



‘Beit il Mtoni, distant about five miles from the city of Zanzibar, lies on the sea coast, surrounded by most beautiful scenery, and quite hidden in a grove of palm and mango trees, and other gigantic specimens of tropical vegetation.
- Ruete tells about the surrounding vegetation of Mtoni Palace (1907: 2)

Fig. 119: Photograph of Mtoni Palace (Author, 2013).

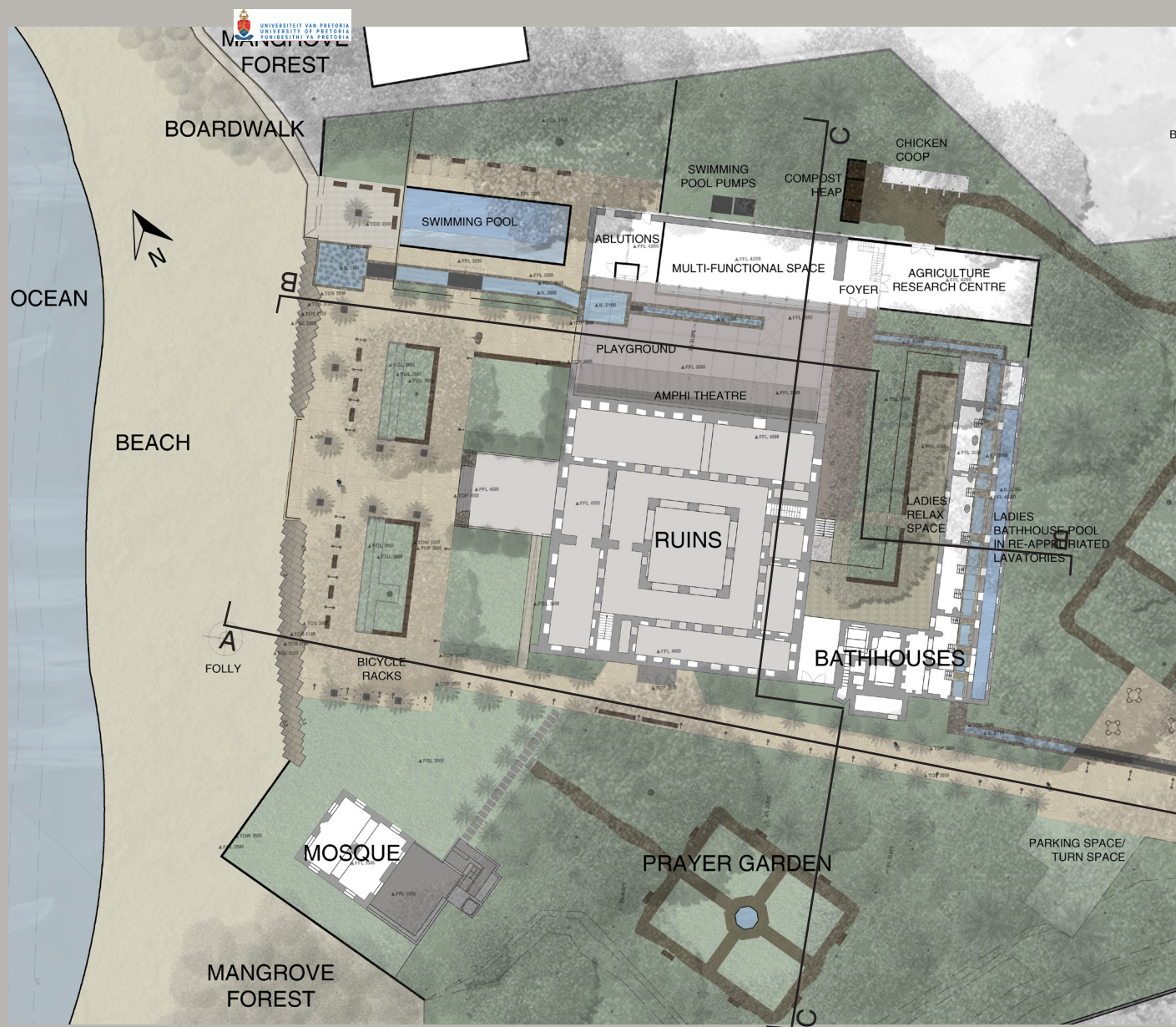
7 TECHNICAL INVESTIGATION

7.1. Introduction

This chapter investigates the technical resolution of the design proposal for Mtoni Palace. The entire extent of the site was developed to a sketchplan level to meet the client's brief. The final sketchplan, sections and details should be read in

conjunction with the heritage strategy, the planting strategy and the water strategy provided herewith. The soft and hard material palette, as well as the lighting plan aim to provide a full understanding of the design proposal.

7.2. Design Proposal



BULK OIL STORAGE FACILITIES








LEGEND	
	LAWN
	PLANTING BEDS
	CORAL AGGREGATE CONCRETE MIX
	DECK
	SMOOTH CONCRETE

Fig. 120:
Design
Proposal
for Mtoni Palace
(Author, 2014).

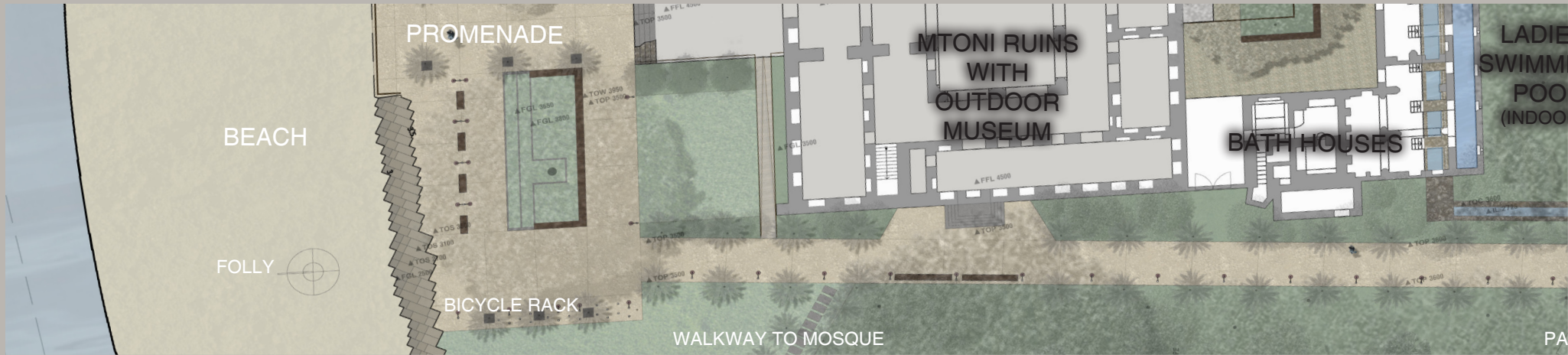




Fig. 121: Promenade Design Proposal (Author, 2014).



Fig. 122: Section Elevation through Beach, Waterfront, Promenade and Market (A-A) (Author, 2014).

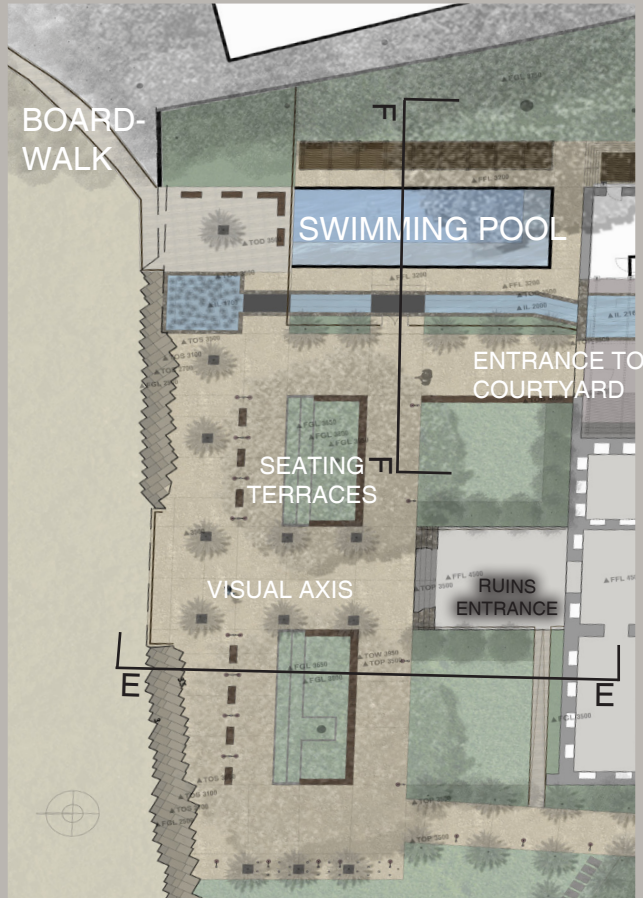


Fig. 123: Waterfront Design Proposal (Author, 2014).



Fig. 124: Market Design Proposal (Author, 2014).

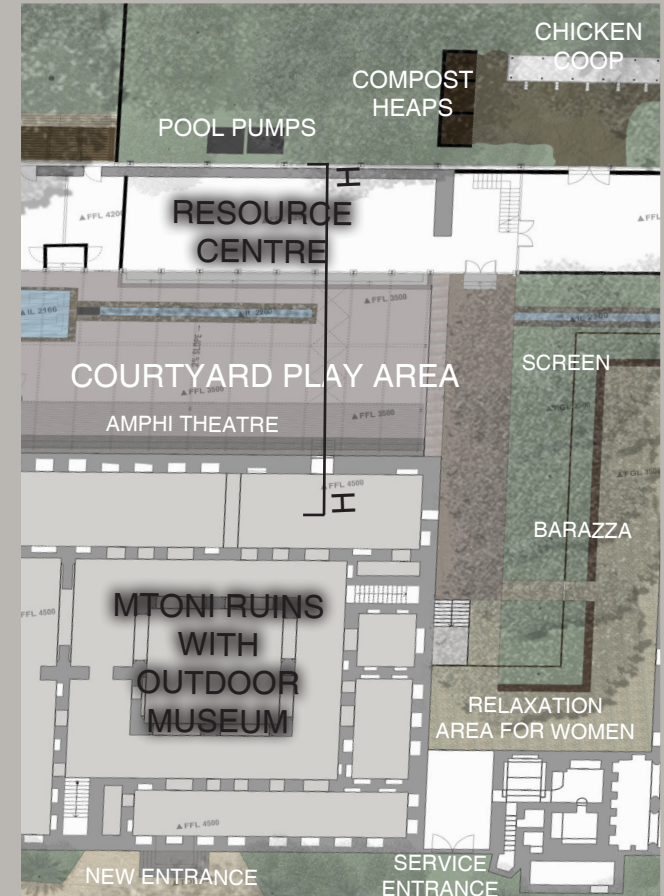


Fig. 125: Courtyard Design Proposal (Author, 2014).



Fig. 126: Section Elevation through Courtyard, Waterfront and Beach (B-B) (Author, 2014).



Fig. 127: Section Elevation through Prayer Garden, Ruins, Courtyard and Resource Centre (C-C) (Author, 2014).



Fig. 128: Section Elevation through Promenade and Spice Garden (D-D) (Author, 2014).

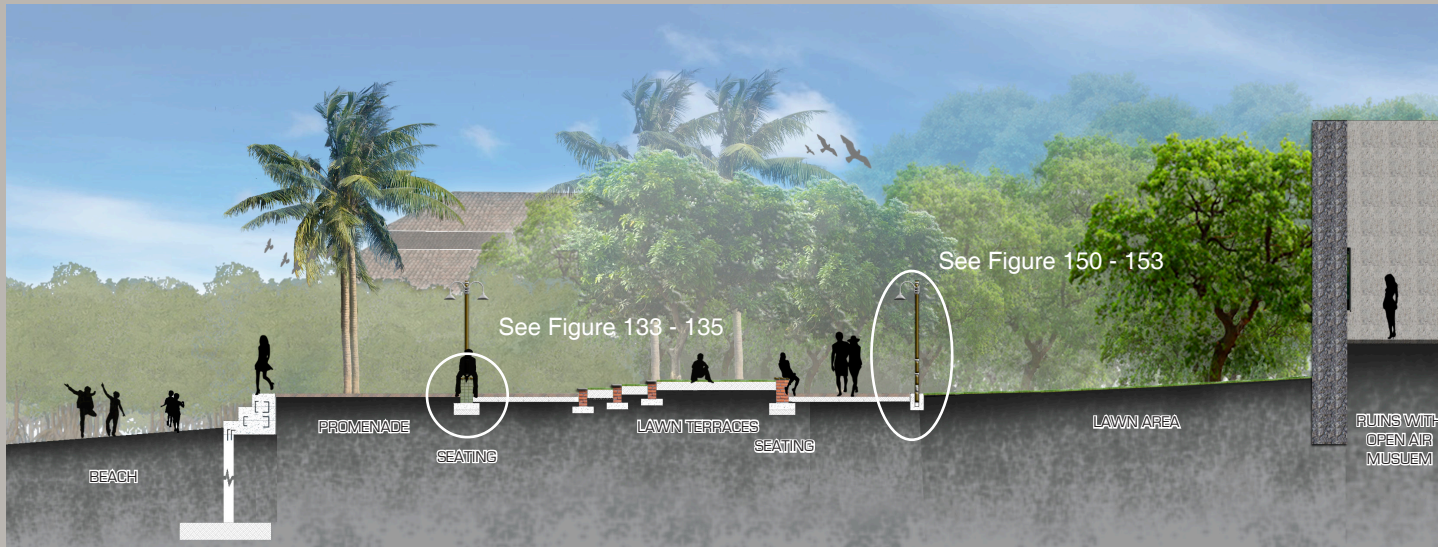


Fig. 129: Detail Section Elevation through Beach, Waterfront, Ruins and Museum signage (E-E) (Author, 2014).



Fig. 130: Detail Section Elevation through Swimming Pool area, Historic Water Channel and Pathway (F-F) (Author, 2014).



Fig. 131: Detail Section Elevation through Spice Garden, Market, Road and Commercial Zone (G-G) (Author, 2014).



Fig. 132: Detail Section Elevation through Ruins, Playground, Historic Water Channel and Resource centre (H-H) (Author, 2014).

