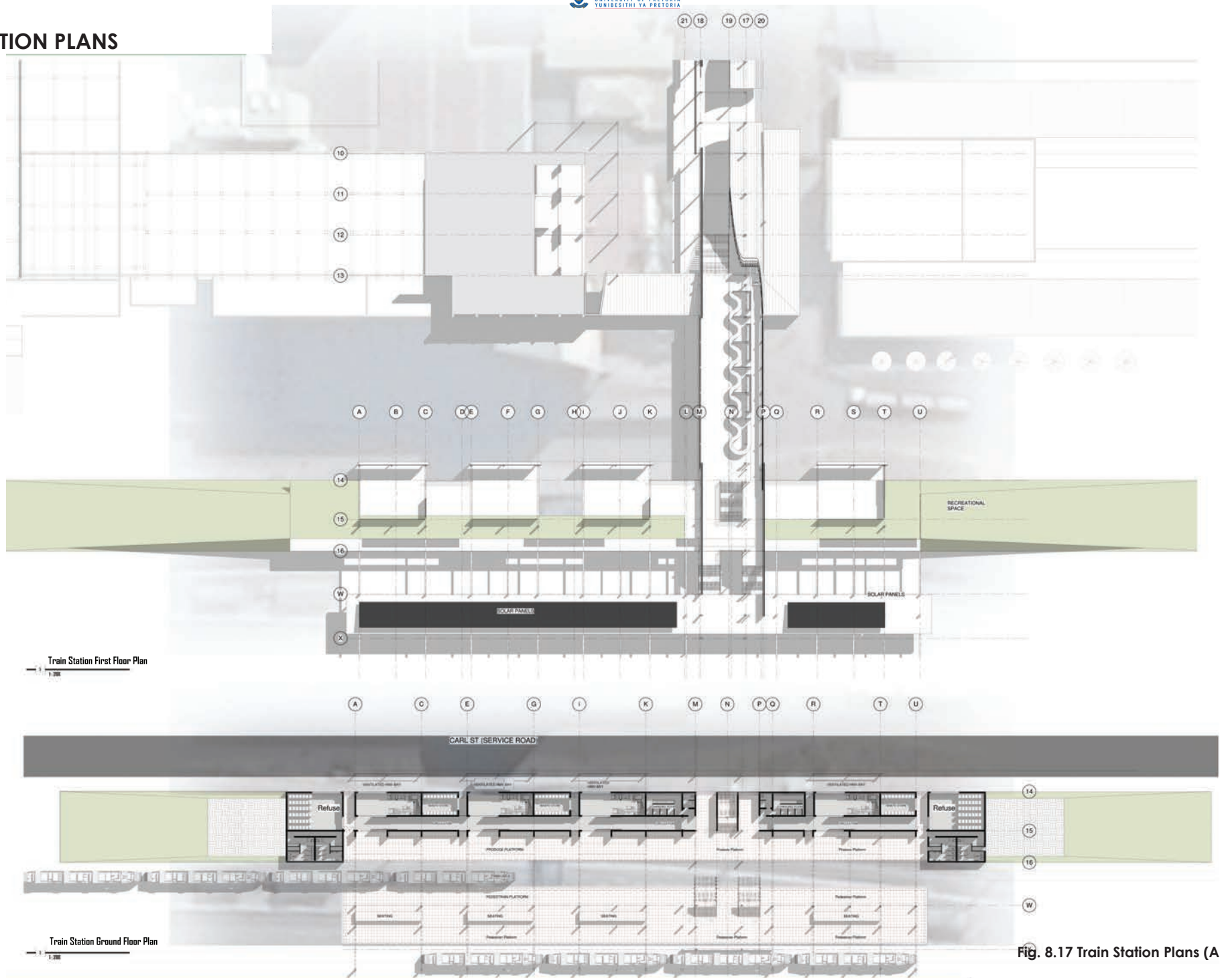
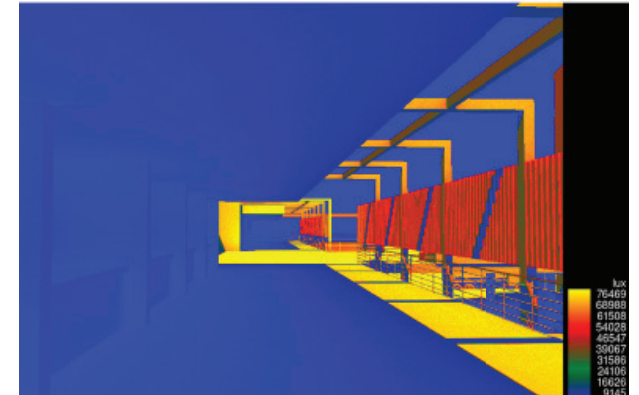
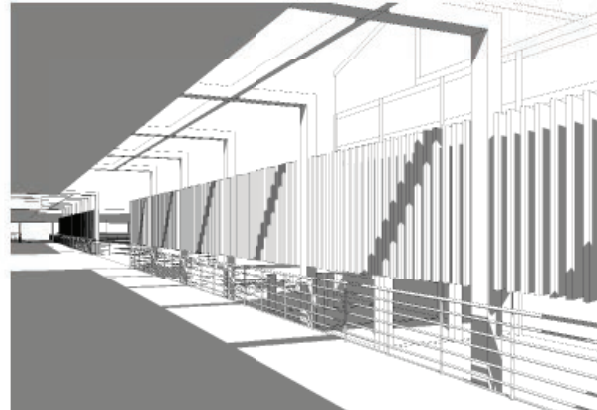


Fig. 8.17 Train Station Plans (Author, 2017)



**SYSTEMS DESIGN**

Fig. 8.18 Shading Design (Revit 2016 by Author, 2017)



**RAINWATER HARVESTING**  
1970m<sup>2</sup> CATCHMENT AREA ROOF  
STRUCTURE



**WASTE CATCHMENT**  
FILTRATION AND SEPERATION OF WET  
WASTE AND GREYWATER RECYCLING



**OIL PLANT**  
INDUSTRIAL PROCESS REFINING



**WATER STORAGE TANKS**  
RAINWATER STORAGE AND  
SEPARATE GREYWATER STORAGE



**PRESURE WASHING**  
DAILY CLEANING OF STALLS AND  
WALKWAYS



**ENERGY GENERATION**  
GENERATORS CONVERT BIO-FEUL  
INTO ELECTRICITY ON SITE USED FOR  
LIGHTING AND PRESURE WASHING



**PHOTOVOLTAIC PANELS**  
450m<sup>2</sup> PHOTOVOLTAIC CELLS  
POWERING WATERPUMPS AND  
LIGHTING



**GREYWATER RECYCLING**  
GREYWATER RECYCLING USED FOR  
IRRIGATION AS WELL AS TOILET



**AIR CURTAIN**  
PEST CONTROL, AIR QUALITY  
CONTROL COMPARTIMENTAL AIR  
CONTROL

Fig. 8.19 Systems Design (Author, 2017)



