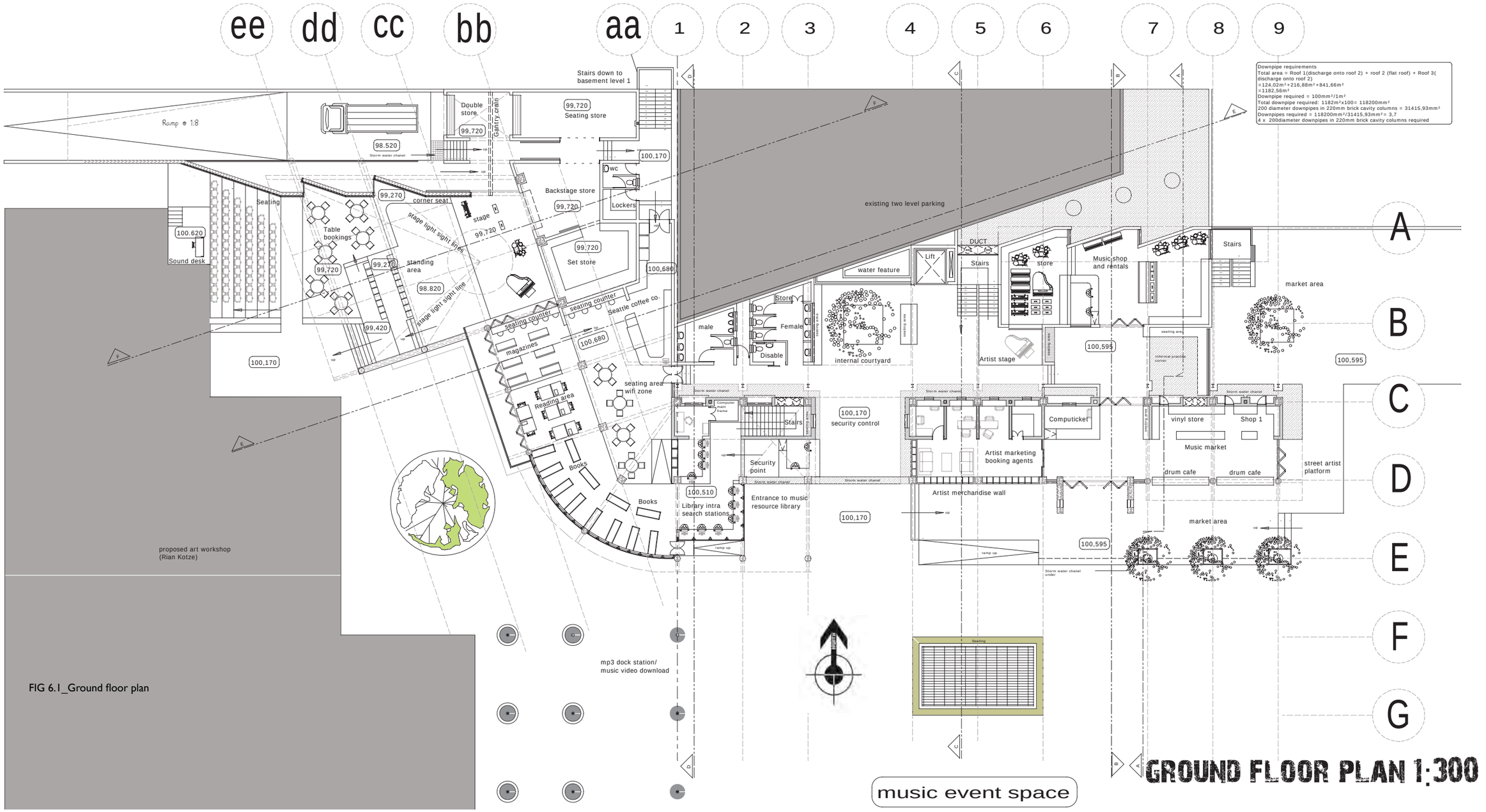
Chapter 6



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: 1182m²x100= 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415,93mm²
Downpipes required = 118200mm²/31415,93mm²= 3,7
4 x 200diameter downpipes in 220mm brick cavity columns required

FIG 6.1_Ground floor plan

GROUND FLOOR PLAN 1:300

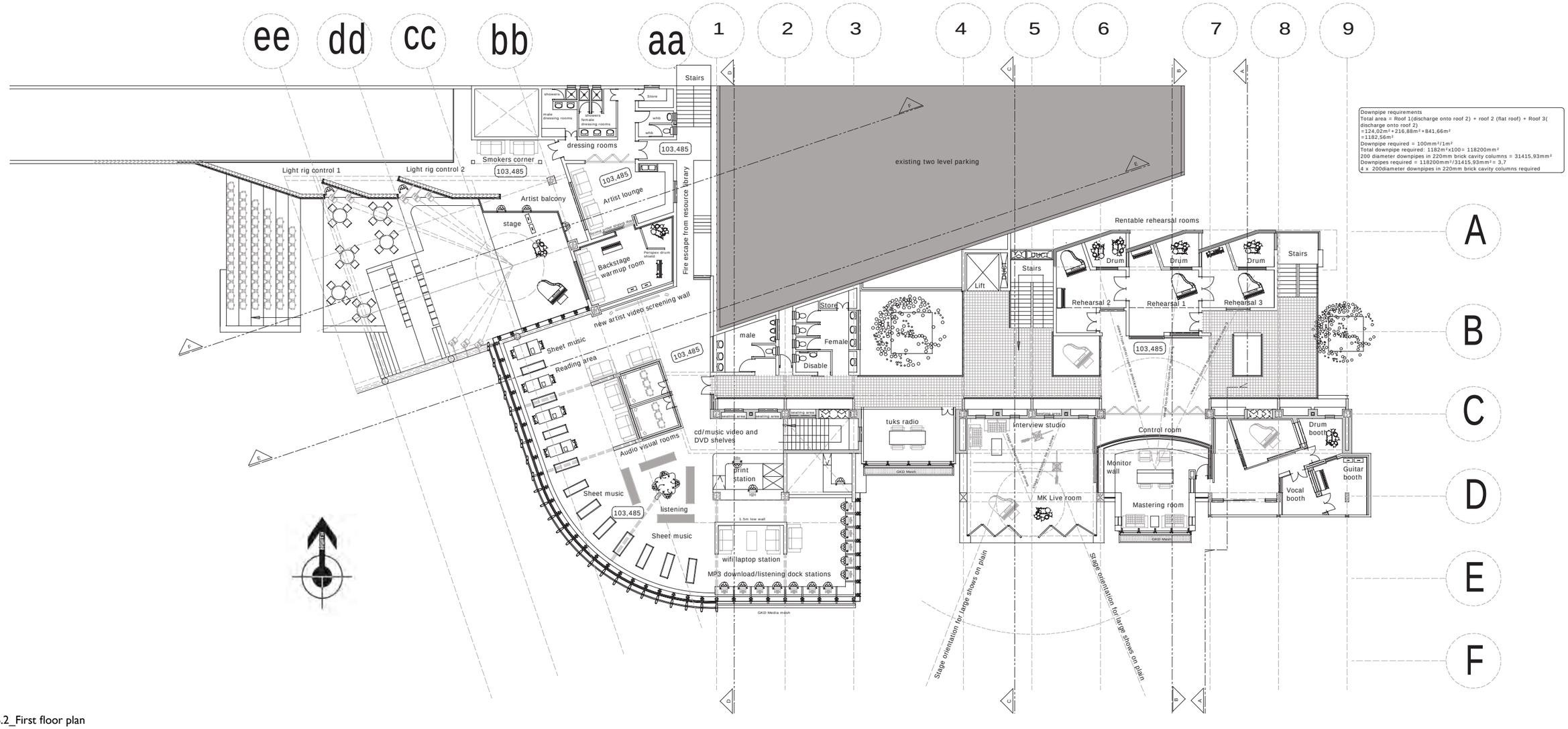
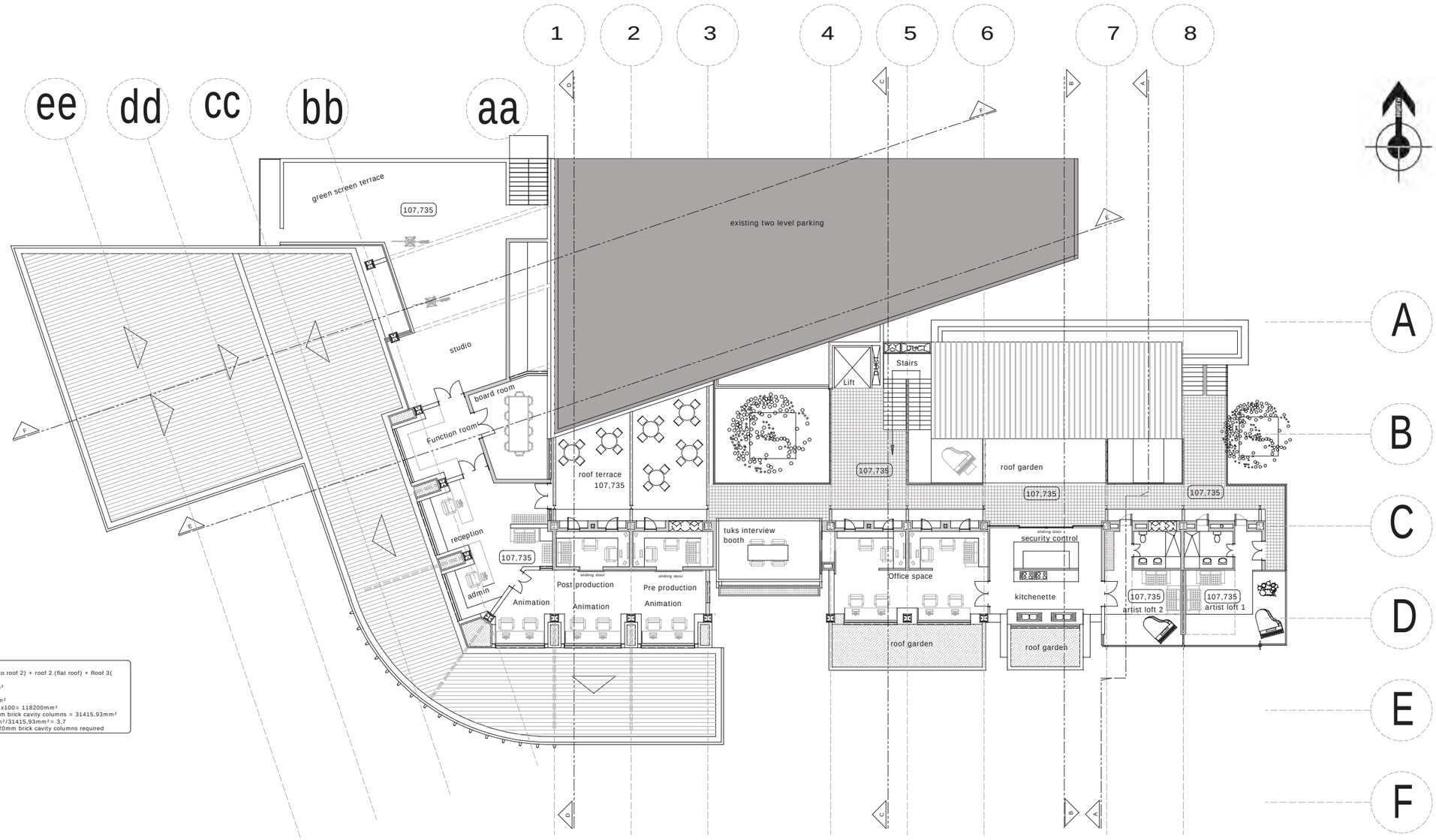