7.3. Water Channel

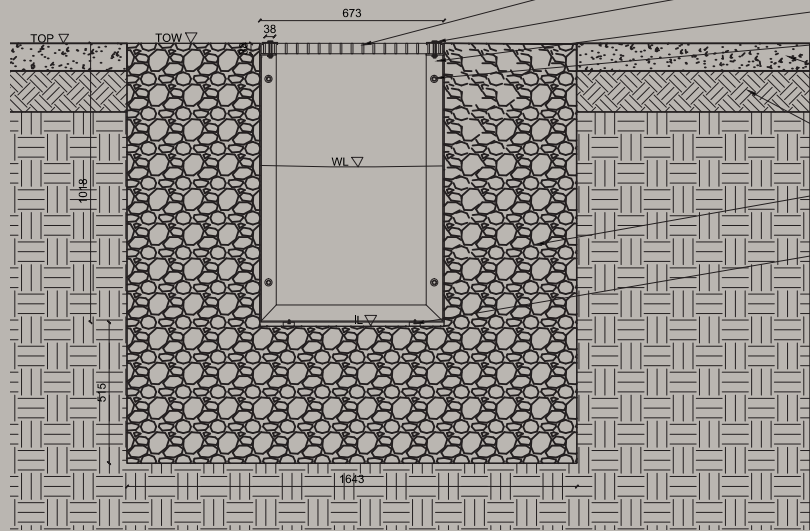


Fig. 133: Detail Section (1:20) of Historic Water Channel with Fibre Glass Grating Fixing Detail (Author, 2014).

673 X 38 DARK GREEN FIBRE GLASS GRATING IN 3660 LONG PANELS FIXED WITH GALVANISED GRATING CLIPS TO 60 X 38 X 4 PRE-WELDED AND PRE-DRILLED GALVANISED MILD STEEL ANGLE WELDED ONTO 60 X 60 X 4 PRE-DRILLED AND PRE-WELDED GALVANIZED MILD STEEL ANGLE.

PRE-WELDED AND PRE-DRILLED GALVANISED MILD STEEL GRID CLIPS BY MANUFACTURER.

60 X 60 X 4 PRE-DRILLED AND PRE-WELDED GALVANIZED MILD STEEL ANGLE.
M6 STAINLESS STEEL BOLT AND NUT WITH 60 STAINLESS STEEL ROD AS CROSS-BRACING.

IN-SITU CAST CONCRETE WITH 5 EXPOSED CORAL AGGREGATE MIX. CONSTRUCTION JOINTS EVERY 2500

COMPACTED EARTH IN LAYERS OF 150 MAX ACCORDING TO 95% MOD. AASHTO.

HISTORIC WATER CHANNEL OF CORAL AND LIME CONSTRUCTION.

RUBBER FOOTING FIXED TO PRE-DRILLED AND PRE-WELDED GALVANISED MILD STEEL ANGLE WITH COUNTER SUNK M6 STAINLESS STEEL BOLT AND NUT.

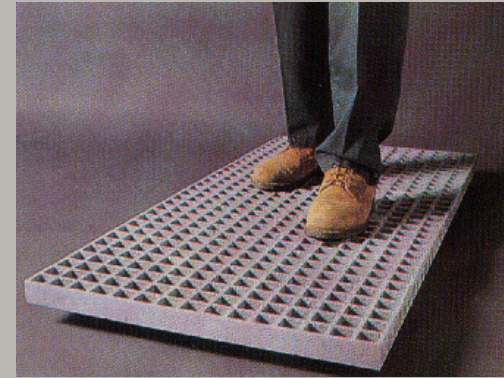
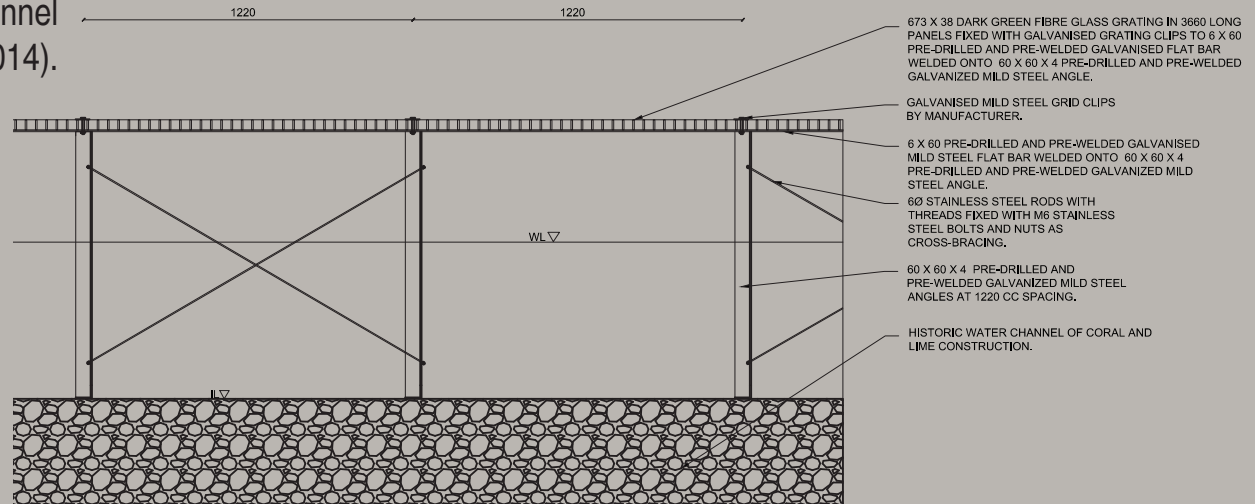


Fig. 134: Fibreglass Grating (www.iinet.com.au, 2014).



673 X 38 DARK GREEN FIBRE GLASS GRATING IN 3660 LONG PANELS FIXED WITH GALVANISED GRATING CLIPS TO 6 X 60 PRE-DRILLED AND PRE-WELDED GALVANISED MILD STEEL BAR WELDED ONTO 60 X 60 X 4 PRE-DRILLED AND PRE-WELDED GALVANIZED MILD STEEL ANGLE.

GALVANISED MILD STEEL GRID CLIPS BY MANUFACTURER.

6 X 60 PRE-DRILLED AND PRE-WELDED GALVANISED MILD STEEL FLAT BAR WELDED ONTO 60 X 60 X 4 PRE-DRILLED AND PRE-WELDED GALVANIZED MILD STEEL ANGLE.

60 STAINLESS STEEL RODS WITH THREADS FIXED WITH M6 STAINLESS STEEL BOLTS AND NUTS AS CROSS-BRACING.

60 X 60 X 4 PRE-DRILLED AND PRE-WELDED GALVANIZED MILD STEEL ANGLES AT 1220 CC SPACING.

HISTORIC WATER CHANNEL OF CORAL AND LIME CONSTRUCTION.

7.4. Water Management Plan



Fig. 136: Water Management Plan (Author, 2014).

7.5. Water Balancing Calculations

	Rainfall (m)	Roof Area structures (m ²)	Rainfall co-efficient	Catchment (m ³)	Rainwater from Spice garden boulevard (m ²)	Rainfall co-efficient	Catchment (m ³)	Area of water channel m ²	Total precipitation catchment on water-channel (m ³)	Area of water features m ²	Total precipitation catchment on water features (m ³)	TOTAL RAINFALL CATCHMENT PER MONTH	Evaporation from water channel (m ³)	Evaporation from water features (m ³)	Total water used by plants in water channel (30% of inflow):	Water loss from water channel due to human activities (30% loss of inflow)	TOTAL WATER LOSS PER MONTH	DEFICIT OR GAIN PER MONTH	EXCESS WATER IN SYSTEM:
January	0.076	416	0.9	28.45	1102	0.5	41.87	170	12.92	42	3.19	83	25.50	6.30	25.93	25.93	83.67	2.78	2.78
February	0.076	416	0.9	28.45	1102	0.5	41.87	170	12.92	42	3.19	83	25.50	6.30	25.93	25.93	83.67	2.78	5.55
March	0.127	416	0.9	47.54	1102	0.5	69.97	170	21.59	42	5.33	139	25.50	6.30	43.33	43.33	118.47	25.98	31.53
April	0.381	416	0.9	142.64	1102	0.5	209.93	170	64.77	42	16	417	25.50	6.30	130.00	130.00	291.81	141.54	173.07
May	0.254	416	0.9	95.09	1102	0.5	139.95	170	43.18	42	10.66	278	25.50	6.30	86.67	86.67	205.14	83.76	256.83
June	0.051	416	0.9	19.09	1102	0.5	28.10	170	8.67	42	2.14	56	25.50	6.30	17.40	17.40	66.60	-8.60	248.24
July	0.051	416	0.9	19.09	1102	0.5	28.10	170	8.67	42	2.14	56	25.50	6.30	17.40	17.40	66.60	-8.60	239.64
August	0.051	416	0.9	19.09	1102	0.5	28.10	170	8.67	42	2.14	56	25.50	6.30	17.40	17.40	66.60	-8.60	231.04
September	0.051	416	0.9	19.09	1102	0.5	28.10	170	8.67	42	2.14	56	25.50	6.30	17.40	17.40	66.60	-8.60	222.45
October	0.076	416	0.9	28.45	1102	0.5	41.87	170	12.92	42	3.19	83	25.50	6.30	25.93	25.93	83.67	2.78	225.22
November	0.228	416	0.9	85.36	1102	0.5	125.62	170	38.76	42	9.57	250	25.50	6.30	77.80	77.80	187.40	71.93	297.15
December	0.152	416	0.9	56.9088	1102	0.5	83.752	170	25.84	42	6.384	167	25.50	6.30	51.87	51.87	135.53	37.35	334.51

	Area of swimming pool	Total precipitation catchment on water (m3)	Total Evaporation from swimming pool (m3)	DEFICIT OR GAIN PER MONTH (m3)		Area of swimming pool	Total precipitation catchment on water (m3)	Total Evaporation from swimming pool (m3)	DEFICIT OR GAIN PER MONTH (m3)		DEFICIT OR GAIN PER MONTH FOR BOTH POOLS	SURPLUS FROM WATER CHANNEL SYSTEM:	ADDITIONAL WATER IN SYSTEMS:
January	136	10.33	20	-10.06	60	0	3	-3.00		-13.06	2.78	-10.29	
February	136	10.33	20	-10.06	60	0	3	-3.00		-13.06	5.55	-7.51	
March	136	17.27	20	-3.13	60	0	3	-3.00		-6.13	31.53	25.41	
April	136	51.81	20	31.42	60	0	3	-3.00		28.42	173.07	201.49	
May	136	34.54	20	14.14	60	0	3	-3.00		11.14	256.83	267.98	
June	136	6.93	20	-13.46	60	0	3	-3.00		-16.46	248.24	231.77	
July	136	6.93	20	-13.46	60	0	3	-3.00		-16.46	239.64	223.18	
August	136	6.93	20	-13.46	60	0	3	-3.00		-16.46	231.04	214.58	
September	136	6.93	20	-13.46	60	0	3	-3.00		-16.46	222.45	205.98	
October	136	10.33	20	-10.06	60	0	3	-3.00		-13.06	225.22	212.16	
November	136	31	20	10.61	60	0	3	-3.00		7.61	297.15	304.76	
December	136	20.67	20	0.27	60	0	3	-3.00		-2.73	334.51	331.78	

The water balancing calculations indicate that Mtoni Palace will be self sufficient for its water requirements after three months.

For a design that focusses much attention around water and the use thereof, these calculations prove that the site will be sustainable and not waste potable water.

Table 5: Water Balancing Calculations (Author, 2014).

7.6. Technical Precedent

Knysna Quays, the waterfront development in the Western Cape Province of South Africa, has become the most visited place in Knysna and the gateway for exploring the surrounding fauna and flora.

Knysna Quays are constructed on Thesen Island, which used to be a timber factory. The use of timber was, therefore, an obvious choice in the construction materials of the new development.

The detail design inspiration comes from the use of timber posts and the diverse application of the material. Knysna Quays have used wood throughout the design for building construction, floor finishes and landscape elements.

The landscape elements create a specific character for the waterfront and bind together the multiple facets of the development.



Fig. 137: Photographs of Knysna Quays (Author, 2012).

7.7. Material Palette

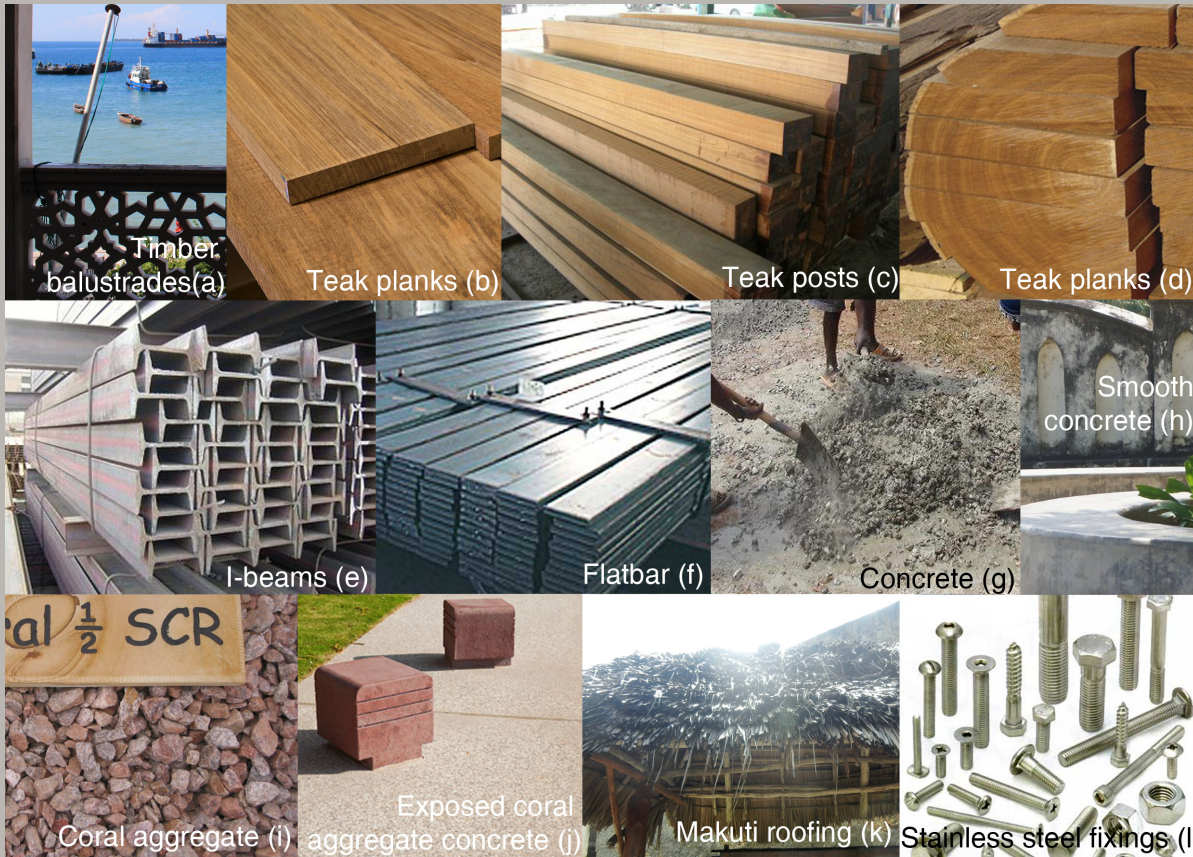


Fig. 138: Material Palette (Author, 2014).

