chapter eight
Technical Documentation
Site Plan

Figure 8.1 Site Plan
Figure 8.2 Ground Level Plan

<table>
<thead>
<tr>
<th>Area Schedule</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total ground Level Area</td>
<td>2565.9m²</td>
</tr>
<tr>
<td>Restaurant</td>
<td>366.5m²</td>
</tr>
<tr>
<td>Kitchen</td>
<td>96.8m²</td>
</tr>
<tr>
<td>Refuse Yard</td>
<td>11.0m²</td>
</tr>
<tr>
<td>Workshop</td>
<td>290.4m²</td>
</tr>
<tr>
<td>Foyer</td>
<td>34.2m²</td>
</tr>
<tr>
<td>Seminar Room</td>
<td>36.6m²</td>
</tr>
<tr>
<td>Refuse Yard</td>
<td>67.1m²</td>
</tr>
<tr>
<td>Entrance Podium</td>
<td>56.7m²</td>
</tr>
<tr>
<td>Court Yard</td>
<td>300.6m²</td>
</tr>
<tr>
<td>Formal Exhibition Area</td>
<td>165.7m²</td>
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<tr>
<td>Foyer</td>
<td>135.1m²</td>
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<tr>
<td>Court Yard</td>
<td>31.2m² each</td>
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<tr>
<td>Kitchen</td>
<td>37.3m²</td>
</tr>
<tr>
<td>Storage</td>
<td>40cm²</td>
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<tr>
<td>Lift</td>
<td>0.7m²</td>
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<tr>
<td>Exterior Exhibition Spaces</td>
<td>02.2m²</td>
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Bridge Level Plan

Area Schedule

<table>
<thead>
<tr>
<th>Area</th>
<th>Area in m²</th>
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<tbody>
<tr>
<td>Total ground Level Area</td>
<td>2566.9 m²</td>
</tr>
<tr>
<td>Restaurant</td>
<td>386.5 m²</td>
</tr>
<tr>
<td>Kitchen</td>
<td>95.8 m²</td>
</tr>
<tr>
<td>Refuse Yard</td>
<td>11.6 m²</td>
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<tr>
<td>Workshop Studios</td>
<td>290.4 m²</td>
</tr>
<tr>
<td>Foyer</td>
<td>34.2 m²</td>
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<tr>
<td>Seminar Room</td>
<td>38.6 m²</td>
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<tr>
<td>Refuse Yard</td>
<td>57.1 m²</td>
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<tr>
<td>Entrance Podium</td>
<td>95.7 m²</td>
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<tr>
<td>Court Yard</td>
<td>390.6 m²</td>
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<td>Formal Exhibition Area</td>
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<td>135.1 m²</td>
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<tr>
<td>Court Yard</td>
<td>31.6 m² each</td>
</tr>
<tr>
<td>Kitchen</td>
<td>37.3 m²</td>
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<tr>
<td>Storage</td>
<td>40 m²</td>
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<tr>
<td>Lift</td>
<td>5.7 m²</td>
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<tr>
<td>Exterior Exhibition Space</td>
<td>52.2 m²</td>
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</tbody>
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Figure 8.3 Bridge Level Plan
Top Level Plan

Figure 8.4 Top Level Plan

<table>
<thead>
<tr>
<th>Area Description</th>
<th>Area (m²)</th>
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<tr>
<td>Total Top Level Area</td>
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<td>Boukünde Balcony</td>
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<td>Total Eastern Incubation Office</td>
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<td>Open plan office 1</td>
<td>260.6</td>
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<tr>
<td>Open plan office 2</td>
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<tr>
<td>Seminar room</td>
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<tr>
<td>Storage</td>
<td>4.6</td>
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<tr>
<td>Battery room</td>
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<tr>
<td>Walkway</td>
<td>57.5</td>
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<td>Northern balcony</td>
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<tr>
<td>Eastern balcony</td>
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<tr>
<td>Southern balcony</td>
<td>99.1</td>
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<td>Western balcony</td>
<td>36.7</td>
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<td>Catwalk balcony</td>
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<td>Total Western Incubation Office</td>
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<td>Foyer</td>
<td>37.5</td>
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<tr>
<td>Seminar room</td>
<td>23.1</td>
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<tr>
<td>Offices</td>
<td>21.6</td>
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<tr>
<td>Bathrooms</td>
<td>32.5</td>
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</table>
Roof Plan

