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Section 6.3: Second Floor Plan

**FIG 6.3 Second floor plan**

- **A**: First Level
- **B**: Second Level
- **C**: Third Level
- **D**: Fourth Level
- **E**: Fifth Level
- **F**: Sixth Level

**Downpipe Requirements**

- Total area = Roof 1 (discharge onto roof 2) + roof 2 (flat roof) + Roof 3 (discharge onto roof 2) = 124,02 m² + 216,88 m² + 841,66 m² = 1182,56 m²
- Downpipe required = 100 mm²/1 m²
- Total downpipe required: 1182 m² x 100 = 118,200 mm²
- 200 diameter downpipes in 220 mm brick cavity columns required = 31,415,93 mm²
- Downpipes required = 118,200 mm² / 31,415,93 mm² = 3.7

**Second Floor Plan 1:300**

- Existing two-level parking
- Sliding doors
- Security control
- Roof garden
- Office space
- Animation board room
- Studio
- Terrace
- Green screen
- Tuks interview booth
- Reception

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*Note: The diagram includes annotations and labels for specific areas on the floor plan.*
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Ramp-up 1:8
Ramp-down to second basement level

Air handling unit
Water storage substation

最高月降雨量在十二月为14毫米~0.014平方米
总屋顶面积= 13487平方米
体积水= 0.014 x 13487= 188,818立方米
因此 - 188,818立方

最大集水储罐所需= 6米 x 32米 x 1米 = 192立方米 ~ 192,000升

水收集

最高月降雨量在十二月为14毫米~0.014平方米
总屋顶面积= 13487平方米

总下水管面积 = 13487 x 100 = 1,348,700平方毫米

下水管用于柱子 = 80?毫米 / 一个 80?毫米 = 5024平方毫米

如果所有水收集到柱子中的下水管，则需90根

柱子可用于现浇下水管

策略：集水渠位于平面中心，直径为200?毫米

下水管要求

6米 x 32米 x 1米 水箱 = 192,000升

3 x (6米 x 6米 x 2米) 水箱在每个机房

水计算

最高月降雨量在十二月为14毫米~0.014平方米
总屋顶面积= 13487平方米

泊车布局

机器房2
艺术及音乐设备储藏

机器房1

残疾人

残疾人

泊车

地下室1: 133泊车位，其中2个为残疾人

停车位

地下室2: 125个泊车位，其中2个为残疾人

总泊车位 = 270个泊车位，其中4个为残疾人，12个为摩托车

停车场布局平面图

比例尺 1:400

停车场布局
FIG 6.5: Site plan
FIG 6.6_Section a-a

Beamsize:
Max span 5740mm/slenderness ratio of 20
5740/20 = 287mm galvanized steel I-Beam

Purlin size:
Max span 8000mm/slenderness ratio of 35
8000/35 = 228mm purlin

Floor slab size:
Max span 6000mm/slenderness ratio of 36
6000/36 = 166mm flat slab

chosen to use 255mm to work with brick courses and to minimize downstand beams

Beamsize:
Max span 5740mm/slenderness ratio of 20
5740/20 = 287mm galvanized steel I-Beam

Purlin size:
Max span 8000mm/slenderness ratio of 35
8000/35 = 228mm purlin

Floor slab size:
Max span 6000mm/slenderness ratio of 36
6000/36 = 166mm flat slab

chosen to use 255mm to work with brick courses and to minimize downstand beams

Summer solstice at 12:00 noon
90 + 23.5 - 27 = 86.5 degrees

Winter solstice at 12:00 noon
90 - 23.5 - 27 = 39.5 degrees

Winter solstice at 12:00 noon
90 - 23.5 - 27 = 39.5 degrees

Water storage tank
Music shop/equipment rentals
Rentable rehearsal booths
Music market
Piano recording booth
Artist lofts
Artist balcony

Basement level one
Basement level two

AB
GF ED
C

100,595
107,735
106,205
103,485
111,050
107,735
103,485
100,595
100,000

informal practice corner
Existing parkade

Note Steel roller shutter:
3mm minimum thickness cold rolled mild steel channel guides with minimum depth of 70mm. Provide guides with necessary bellmouths, 25 x 3mm flat mild steel T-bar stoppers, and 50 x 5mm mild steel fixing lugs with 11mm diameter holes for fixing bolts.

