Application of the pavilion

9

Final design

9.1 Introduction

The relevance of the pavilion will be tested on two sites that represent open space in Pretoria that will benefit from the pavilion. Venning Park embodies the typical Pretoria urban park (Figure 60), and is used mostly by people employed in the surrounding Sunnyside and Arcadia areas during daytime hours. The rooftop of the Prinschurch building in Pretoria central represents the typical urban renewal project typology. To fully illustrate the forces acting on the landscape, an alternative to steel scaffolding was considered for the final design. Bamboo will not only overcome the weight restrictions of a mobile pavilion, but will change colour upon sun- and rain exposure (see Figure 59). Weathering of exposed bamboo occurs as a result of the interaction between different climatic conditions, such as variations in temperature and relative humidity (Shröder 2016). Pretoria rain events typically occur as short but intense afternoon downpours, preceded and followed by sun exposure. This leads to small cracks on exposed bamboo poles. Furthermore, ultraviolet radiation causes the breakdown of cellulose found in bamboo. and this leads to a change in colour (Shröder 2016).

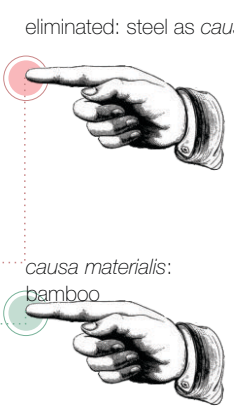

Figure 59: Bamboo weathering (Bamboo Import Europe 2016)

Figure 60: Venning Park's reflection pond (top) and sunken garden (bottom)

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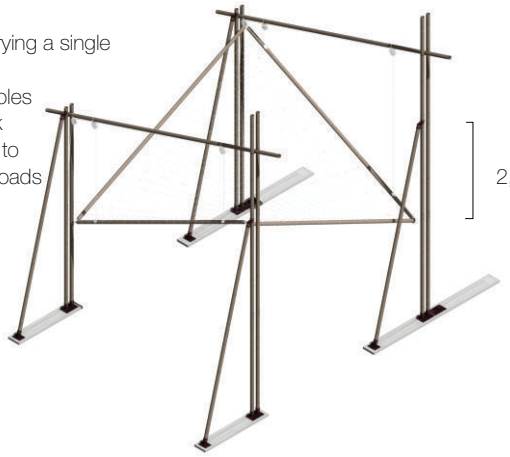
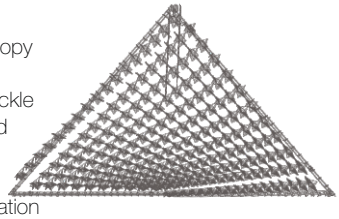
1 x structural unit carrying a single canopy
- 32 x bamboo poles
- 4 x 50 mm thick spreader plates to carry structural loads



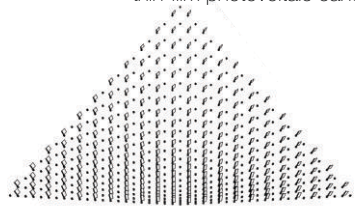
structural members designed based on lengths of 2,5 m, as this is the bamboo pole length available from suppliers in Pretoria

optional:
plants with irrigation system

1 x hyperbolic paraboloid canopy
- 8 x bamboo poles
- 2 x double block-and-tackle pulley systems with hand winches
- 216 textile modules
- optional: plants with irrigation

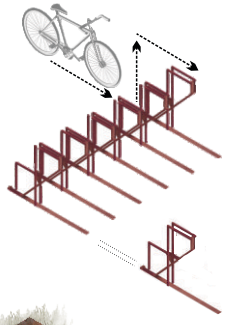


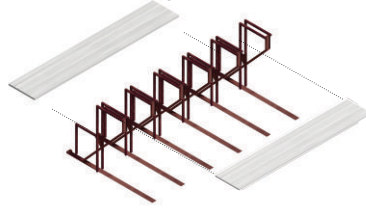
thin-film photovoltaic canopy



optional:
seating

1 x convertible bicycle rack





table

surface modules
- weathering steel with perforations for plant growth
- lightweight composite pavers
- ramp
- edges

type A: 100 x 100 mm perforations
type B: 75 x 75 mm perforations
type C: 50 x 50 mm perforations
type D: 25 x 25 mm perforations