FIG 6.2_First floor plan

FIRST FLOOR PLAN 1:300



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 x100= 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415,93mm²
Downpipes required = 118200mm²/31415,93mm²= 3,7
4 x 200diameter downpipes in 220mm brick cavity columns required

FIG 6.3_Second floor plan

SECOND FLOOR PLAN 1:300

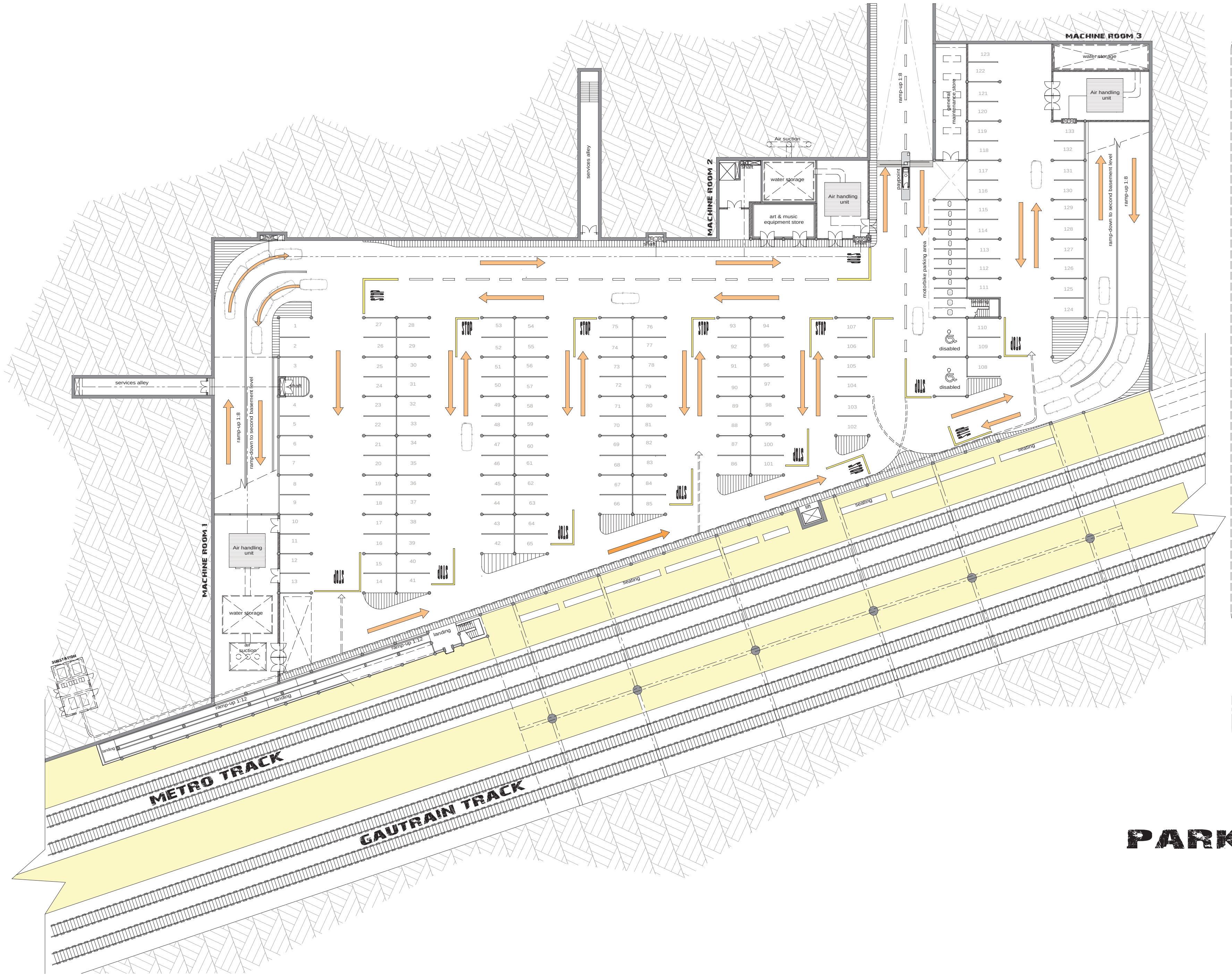


FIG 6.4_Basement parking layout plan

WATER CALCULATIONS

Water catchment

- ☐Highest monthly rainfall in December = 14mm~0.014m²
- ☐Total roof area= 13487m²
- ☐Volume water = 0.014x13487=188,818m³
- ☐Thus - 188,818L
- ☐Max. catchment storage tank required=6m x 32m x1m = 192m³ ~ 192 000L

Downpipe requiremnet

- ☐Roof area = 13487m²
- ☐100mm² downpipe / 1m²
- ☐Total downpipe required = 13487 x 100 = 1 348 700mm²
- ☐Downpipes used in columns = 80?mm / One 80?mm = 5024mm²
- ☐If all water collected with downpipes in columns,
  270 downpipes are needed
- ☐90 Columns available for cast-in-situ downpipes
- ☐Thus 90 x 5024 = 452160mm² -
- ☐Total downpipe area required- (90 x 80 ?mm downpipes) = 896540mm² required
- ☐Strategy : Catchment channel at centre of plane with 200?mm downpipes
- ☐29 Downpipes required over 100m
- ☐Total downpipe area = Channel + columns
  = 452160mm² + 910600mm²
  = 1362760mm² > 1348700mm²
  = O.K

6m x 32m x 1m Tank = 192 000 L

3 x (6m x 6m x 2m) Tank in each plantroom

PARKING

Basement level 1: 133 parking bays of which 2 is disabled parking
12 motorbike parking bays
Basement level 2 : 125 parking bays of which 2 disabled parking

Total parking bays = 270 bays of which 4 is disabled and 12 motorbike parking

PARKING LAYOUT

scale 1 :400

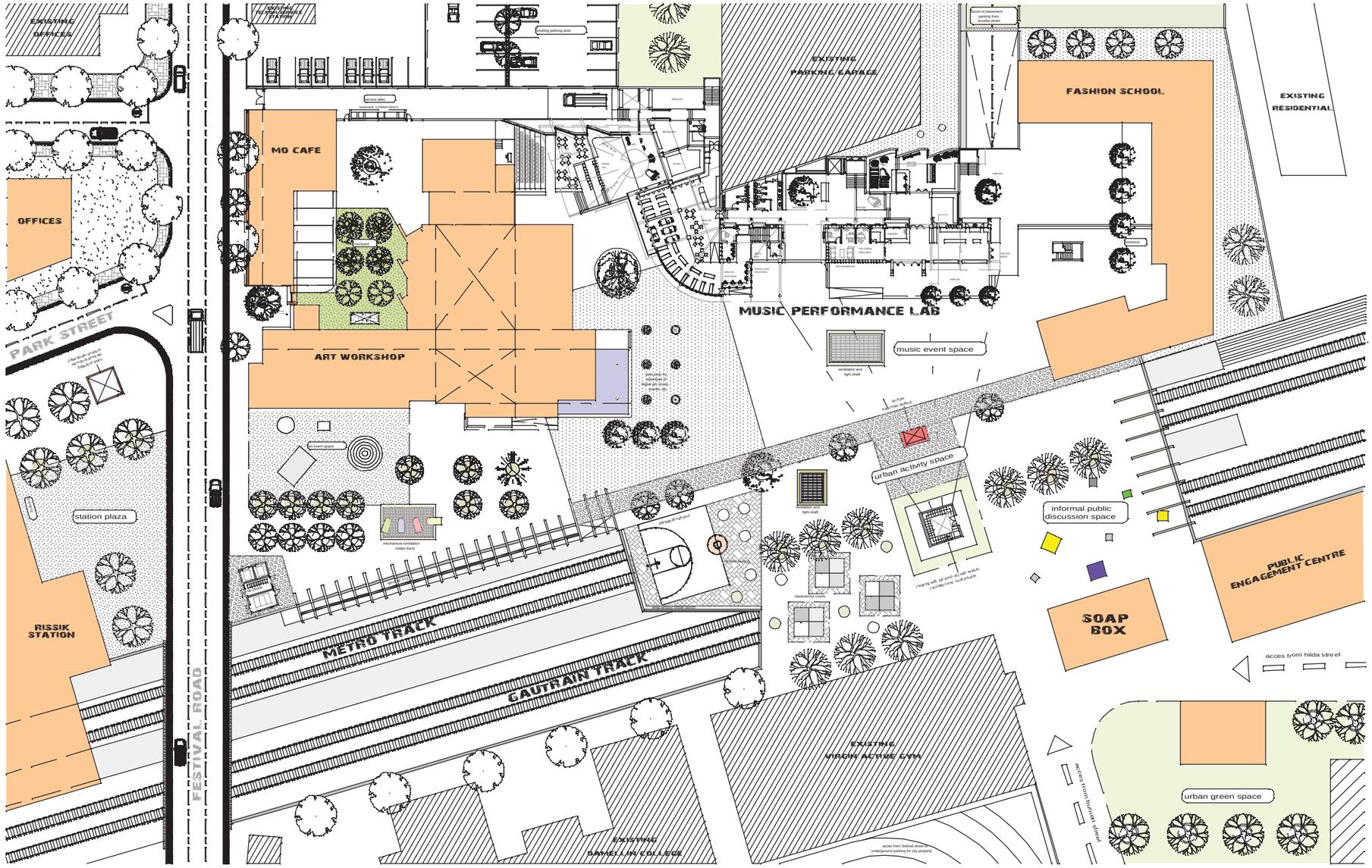
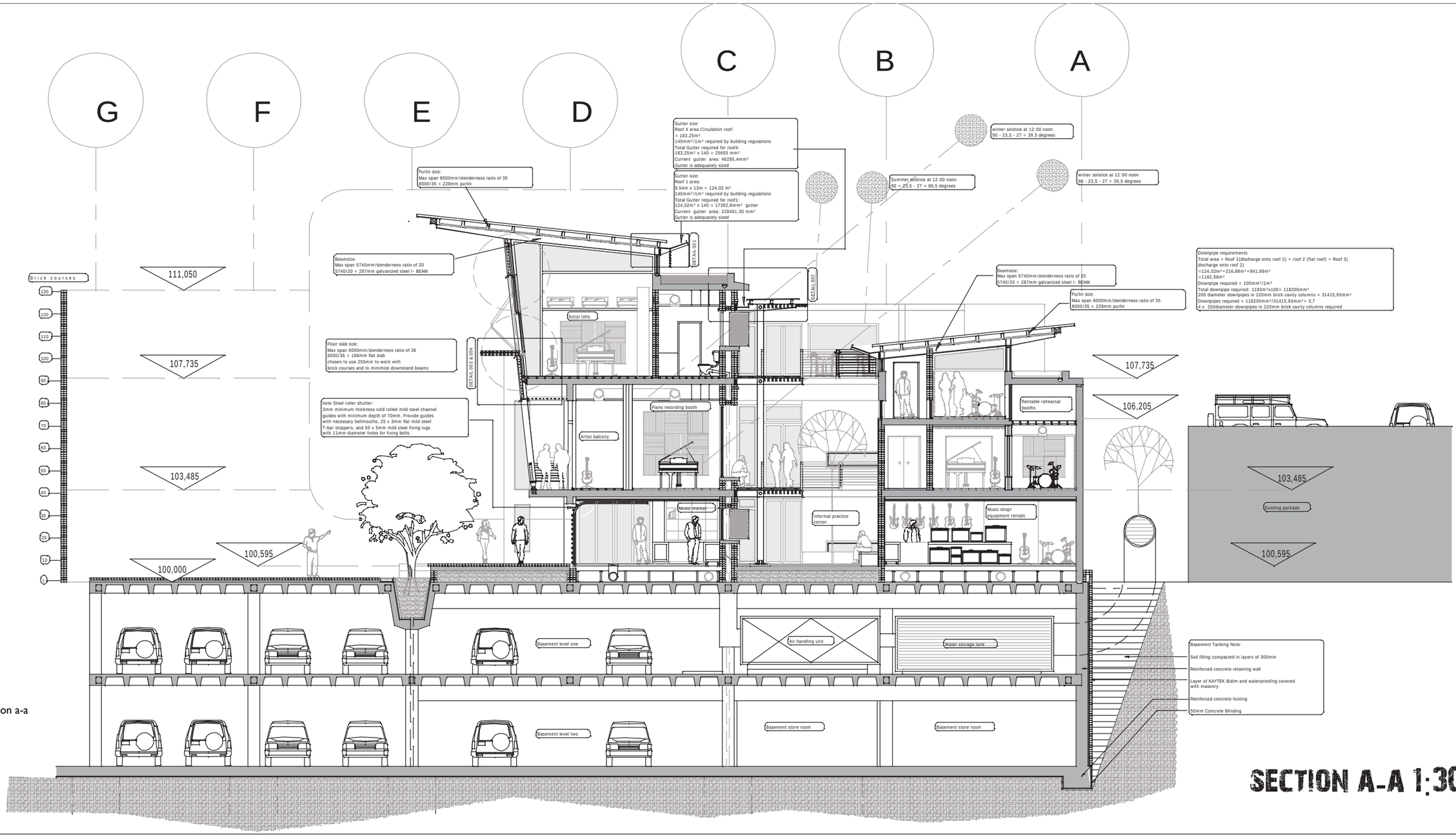