Figure 8.5 Roof Plan
Eastern Elevation
Southern Elevation
Western Elevation

Figure 8.8 Western Elevation
Figure 8.10 Detail Section AA
Section BB
Section CC
Section DD
40 mm insulating screed to min slope 1:80 to 200mm diameter full bore outlets.

Polymer modified bituminous waterproofing membrane torched onto screed up to an if possible over steel members at edges of roof. Waterproofing protected by min 20mm course gravel up to edge of roof.

381 x 152 x 9.7mm pre-painted mild steel I beams at 3000mm centres, bolted to factory welded flanges of Vierendeel horizontal chord.

BILLBOARD:
80mm timber facing board, bolted to horizontal pre-painted, mild steel, flat plates, as stringers of billboard. Factory printed vinyl sheeting glued to facing with polyurethane based adhesive, according to manufacturer's specifications

2940 x 100 x 8.5 mm pre-painted mild steel flat plates bolted to factory welded flanges on vertical support square tubing of Vierendeel Truss.

100 x 100 x 10mm pre-painted cold formed mild steel square tubing as vertical support of Vierendeel Truss, factory welded into position at 3000mm centres.

686 x 254 x 14.5mm pre-painted mild steel I beam as horizontal chord of Vierendeel Truss.
1000 x 740 x 50mm 10 MW horizontal solar PV tiles, installation by specialist, according to manufacturer's specifications.

305 x 89 x 10.2 mm pre-painted unequal mild steel angle welded to top of 305 x 89 x 10.2 mm channel. Top side of angle to be lower than underside of skylight window, as storm water management emergency overflow.

1500 x 600 x 75 x 1.2mm G275 spelter galvanized steel as part of Q-Lock roof units type Q.L. 21. 75mm deep light weight concrete slab to be cast after sheeting in position. Units shall butt joint on the centre line of the supporting steel beam and be fixed to the beam by means of 20mm hammer drive galvanized steel screws, according to engineer's specifications.

203 x 133 x 6.5 mm pre-painted mild steel I beam bolted to factory welded flange on 305 x 89 x 10.2 mm channel

Custom cut PG Bison Formica exterior grade solid core (dimensions to be measured on site after steel structure is installed). Exterior side of panel to have an acrylic sheet overlay for UV protection. All cutting to be done with carbide tipped tools only. Chipping to be avoided by using a scoring blade. Formica panels to be fixed to steel structure with polyurethane based adhesives according to manufacturer's specifications. All edges to be sealed with water resistant, heat resistant, flexible, clear silicone.

80 x 80 x 10 mm pre-painted mild steel equal angle bolted to channel above and below glued to Formica 8mm PG Bison Formica Exterior grade solid core panel.
300 mm fabricated steel acoustic factory assembled with 225mm pitch, 1.2 x 300 mm blades, mechanically fixed to 1.2 mm galvanized steel frame. Louvre system supplied as assembled unit to be bolted to T-sections welded to vertical support of Vierendeel truss.

3050 x 1300 x 8mm PG Bison Formica exterior grade solid core. No UV sheeting required. Formica walling system to be glued (polyurethane based) onto steel structure above and screwed into concrete light weight slab, according to manufacturer's specifications.

4500 x 600mm reinforced concrete column, levelled at top, off-shutter finished. Column according to eng detail.

686 x 254 x 14.5mm pre-painted mild steel I beam as horizontal chord of Vierendeel Truss, bolted to top side of concrete column with min 50mm diameter expansion bolts at min 300mm depth, as per eng spec.