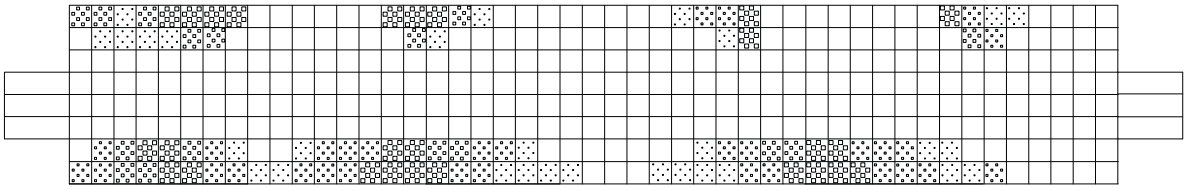


Figure 61: Parts of the pavilion (Author 2016)

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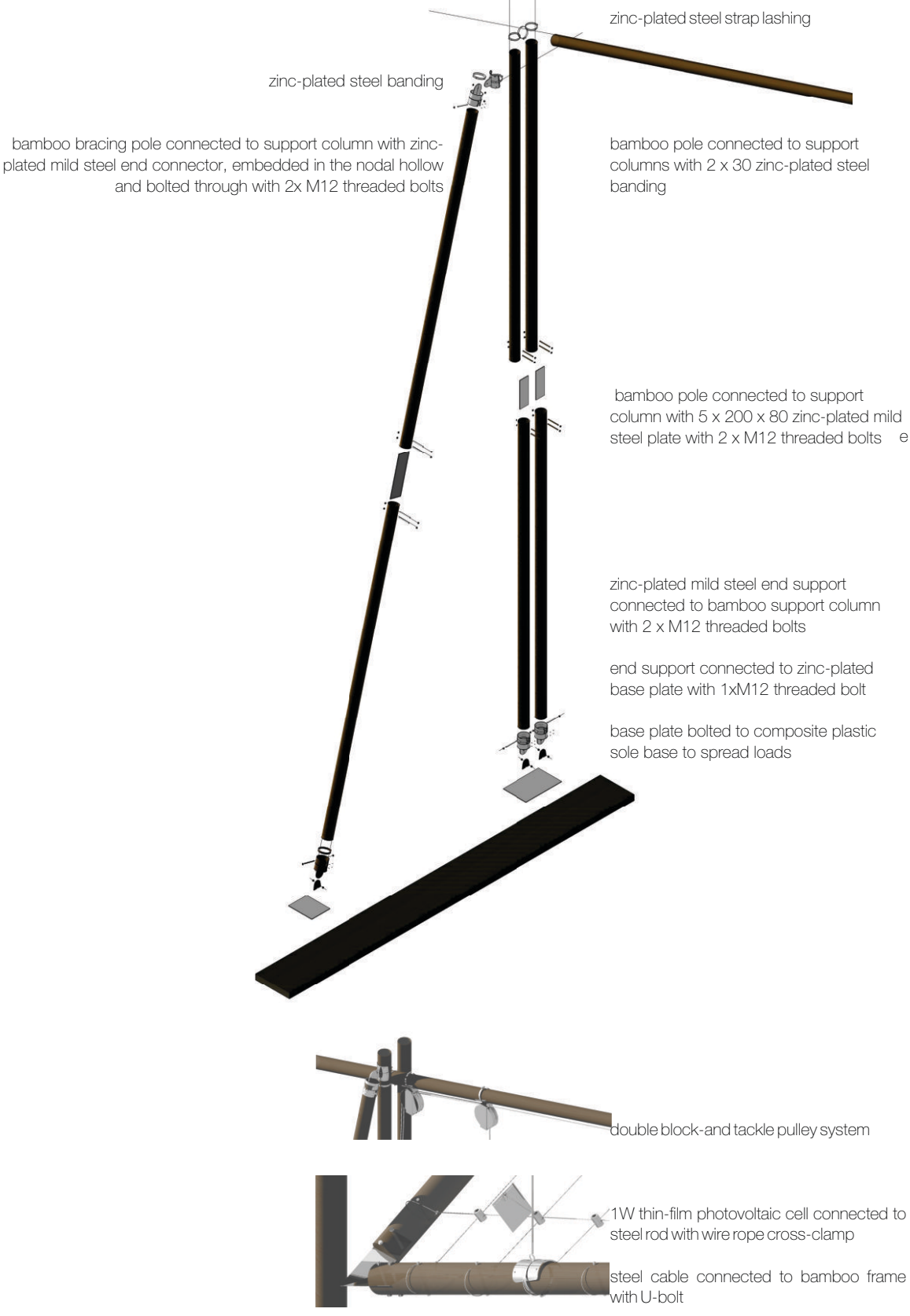