SECTIONS

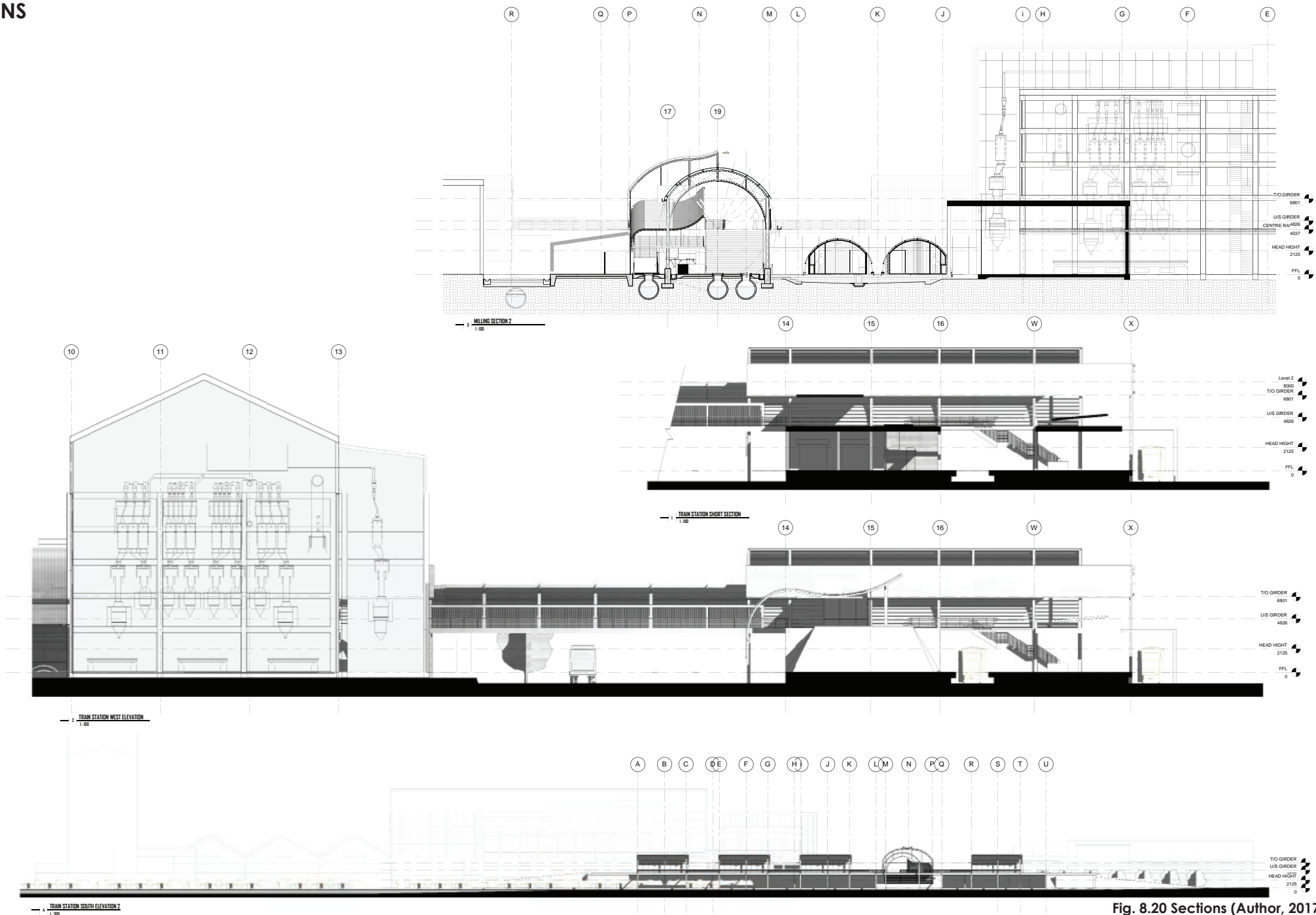


Fig. 8.20 Sections (Author, 2017)

# ELEVATIONS

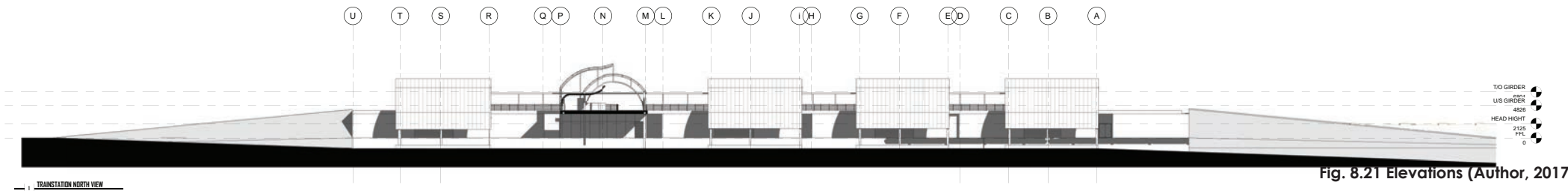
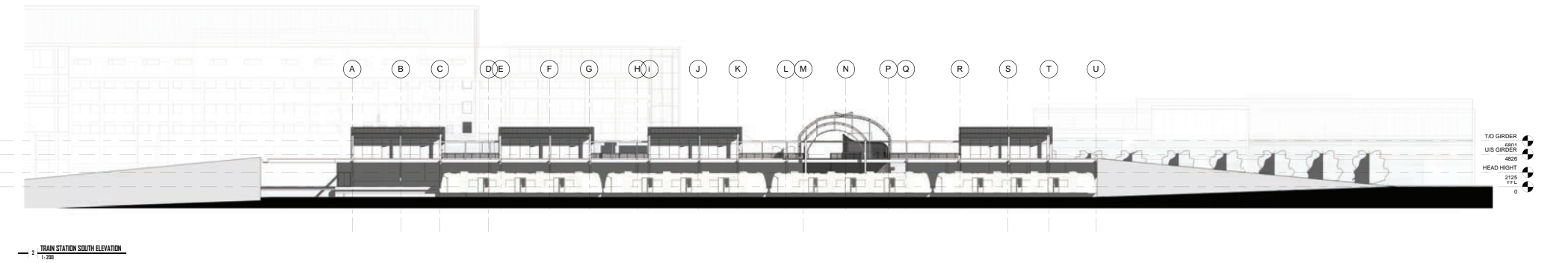
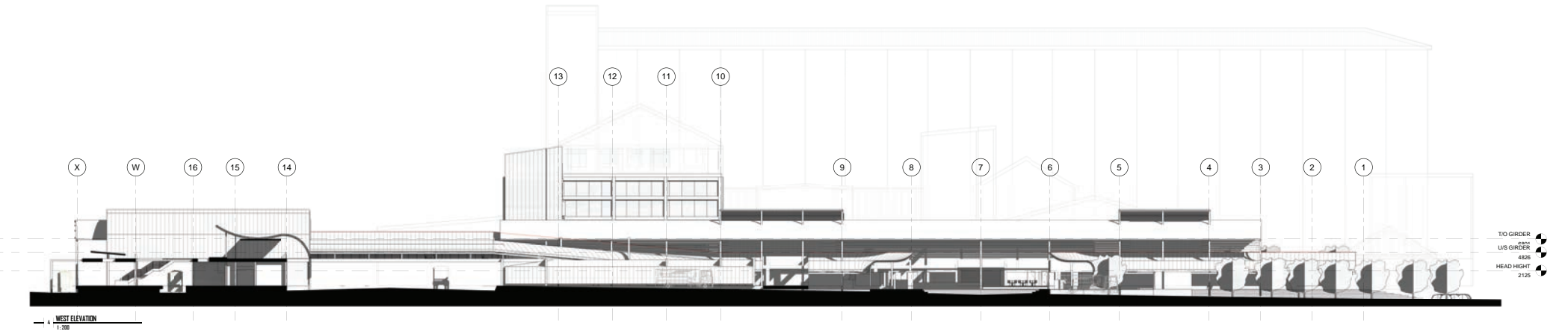
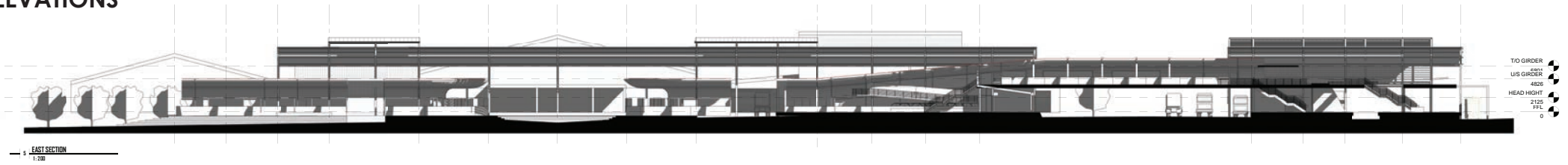
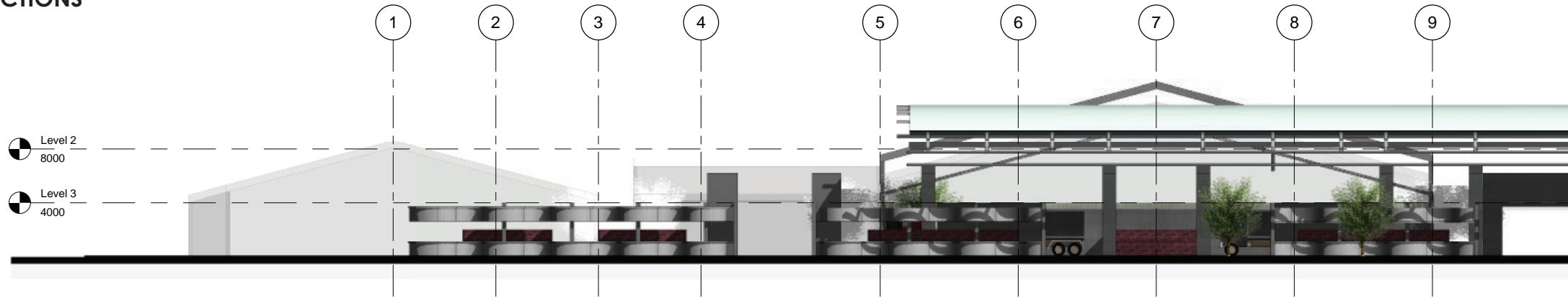