1500 x 600 x 75 x 1.2mm G275 spelter galvanized steel as part of Q-Lock floor units type Q.L. 21. 75mm deep light weight concrete slab to be cast after sheeting is in position. Units shall butt joint on the centre line of the supporting steel beam and be fixed to the beam by means of 20mm hammer drive galvanized steel screws, according to engineer's specifications.

1500 x 1550 x 50, 0.8mm thick galvanized steel pre-painted Superseal 500 roof sheets, or equal approved, with double interlocking clips fixed to Vierendeel trusses between flanges, according to manufacturer's instructions.
2200 x 1200 x 8mm Climaplus Acoustic double glazing (manufactured by Saint Gobain) in aluminium frame inside formica solid core exterior panel.

CONSTRUCTION PROCEDURE:
After Vierendeel truss, with lateral supports are erected and in position, the Superseal 500 roof sheeting are installed with manufacturer supplied clips, bolted to underside of mild steel I beams.
AcoustiPack is then torched onto Superseal 500 sheets before the Q-Lock floor units are installed, followed by the light weight concrete being cast.

7mm Acoustipack EXTRA sheet (APExtS) 3 layered acoustic sheets torched onto top side of Superseal 500 roof sheets. See Construction Procedure.
min 40 mm Stucco Granno self-leveling screed, premixed and poured onto Q-Lock floor. Granno to be cast in max 1500 x 1500 mm blocks, separated before casting with polypropylene spacers. Openings to be filled with polyurethane sealant.

2280 x 100 x 40 mm SA Pine, timber door screwed to mild steel hinge, factory welded to vertical support of Vierendeel Truss. Door to open for manoeuvrability of operable walls and ventilation control of interior spaces.

2 x 100 x 100 x 10mm pre-painted cold formed mild steel square tubing as vertical support of Vierendeel Truss. min 105 mm opening between vertical supports for operable wall manoeuvrability. Vertical supports factory welded into position at 3000mm centres.

1500 x 600 x 75 x 1.2mm G275 spelter galvanized steel as part of Q-Lock floor units type Q.L. 21. 75mm deep light weight concrete slab to be cast after sheeting is in position. Units shall butt joint on the centre line of the supporting steel beam and be fixed to the beam by means of 20mm hammer drive galvanized steel screws, according to engineer’s specifications.

381 x 152 x 9.7mm pre-painted mild steel I beams at 3000mm centres, bolted to factory welded flanges of Vierendeel bottom chord.

1500 x 1550 x 50, 0.8mm thick galvanized steel pre-painted Superseal 500 roof sheets, or equal approved, with double interlocking clips fixed to Vierendeel trusses between flanges, according to manufacturer’s instructions.
2250 x 2850 mm PG Bison Formica exterior grade solid core (dimensions to be measured on site after steel structure is installed) doors. Both sides of doors to have an acrylic sheet overlay for UV protection. All cutting to be done with carbide tipped tools only. All doors are to be custom cut on site. Chipping to be avoided by using a scoring blade. Formica panels to be fixed to steel structure with heavy duty hinges.

Min 20mm openings between steel structure and Formica door, sealed with a polypropylene rubber seal, glued to edge of door with polyurethane based adhesive. Heat resistant, flexible, clear silicone.

500 x 45 x 6 mm mild steel removable grating with easy clean solids traps

6mm laminated safety glass with solar radiation control inside aluminium powder coated window frame as part of purpose made Formica door with wheels, as per specialist.

152 x 191 x 9.7mm pre-painted mild steel T-sections bolted to pre-painted mild steel I beams at 500mm centres for supporting removable concrete tiles with polypropylene spacers between tile and steel structure.

Min 400mm opening between Superseal 500 roofsheets and bottom chord of Vierendeel Truss as storm water overflow, when down pipes or reticulation tanks are faulty water cannot penetrate the interior spaces of the bridge.