FIG 6.5_Site plan

SITE PLAN 1:800



SECTION A-A 1:300

FIG 6.6_Section a-a

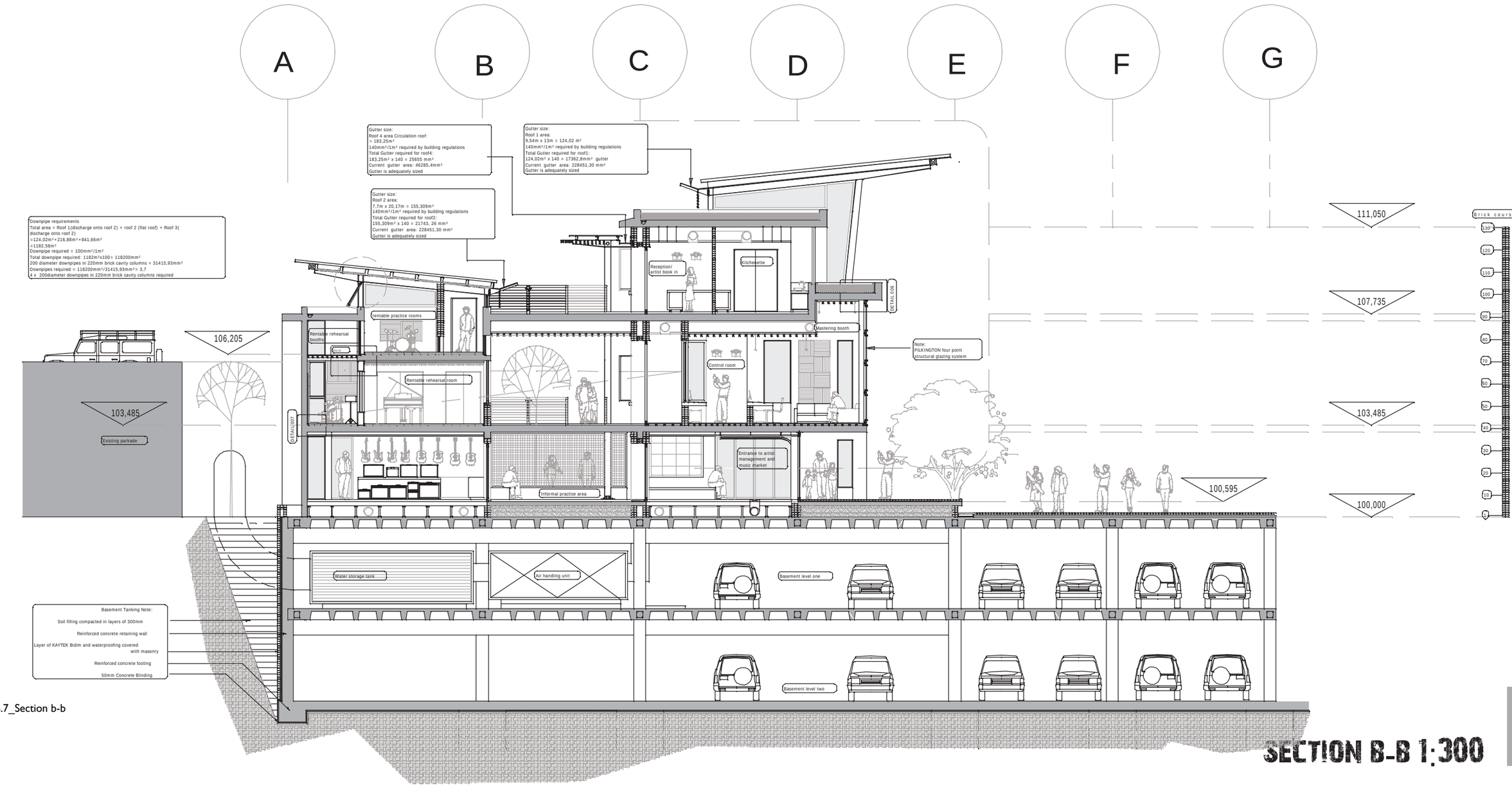


FIG 6.7_Section b-b

SECTION B-B 1:300

I H G F E D C B A

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: 1182m²x100= 118200mm²
200 diameter downpipes in 220mm brick cavity columns = 31415,93mm²
Downpipes required = 118200mm²/31415,93mm²= 3,7
4 x 200diameter downpipes in 220mm brick cavity columns required

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 roof3:
841,66m² x 140 = 117832,4 mm²
Current gutter area: 229243,88mm²
Gutter is adequately sized

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

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

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

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

DETAIL 008

DETAIL 009

office space

office space

Roof terrace

Mk live stage

Mk life tv studio

Note:
PILKINGTON four point structural glazing system

Note:
NuKLIP FLUSH GLAZING system

Artist marketing/ booking agents

Existing parkade

Main starcase

Note:
Ventilation shaft and seating area with view onto MK Live stage. Mentis grid supported by 350mm castelated beam.