Teak is a common wood on the East African coast and is used extensively in Zanzibar. It is exported from mainland Africa - where it is grown in sustainable plantations. It will be used as seating, balustrades, pergolas, lightposts, bollards, screening and facade treatment.

Steel I-beams will be used for the construction of a new resource centre and for the overhead structure in the courtyard and play equipment will be fixed to these overhead beams. Steel flat bars will be used throughout the landscape elements as a finishing element and as fixing structures for the landscape elements.

Concrete will be used for all new structures. This is to clearly distinguish between historic and new construction. It will be finished as a smooth concrete.

Coral stone is an organic sedimentary rock that is found on Zanzibar as it forms the underlying geology of large parts of the Zanzibar. It will be used as a brushed coral aggregate concrete mix throughout for most of the hardscape. This allows flexible on-site installation that is robust, rigid and needs no haunching.

7.8. Market Stand

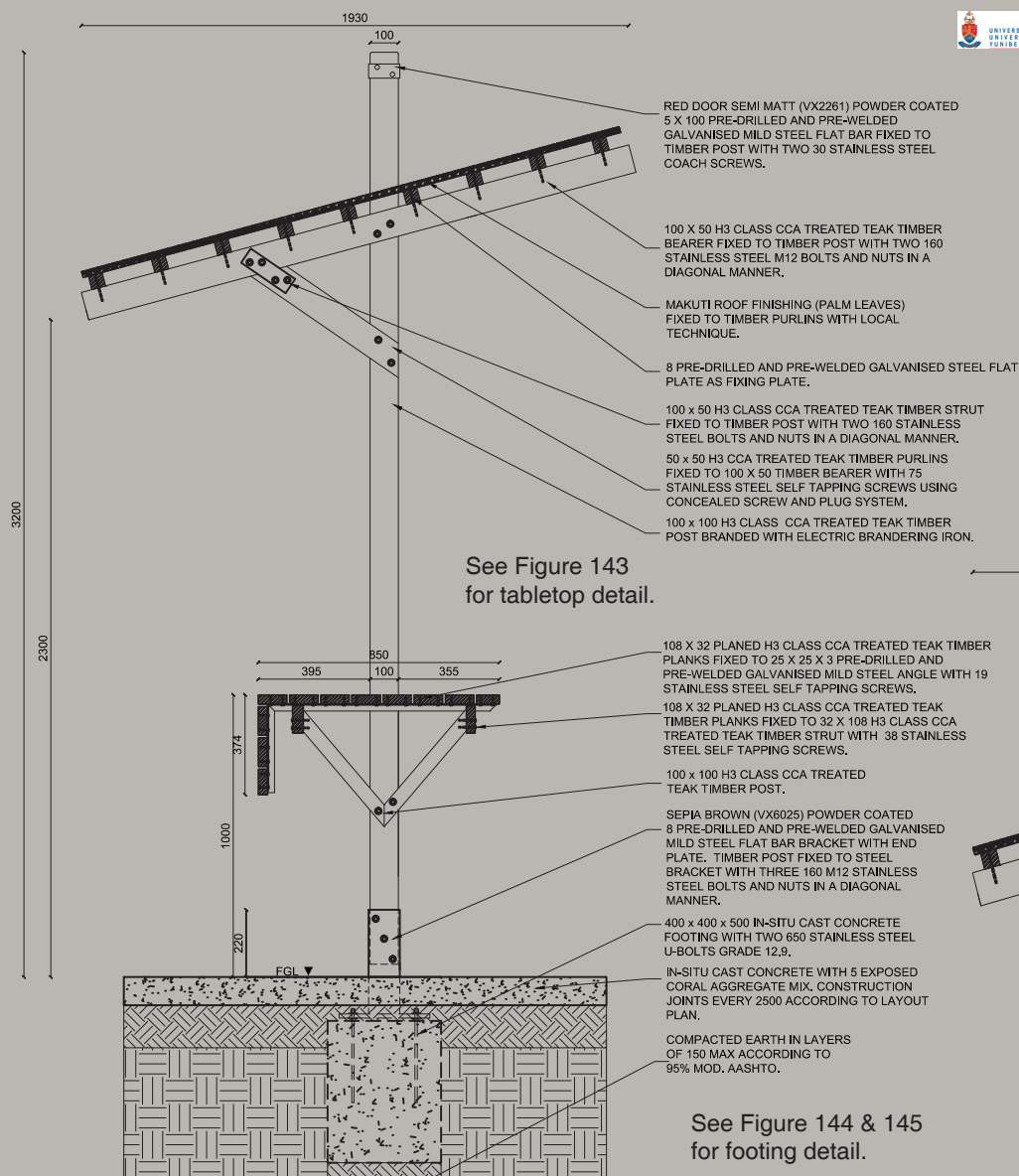


Fig. 139: Detail Section (1:20) of Market Stand (Author, 2014).



Fig. 140: Photographs of Makuti Roof Finish (Author, 2013).

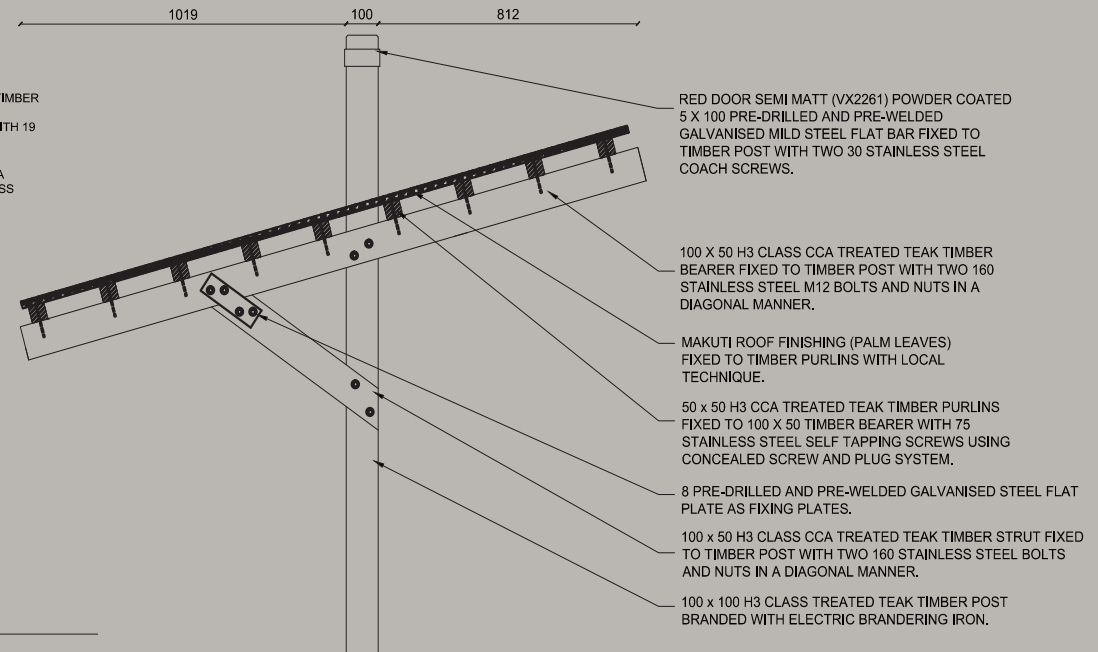


Fig. 141: Detail Section (1:15) of Market Stand Canopy (Author, 2014).

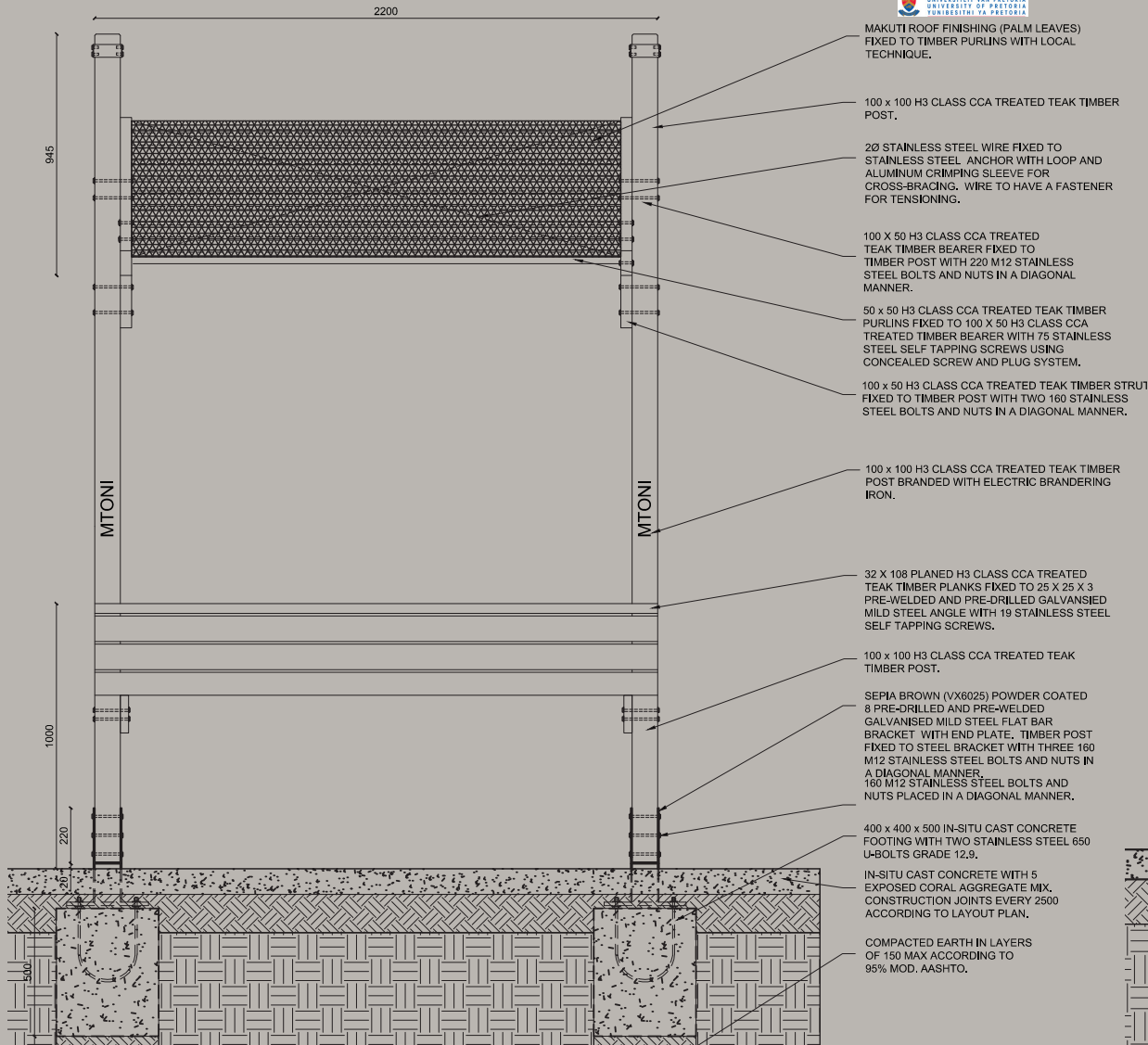


Fig. 142: Detail Elevation (1:20) of Market Stand (Author, 2014).

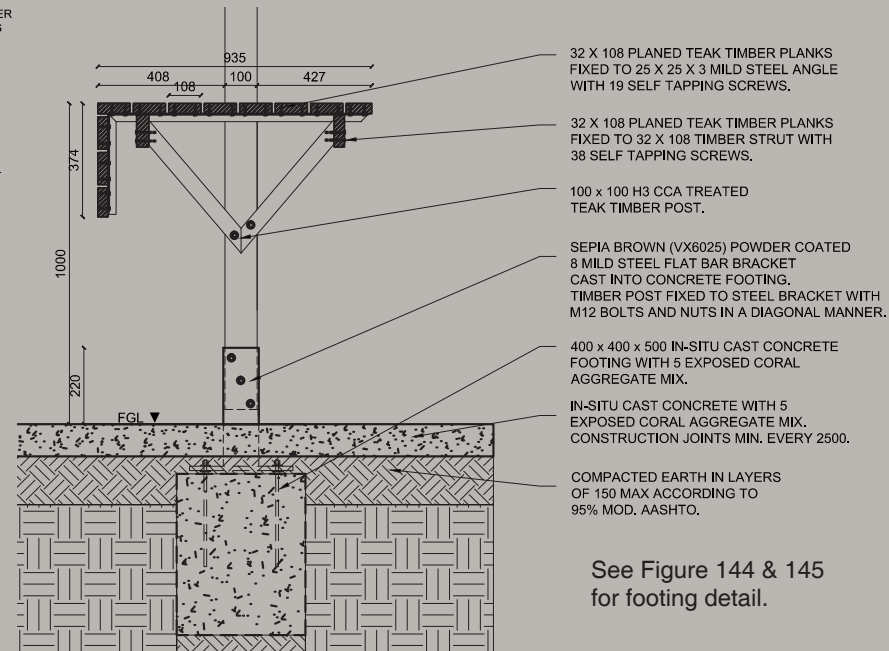


Fig. 143: Detail Section (1:15) of Market Stand Tabletop (Author, 2014).

See Figure 144 & 145 for footing detail.