Figure 62: Details (Author 2016)

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9.2 Pavilion in the park

Venning Park is situated in Arcadia, bordering Arcadia Primary School and in close proximity to embassies and restaurants (see Figure 65). A small building used to function as a café, but has since closed. The park's three ponds are empty, and only some of the formal flower beds are planted. It has electricity- and water supply and lights for night use. There are some shade trees and benches, but few of the seats are situated in shady areas. The park will benefit from the kit-of-parts pavilion by attracting users and acting as a catalyst point for activity and further development..

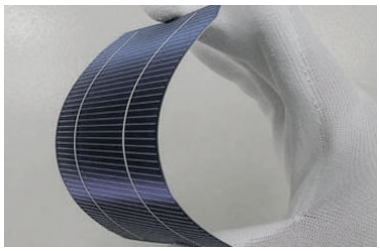

Figure 64: Thin-film photovoltaic cell (Sanyo 2013)

The parts of the pavilion kit that will be suitable for Venning Park are the textile canopy, seating, bicycle rack, serving table, surface and lighting. Furthermore, the energy required to power the luminaires will be provided by a network of thin-film photovoltaic cells (Figure 64). These are not only a light-weight alternative to conventional photovoltaic panels, but will also move in the wind and create a striking visual effect during daytime.

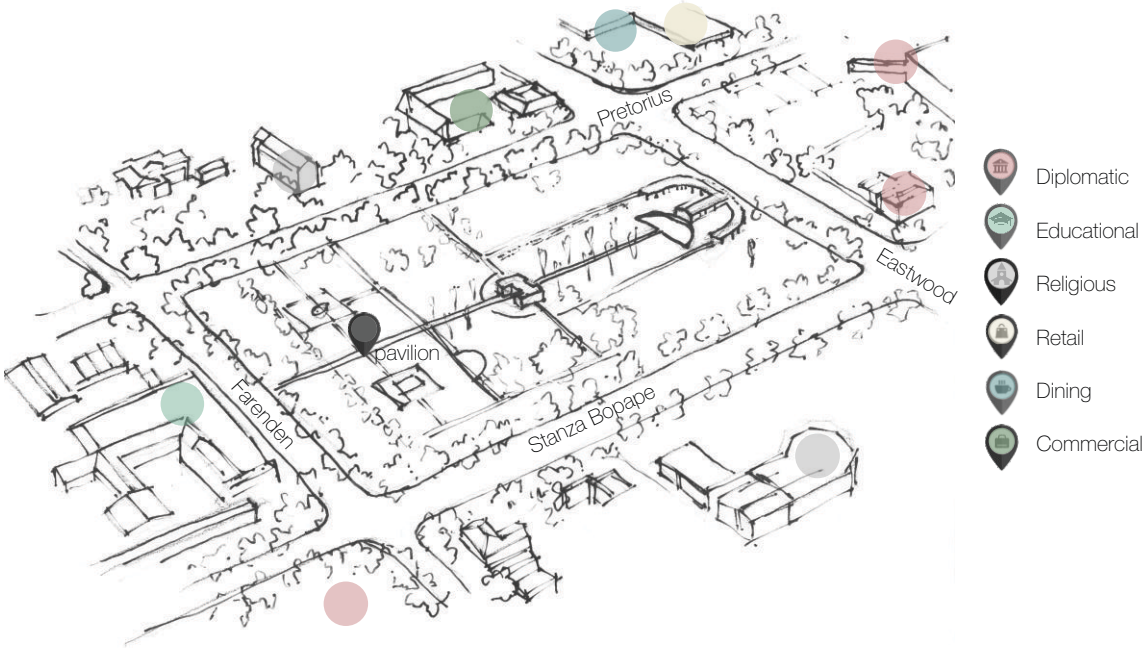

Figure 65: Position and context of the of pavilion in Venning P[illegible]