DETAIL 3
Bridge Flooring Detail
Scale 1:20
Figure 8.17 Detail 4 - Facade Detail

DETAIL 4
Facade Detail
Scale 1:20
80 x 80 x 6 mm pre-painted mild steel equal angle welded to top side of square tubing at max 2000mm centres, bolted to 80 x 6mm flat plate.

148 x 89 x 11mm pre-painted mild steel hollow core square tubing welded to underside of Vierendeel horizontal chord. Square tubing to act as guide-rail form movable wall panels as per manufacturer’s specifications. Maximum finished floor level to underside of tubing: 2150mm.

Min 20mm SCS 287 rubber sealant glued (polyurethane based) to all edges of Formica Solid Core Panels.

Extra Heavy Duty T Hinge With Bushing

100mm cavity in facade for movable wall panels to penetrate facade.

76 x 76 x 11mm prepainted mild steel equal angle bolted to factory welded flange, at 2000 mm centres, on underside of Vierendeel lateral support I beam and top side of channel for moveable panels.

280 x 40 x 11mm prepainted mild steel flanges factory welded to bottom chord of Vierendeel trusses at 3000mm centres, with pre-drilled holes for fixings, as per eng specs.

6mm laminated safety glass with solar radiation control inside aluminium powder coated window frame as part of purpose made Formica door with wheels, as per specialist.

148 x 89 x 11mm pre-painted mild steel hollow core square tubing welded to top side of Vierendeel truss horizontal chord as spacer between vertical supports of Vierendeel truss.
Unidirectional formation extended terraccrete interlocking pavers

500 x 45 x 6 mm mild steel removable grating with easy clean solids traps

50mm diameter galvanized steel downpipe

76 x 19 (or 25 mm) mm thick hardwood skirting with one rounded top edge plugged to the wall. Painting shall be in accordance with interior finishes.

WP110 Kaytech Geotextile

100 mm diameter Kaytech Geopipe

700 x 200 mm reinforced concrete foundation as per eng spec

Formal Exhibition Space
min 40mm insulated screed laid
to min fall 1:100

170mm off-shutter reinforced self
compacting concrete roof slab,
cast on timber plank shuttering.

PEG MDF Soft wood timber exhibition
boards fixed to timber skirtings and
cornices -colour to match interior

RETAINING WALL:
980mm concrete and masonry composite
retaining wall, consisting of single brick
course, in-situ cast concrete and double
course masonry, as per eng specs.

Plaster and paint

Epoxy resin flooring applied onto screed

FLOOR CONSTRUCTION:
min 40mm cement screed on
150mm reinforced concrete floor
on 0.25mm micron polyolefin damp
proof membrane on approved
compacted fill in max 150mm
layers to 90% MOD AASHTO.

0.25mm polyolefin damp proof membrane

50mm diameter Kaytech Geopipe from
courtyard - storm water management

DETAIL 5
Retaining Wall Detail
Scale 1:50
200 mm diameter galvanized steel downpipes fixed concrete column, 200 mm away from finished wall surface, seam towards column, with 200 x 1.6 mm galvanized mild steel clamps, bolted around pipe in two halves, and with 6 mm diameter galvanized steel spiral nail driven into wall at least twice per downpipe length and max 2 m centres.

Unidirectional formation extended terracrete interlocking pavers.

Manhole ladder as per man spec.

850x300mm reinforced concrete strip foundation acc to eng spec.

Pump and cover position

G6 Backfill material to be compacted in 150mm layers to 95% MOD AASHTO

100 mm diameter Kaytech Geopipe

230+100+115 masonry and reinforced concrete composite retaining wall as per eng spec.

TANK PROPERTIES:
4 x Pioneer GT 330 Tanks
Diameter: 11.36m, Height: 3.23m
Litres per Tank: 328 096 litres
Total capacity: 1 312 384 litres

RETAINING WALL:
980mm concrete and masonry composite retaining wall, consisting of single brick coarse, in-situ cast concrete and double coarse masonry, as per eng specs.
SPECIFICATION WATER TANKS

PIioneer WATER TANKS

Site Preparation prior to tank installation:

Concrete slab must be level and stable prior to construction. Base to be 1000mm wider than tank on all sides.