7.9. Typical Timber Post Fixing

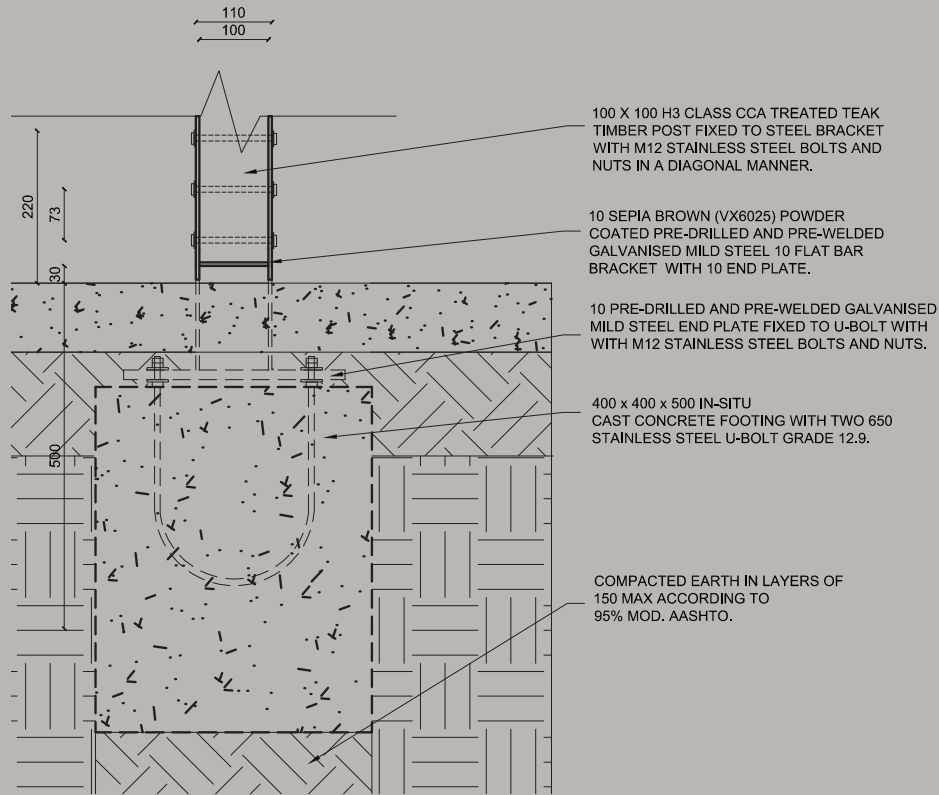


Fig. 144: Detail Section (1:10) of Typical Timber Post Fixing (Author, 2014).

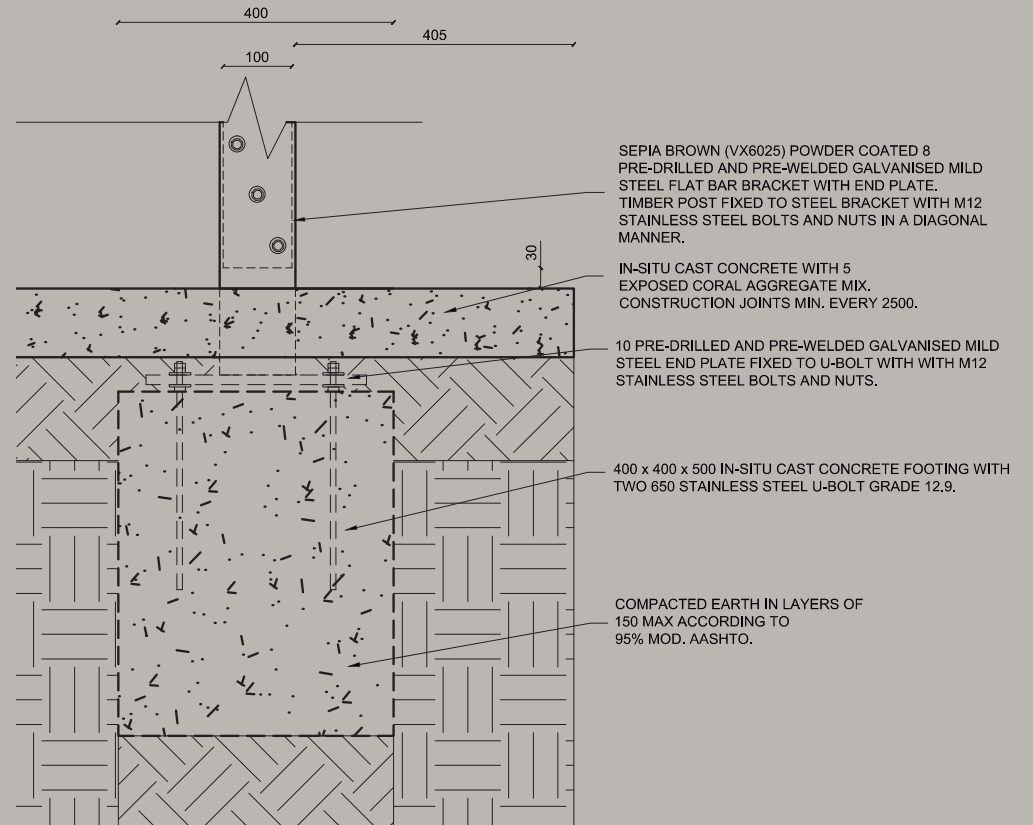


Fig. 145: Detail Section (1:10) of Typical Timber Post Fixing Detail (Author, 2014).

7.10. Bollard

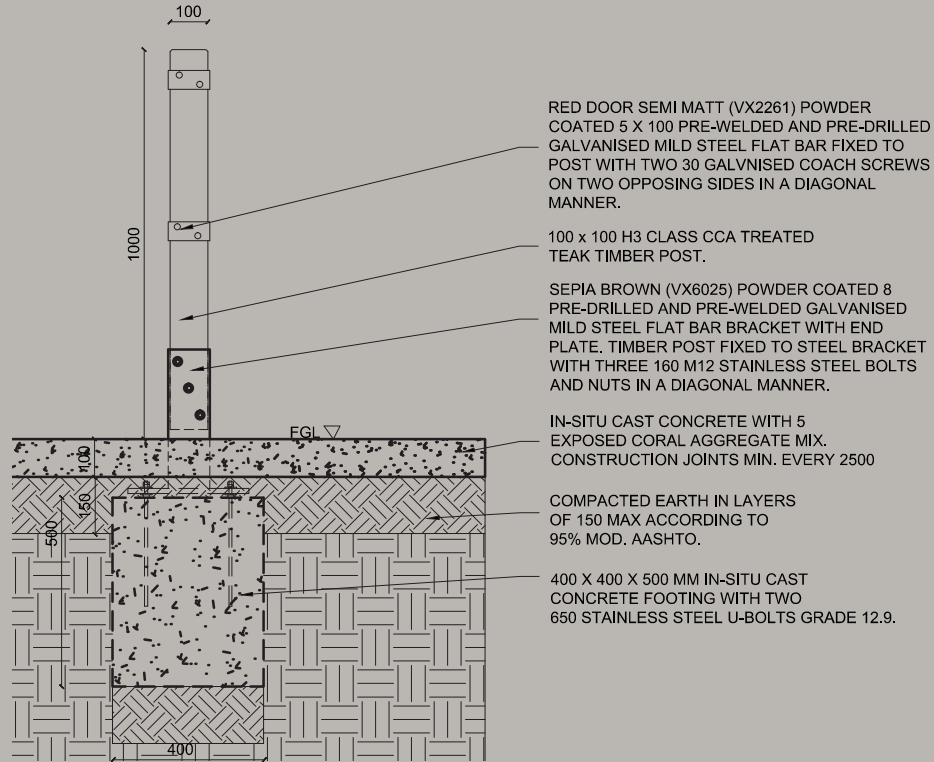


Fig. 146: Detail Section (1:20) of Bollard (Author, 2014).

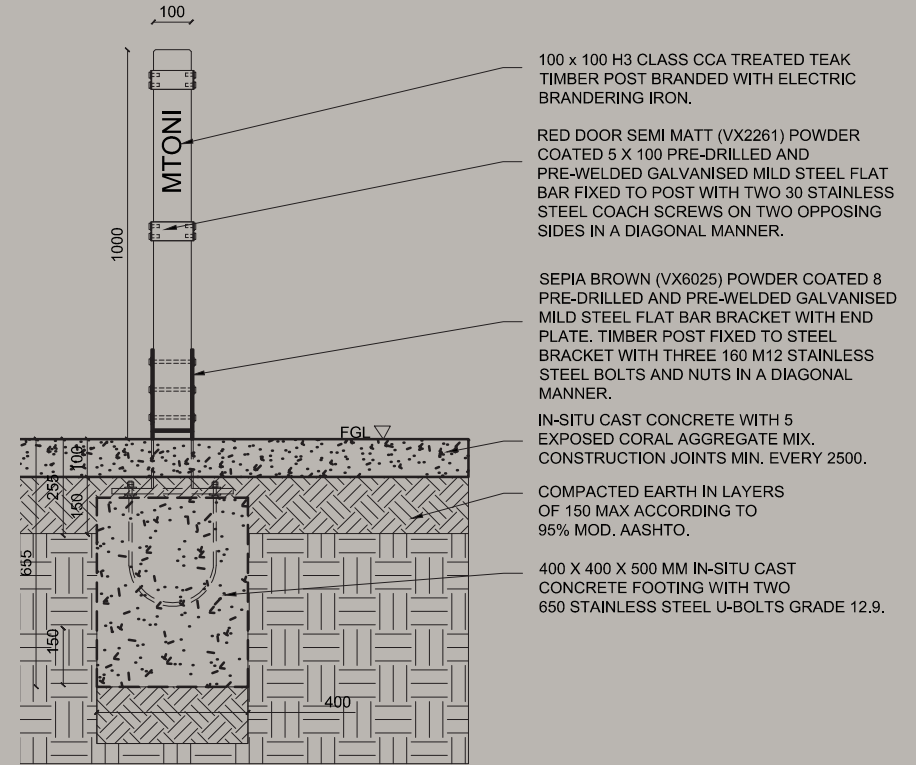


Fig. 147: Detail Section (1:20) of Bollard (Author, 2014).

7.11. Lamp Post

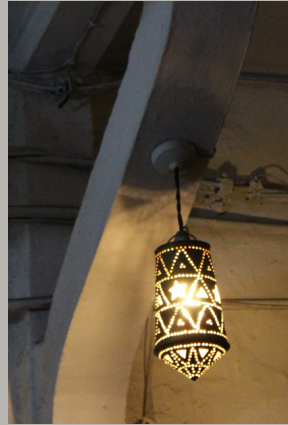


Fig. 149: Photograph of Lampshade Motif (Author, 2014).

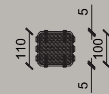
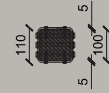
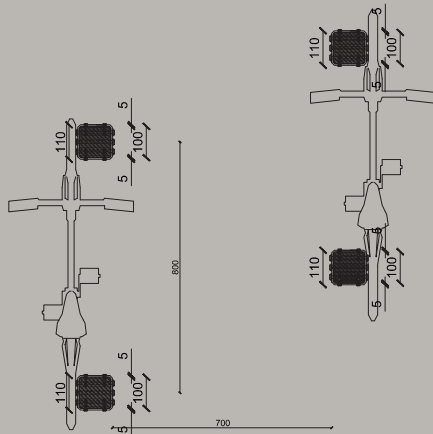
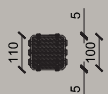
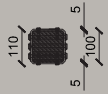
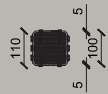


Fig. 148: Plan of Bollard Arrangement as Bicycle Stand (1:20) (Author, 2014).

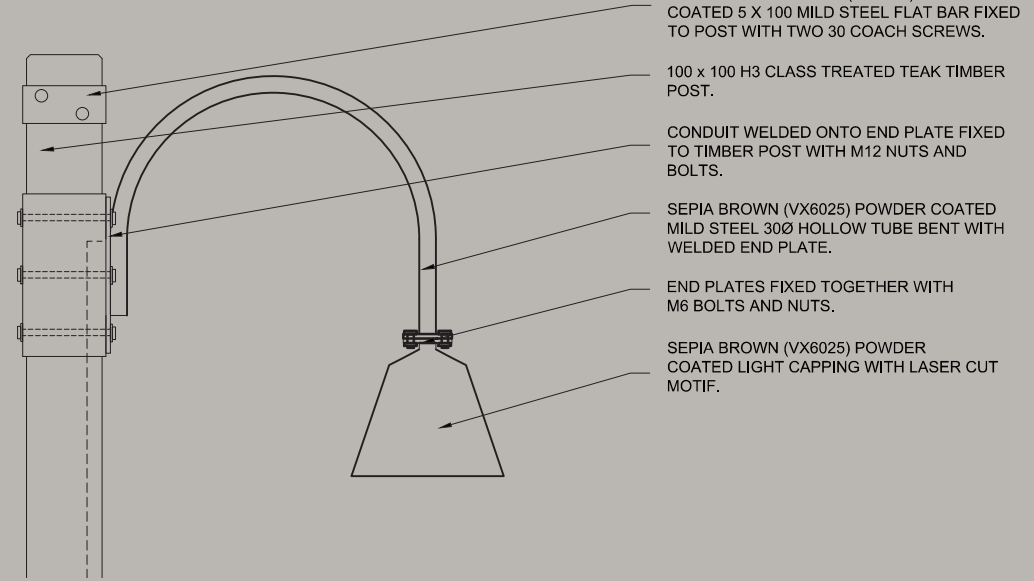


Fig. 150: Detail Section (1:10) of Lamp Post Light Fixing Detail (Author, 2014).

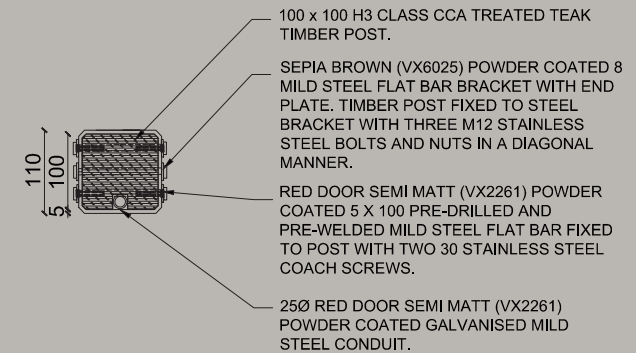


Fig. 151: Detail Plan (1:10) of Bollard (Author, 2014).