Brick courses
130 120 110 100 90 80 70 60 50 40 30 20 10 1

111,050
107,735
103,485
100,510
100,000

Basement level one

Basement level two

Equipment store room

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

SECTION C-C 1:300

FIG 6.8_Section c-c

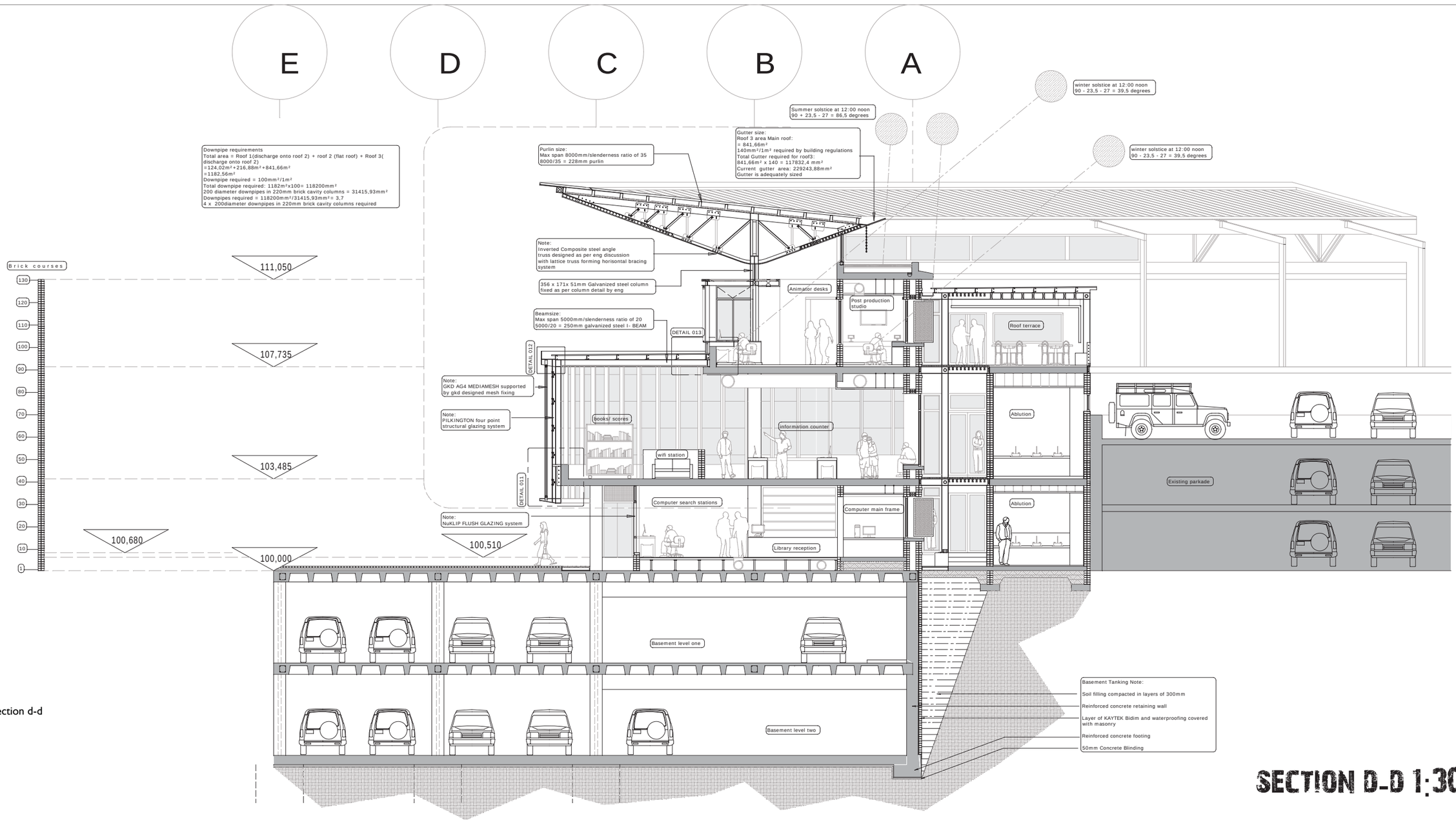


FIG 6.9_Section d-d

SECTION D-D 1:300

ee dd cc bb aa

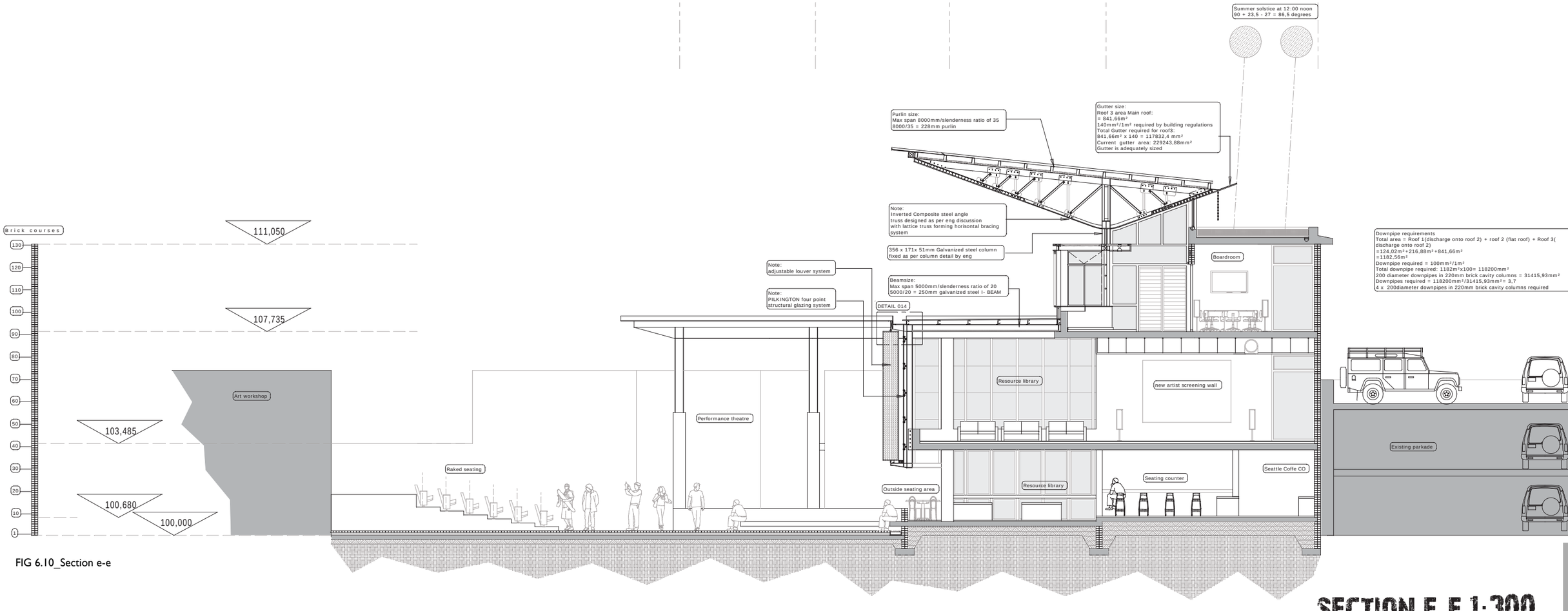


FIG 6.10_Section e-e

SECTION E-E 1:300

ee dd cc bb aa

Sight line diagram 1:50

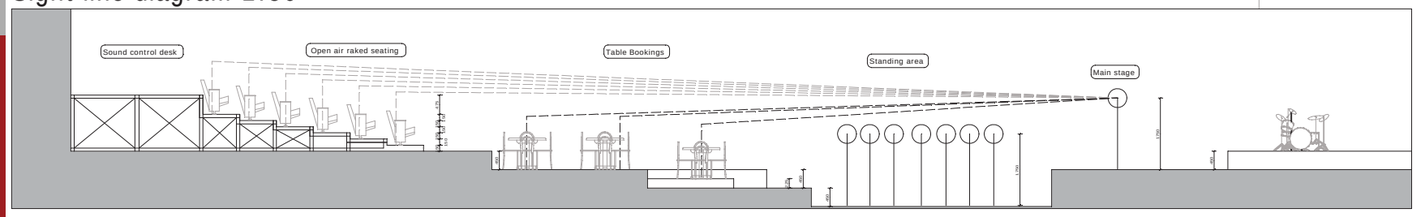
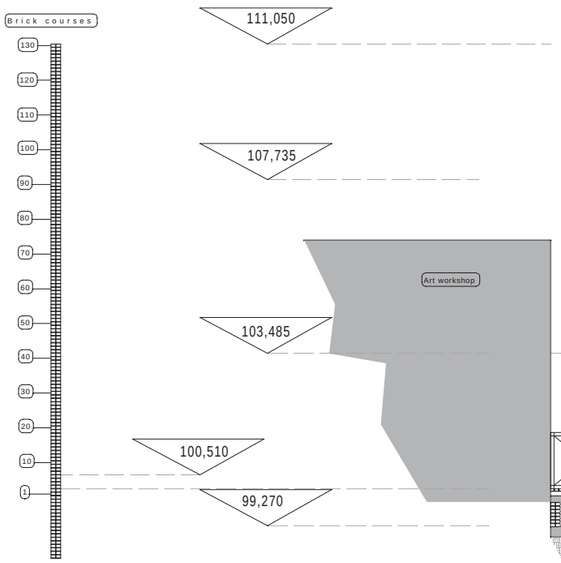