Gutter size:
Roof 1 area:
9.54m x 13m = 124.02m²
140mm²/1m² required by building regulations
Total Gutter required for roof 1:
124.02m² x 140 = 17362.8mm² gutter
Current gutter area: 228451.30mm²
Gutter is adequately sized

Gutter size:
Roof 4 area:
Circular roof:
= 183.25m²
140mm²/1m² required by building regulations
Total Gutter required for roof 4:
183.25m² x 140 = 25655mm²
Current gutter area: 46285.4mm²
Gutter is adequately sized

Downpipe requirements:
Total area = Roof 1 (discharge onto roof 2) + roof 2 (flat roof) + Roof 3 (discharge onto roof 2)
= 124,02m² + 216,88m² + 841,66m²
= 1182,56m²
Downpipe required = 100mm²/1m²
Total downpipe required: 1182m² x 100 = 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415.93mm²
Downpipes required = 118200mm²/31415.93mm² = 3.74
3 x 200 diameter downpipes in 220mm brick cavity columns required

Air handling unit

Basement Tanking Note:
Soil filling compacted in layers of 300mm
Reinforced concrete retaining wall
Layer of KAYTEK Bidim and waterproofing covered with masonry
Reinforced concrete footing
50mm Concrete Blinding

Basement store room
Basement store room
Section b

Note: PILKINGTON four point structural glazing system

Basement level one

Basement level two

Rentable rehearsal booths

Informal practice area

Mastering booth

Control room

Reception/artist book in

Kitchenette

Existing parkade

Gutter size:

Roof 4 area Circulation roof: = 183,25 m²

140 mm²/1 m² required by building regulations

Total Gutter required for roof 4:

183,25 m² x 140 = 25655 mm²

Current gutter area: 46285,4 mm²

Gutter is adequately sized

Gutter size: Roof 1 area:

9,54 m x 13 m = 124,02 m²

140 mm²/1 m² required by building regulations

Total Gutter required for roof 1:

124,02 m² x 140 = 17362,8 mm²

Current gutter area: 228451,30 mm²

Gutter is adequately sized

Gutter size: Roof 2 area:

7,7 m x 20,17 m = 155,309 m²

140 mm²/1 m² required by building regulations

Total Gutter required for roof 2:

155,309 m² x 140 = 21743,26 mm²

Current gutter area: 228451,30 mm²

Gutter is adequately sized

Downpipe requirements

Total area = Roof 1 (discharge onto roof 2) + roof 2 (flat roof) + Roof 3 (discharge onto roof 2)

= 124,02 m² + 216,88 m² + 841,66 m² = 1182,56 m²

Downpipe required = 100 mm²/1 m²

Total downpipe required: 1182 m² x 100 = 118200 mm²

200 diameter downpipes in 220 mm brick cavity columns = 31415,93 mm²

Downpipes required = 118200 mm² / 31415,93 mm² = 3,74

x 200 diameter downpipes in 220 mm brick cavity columns required
winter solstice at 12:00 noon
90 - 23.5 - 27 = 39.5 degrees

Summer solstice at 12:00 noon
90 + 23.5 - 27 = 86.5 degrees

Purlin size:
Max span 8000mm/slenderness ratio of 35
8000/35 = 228mm purlin

Upstand size:
Max span 10000mm/slenderness ratio of 20
10000/20 = 500mm upstand

Note:
Downstand beams @ 2500mm centers to allow concrete structure to cantilever as per eng. discussion

Note:
Inverted Composite steel angle truss designed as per eng discussion with lattice truss forming horizontal bracing system

Note:
PILKINGTON four point structural glazing system

Note:
NuKLIP FLUSH GLAZING system

Brick courses

1
10
20
30
40
50
60
70
80
90
100
110
120

SECTION C-C 1:300
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Winter solstice at 12:00 noon:
90 - 23.5 - 27 = 39.5 degrees

Summer solstice at 12:00 noon:
90 + 23.5 - 27 = 86.5 degrees

356 x 171 x 51mm Galvanized steel column fixed as per column detail by eng.