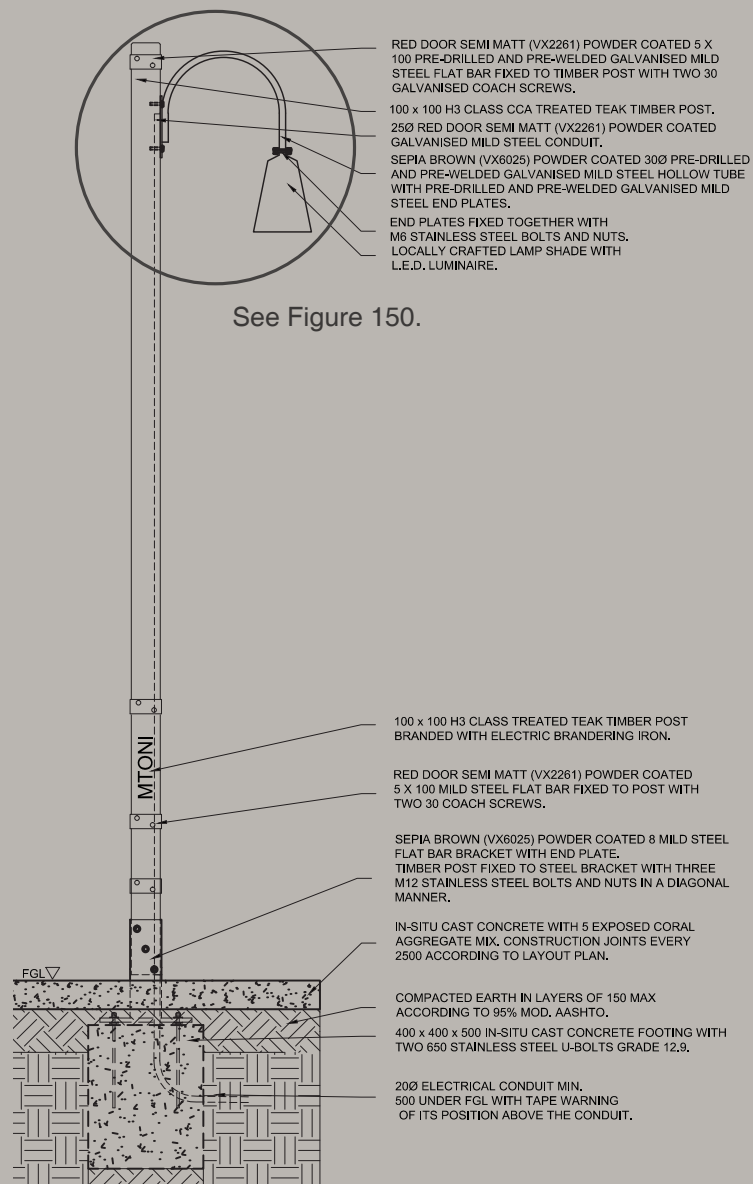


Fig. 152: Detail Section (1:20) of Lamp Post (Author, 2014).

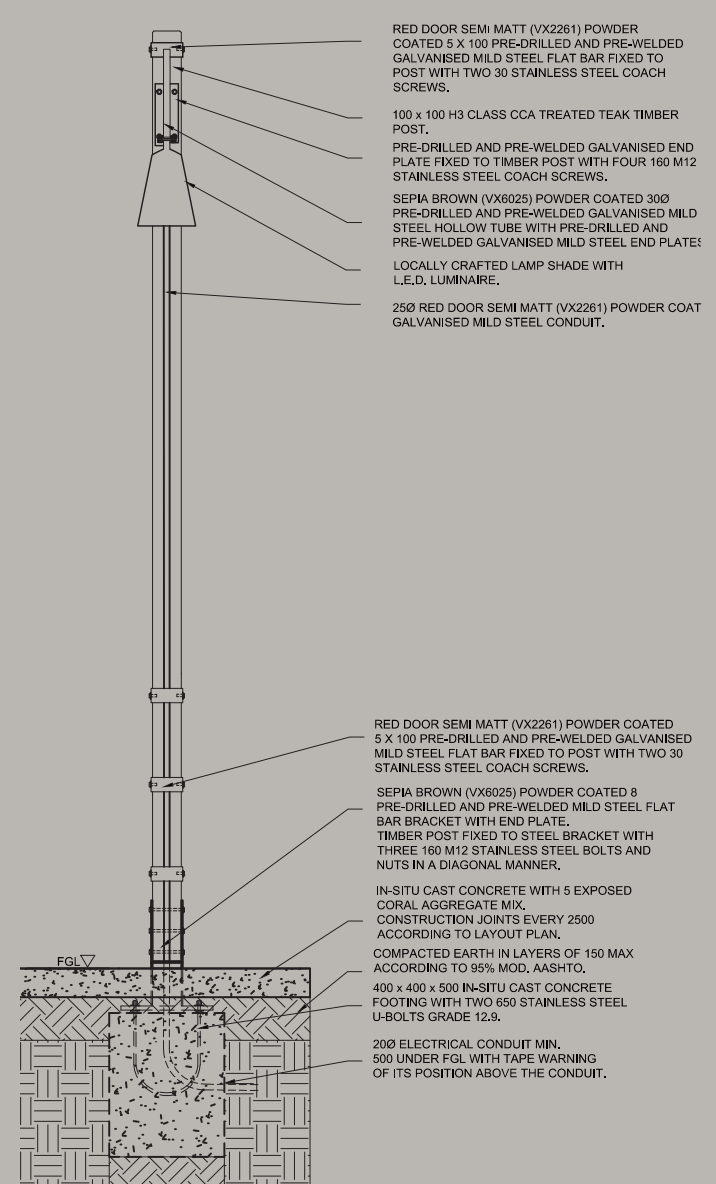


Fig. 153: Detail Elevation (1:20) of Lamp Post (Author, 2014).

7.12. Lighting Plan



Fig. 154: Lighting Plan (Author, 2014).

7.13. Lighting Strategy

The BEKA LED range will be used as it has a long lasting life, use little electricity and is therefor more sustainable. The BEKA CITEA luminaire will be used and fit in a custom housing into the Mtoni Palace lamp posts (Figures 150, 152 & 153).



Fig. 155: Luminaire (www.beka.co.za, 2014).

7.14. Bench

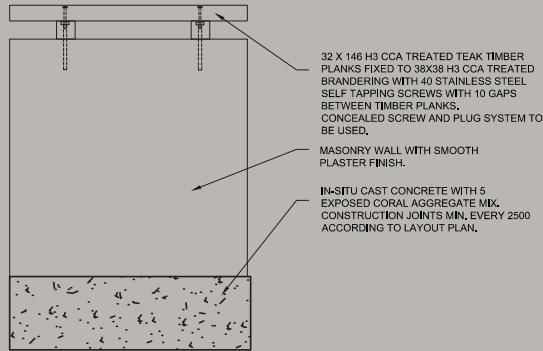


Fig. 156: Detail Section Elevation (1:10) of Bench (Author, 2014).

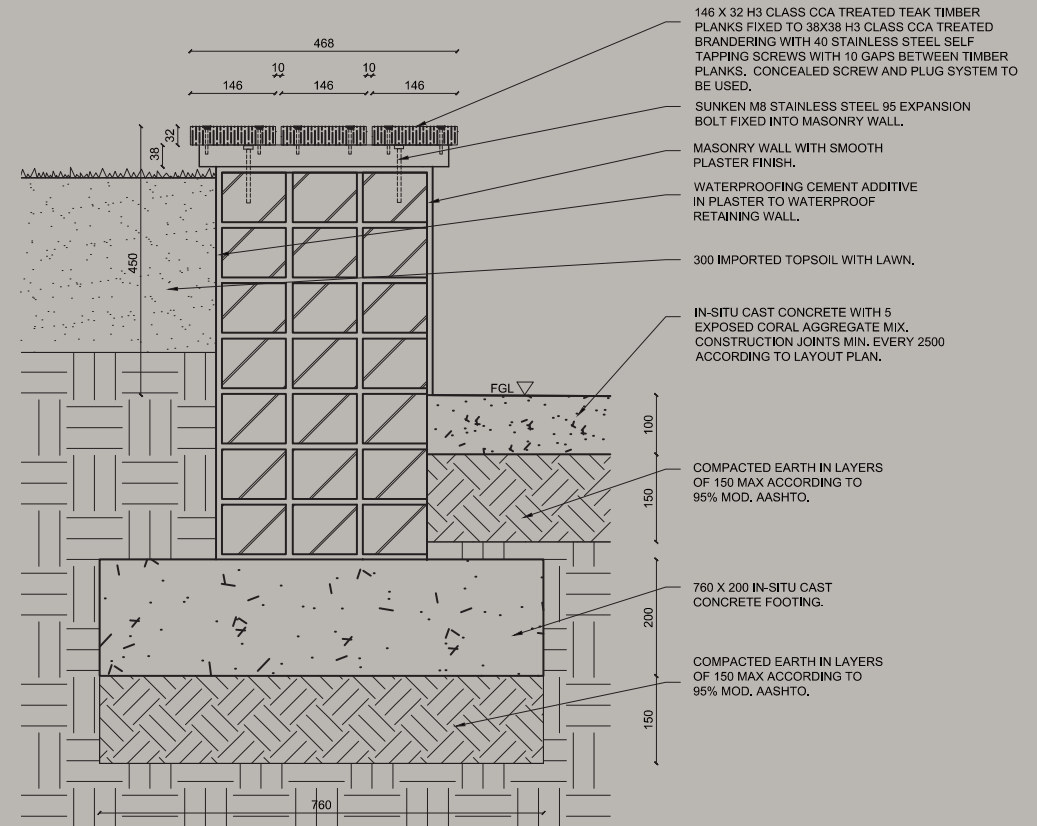


Fig. 157: Detail Section (1:10) of Bench (Author, 2014).

7.15. Pergola

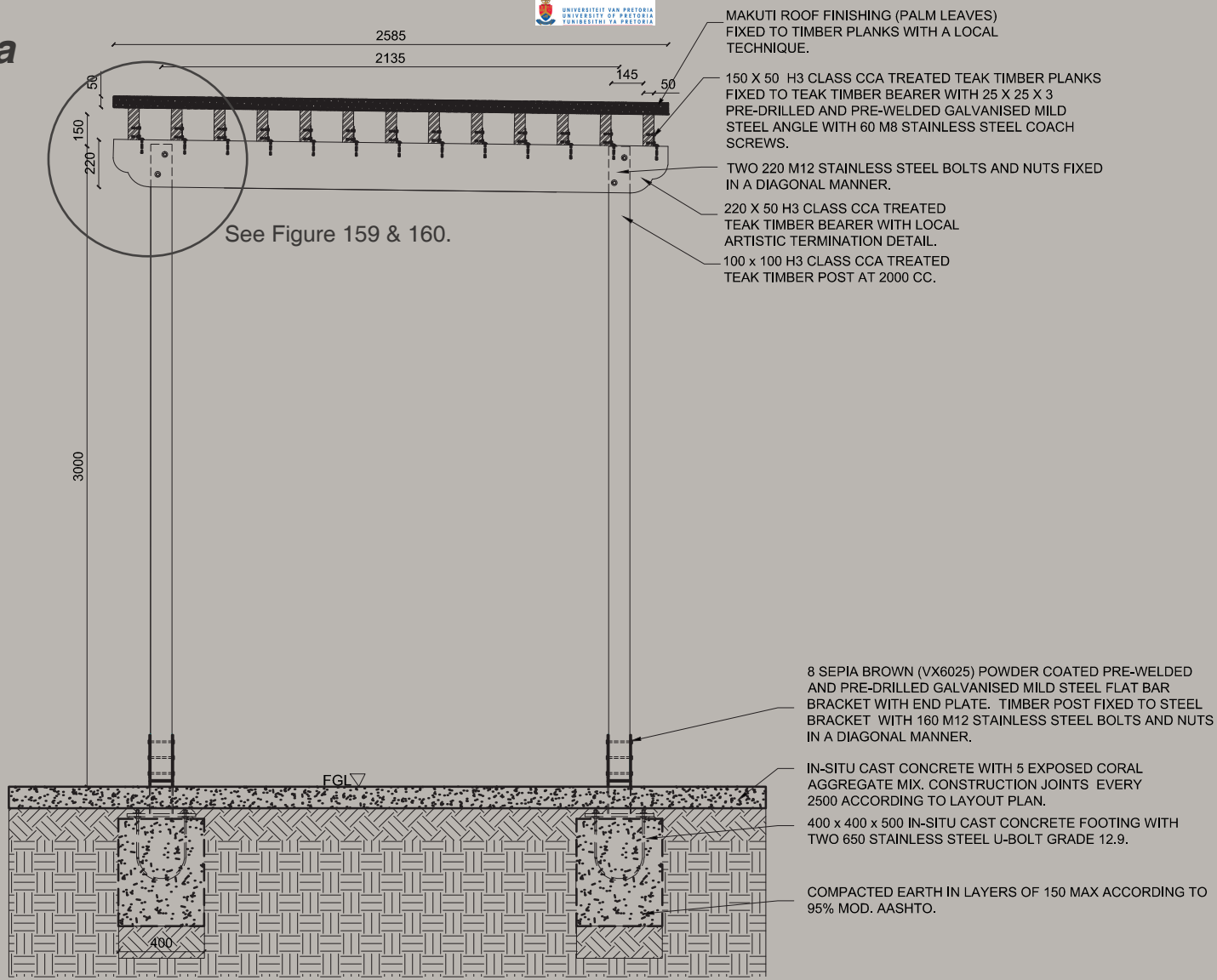
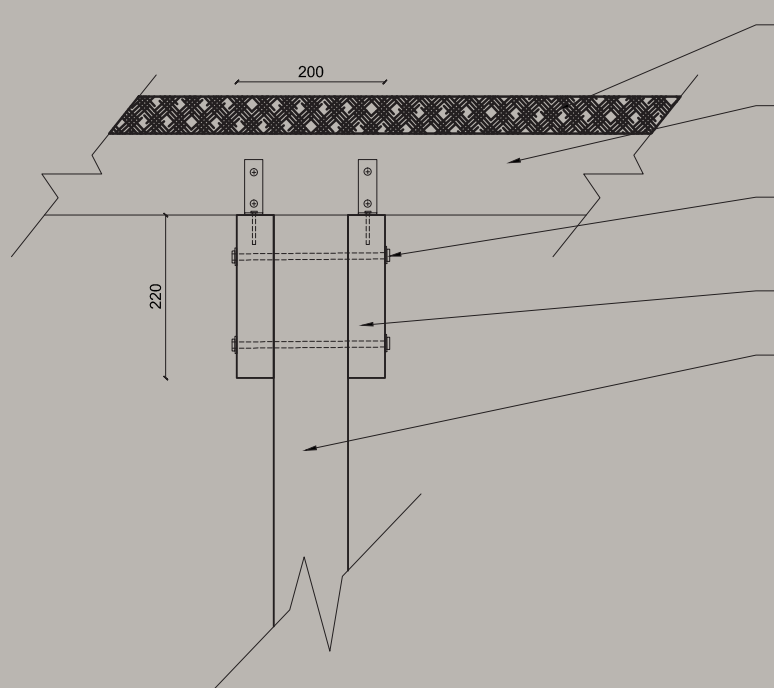


Fig. 158: Detail Section (1:20) of Pergola (Author, 2014).



MAKUTI ROOF FINISHING (PALM LEAVES)
FIXED TO TIMBER PLANKS WITH A LOCAL
TECHNIQUE.