FIG 6.11_Sight line diagram



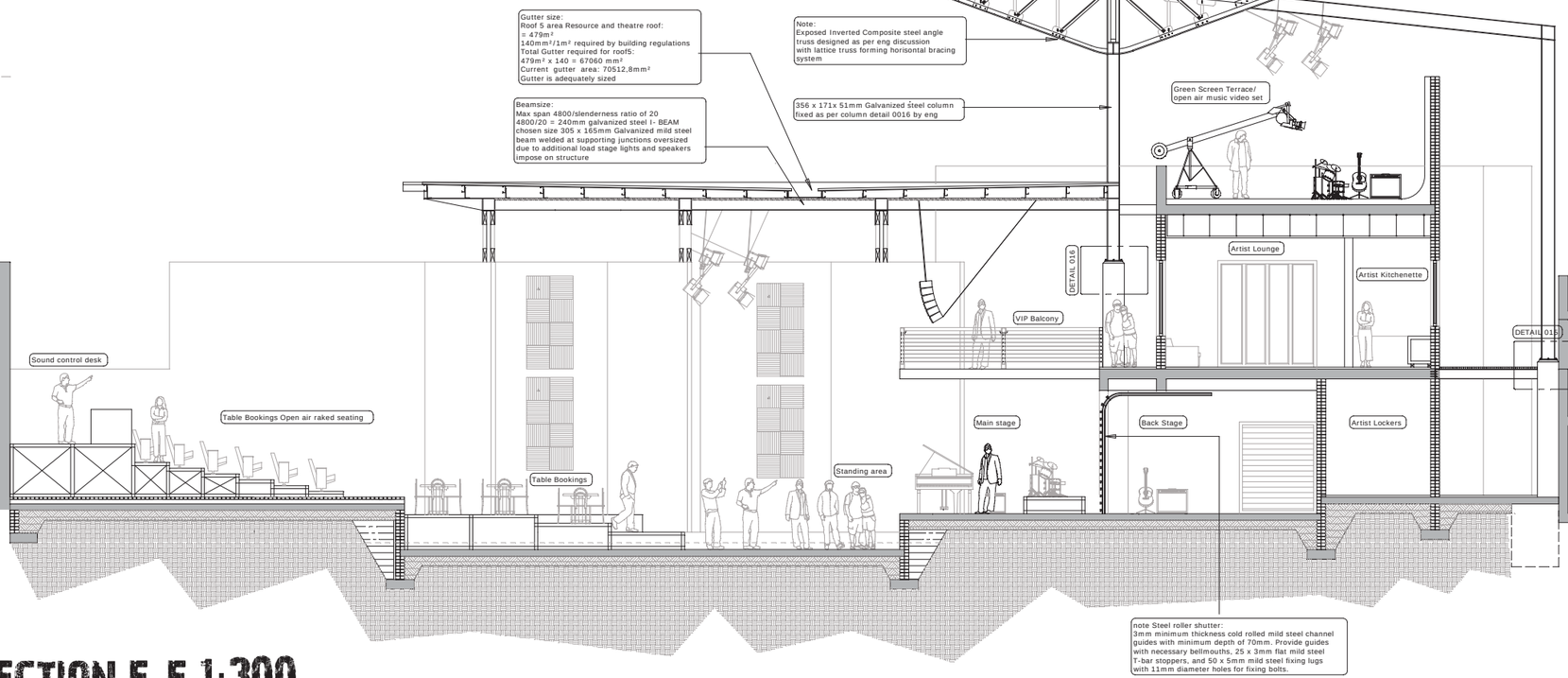


FIG 6.12_Section f-f

SECTION F-F 1:300

detail 001 scale 1 : 10

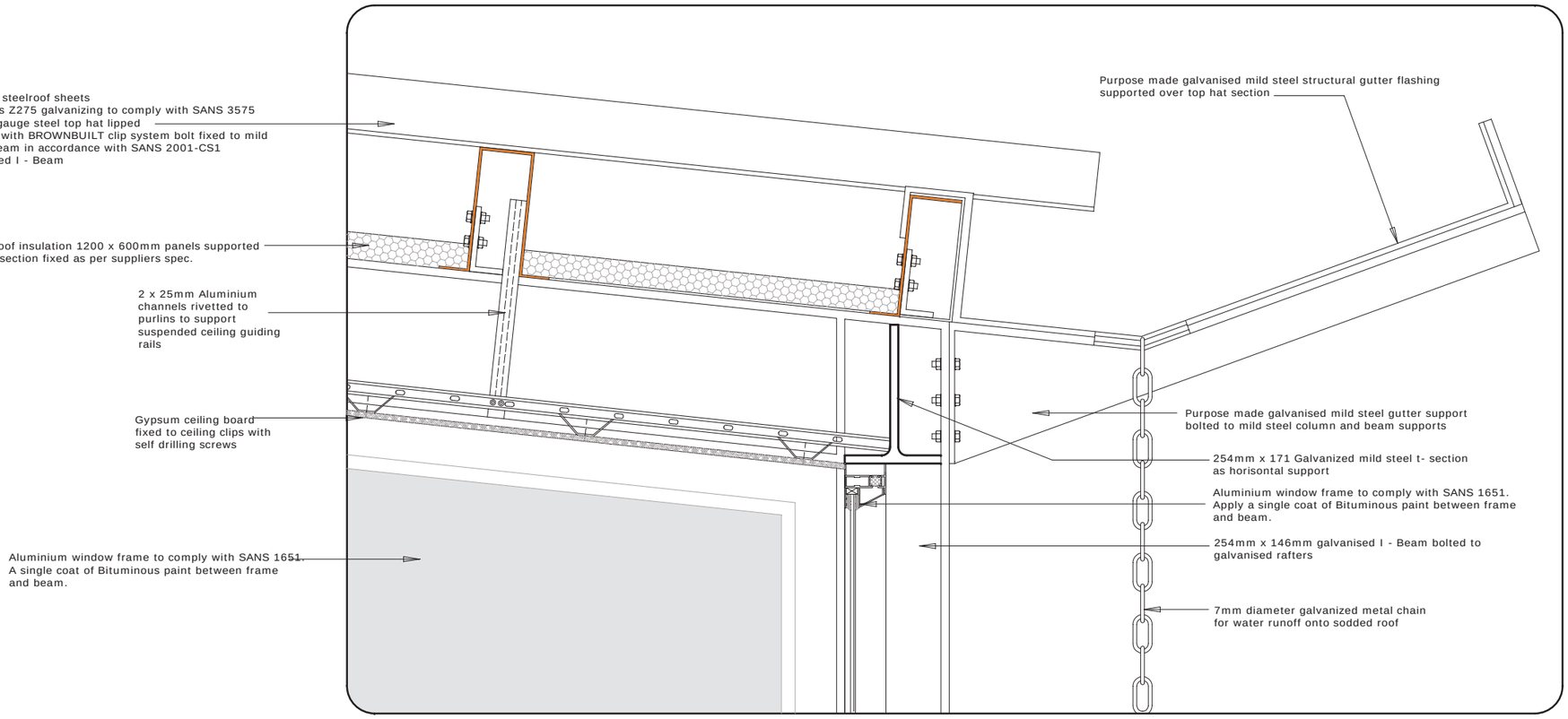


FIG 6.13_Roof detail

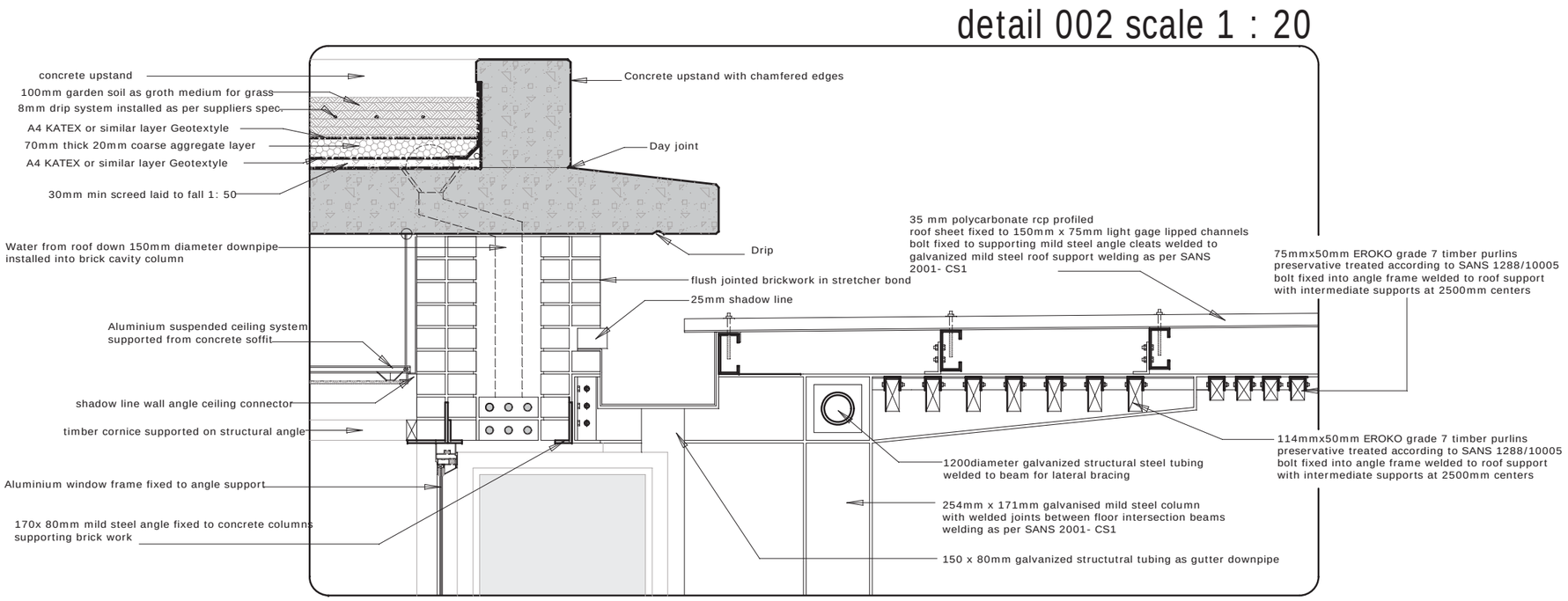


FIG 6.14_Flat Roof and circulation detail

detail 004 scale 1 : 10

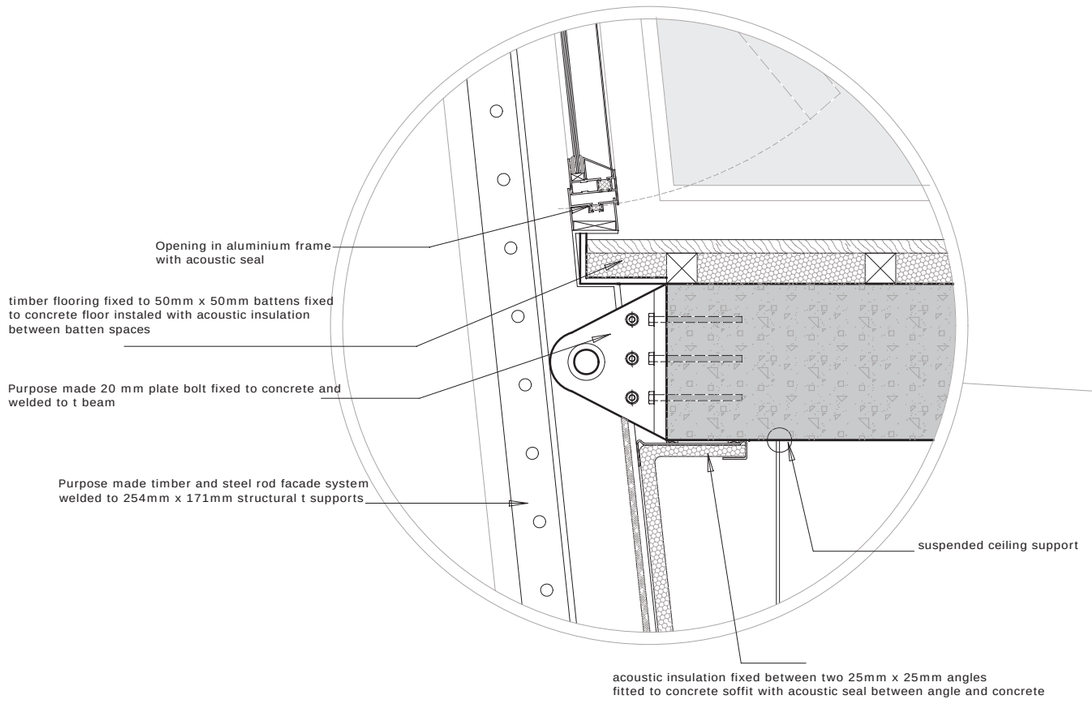


FIG 6.15_Foor slab and facade junction

detail 003 scale 1 : 20