Fig. 8.21 Elevations (Author, 2017)



# SECTIONS



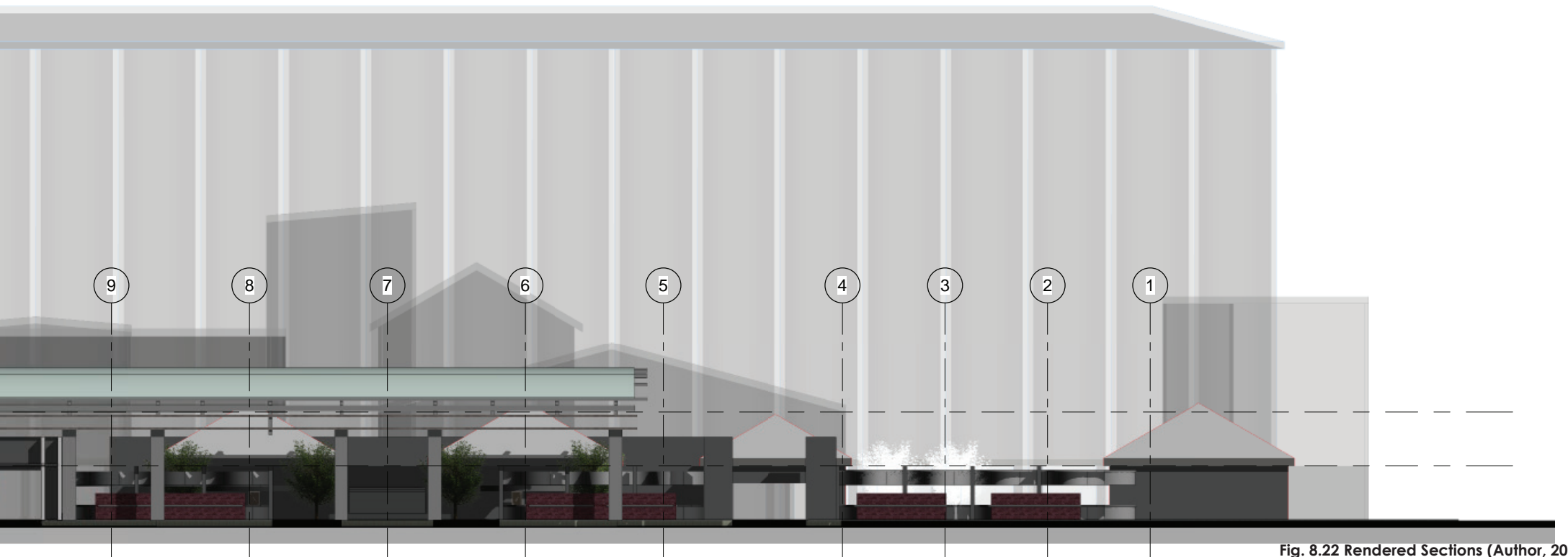
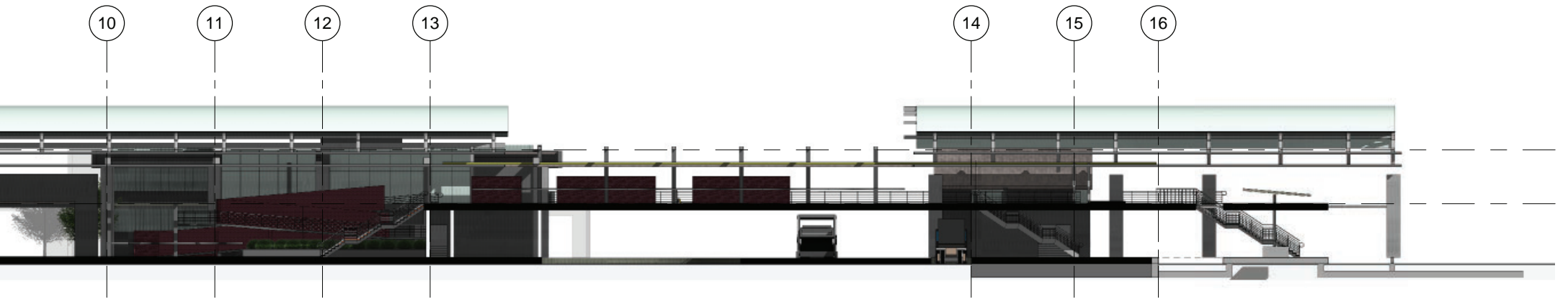


Fig. 8.22 Rendered Sections (Author, 2017)