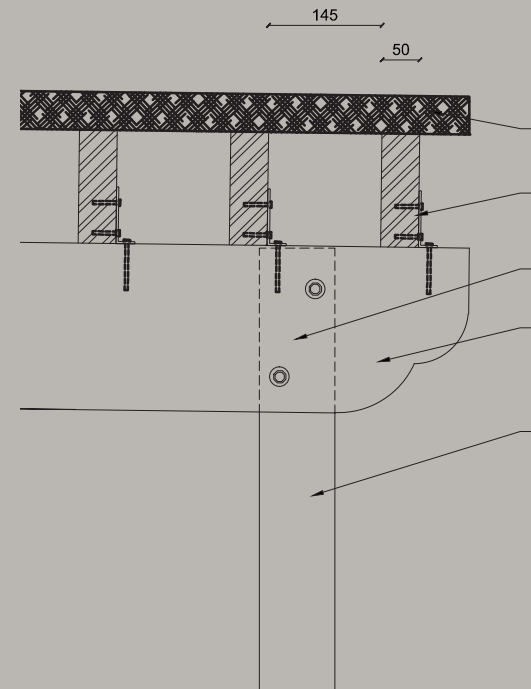
150 X 50 H3 CLASS CCA TREATED PLANED TEAK
TIMBER PLANKS FIXED TO BEARER WITH 25 X 25 X 3
PRE-DRILLED AND PRE-GALVANISED MILD STEEL
ANGLE WITH 30 STAINLESS STEEL SELF TAPPING
SCREWS.

M12 STAINLESS STEEL
BOLTS AND NUTS FIXED IN A
DIAGONAL MANNER.

220 X 50 H3 CLASS CCA TREATED
TEAK TIMBER BEARER.

100 x 100 H3 CLASS CCA TREATED
TEAK TIMBER POST AT 2000 CC.

Fig. 159: Detail Section (1:10) of
Pergola Fixing (Author, 2014).



MAKUTI ROOF FINISHING (PALM LEAVES)
FIXED TO TIMBER PLANKS WITH A LOCAL
TECHNIQUE.

150 X 50 H3 CLASS CCA TREATED TEAK TIMBER PLANKS FIXED TO
TEAK TIMBER BEARER WITH 25 X 25 X 3 PRE-DRILLED AND
PRE-WELDED GALVANISED MILD STEEL ANGLE WITH 60 M8
STAINLESS STEEL COACH SCREWS.

TWO 220 M12 STAINLESS STEEL BOLTS AND NUTS FIXED
IN A DIAGONAL MANNER.

220 X 50 H3 CLASS CCA TREATED
TEAK TIMBER BEARER WITH LOCAL
ARTISTIC TERMINATION DETAIL.

100 x 100 H3 CLASS CCA TREATED
TEAK TIMBER POST AT 2000 CC.

Fig. 160: Detail Section (1:10) of Pergola Planks Fixing (Author, 2014).

7.16. Courtyard

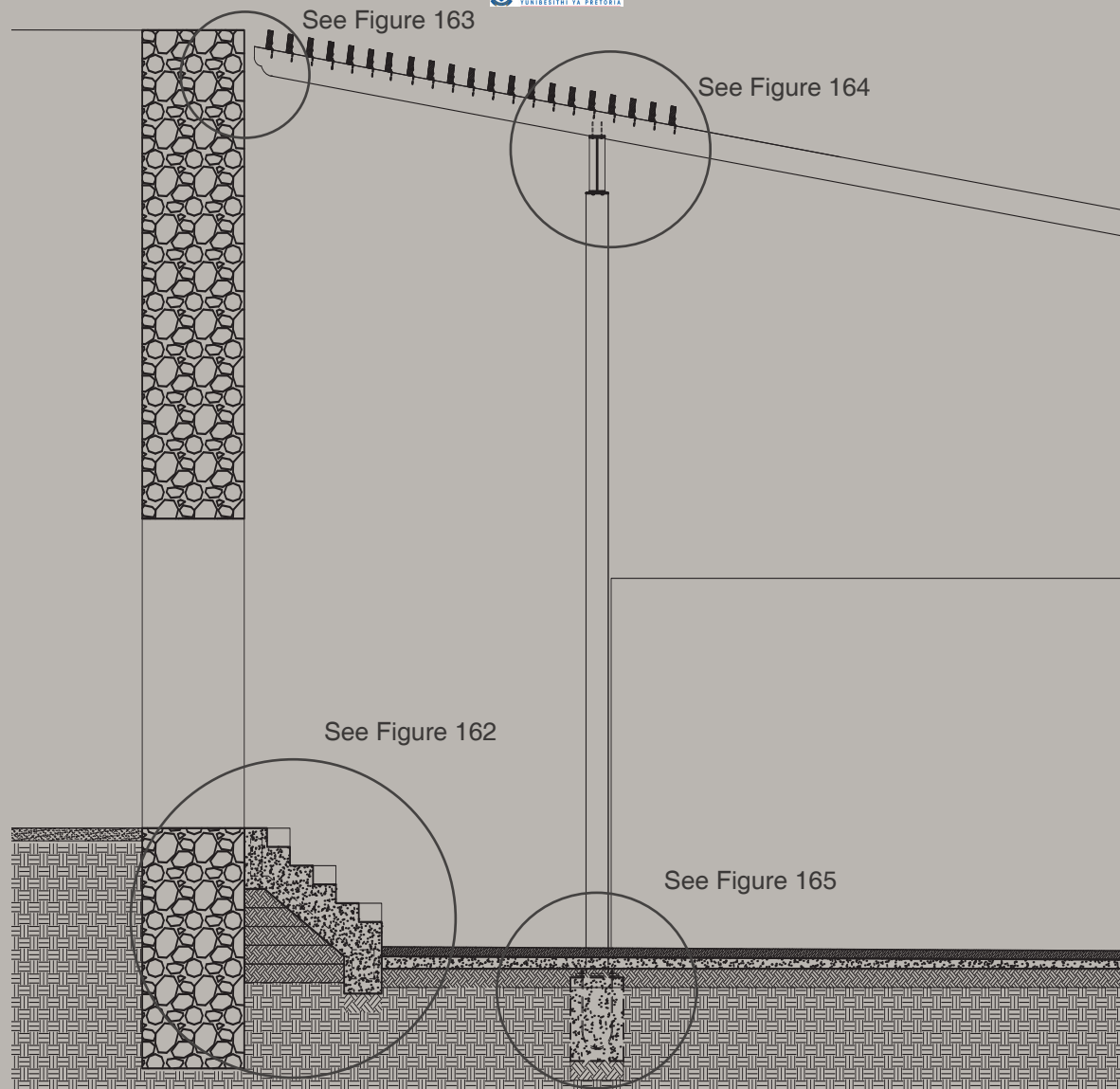


Fig. 161: Detail Section Elevation (1:50) of Courtyard (Author, 2014).

7.17. New Steps

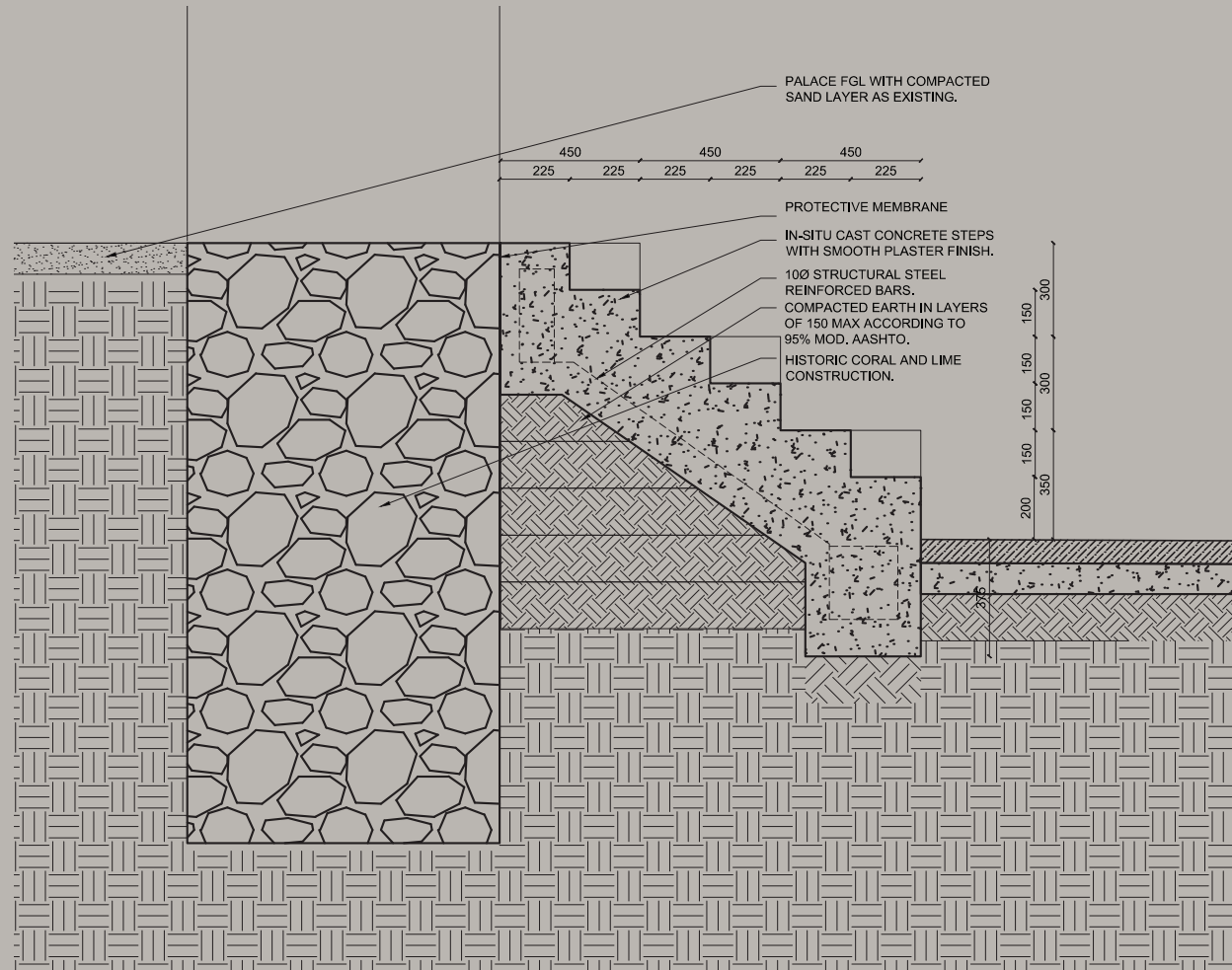


Fig. 162: Detail Section (1:20) of New Steps in Ruins (Author, 2014).

7.18. Overhead canopy

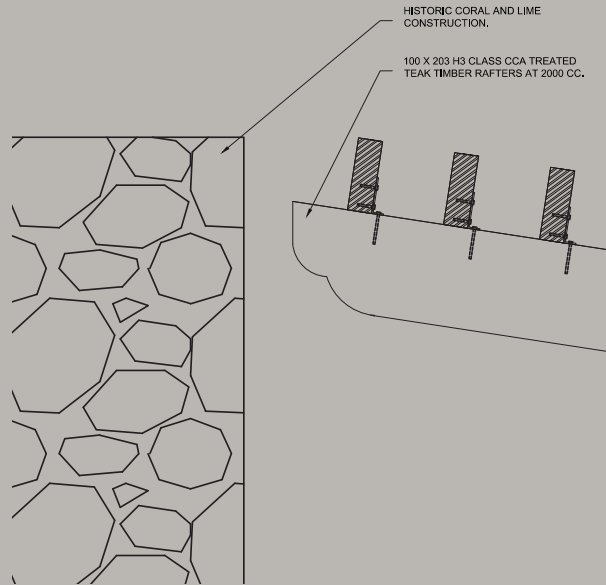


Fig. 163: Detail Section (1:10) of I-beam/Ruins meet
(Author, 2014).

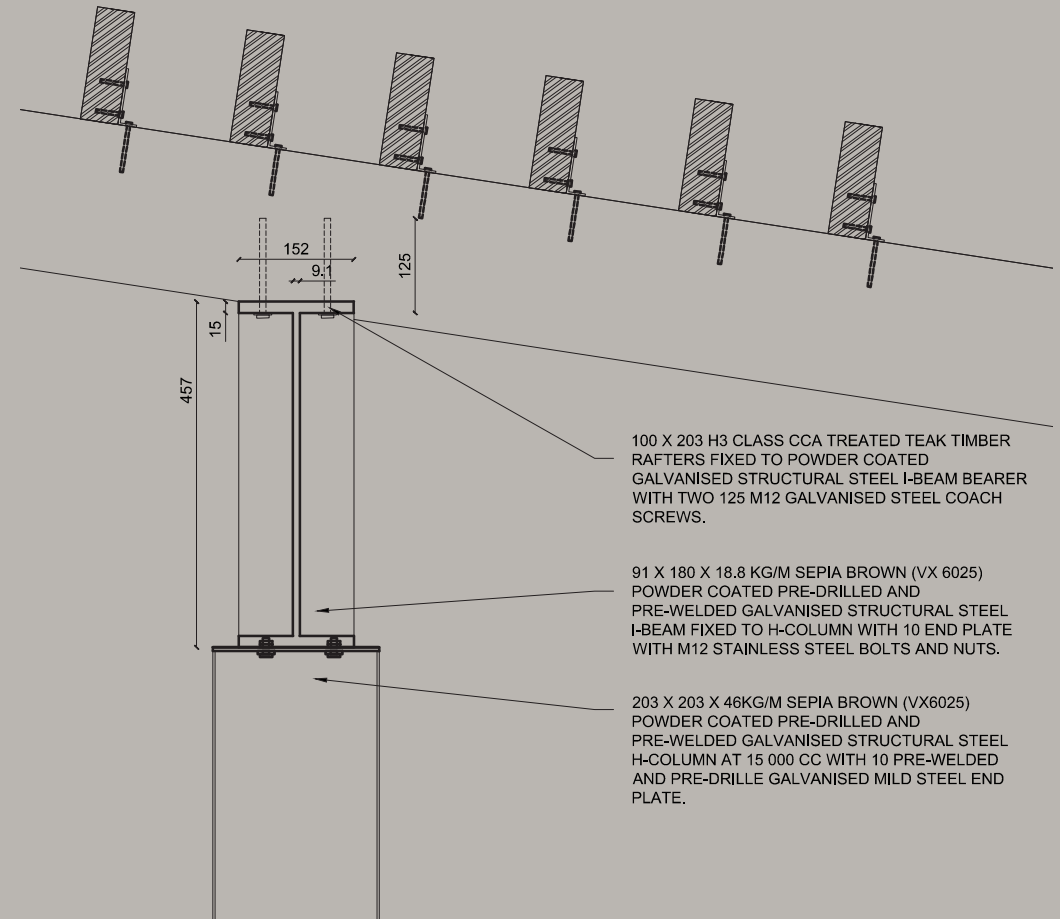


Fig. 164: Detail Section (1:10) of Overhead I-Beam and Timber Planks Fixings (Author, 2014).