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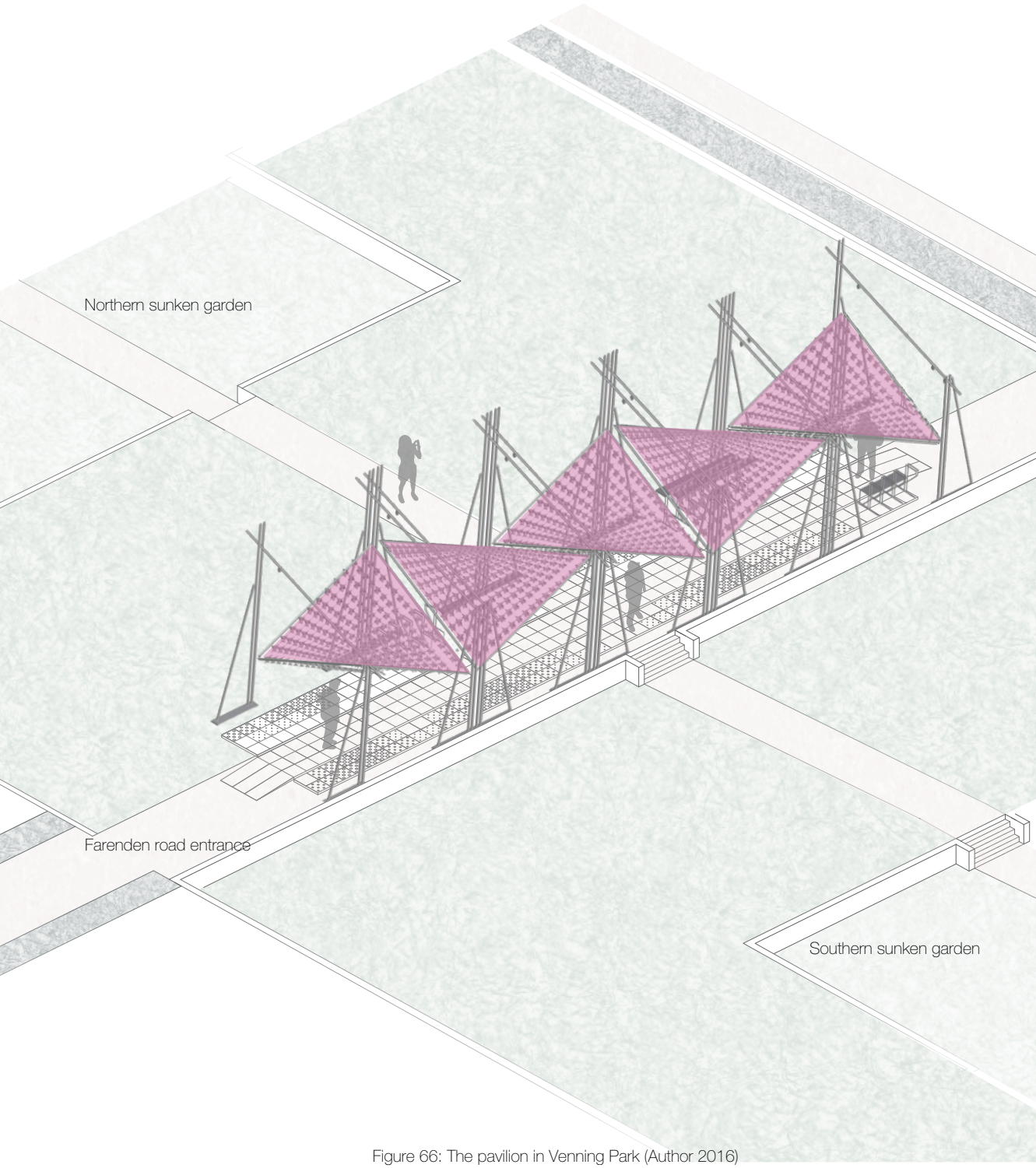

Figure 66: The pavilion in Venning Park (Author 2016)