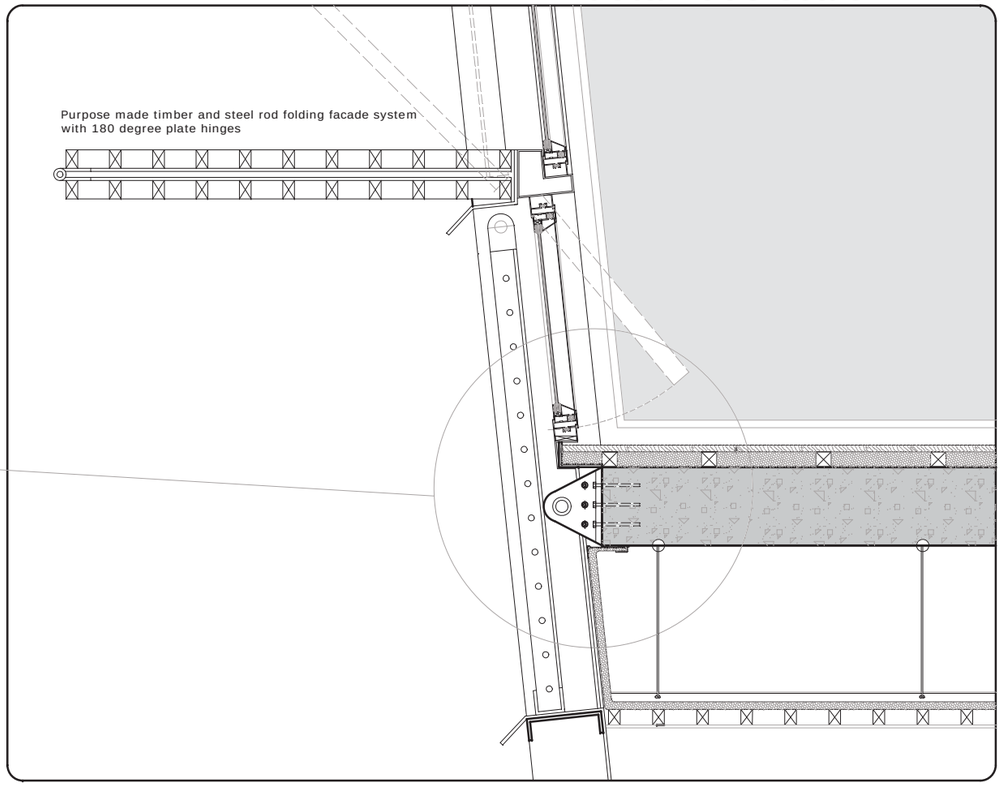


FIG 6.16_Foor slab and facade junction location drawing

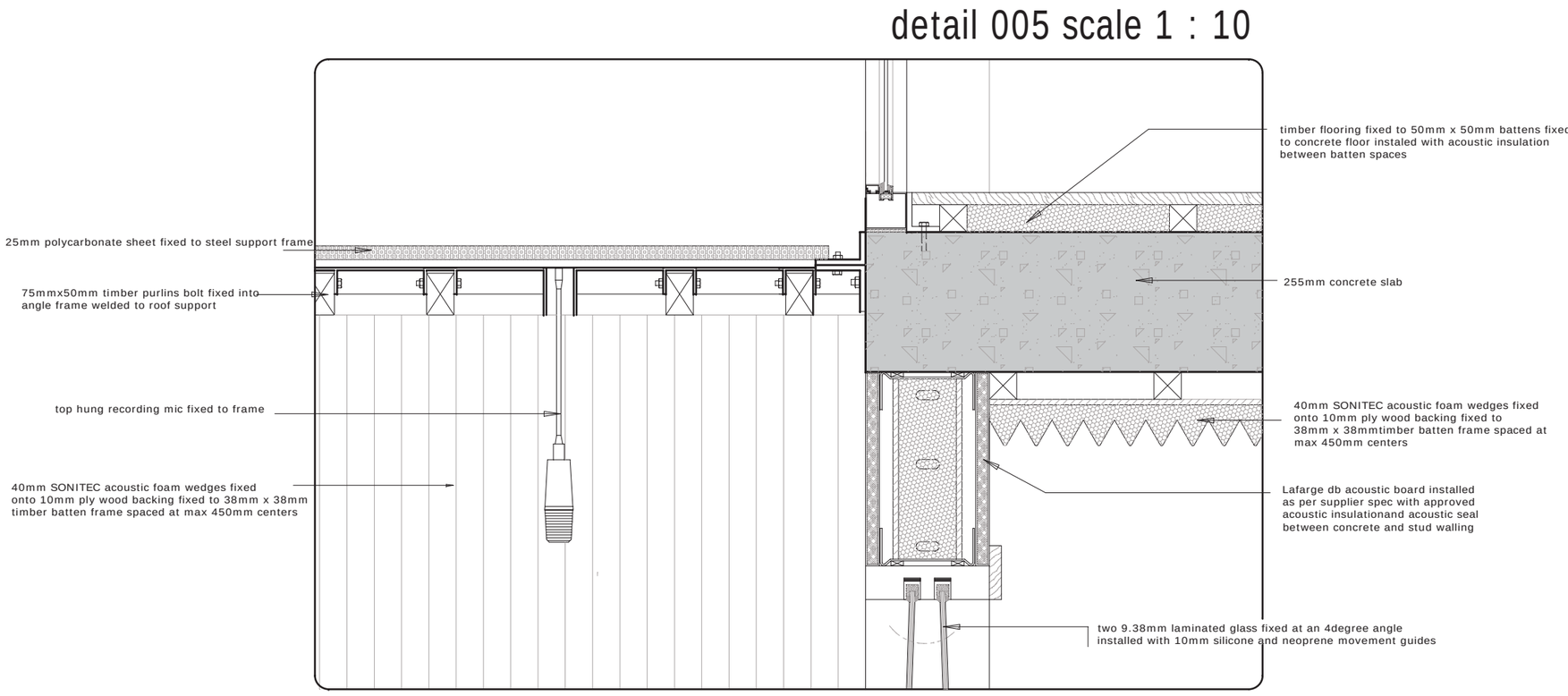


FIG 6.17_Drum booth acoustic detail

detail 006 scale 1 : 10

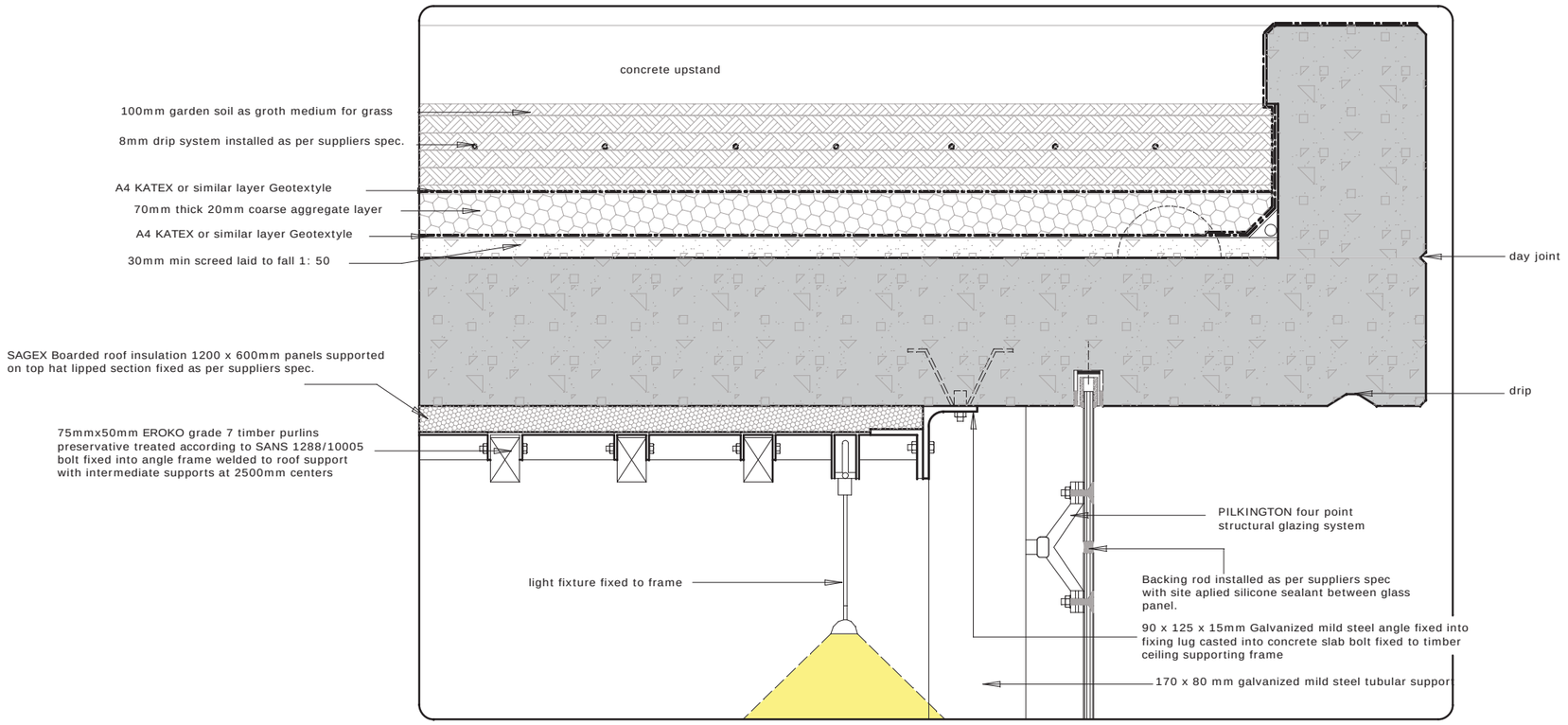


FIG 6.18_Sodded roof detail

detail 007 scale 1 : 15

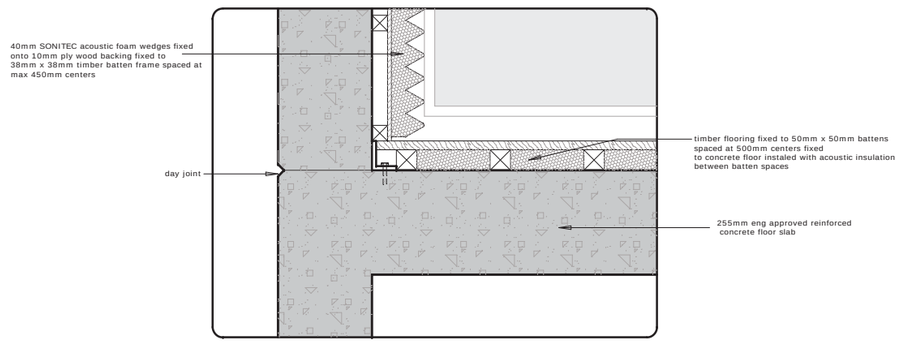


FIG 6.19_Drum booth acoustic floor and wall junction

detail 008 scale 1 : 10