Beam size: Max span 5000mm / slenderness ratio of 20

5000/20 = 250mm galvanized steel I-BEAM

Note:
NuKLIP FLUSH GLAZING system

Note:
PILKINGTON four point structural glazing system

Note:
GKD AG4 MEDIAMESH supported by gkd designed mesh fixing

Brick courses:

DETAIL 011
DETAIL 012
DETAIL 013

Note:
Inverted Composite steel angle truss designed as per eng discussion with lattice truss forming horizontal bracing system

Purlin size:
Max span 8000mm / slenderness ratio of 35
8000/35 = 228mm purlin

Gutter size:
Roof 3 area Main roof:
= 841.66m²
140mm² / 1m² required by building regulations

Total Gutter required for roof 3:
841.66m² x 140 = 117832.4 mm²
Current gutter area: 229243.88 mm²

50mm Concrete Blinding

SECTION D-D 1:300

FIG 6.9 Section d-d

Basement level one
Basement level two

books/scores
wifi station
information counter
Computer search stations
Library reception
Computer main frame
Ablution
Roof terrace
Post production studio
Existing parkade
Animator desks

Soil filling compacted in layers of 300mm
Reinforced concrete retaining wall
Layer of KAYTEK Bidim and waterproofing covered with masonry
Reinforced concrete footing

50mm Concrete Blinding

section d-d

300
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Summer solstice at 12:00 noon: 90 + 23.5 - 27 = 86.5 degrees

Beam size:
Max span 5000mm/slenderness ratio of 20
5000/20 = 250mm galvanized steel I-Beam

Note: PILKINGTON four point structural glazing system

Note: Adjustable louver system

Brick courses

DETAIL 014

Purlin size:
Max span 8000mm/slenderness ratio of 35
8000/35 = 228mm purlin

Note: Inverted Composite steel angle truss designed as per engineer discussion with lattice truss forming horizontal bracing system

Gutter size:
Roof 3 area Main roof:
= 841.66m²
140mm²/1m² required by building regulations
Total Gutter required for roof 3:
841.66m² x 140 = 117832.4 mm²
Current gutter area: 229243.88mm² Gutter is adequately sized

Downpipe requirements
Total area = Roof 1 (discharge onto roof 2) + roof 2 (flat roof) + Roof 3 (discharge onto roof 2)
= 124.02m² + 216.88m² + 841.66m²
= 1182.56m²
Downpipe required = 100mm²/1m²
Total downpipe required: 1182m² x 100 = 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415.93mm²
Downpipes required = 118200mm² / 31415.93mm² = 3.74
X 200 diameter downpipes in 220mm brick cavity columns required

FIG 6.10: Section e-e

SECTION E-E 1:300
Sight line diagram 1:50

SECTION F-F 1:300
Aluminium window frame to comply with SANS 1651.
Apply a single coat of Bituminous paint between frame and beam.

7mm diameter galvanized metal chain for water runoff onto sodded roof
detail 001 scale 1 : 10

Purpose made galvanized mild steel structural gutter flashing supported over top hat section

SAGEX Boarded roof insulation 1200 x 600mm panels supported on top hat tipped section fixed as per suppliers spec.

BROWNBUILT galvanized mild steel roof sheets coated at both sides with class Z275 galvanizing to comply with SANS 3575 fixed to 228 x 100mm light-gauge steel top hat lipped channels @ 1100mm centres with BROWNBUILT clip system bolt fixed to mild steel angle cleats welded to beam in accordance with SANS 2001-CS1.