FINAL MODELS

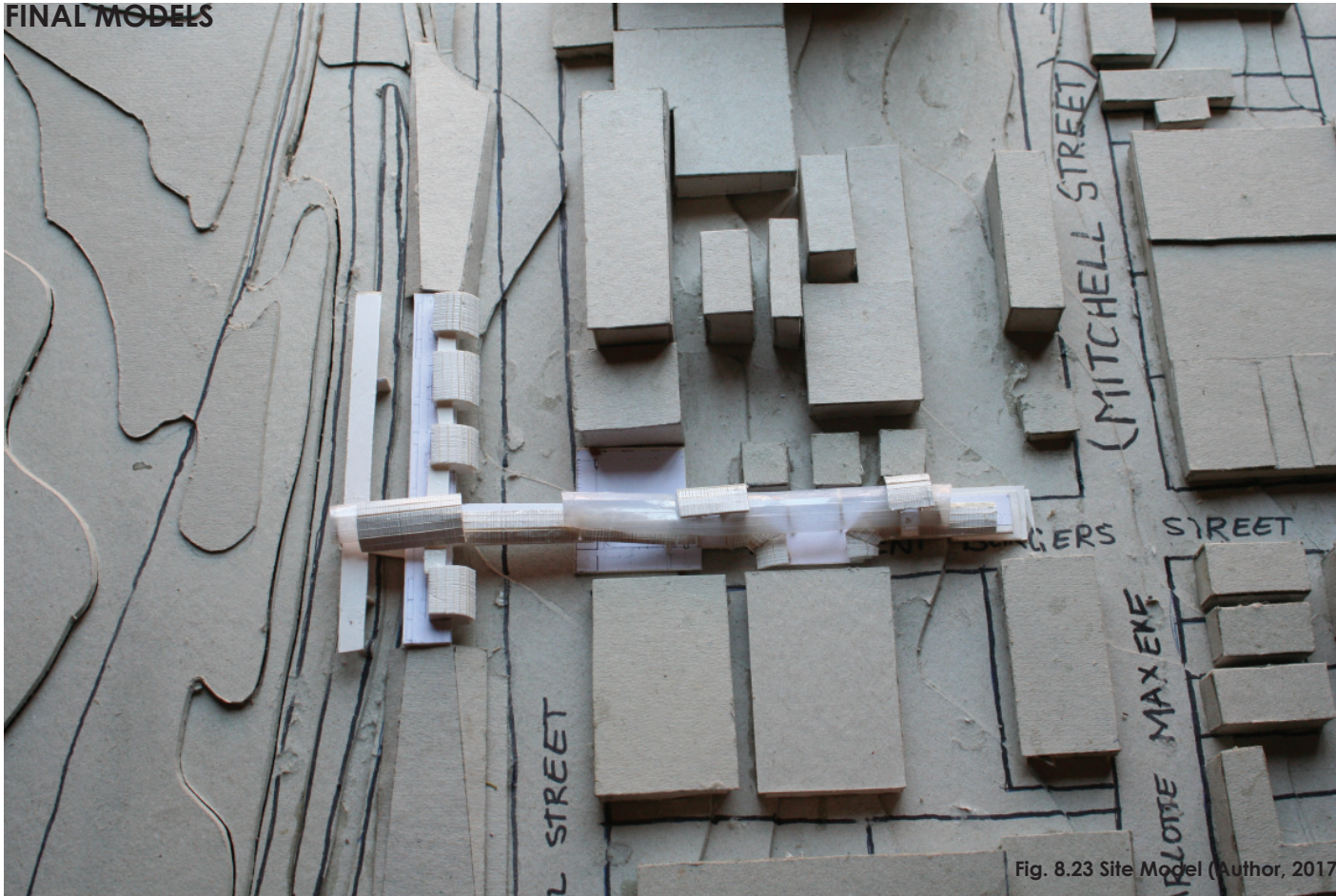


Fig. 8.23 Site Model (Author, 2017)

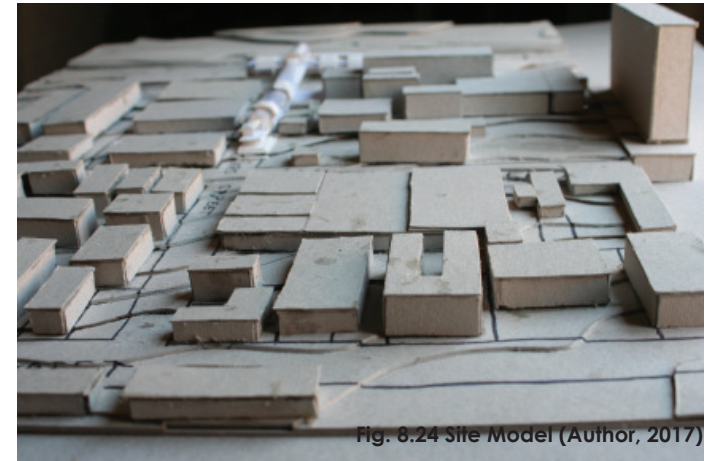


Fig. 8.24 Site Model (Author, 2017)

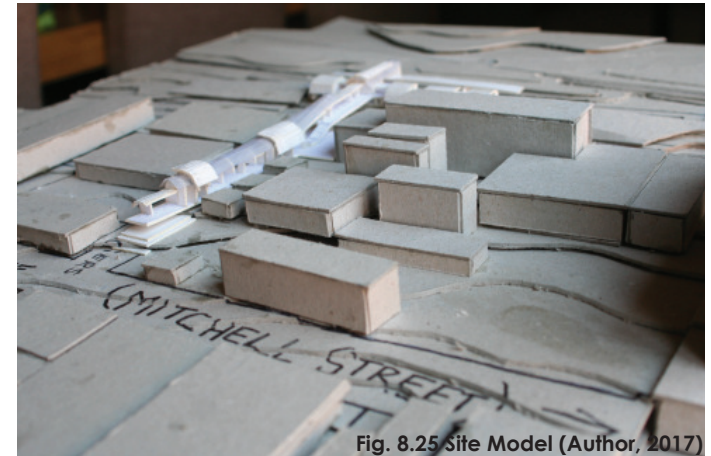


Fig. 8.25 Site Model (Author, 2017)



Fig. 8.26 Pretoria Figure Model (Author, 2017)

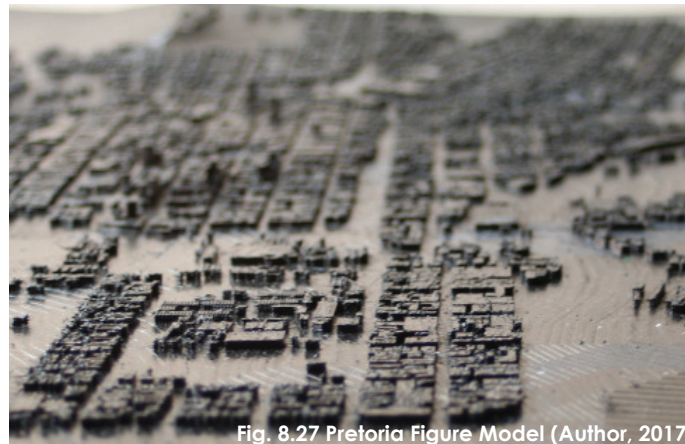


Fig. 8.27 Pretoria Figure Model (Author, 2017)



Fig. 8.28 Site Model (Author, 2017)



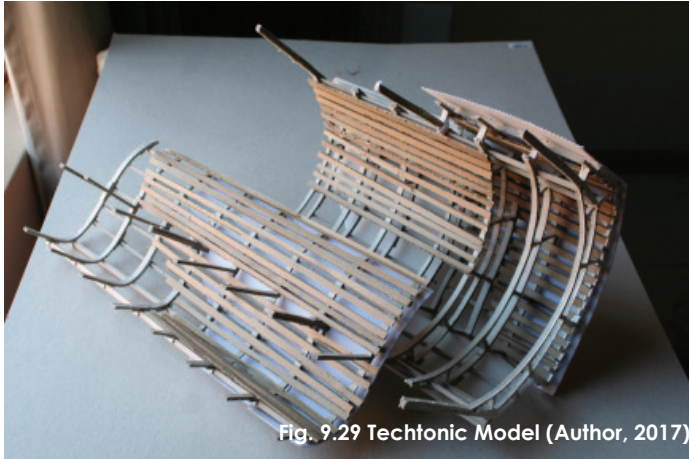


Fig. 9.29 Tectonic Model (Author, 2017)



Fig. 8.30 Tectonic Model (Author, 2017)



Fig. 8.31 Tectonic Model (Author, 2017)