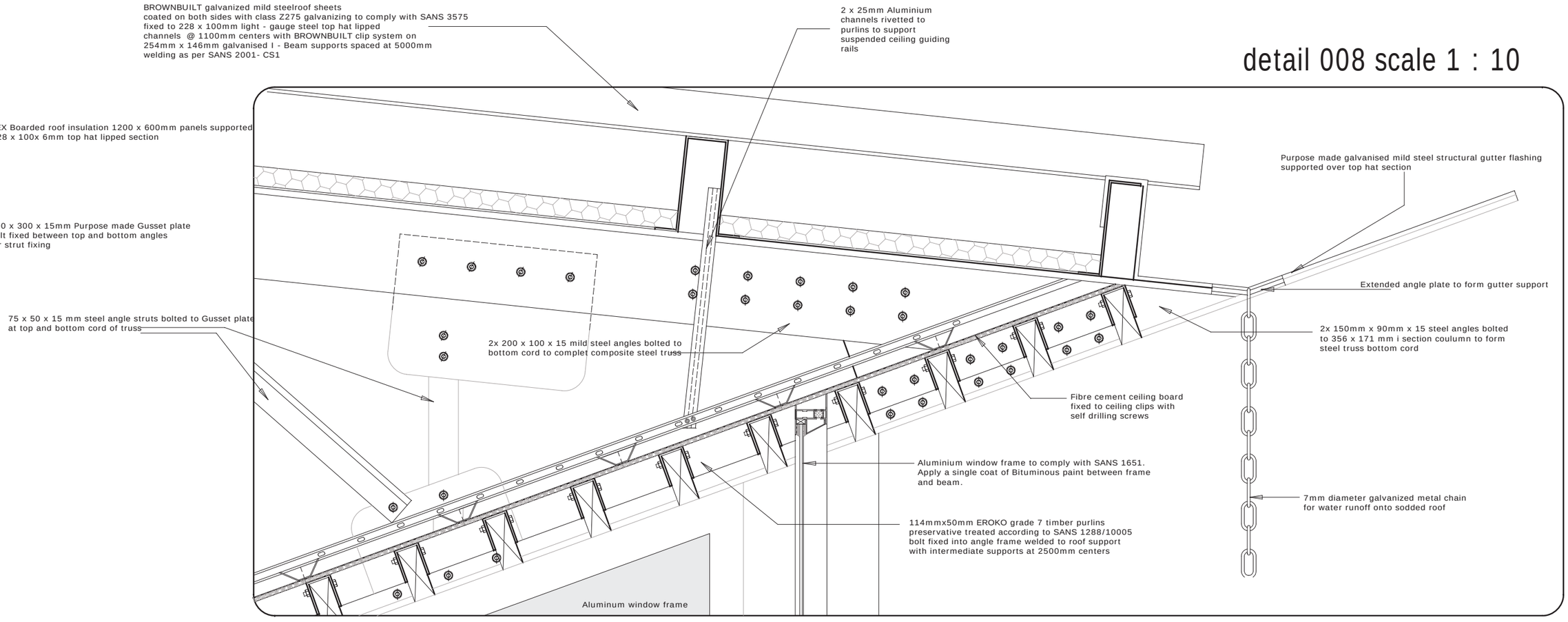


FIG 6.20_Main roof suspended timber roof underside detail

detail 0010 scale 1 : 20

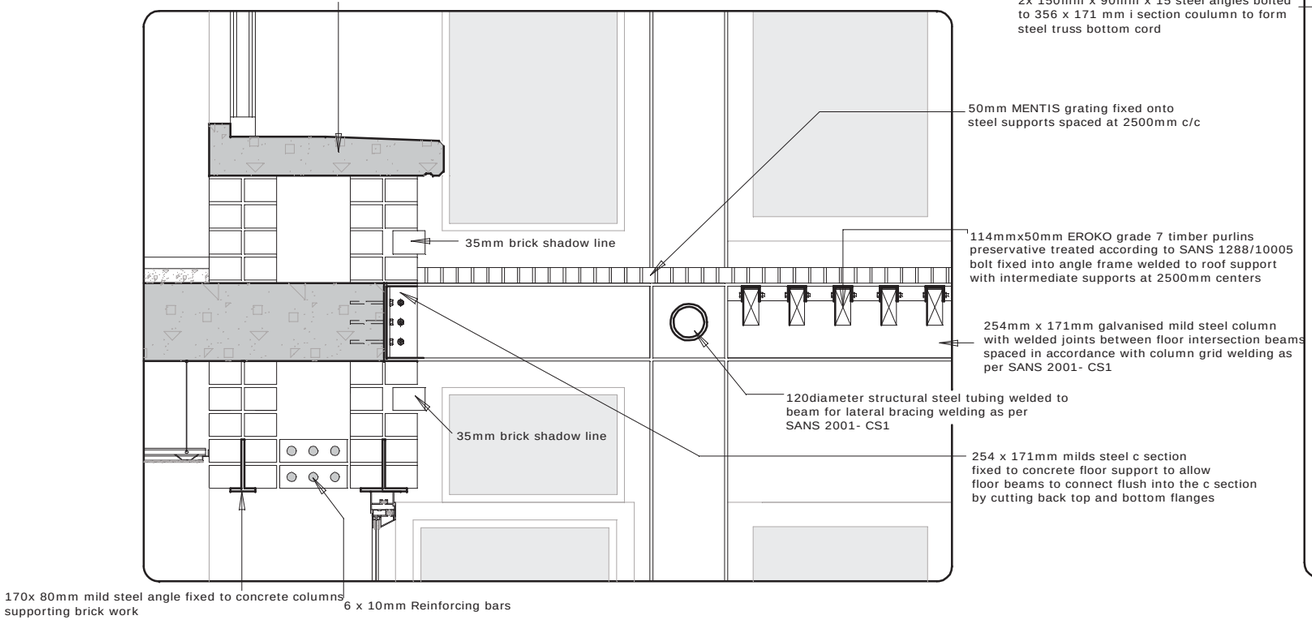


FIG 6.21_Circultion connection detail

detail 009 scale 1 : 20

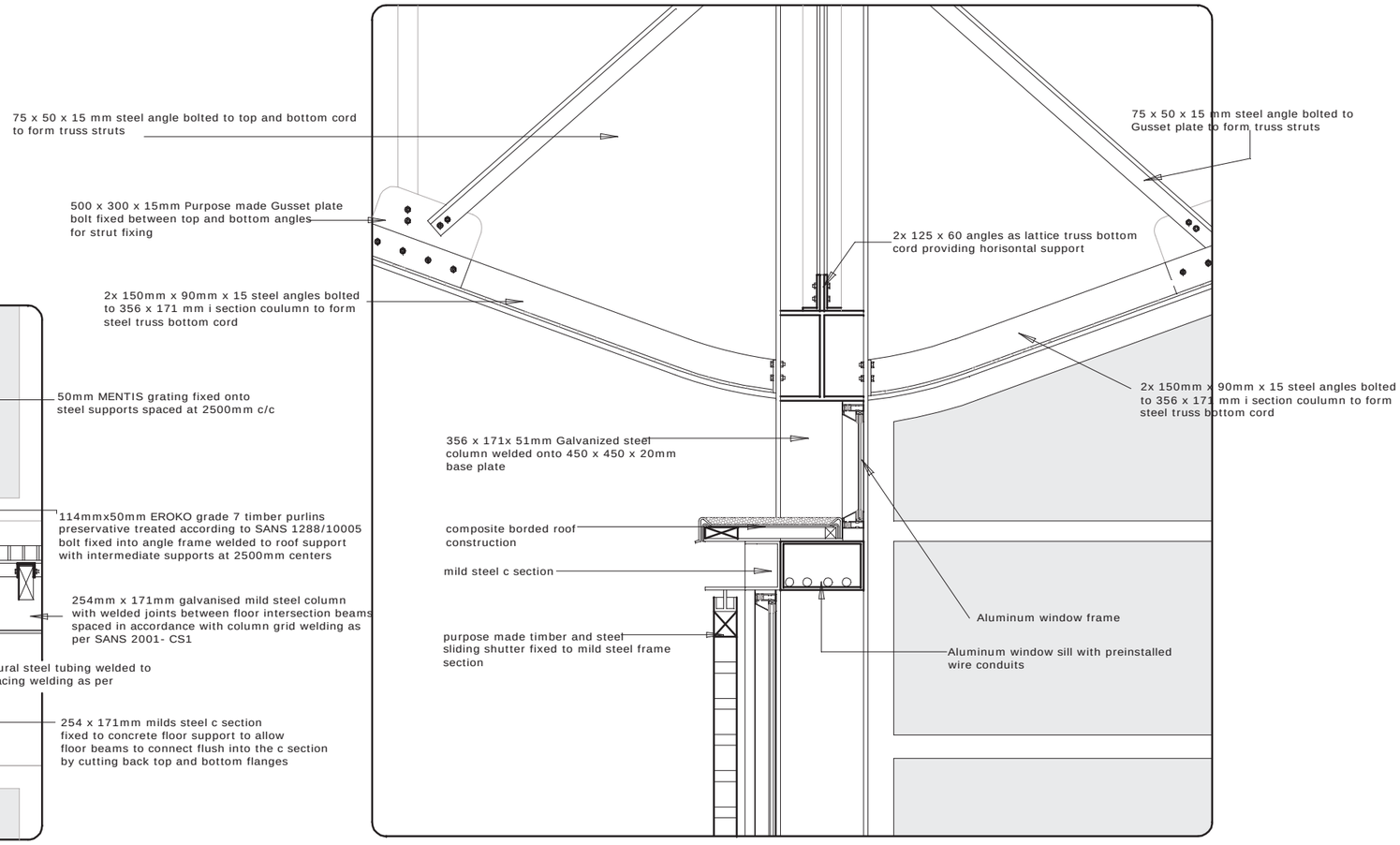


FIG 6.22_Main roof office facade detail

detail 0011 scale 1 : 20

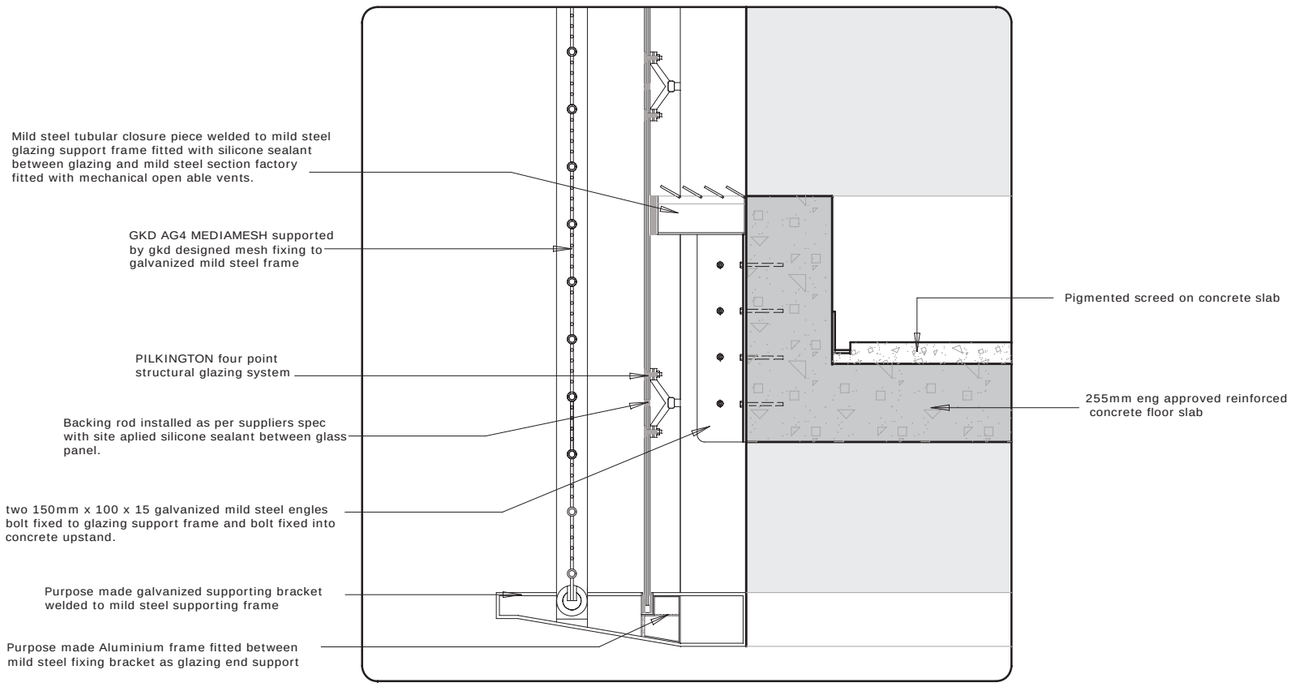


FIG 6.23_Resource library GKD Mesh detail

detail 0012 scale 1 : 10