254mm x 146mm galvanized I-Beam as horizontal support

254mm x 146mm galvanised raftersAluminium window frame to comply with SANS 1651.

A single coat of Bituminous paint between frame and beam.

2 x 25mm Aluminium channels rivetted to purlins to support suspended ceiling guiding rail

Gypsum ceiling board fixed to ceiling clips with self drilling screws

Aluminium window frame to comply with SANS 1651.
A single coat of Bituminous paint between frame and beam.

BROWNBUILT galvanized mild steel gutter support bolted to mild steel column and beam supports.

154mm x 175 Galvanized mild steel I-section as horizontal support

Aluminium window frame to comply with SANS 1651.
Apply a single coat of Bituminous paint between frame and beam.

254mm x 146mm galvanized I-Beam bolted to galvanized rafters

7mm diameter galvanized metal chain for water runoff onto sodded roof
Water from roof down 150mm diameter downpipe installed into brick cavity column 75mmx50mm EROKO grade 7 timber purlins preservative treated according to SANS 1288/10005 bolt fixed into angle frame welded to roof support with intermediate supports at 2500mm centers

170x 80mm mild steel angle fixed to concrete columns supporting brick work

114mmx50mm EROKO grade 7 timber purlins preservative treated according to SANS 1288/10005 bolt fixed into angle frame welded to roof support with intermediate supports at 2500mm centers

FIG 6.14_Flat Roof and circulation detail
Purpose made timber and steel rod folding facade system with 180 degree plate hinges

Timber bearing fixed to 50mm x 50mm battens fixed to concrete floor installed with acoustic insulation between batten spaces.

Purpose made 20 mm plate bolt fixed to concrete and welded to t beam.

Purpose made timber and steel rod facade system welded to 254mm x 171mm structural t supports.

Acoustic insulation fixed between two 25mm x 25mm angles fitted to concrete soffit with acoustic seal between angle and concrete.

Opening in aluminium frame with acoustic seal.

Suspended ceiling support.

FIG 6.15_Floor slab and facade junction

FIG 6.16_Floor slab and facade junction location drawing
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Timber flooring fixed to 50mm x 50mm battens fixed to concrete floor installed with acoustic insulation between batten spaces.

40mm SONITEC acoustic foam wedges fixed onto 10mm ply wood backing fixed to 38mm x 38mm timber batten frame spaced at max 450mm centers.

Lafarge db acoustic board installed as per supplier spec with approved acoustic insulation and acoustic seal between concrete and stud walling.

Two 6.38mm laminated glass fixed at 45 degree angle installed with 10mm silicone and neoprene movement guides.

25mm polycarbonate sheet fixed to steel support frame.

75mm x 50mm timber purlins bolt fixed into angle frame welded to roof support.

Top hung recording mic fixed to frame.

255mm concrete slab.

40mm SONITEC acoustic foam wedges fixed onto 10mm ply wood backing fixed to 38mm x 38mm timber batten frame spaced at max 450mm centers.

75mm x 50mm timber purlins bolt fixed into angle frame welded to roof support.

25mm polycarbonate sheet fixed to steel support frame.

Top hung recording mic fixed to frame.

255mm concrete slab.

40mm SONITEC acoustic foam wedges fixed onto 10mm ply wood backing fixed to 38mm x 38mm timber batten frame spaced at max 450mm centers.

Lafarge db acoustic board installed as per supplier spec with approved acoustic insulation and acoustic seal between concrete and stud walling.

Two 6.38mm laminated glass fixed at 45 degree angle installed with 10mm silicone and neoprene movement guides.

Detail 005 scale 1:10

FIG 6.17: Drum booth acoustic detail
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75mmx50mm EROKO grade 7 timber purlins
preservative treated according to SANS 1288/10005
bolt fixed into angle frame welded to roof support
with intermediate supports at 2500mm centers

SAGEX Boarded roof insulation 1200 x 600mm panels supported on top hat lipped section fixed as per suppliers spec.