Inside Tank:

Aqualiner created by hot melt laminating the 5 material layers under pressure.
Layer 1: Clear Polyethylene Film
Layer 2: Green advanced Polyolefin coating
Layer 3: Weave: High tenacity multifilament polypropylene
Layer 4: Green advanced polyolefin coating
Layer 5: Black Polyethylene film
Steel Dome Roof: Heavy duty hot dipped galv steel roof trusses and roof sheeting.

PUMP
Davey H560/08T with 8 litres Pressure cell (supplied by PIONEER). Backup generator to manufacturer's spec. Pump mounted next to Tank on Basement 2 with pump cover.
Figure 8.20 Detail 8 - Steel Staircase Detail

280 x 80 x 11mm prepainted mild steel flanges factory welded I beam, with pre-drilled holes for fixings, as per eng specs.

Epoxy resin flooring applied onto screed

381 x 152 x 9.7mm I beams at 3000mm centres, bolted to factory welded flanges of Vierendeel bottom chord.

200mm diameter galvanized steel downpipe to be bolted to t-section, seam towards balustrade, with 200 x 1.6 mm galvanized mild steel clamps, bolted around pipe in two halves, and with 6 mm diameter galvanized steel spiral nail driven into all upright t-sections

1500 x 600 x 75 x 1.2mm G275 spelter galvanized steel as part of Q-Lock floor units type Q.L. 21. 75mm deep light weight concrete slab to be cast after sheeting is in position.

6.5mm stainless steel checker board sheeting welded to T-section (custom bent prior to welding) not painted

50x12mm flat irons welded to 50 x 50mm mild steel T-sections at 150mm centres

305x120x12 mm prepainted mild steel channel stringer bolted to light weight concrete floor slab.

min 2100 headroom

See DETAIL 9

DETAIL 8
Steel Staircase Detail
PAINT: Degrease with AQUASOLY DEGREASER (GR1) Rinse with water, remove all rust with RUST REMOVER (RR1). Prime general surfaces the same day with PLASCON METAL PRIMER (UC501). Use ZINC PHOSPHATE PRIMER RED OXIDE (UC 207) for structural steel work. Apply WATERBASED ENAMEL colour name ‘Cement Wash Y1-E2-2’

305x120x12 mm pre-painted mild steel channel stringer cut and welded acc to eng specs

50x12mm pre-painted mild steel flat irons welded to T-sections at 150mm centres

150x100x10mm T-section welded to channel at 860mm centres

2 x 120x60x8mm flat irons welded to channel and bolted to balustrade flat iron

305x120x12 C-section stringer bolted to ground floor slab acc to eng spec

Figure 8.21 Detail 9 - Steel Staircase Detail

DETAIL 9
Steel Staircase Detail
Scale 1:10
30000 x 2480 x 85mm maximum dimensions of mild steel Billboard structure, expansion bolted to in-situ cast concrete wall as per manufacturer’s specifications.

min 40 mm Stucco Granno self-levelling screed, premixed and poured onto Q-Lock floor. Granno to be cast in max 1500 x 1500 mm blocks, separated before casting with polypropylene spacers. Openings to be filled with polyurethane sealant.

BILLBOARD:
80mm timber facing board, bolted to horizontal pre-painted, mild steel, flat plates, as stringers of billboard. Factory printed vinyl sheeting glued to facing with polyurethane based adhesive, according to manufacturer’s specifications.

Figure 8.22 Detail 10 - Connection to Boukunde
100 x 100 x 10mm pre-painted cold formed mild steel square tubing as columns supporting concrete beam above. Tubing to match vertical support of Vierendeel truss.

280 x 200 reinforced concrete beam, shutter finish to match Boukunde aesthetic. Shuttering to be 500mm timber shuttering, paint to match existing Boukunde colour, according to specialist.

4500 x 600 mm reinforced concrete column as per eng specifications

DETAIL 10
Connection to Boukunde
Scale 1:20