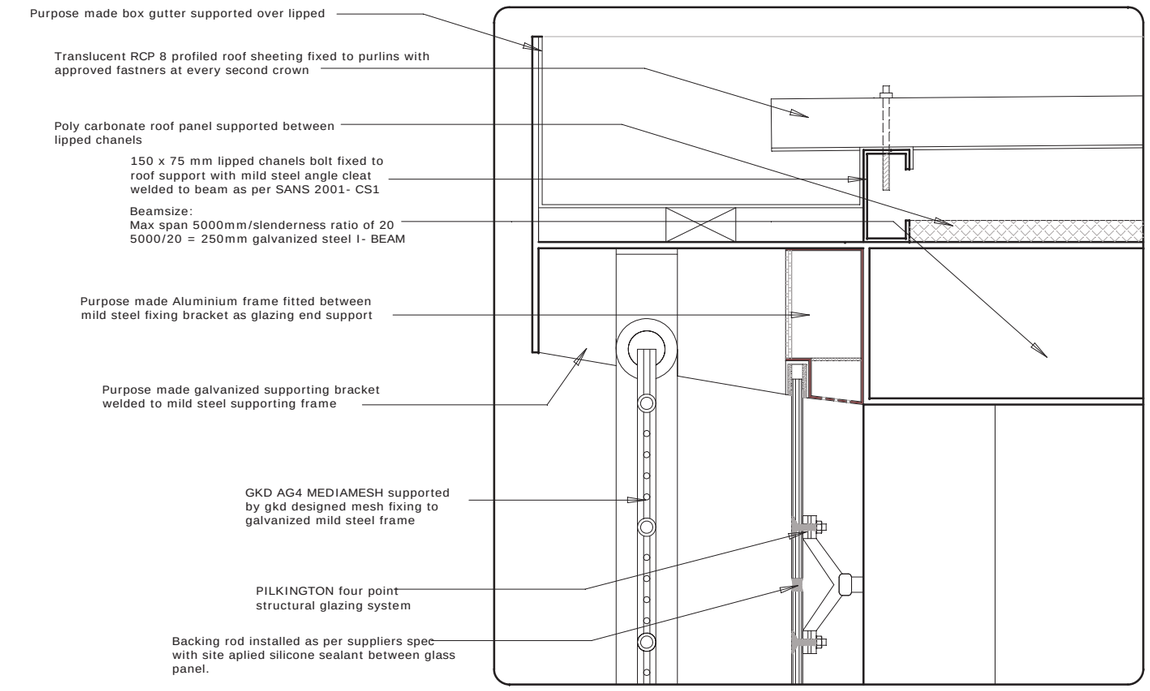


FIG 6.24_Resource library facade and gutter detail

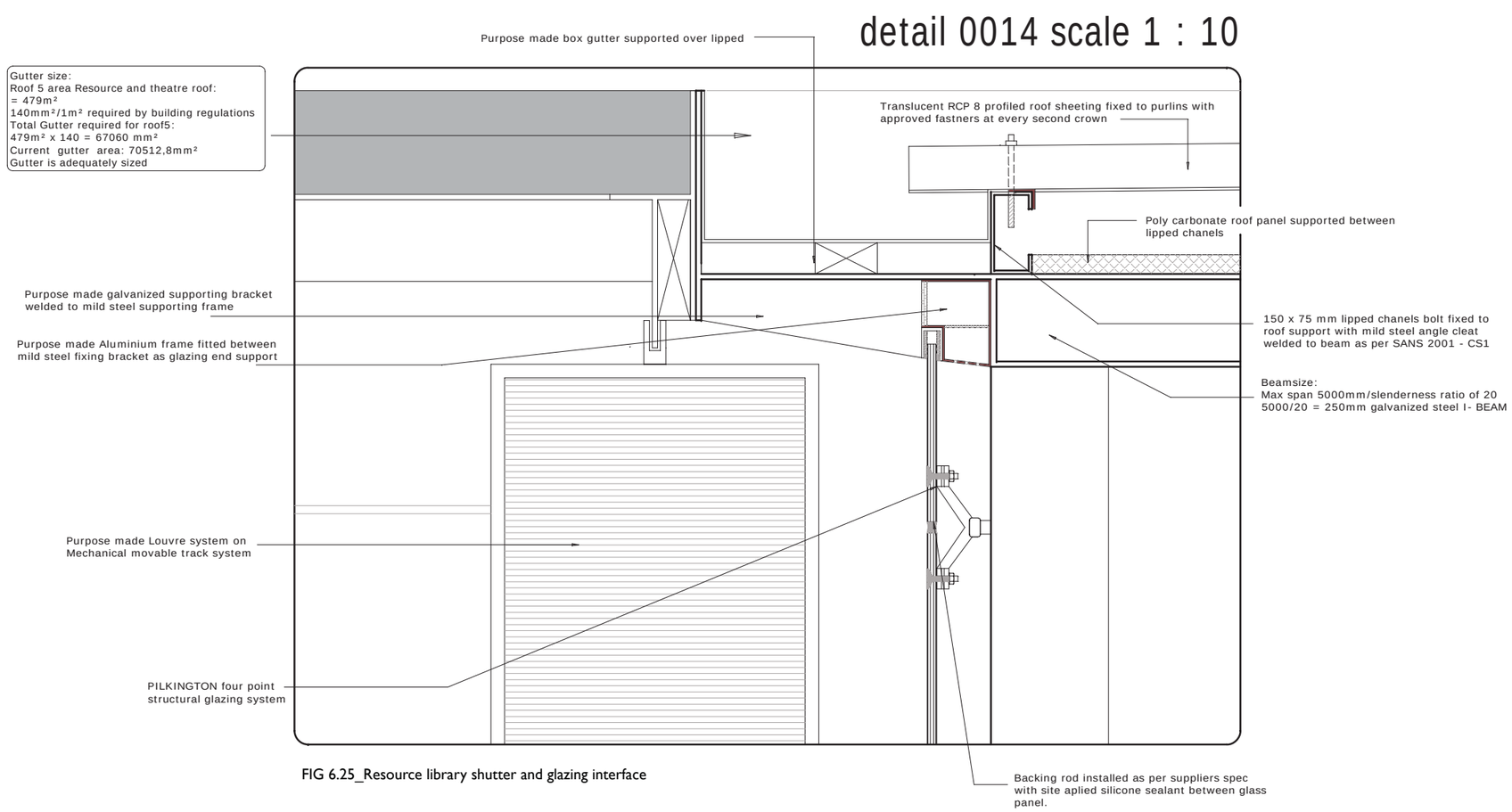


FIG 6.25_Resource library shutter and glazing interface

detail 0015 scale 1 : 20

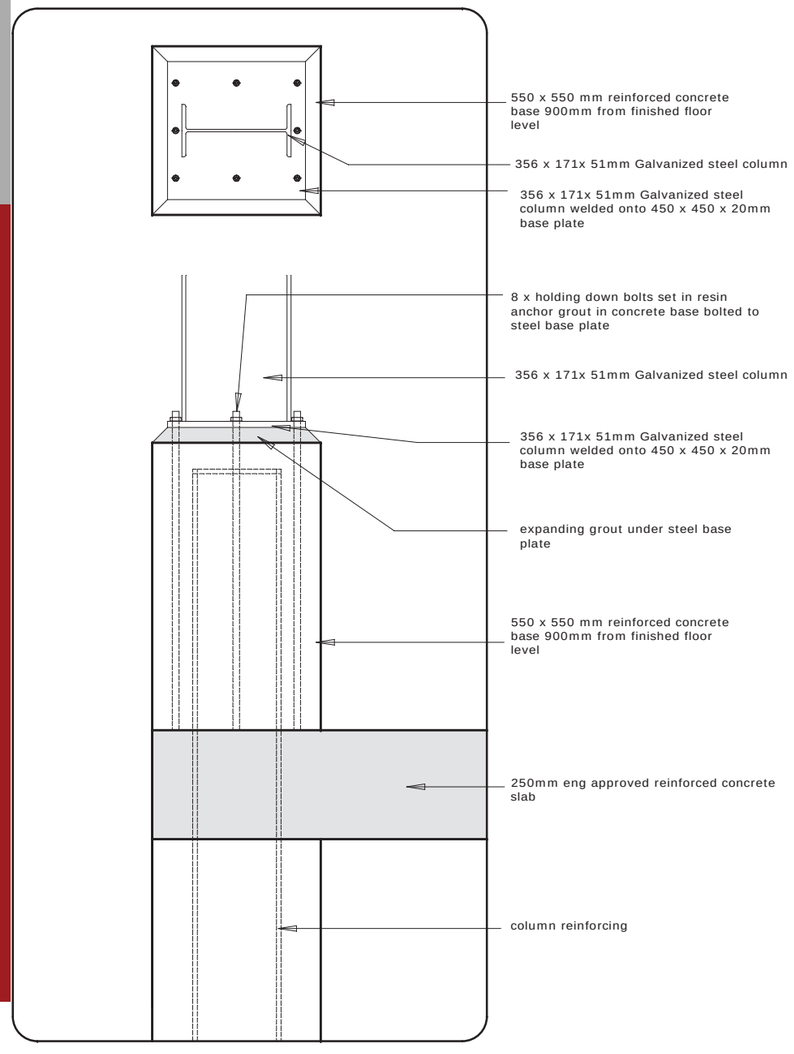


FIG 6.26_Roof support column detail

detail 0013 scale 1 : 20

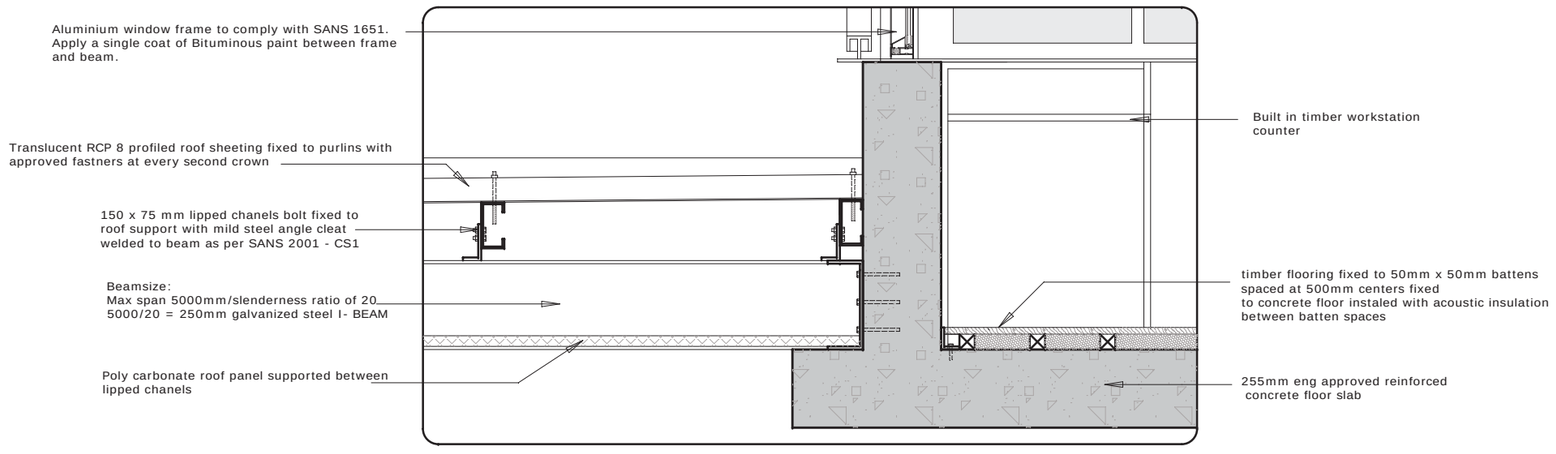


FIG 6.27_Resource library Polycarbonate roof support detail