PILKINGTON four point structural glazing system

170 x 80 mm galvanized mild steel tubular support
90 x 125 x 15mm Galvanized mild steel angle fixed into fixing lug casted into concrete slab bolt fixed to timber ceiling supporting frame

30mm min screed laid to fall 1:50
A4 KATEX or similar layer Geotextyle
70mm thick 20mm coarse aggregate layer
A4 KATEX or similar layer Geotextyle
30mm min screwed bad to fall 1:50

40mm SONITEC acoustic foam wedges fixed onto 10mm ply wood backing fixed to 38mm x 38mm timber batten frame spaced at max 450mm centers

255mm eng approved reinforced concrete floor slab
detail 007 scale 1:15

A4 KATEX or similar layer Geotextyle
70mm thick 20mm coarse aggregate layer
A4 KATEX or similar layer Geotextyle
30mm min screwed bad to fall 1:50

Backimg rod installed as per supplier spec
with site applied silicone sealant between glass panel.

60 x 125 x 10mm galvanized mild steel angle fixed into
fixing lug casted into concrete slab bolt fixed to timber ceiling supporting frame

170 x 80 mm galvanized mild steel tubular support

255mm eng approved reinforced concrete floor slab
detail 007 scale 1:15

FIG 6.18_Sodded roof detail

FIG 6.19_Drum booth acoustic floor and wall junction

FIG 6.18_Sodded roof detail
**Chapter 6: Technical Documentation**

500 x 300 x 15mm Purpose made Gusset plate bolt fixed between top and bottom angles for strut fixing.

Aluminium window frame to comply with SANS 1651. Apply a single coat of Bituminous paint between frame and beam.

BROWNBUILT galvanized mild steel roof sheets coated on both sides with class Z275 galvanizing to comply with SANS 3575 fixed to 228 x 100mm light-gauge steel top hat lipped channels @ 1100mm centres with BROWNBUILT clip system on 200mm x 100mm gusseted I-beam supports spaced at 5000mm welding as per SANS 2001-CSI.

114mm x 50mm EROKO grade 7 timber purlins preservative treated according to SANS 1288/10005 bolt fixed into angle frame welded to roof support with intermediate supports at 2500mm centres.

SAGEX Boarded roof insulation 1200 x 600mm panels supported on 228 x 100x 6mm top hat lipped section.

75 x 50 x 15mm steel angle struts bolted to Gusset plate at top and bottom cord of truss.

2 x 25mm Aluminium channels rivetted to purlins to support suspended ceiling guiding rails.

2 x 150mm x 90mm x 15 steel angles bolted to 356 x 171 mm I-section column to form steel truss bottom cord.

2 x 200 x 100 x 15 mild steel angles bolted to bottom card to complete composite steel truss.

Fibre cement ceiling board fixed to ceiling clips with self drilling screws.

7mm diameter galvanized metal chain for water runoff onto sodded roof.

**FIG 6.20_Main roof suspended timber roof underside detail**
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500 x 300 x 15mm Purpose made Gusset plate bolt fixed between top and bottom angles for strut fixing.

114mm x 50mm EROKO grade 7 timber purlins preservative treated according to SANS 1288/10005 bolt fixed into angle frame welded to roof support with intermediate supports at 2500mm centers.

Detail 0010 scale 1:20

2x 150mm x 90mm x 15 steel angles bolted to 356 x 171 mm I section column to form steel truss bottom cord.

75 x 50 x 15 mm steel angle bolted to top and bottom cord to form truss strut.

76 x 50 x 15 mm steel angle bolted to Gusset plate.

2x 125 x 60 angles as lattice truss bottom cord providing horizontal support.

120 diameter structural steel tubing welded to beam for lateral bracing welding as per SANS 2001-C3.

35mm brick shadow line

Concrete seat and window sill with chamfered edges and drip groove.