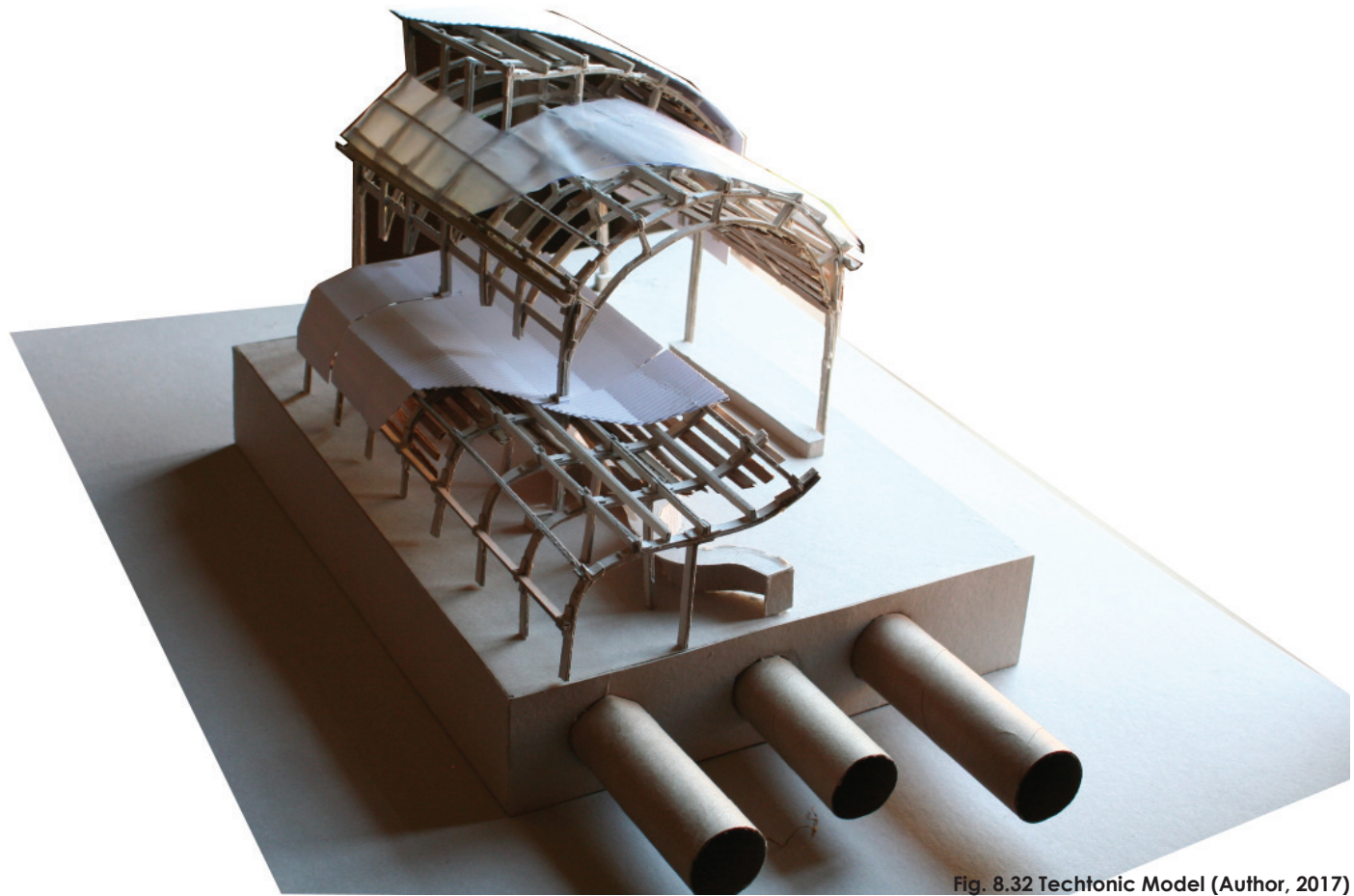


Fig. 8.32 Tectonic Model (Author, 2017)

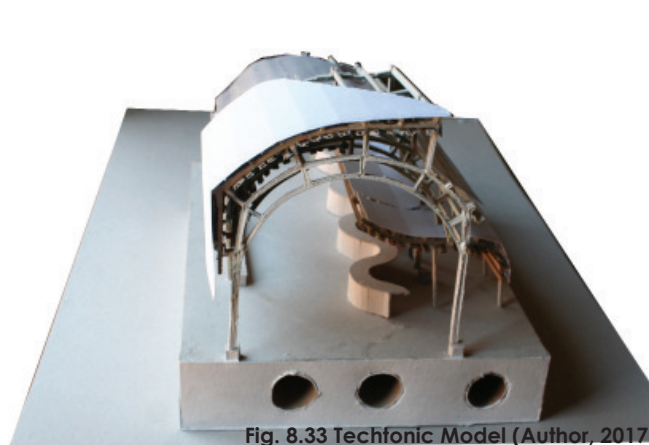


Fig. 8.33 Tectonic Model (Author, 2017)

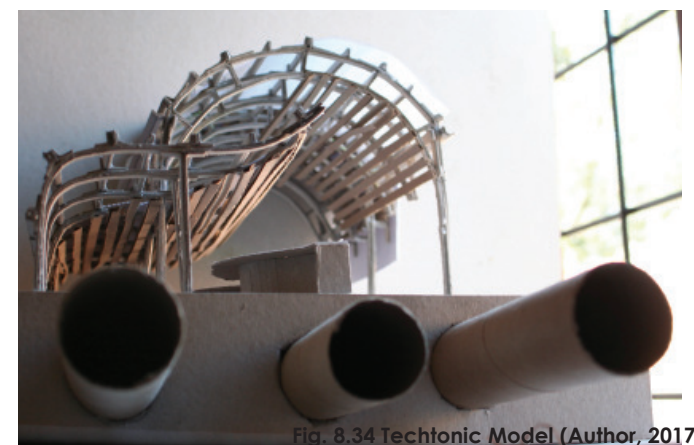


Fig. 8.34 Tectonic Model (Author, 2017)