7.19. H-beam Fixing

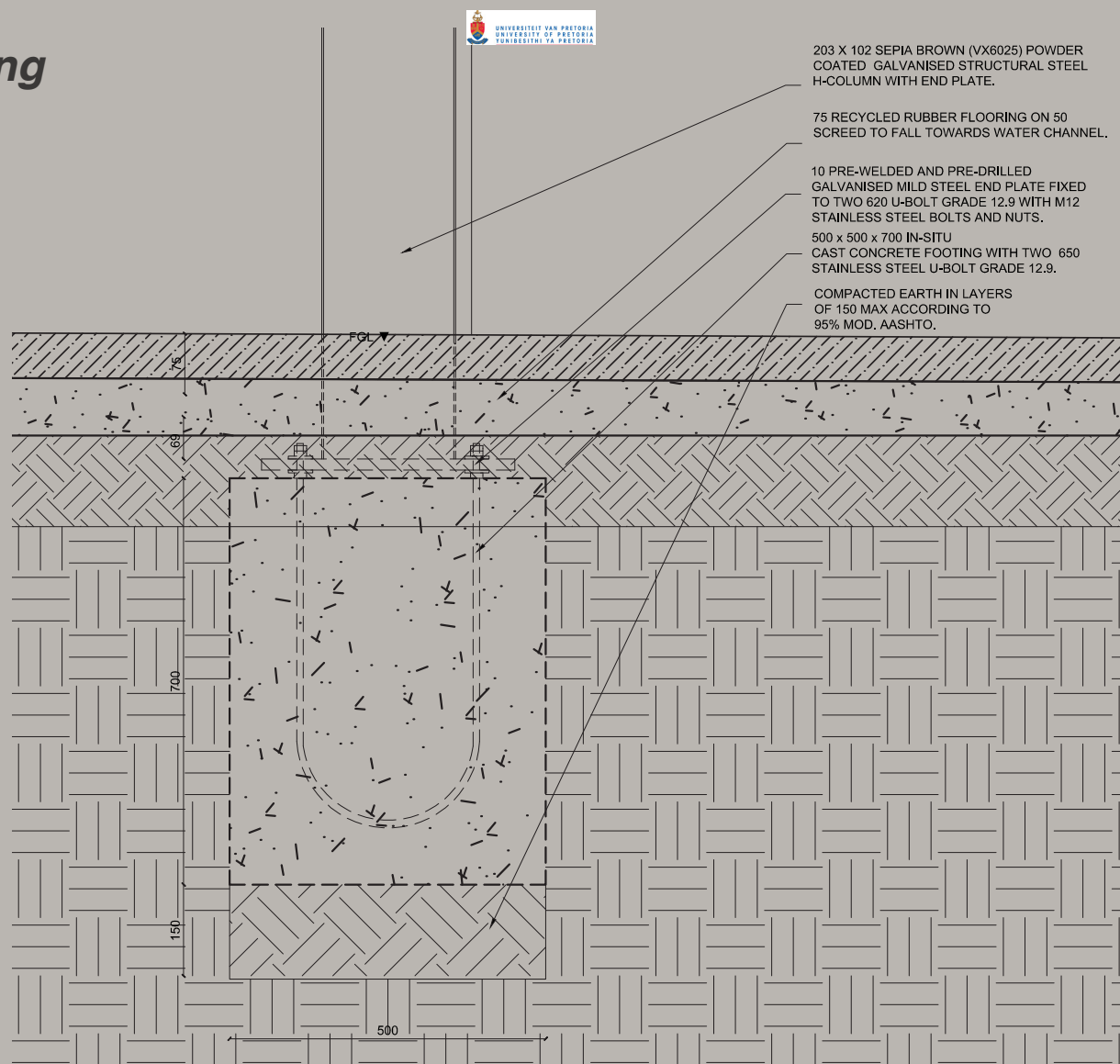


Fig. 165: Detail Section (1:10) of I-Beam Footing and Courtyard Floor Finish (Author, 2014).

7.20. Planting Strategy

The planting strategy is based on an important part of the history of Zanzibar. The spice industry was greatly expanded by Seyyid Said and the first clove trees were planted at Mtoni Palace. Today, the Spice industry is still one of the main economic sectors of Zanzibar. Spices are used for everyday medicinal use and important cultural uses.

Historically, Mtoni Palace was situated in a lush forest with Mango, Cinnamon, Cloves, Orange and Coconut trees (Ruete, 1907:4; Leigh & Kirkman, 1980:286). The closest example of the original planting composition of Zanzibar is the Jozini Forest on Zanzibar (Figure 166 (a)). In the times of Seyyid Said Mtoni Palace was self-sustainable, thereby implicating that the surrounding landscape must have been productive.

Today agriculture in Zanzibar is based on a four level multi-cropping system (Zanzibar: Commission of Agriculture, Research and Extension, 2005:1) as can be seen in Figure 166 (b-d) & 167. This system will be implemented at Mtoni Palace with multiple species being planted (Table 6).

The design proposal comprises four planting zones: historical, spice garden, riverine and the water channel (Figure 168).

- The historical planting includes specific plant species that were recorded in historical documents. These species include Cinnamon trees, Clove trees, Coconut palms, Mango trees and Orange trees in front of the bathhouses and will be re-instated..
- The spice garden is based on current agricultural practices as well as Islamic principles. The four level cropping system will be used, as well as the Islamic principles that prescribe gardens to be colourful and to provide an olfactory experience. The produce will provide the agriculture research centre and the restaurant with herbs, spices and fruits.
- The rivering planting will be a mixed composition of spice garden planting and semi-aquatic plant species that will be planted in the stormwater drainage channel that runs from Creek Road to the beach.
- Aquatic plants will be planted in key areas in the water channel in order to purify and cleanse the water. This is a precautionary measure as rainwater will flow into the system and users will interact with the water along the entire length of the channel.
- The lawn areas will be a grass mix of LM, Gulfgreen and Cynodon dactylon.



Fig. 166: Planting Typology (Author, 2014).

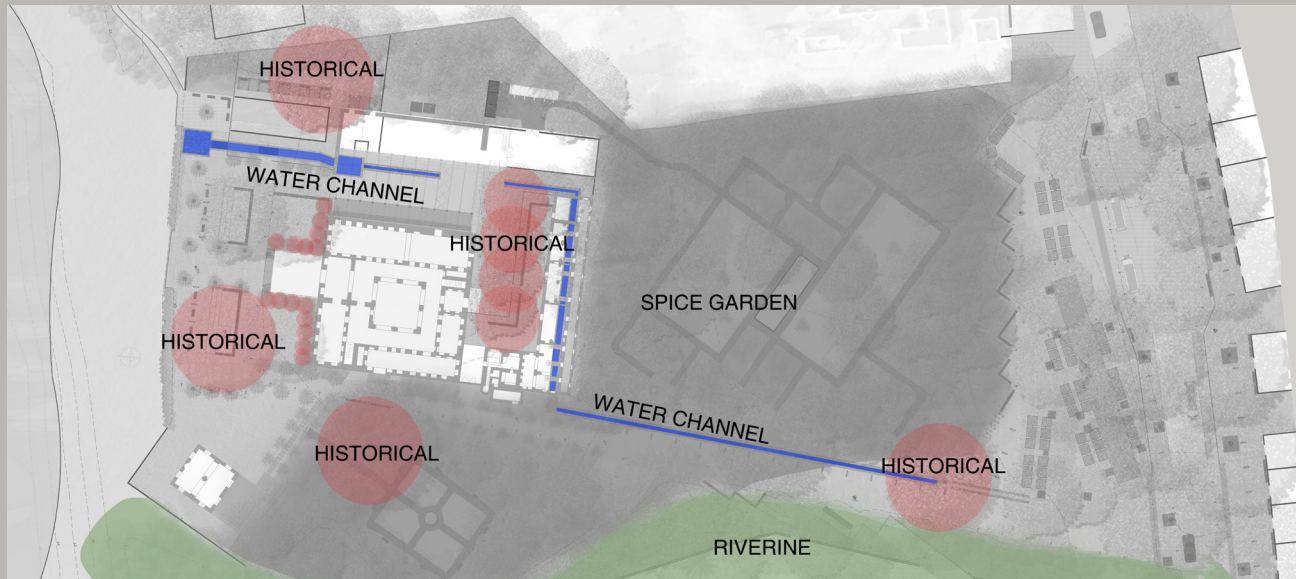


Fig. 167: Planting Zones (Author, 2014).

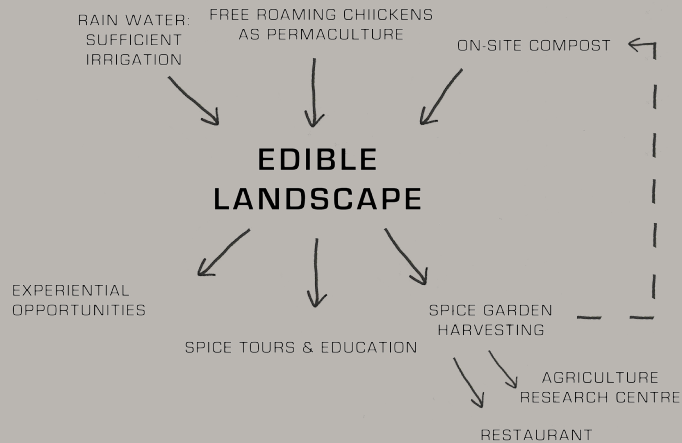


Fig. 168: Planting Strategy (Author, 2014).

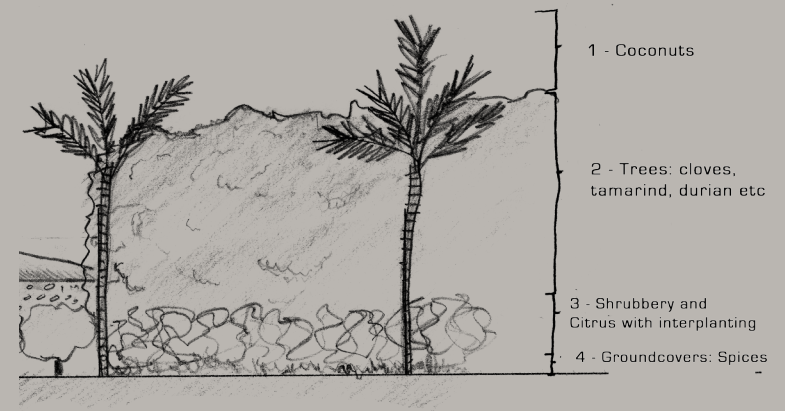


Fig. 169: Four-level multi cropping system (Author, 2014).



Fig. 170: Planting Design (Author, 2014).

7.21. Planting Palette

NR.	COMMON NAME	SCIENTIFIC NAME	SWAHILI NAME	TYPE	HEIGHT	E / D	FLOWERS
HISTORICAL PLANTING							
1	Cinnamon	Cinnamomum verum	Mdallasimu	Tree	17m	Evergreen	Greenish - White
2	Cloves	Syzygium aromaticum	Mkarafuu	Tree	9-12m	Evergreen	White
3	Coconut	Cocos nucifera	Nazi	Palm	20-30 m	Evergreen	White
4	Mango	Mangifera indica	Mwembe	Tree	30m	Evergreen	Brownish - Yellow
5	Orange	Citrus aurantium	Chungwa	Tree	9-10m	Evergreen	White
HERBS & SPICES							
6	Cardamon	Aframomum corrima	Hiliki	Perennial	2m	Evergreen	White - Yellow
7	Cassia	Cassia senna	-	Shrub	3m	Evergreen	Yellow
8	Chillies	Capsicum annum, C. frutescens	Mpilipili hoho	Perennial	0,2m	Evergreen	White/Cream/Purple
9	Cinnamon	Cinnamomum verum	Mdallasimu	Tree	17m	Evergreen	Greenish - White
10	Cloves	Syzygium aromaticum	Mkarafuu	Tree	9-12m	Evergreen	White
11	Coffee	Coffea arabica	Mbuni (plant)	Shrub	6m	Evergreen	White
12	Coriander	Coriandrum sativum	Giligilani	Annual	0,5m	-	White - Pink
13	Cumin	Cuminum cyminum	Urile/Bizarinzima	Annual	0,3-0,6m	-	Purple
14	Curry leaves	Murraya koenigii	Mvuje	Tree	3-6m	Evergreen	White
15	Galangal	Languas galangal	-	Rhizomous Perennial	1-2m	Evergreen	Greenish - White
16	Garlic	Allium sativum	Kitunguu thauma	Bolbous Perennial	1,5-1,2m	Evergreen	Pink - White
17	Ginger	Zingiber officinale	Tangawizi	Rhizomous Perennial	1m	Deciduous	Yellow
18	Lemon grass	Cymbopogon citratus	Mchai-chai	Grass	2m	Deciduous	-
19	Liquorice	Glycyrrhiza glabra	-	Rhizome Perennial	0,1-0,2m	Evergreen	Pink
20	Mint	Mentha x piperita	Nanaa	Perennial	0,4m	Evergreen	White - Purple
21	Nutmeg	Myristica fragrans	Mkungumanga	Tree	12-15m	Evergreen	Yellowish
22	Pepper (black)	Piper nigrum	Mpilipili manga	Creeper	-	Evergreen	White
23	Saffron	Crocus sativus	Zafarani	Bolbous Perennial	0,3m	Evergreen	Purple
24	Sesame seeds	Sesamum orientale	Ufuta	Annual	0,6-1,8m	-	White - Purple
25	Tamarind	Tamarindus indica	Mkwaju	Tree	30m	Evergreen	Yellow
26	Turmeric	Curcuma longa	Binzi	Rhizome Perennial	0,9-1,2m	Deciduous	Yellow - White
27	Vanilla	Vanilla planifolia	Mvanila	Creeper	-	Evergreen	Green - Yellow

Table 6: Planting Palette (Author, 2014).