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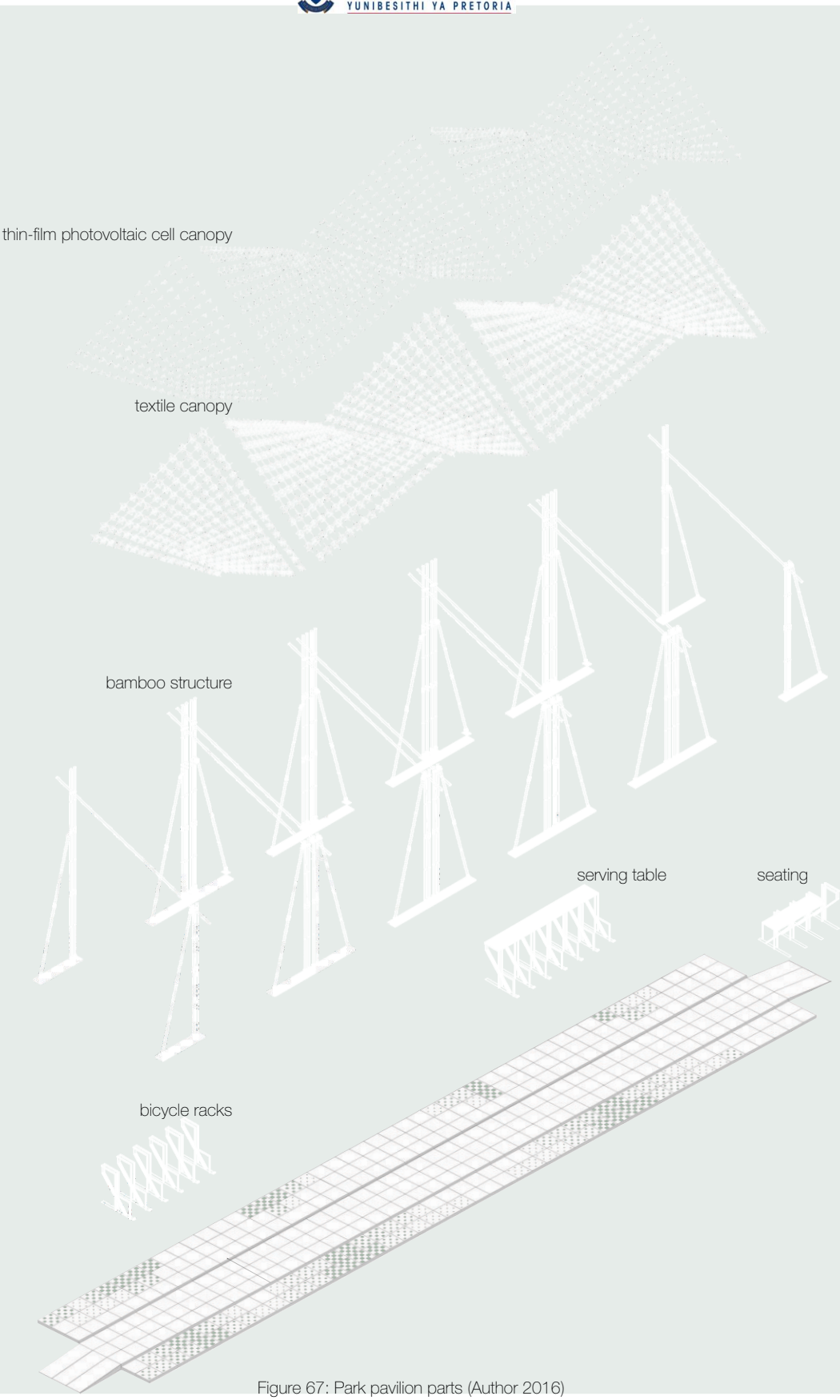

Figure 67: Park pavilion parts (Author 2016)

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Figure 68: Section perspective of park pavilion (Author 2016)

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9.3 Pavilion on an urban rooftop

The Prinschurch building is situated in Pretoria central, and is part of a redevelopment initiative by City Properties. It forms part of 012central, a cluster of refurbished buildings similar to Johannesburg's Maboneng precinct. The spaces are used for events, and the Prinschurch building is currently an unoccupied building primarily used for its rooftop space overlooking the State Theatre and Sammy Marks Square.