DETAIL 1

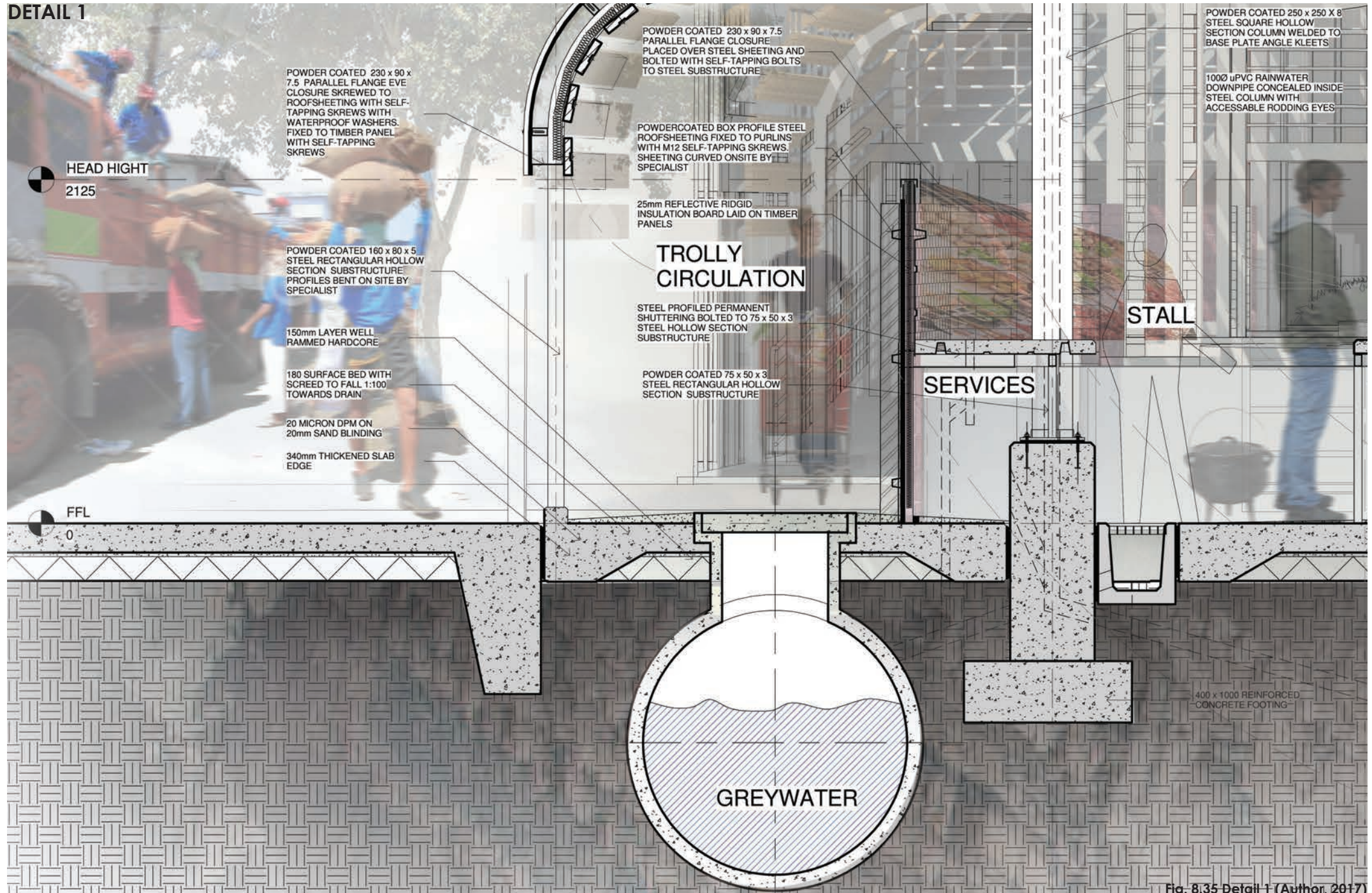
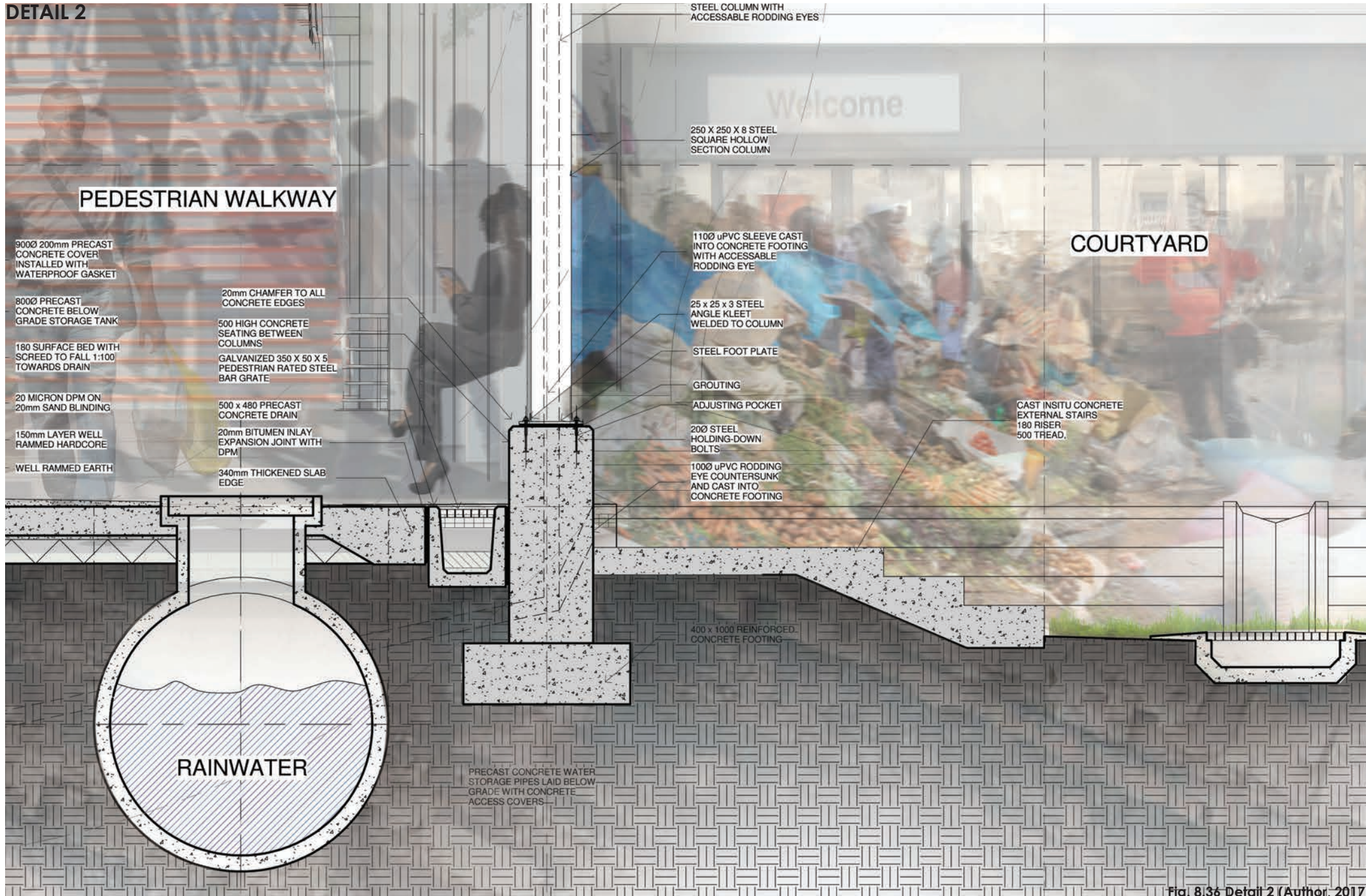


Fig. 8.35 Detail 1 (Author, 2017)



DETAIL 2



PEDESTRIAN WALKWAY

9000 200mm PRECAST  
CONCRETE COVER  
INSTALLED WITH  
WATERPROOF GASKET

8000 PRECAST  
CONCRETE BELOW  
GRADE STORAGE TANK

180 SURFACE BED WITH  
SCREED TO FALL 1:100  
TOWARDS DRAIN

20 MICRON DPM ON  
20mm SAND BLINDING

150mm LAYER WELL  
RAMMED HARDCORE

WELL RAMMED EARTH

20mm CHAMFER TO ALL  
CONCRETE EDGES

500 HIGH CONCRETE  
SEATING BETWEEN  
COLUMNS

GALVANIZED 350 X 50 X 5  
PEDESTRIAN RATED STEEL  
BAR GRATE

500 x 480 PRECAST  
CONCRETE DRAIN

20mm BITUMEN INLAY  
EXPANSION JOINT WITH  
DPM

340mm THICKENED SLAB  
EDGE

STEEL COLUMN WITH  
ACCESSABLE RODDING EYES

250 X 250 X 8 STEEL  
SQUARE HOLLOW  
SECTION COLUMN

1100 uPVC SLEEVE CAST  
INTO CONCRETE FOOTING  
WITH ACCESSABLE  
RODDING EYE

25 x 25 x 3 STEEL  
ANGLE KLEET  
WELDED TO COLUMN

STEEL FOOT PLATE

GROUTING

ADJUSTING POCKET

200 STEEL  
HOLDING-DOWN  
BOLTS

1000 uPVC RODDING  
EYE COUNTERSUNK  
AND CAST INTO  
CONCRETE FOOTING

COURTYARD

CAST INSITU CONCRETE  
EXTERNAL STAIRS  
180 RISER,  
500 TREAD.