170x 80mm mild steel angle fixed to concrete column supporting brick work.

35mm brick shadow line

Majority of the comments are explained in the diagrams and the text is repeated for emphasis.

FIG 6.21_Circultion connection detail

FIG 6.22_Main roof office facade detail

FIG 6.23_Main office facade detail
**Chapter 6: Technical Documentation**

**detail 0011 scale 1:20**

- Mild steel tubular closure piece welded to mild steel glazing support frame fitted with silicone sealant between glazing and mild steel section. Factory fitted with mechanical openable vents.
- PILKINGTON four point structural glazing system.
- Backing rod installed as per supplier's specification with site-applied silicone sealant between glass panel.
- GKD AG4 MEDIAMESH supported by GKD designed mesh fixing to galvanized mild steel frame.
- Poly carbonate roof panel supported between lipped channels.
- Translucent KOP II profiled roof sheeting fixed to purline with approved fasteners at every second crown.
- 150 x 75 mm lipped channel bolt fixed to roof support with mild steel angle cleat welded to beam as per SANS 2001- CS1.
- Purpose made galvanized supporting bracket welded to roof support with mild steel angle cleat welded to beam as per SANS 2001- CS1.

**detail 0012 scale 1:10**

- Translucent KOP II profiled roof sheeting fixed to purline with approved fasteners at every second crown.
- 150 x 75 mm lipped channel bolt fixed to roof support with mild steel angle cleat welded to beam as per SANS 2001- CS1.
- Purpose made Aluminium frame fitted between mild steel fixing bracket as glazing end support.
- Purpose made galvanized supporting bracket welded to mild steel supporting frame.
- GKD AG4 MEDIAMESH supported by GKD designed mesh fixing to galvanized mild steel frame.
- Backing rod installed as per supplier's specification with site-applied silicone sealant between glass panel.

**FIG 6.23 Resource library GKD Mesh detail**

**FIG 6.24 Resource library facade and gutter detail**
Roof 5 area Resource and theatre roof: 

140mm²/1m² required by building regulations

Total Gutter required for roof 5:

479m² x 140 = 67060 mm²

Current gutter area: 78128.8 mm²

Gutter is adequately sized

Purpose made box gutter supported over lipped 150 x 75 mm lipped channels bolt fixed to roof support with mild steel angle cleat welded to beam as per SANS 2001 - CS1

Translucent ACP 8 profiled roof sheeting fixed to purlins with approved fasteners at every second crown.

Poly carbonate roof panel supported between lipped channels

Beam size:

Max span 5000mm/slenderness ratio of 20:

5000/20 = 250mm galvanized steel I-Beam

Purpose made galvanized supporting bracket welded to mild steel supporting frame

Purpose made Aluminium frame fitted between mild steel fixing bracket as glazing end support

Backing rod installed as per suppliers spec with site applied silicon sealant between glass panel.

FIG 6.35 Resource library shutter and glazing interface
Beamsize: Max span 5000mm/slenderness ratio of 205000/20 = 250mm galvanized steel I-BEAM

Poly carbonate roof panel supported between lipped channels

Aluminium window frame to comply with SANS 1651. Apply a single coat of Bituminous paint between frame and beam.

Translucent RCP 8 profiled roof sheeting fixed to purlins with approved fasteners at every second crown.

150 x 75 mm lipped channels bolt fixed to roof support with mild steel angle cleat welded to beam as per SANS 2001 - CS1

Built in timber workstation counter

Timber flooring fixed to 50mm x 50mm battens spaced at 500mm centers fixed to concrete floor coated with acoustic insulation between battens spaces

255mm eng approved reinforced concrete floor slab

550 x 550 mm reinforced concrete base 900mm from finished floor level

8 x holding down balls set in resin anchor grout in concrete base bolted to steel base plate

356 x 171 x 51mm Galvanized steel column welded onto 450 x 450 x 20mm base plate

250mm eng approved reinforced concrete slab

Column reinforcing