The pavilion will provide not only a sense of human scale to the space, but will also be a source of planting in an urban environment where this is lacking. In addition, it can provide atmospheric lighting and seating. Due to the higher wind speed at this increased altitude, textile weights are added to the spreader plates in order to secure the structure. Due to the relatively flat slope of the roof, no steps are needed, and the gentle slope can be compensated for by adjusting the decking pedestals.

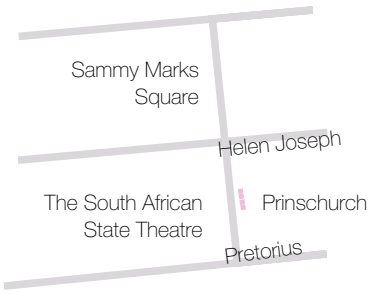

Figure 69: Location of the pavilion as an urban rooftop intervention (Author 2016)

Figure 70: Rooftop event space at the Prinschurch building (Author 2016)

Figure 71: Views from the Prinschurch roof to Sammy Marks Square (top) and the South African National State Theatre (bottom) (Author 2016)

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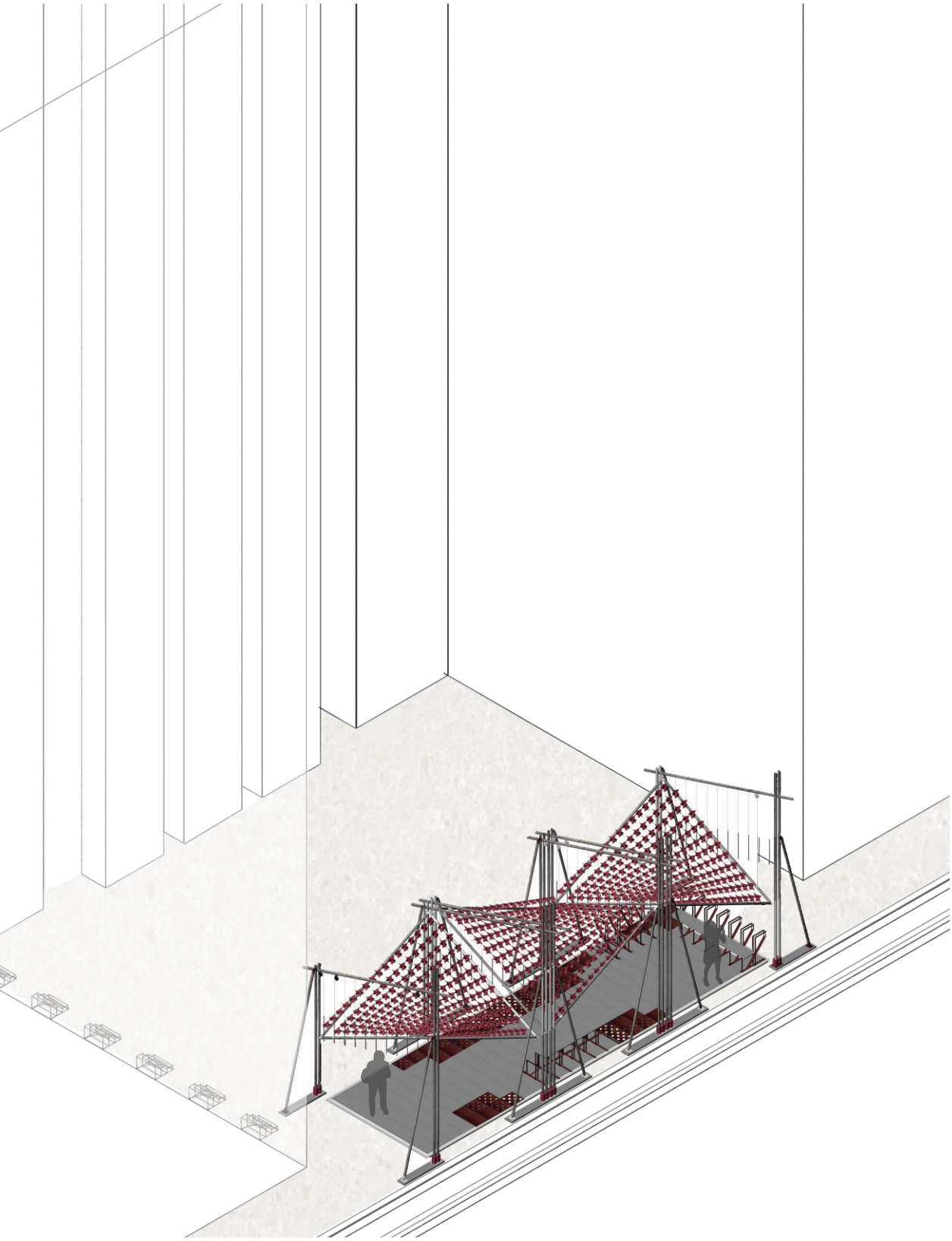