400 x 1000 REINFORCED  
CONCRETE FOOTING

RAINWATER

PRECAST CONCRETE WATER  
STORAGE PIPES LAID BELOW  
GRADE WITH CONCRETE  
ACCESS COVERS

Fig. 8.36 Detail 2 (Author, 2017)



### DETAIL 3

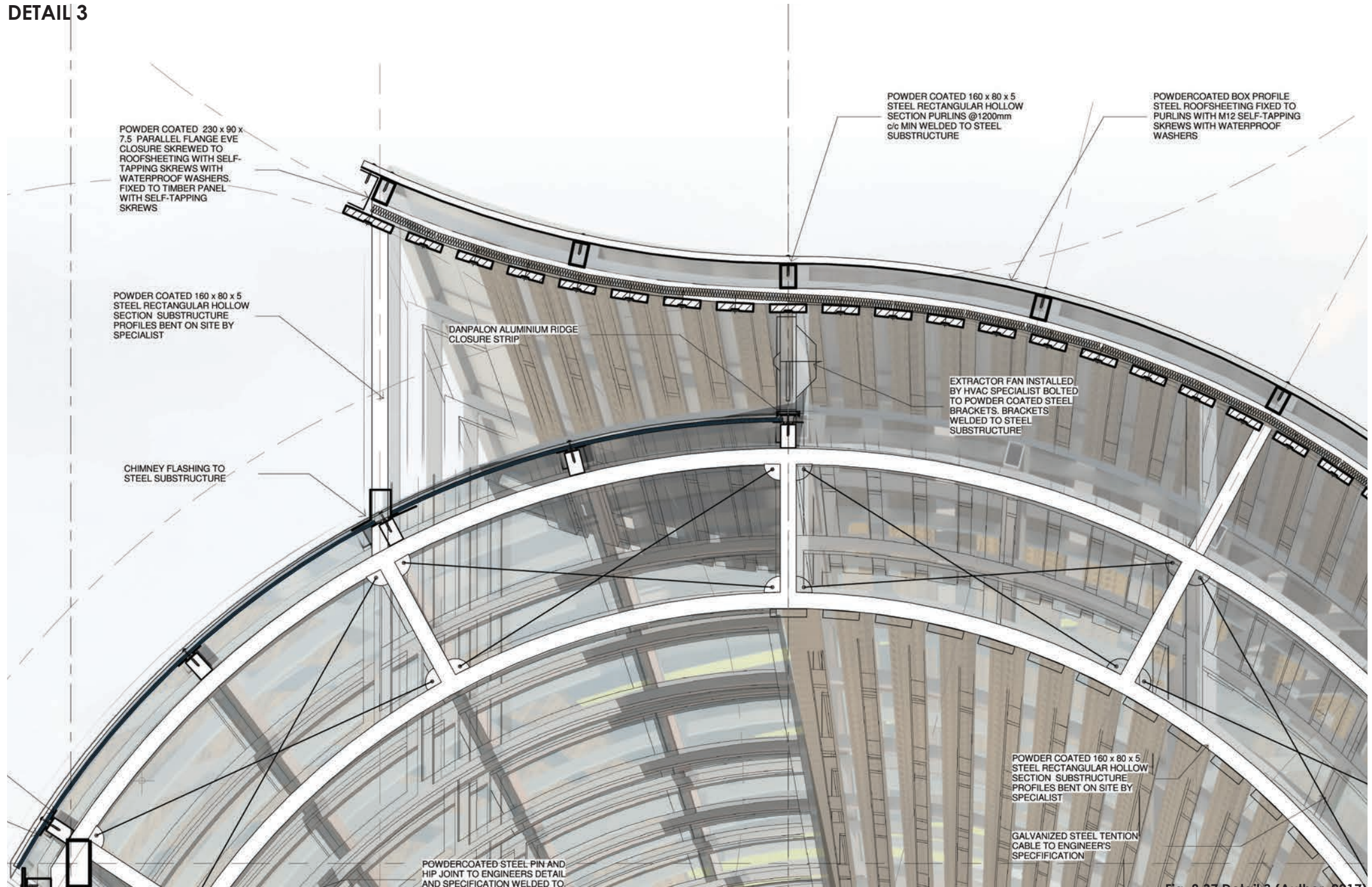


Fig. 8.37 Detail 3 (Author, 2017)



DETAIL 4

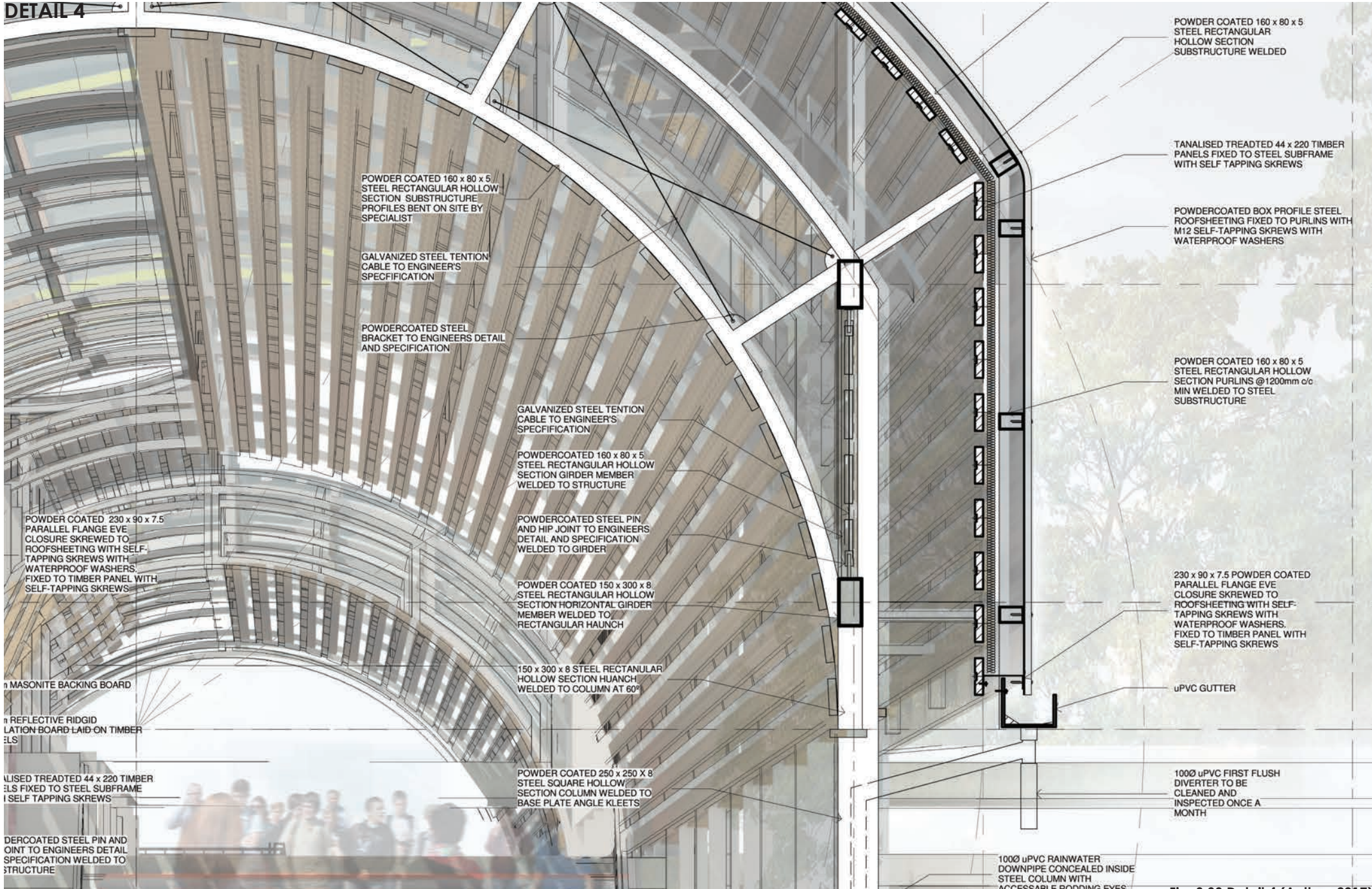


Fig. 8.38 Detail 4 (Author, 2017)