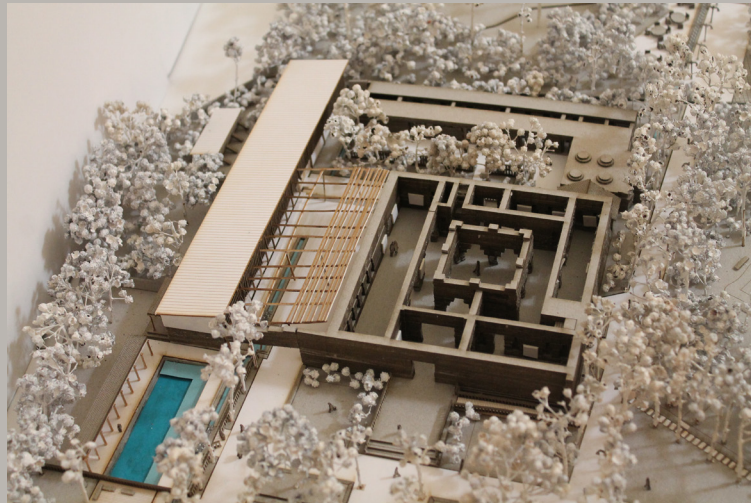
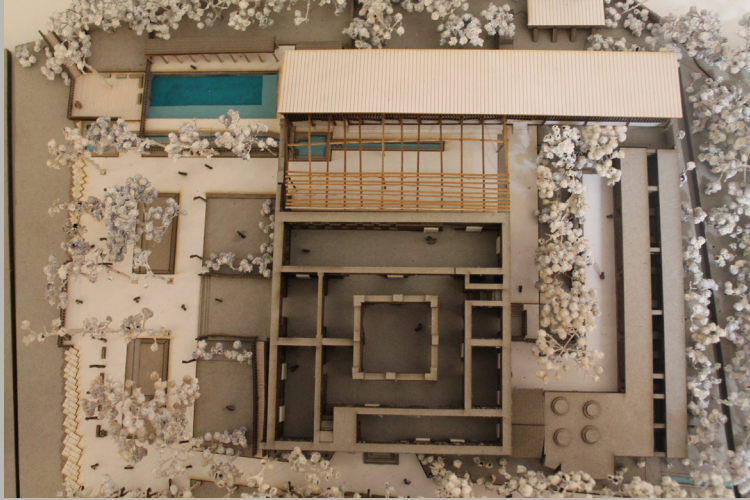
NR.	COMMON NAME	SCIENTIFIC NAME	SWAHILI NAME	TYPE	HEIGHT	E / D	FLOWERS
CITRUS							
28	Cassava	<i>Manihot esculenta</i>	Muhogo	Rhizomous Perennial	1m	Evergreen	Green
29	Custard apple	<i>Annona reticulata</i>	Mtomoko Mkubwa	Tree	8m	Evergreen	Yellow - Green
30	Durian	<i>Durio zibethinus</i>	Duriani	Tree	24-45m	Evergreen	Yellow or Pink
31	Grapefruit	<i>Citrus aurant a iifolia</i>	Mdimu	tree	4,5-6m	Evergreen	White
32	Guava	<i>Psidium guajava</i>	Pera	Tree	10m	Evergreen	White
33	Jack fruit	<i>Artocarpus integer</i>	Fenesi	Tree	9-15m	Evergreen	Yellow - Green
34	Lime	<i>Citrus aurantifolia</i>	Limau	Tree	4m	Evergreen	White
35	Mandarine	<i>Citrus reticulata</i>	Chenz	Tree	20-30m	Evergreen	White
36	Mango	<i>Mangifera indica</i>	Mwembe	Tree	30m	Evergreen	Brownish - Yellow
37	Mangosteen	<i>Garcinia mangostana</i>	-	Tree	6-10m	Evergreen	Pink
38	Mbirimbi	<i>Averrhoa bilimbi</i>	Mbirimbi	Tree	5-10m	Evergreen	Red
39	Orange	<i>Citrus aurantium</i>	Chungwa	Tree	9-10m	Evergreen	White
40	Papaya/Pawpaw	<i>Carica papaya</i>	Mpapai	Tree	9m	Evergreen	Purple - Red
41	Passionfruit	<i>Passiflora edulis</i>	Peshun	Creepers	-	Evergreen	Purple - White
42	Pineapple	<i>Ananus comosus</i>	Mnanasi	Perennial	0.5m	Evergreen	Pink
43	Pomegranate	<i>Punica granatum</i>	Mkomamanga	Shrub	5-8m	Deciduous	Scarlet
44	Pomello	<i>Citrus maxima</i>	Mbalungi	Tree	5-10m	Evergreen	White
45	Rambutan	<i>Nephelium lappaceum</i>	Shoki-shoki	Tree	15-25m	Evergreen	Yellow
46	Starfruit	<i>Averrhoa carambola</i>	Wa Kizungu	Tree	6-9m	Evergreen	Red - White
47	Sugar cane	<i>Saccharum officinarum</i>	Mua	Reed	5m	Evergreen	White
FRUITS							
48	Avocado	<i>Persea americana</i>	Pea/Parachichi	Tree	18m	Evergreen	Greenish - White
49	Banana	<i>Musa sp.</i>	Ndizi	Tree	2-9m	Evergreen	Red - Orange
50	Breadfruit	<i>Artocarpus altilis</i>	Shelisheli	Tree	12-15m	Evergreen	Green
51	Cacao	<i>Theobroma cacao</i>	Kakao	Tree	8m	Evergreen	Yellowish - White
52	Cashew	<i>Anacardium occidentale</i>	Korosho/Mkanju	Tree	12m	Evergreen	Green - Red
53	Coconut	<i>Cocos nucifera</i>	Nazi	Palm	20-30 m	Evergreen	White
54	Sweet potato	<i>Ipomoea batatas</i>	Kiazi kitamu	Climber	-	Evergreen	Red

NR.	COMMON NAME	SCIENTIFIC NAME	SWAHILI NAME	TYPE	HEIGHT	E / D	FLOWERS
OTHER EXISTING PLANTS							
55	Casuarina	Casuarina equisetifolia	Mvinge	Tree	15-20m	Evergreen	Pink
56	Flame tree	Delonix regia	Mjohoro	Tree	9-15m	Evergreen	Red
57	Henna	Lawsonia inermis	Mhina/Mhenna	Tree	6-8m	Evergreen	Creamy white
58	Indian almond	Terminalia catappa	Mkungu	Tree	15-20m	Evergreen	White
59	Iodine plant	Vismia ferruginea	Iodine	Shrub	1m	Evergreen	Red
60	Lipstick plant	Bixia orellana	Mzingefuri	Tree	3-10m	Evergreen	White or pink
61	Neem tree	Azadirachta indica	Neem tree	Tree	15m	Evergreen	White
62	Oil palm	Elæis guineensis	Mchikichi	Palm	12m	Evergreen	Yellow - Orange
63	Raintree	Landolphia pertersiana	Mbungo	Tree	10m	Evergreen	White - Yellow
64	Soap berry	Sapindus saponaria	Mharita	Tree	12m	Evergreen	Greenish - White
65	Wild date palm	Phoenix reclinata	Mkindu/Ukili	Palm	8m	Evergreen	Creamy white
66	Ylang-Ylang	Cananga odorata	Ylang-ylang	Tree	15m	Evergreen	Green - Yellow
RIVERINE PLANTING							
67	Red milkwood	Mimusops caffra	-	Tree	15m	Evergreen	White
68	Croton	Codiaeum variegatum	-	Shrub	2,5m	Evergreen	Multiple
69	Fagara	Fagara schentecteri	-	Shrub	4m	Evergreen	Orang - Red
70	Gross berry	Grewia occidentalis	-	shrub	4,5-7,5m	Evergreen	Purple
71	Hermannia	Hermannia micropetala	-	Shrub	1m	Evergreen	Pink
72	Mangroves	Avicennia sp.; Conocarpus sp.	-	Tree	3m	Evergreen	Yellow
73	Peawood	Craibia zimmermannii	-	Tree	5m	Evergreen	White
74	Scaevola koenigii	Scaevola koenigii	-	Shrub	6-8m	Evergreen	White
75	Swamp cabbage	Ipomoea reptans	Mriba Wa Zia	Vine	0,3-0,6m	Evergreen	White - Purple
76	Water banana	Typhonodorum lindleyanum	Mgombakofi	Aquatic plant	2.5m	Evergreen	White
77	Vitex negundo	Vitex negundo	-	Shrub	2m	Evergreen	Blue
WATERCHANNEL PLANTING							
78	Arum lily	Zantedeschia aethiopica	-	Aquatic plant	1m	Deciduous	White
79	Bulrush	Cyperus papyrus, C. textilis	-	Perennial	1,5m	Evergreen	Green
80	Lotus	Nelumbo nucifera	-	Aquatic plant	0,3m	Evergreen	Pink
81	Nymphoides	Nymphoides sp.	-	Aquatic plant	0,2-0,3m	Evergreen	Various
82	Water banana	Typhonodorum lindleyamun	Mgombakofi	Aquatic plant	2.5m	Evergreen	White
83	Water lily	Nymphaea sp.	-	Aquatic plant	0,3m	Evergreen	Various
84	Yellow-eyed grass	Xyris sp.	-	Perennial	0,6m	Evergreen	Yellow

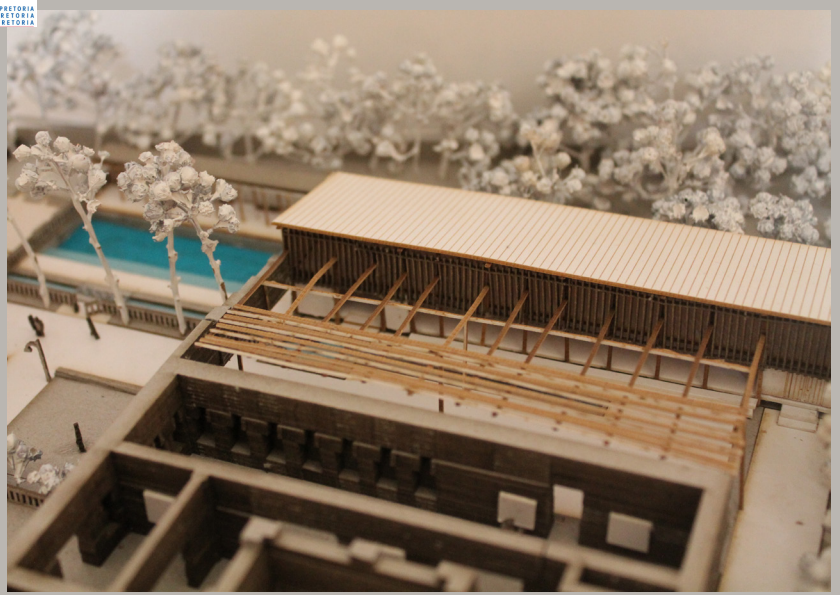
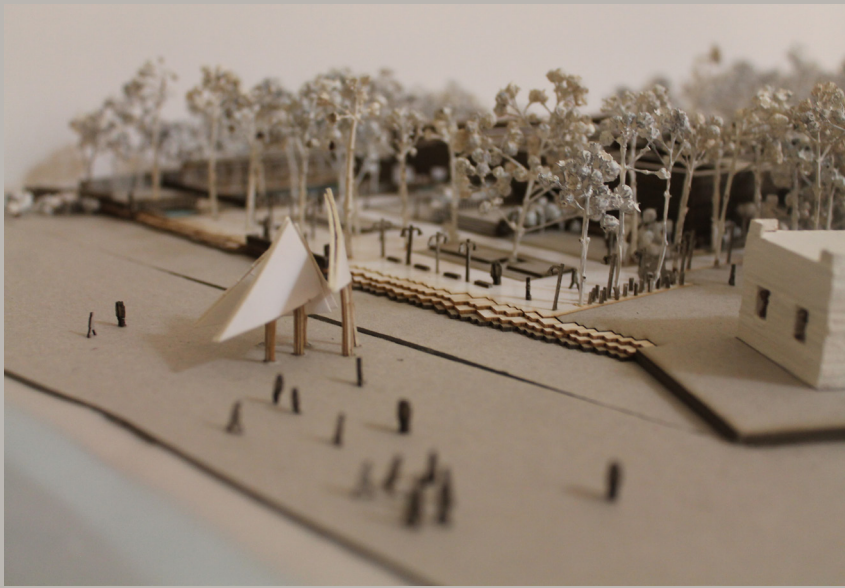


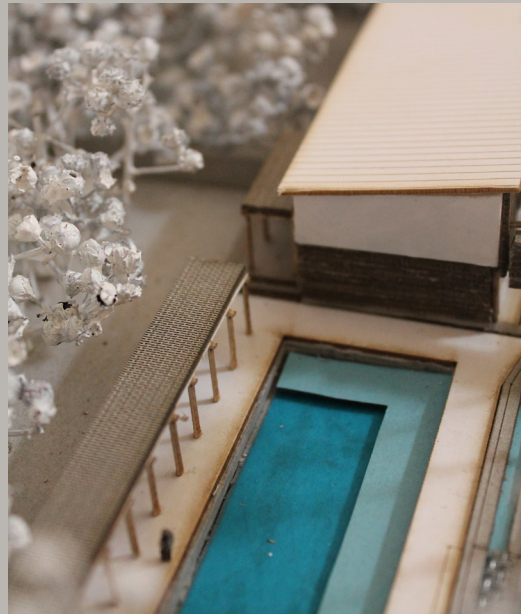


7.22. Photographs of Model:









7.23. Conclusion

Mtoni Palace nurtures identity through celebrating heritage value, programming, materiality and intangible factors that forms part of the Zanzibari identity. These elements will nurture identity.

HERITAGE

REMEMBERING OIL STORAGE
WATER CHANNEL USAGE
HISTORIC VEGETATION
WOMEN'S BATH HOUSE
MUSEUM: NARRATIVE OF MTONI PALACE
RESTORING COURTYARD ARRANGEMENT

USES & ACTIVITY

BEACH USAGE
SWIMMING
MARKET
RESTAURANT
INTERACTION WITH WATER
RUINS AS EVENTS SPACE
MUSEUM
MOSQUE
PRAYER GARDEN
BATH HOUSES

MTONI PALACE ACTS AS MNEMONIC DEVICE:

- RUINS
- NARRATIVE OF MTONI PALACE
- SPICE GARDENS, RESTAURANT AND RESERACH CENTRE.
- MATERIALITY OF THE LANDSCAPE ELEMENTS.
- IMPORTANCE OF WATER: ACTIVITIES ALONG CHANNEL.
- BEACH ACTIVITIES - SEA TRADING CULTURE.

MATERIALITY

TIMBER: BALUSTRADES, SCREENS,
PERGOLA'S, CANOPY,
MARKET STAND, LAMP POSTS,
BOLLARDS.

COCONUT PALMS
SMOOTH CONCRETE SEATING
MAKUTI ROOF FINISHING
LOCALLY PRODUCED LAMP SHADES
SPICE GARDEN
WATER
CORAL AGGREGATES

INTANGIBLE

ISLAMIC LANDSCAPE DESIGN PRINCIPLES
LOCAL INVOLVEMENT
WOMEN'S PRIVATE SPACE
MOVEMENT THROUGH RUINS
MOSQUE AS ICON OF ISLAMIC LIFESTYLE
RESOURCE CENTRE AS INFORMATORIUM
MARKET TYPOLOGY
VEGETATION TYPOLOGY



The shortest war in history was between Zanzibar and England.
It lasted only 38 minutes after which Zanzibar surrendered.
- Zanzibar's World Guinness Record.

Fig. 186: Aerial photograph of Zanzibar (Department of Urban Planning, 2013).

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