Figure 72: Pavilion on the Prinschurch roof (Author 2016)

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Figure 73: Rooftop pavilion parts (Author 2016)

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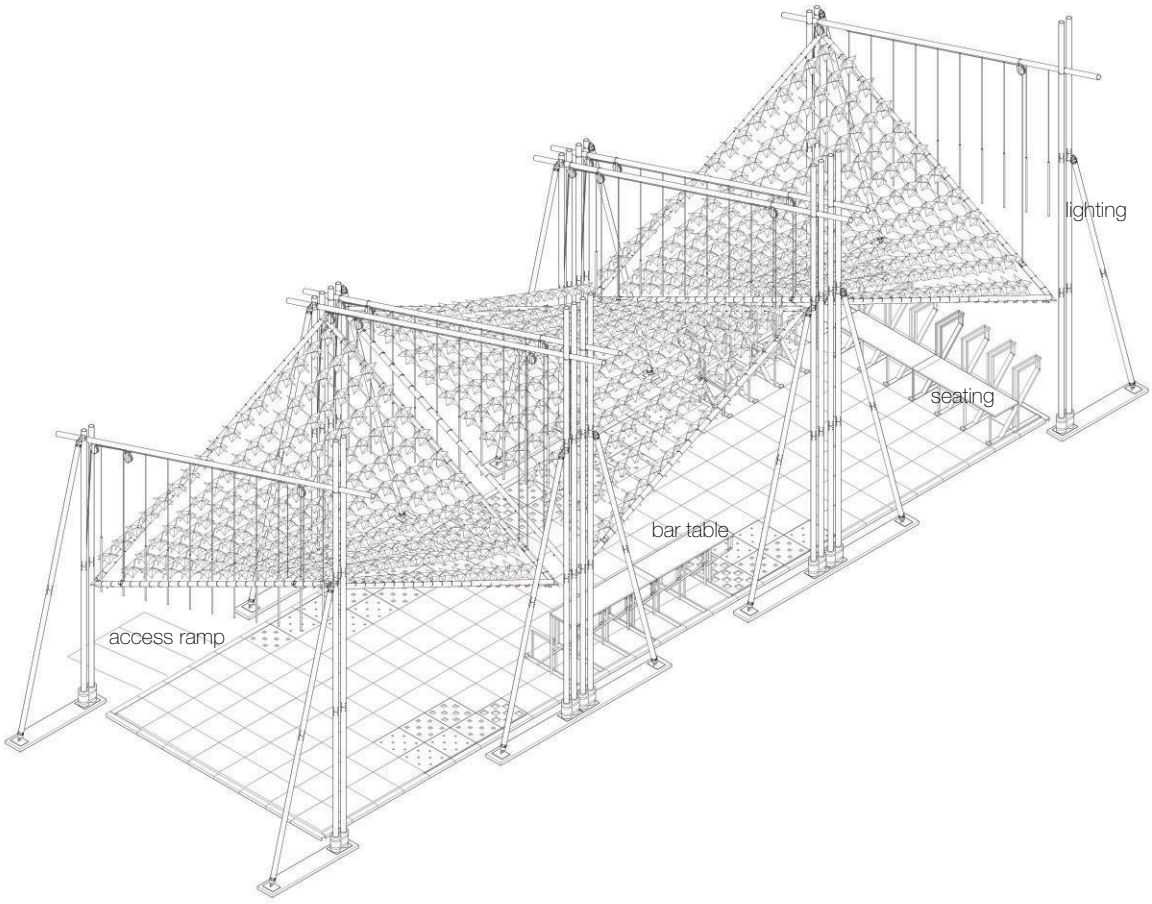