DETAIL 5

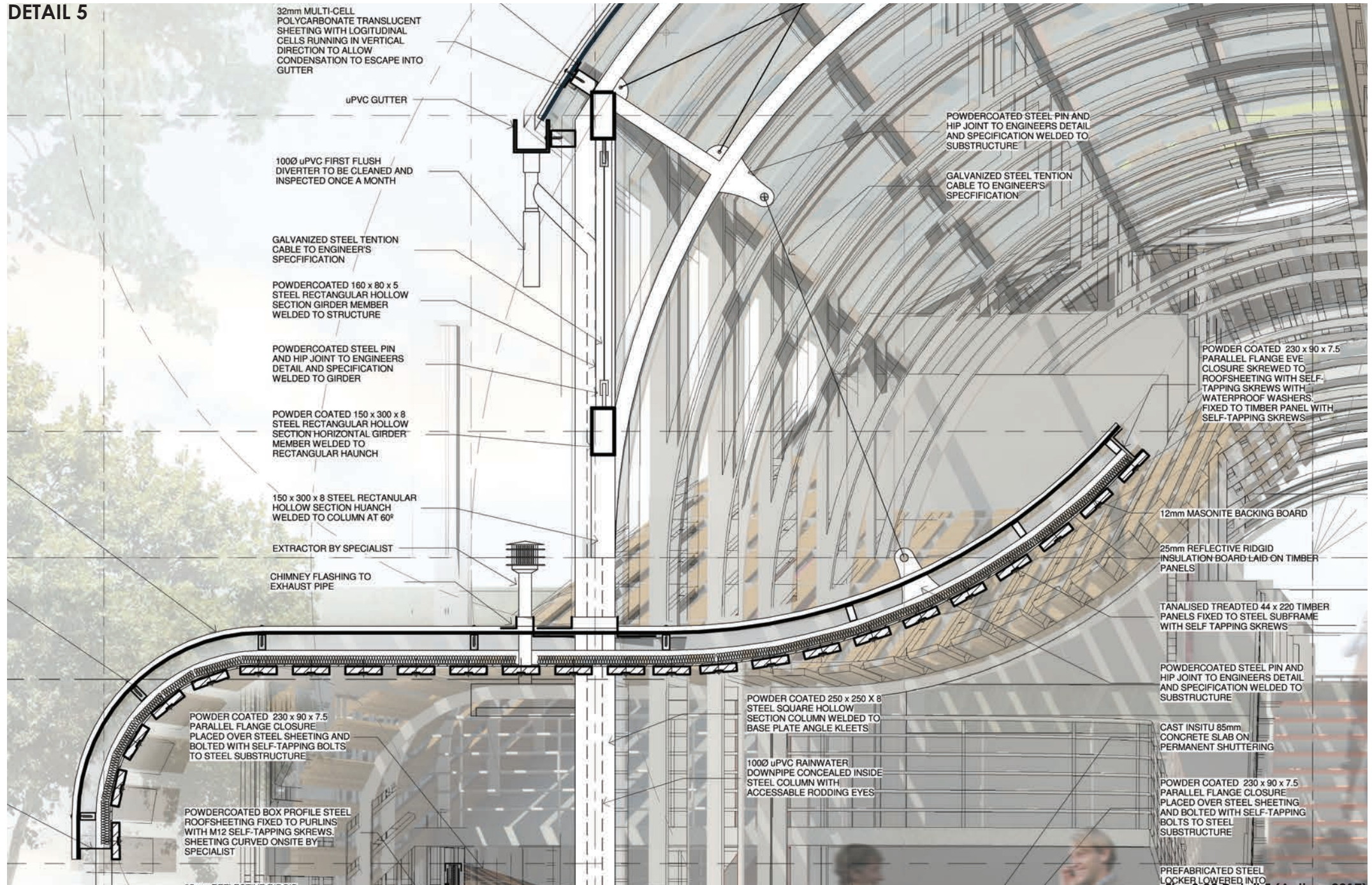
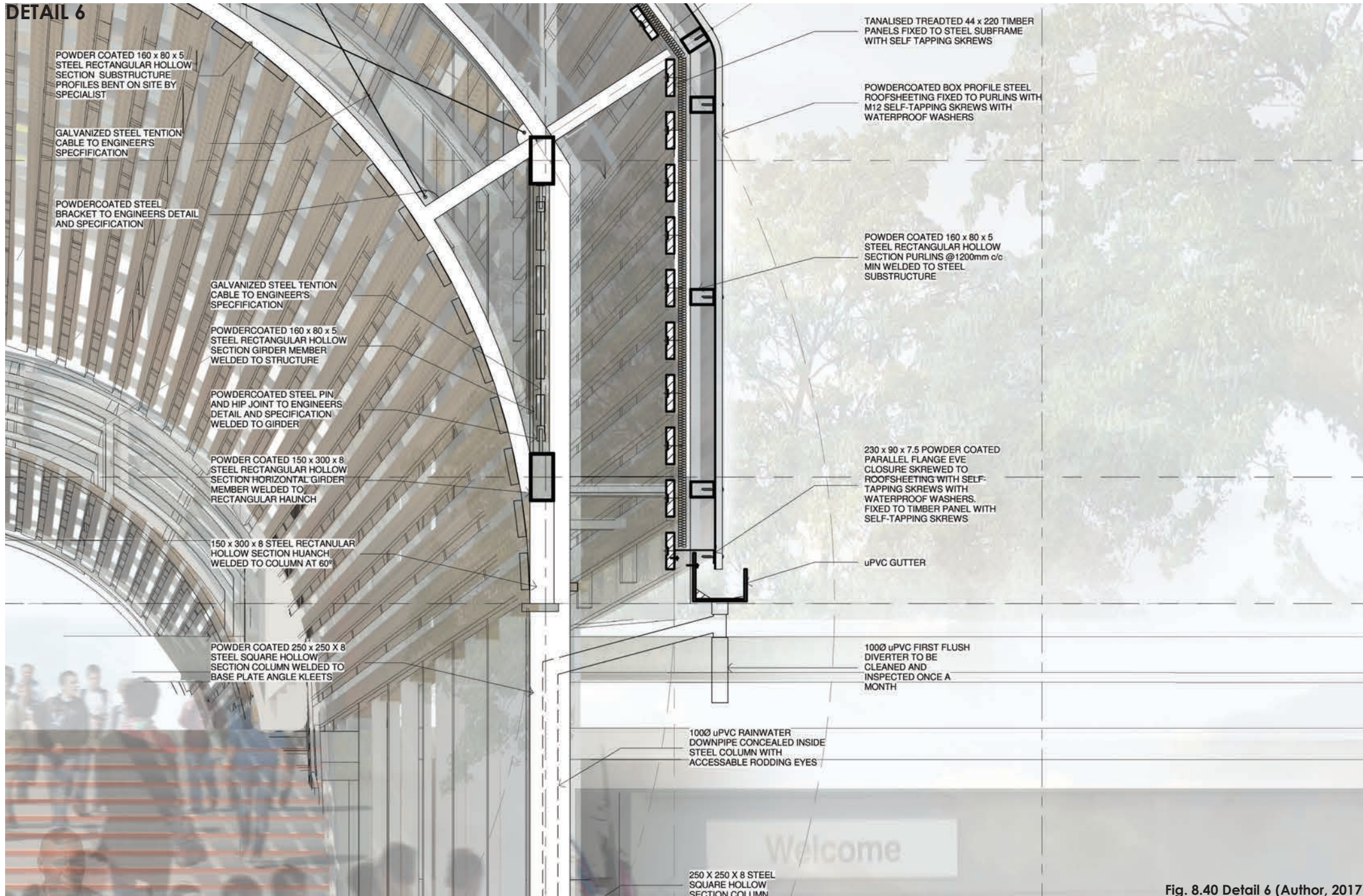


Fig. 8.39 Detail 5 (Author, 2017)



**DETAIL 6**



**Fig. 8.40 Detail 6 (Author, 2017)**