Figure 74: Rooftop pavilion in isolation (Author 2016)

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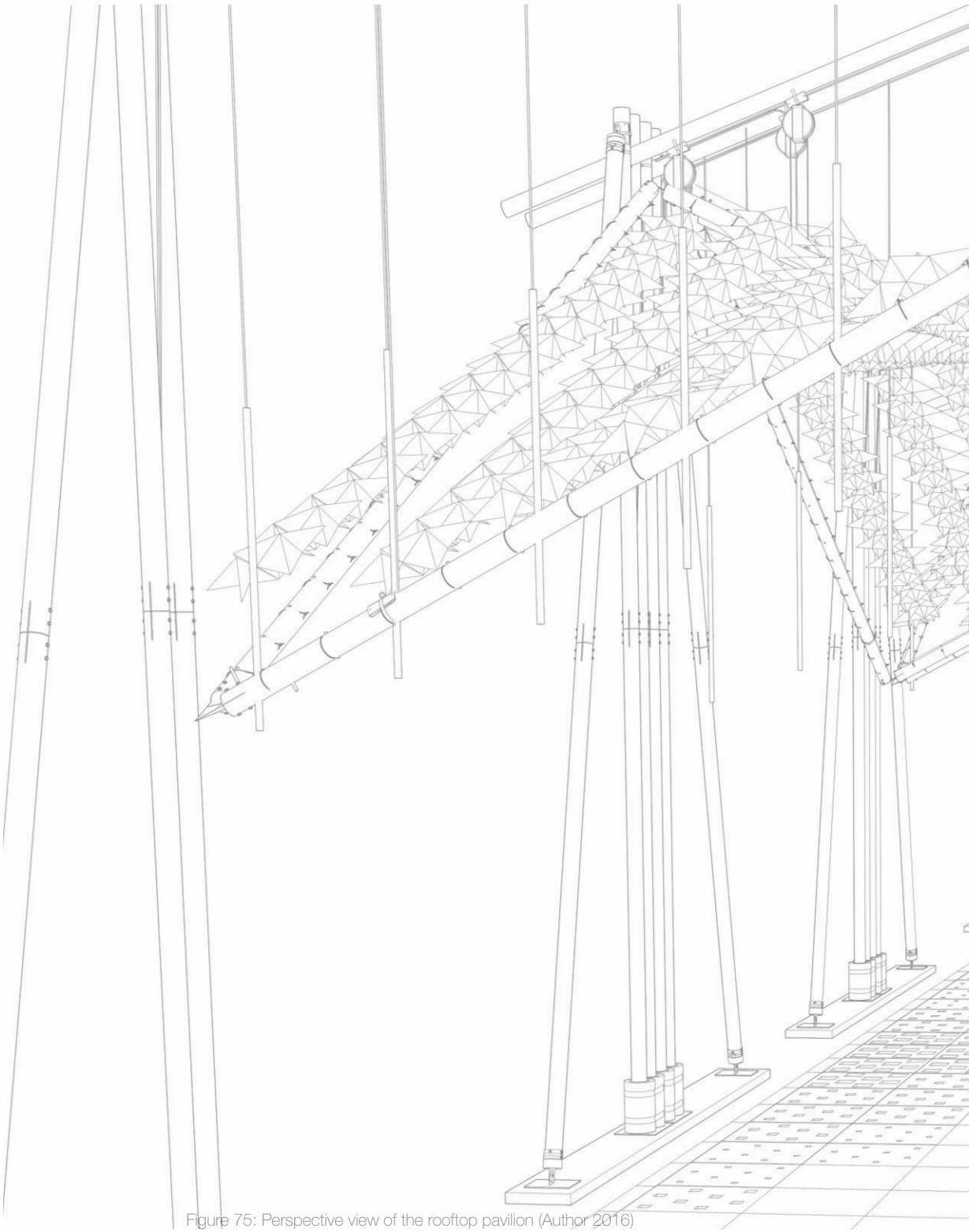

Figure 75: Perspective view of the rooftop pavilion (Author 2016)

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