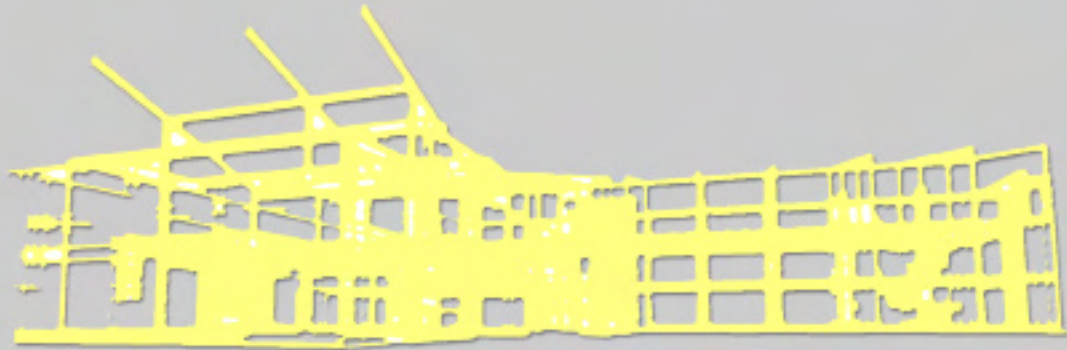


five



TECHNICAL

i n v e s t i g a t i o n

Technical Development

s e c t i o n
t e c h n i - s p a t i a l

Systems

m e c h a n i c a l
s t r u c t u r a l

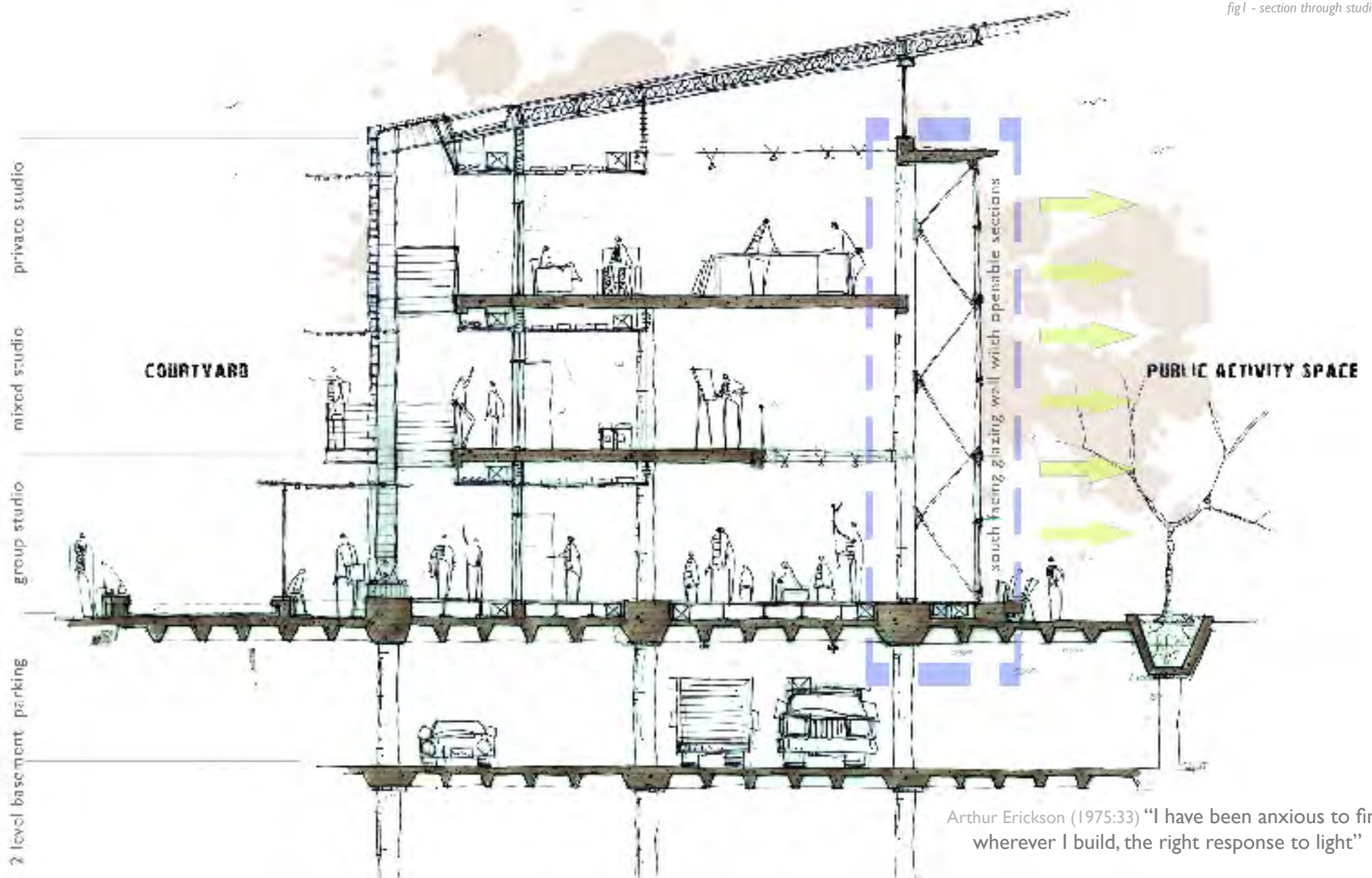
Technical documentation

s i t e
p a r k i n g
p l a n
s e c t i o n
d e t a i l

circulation

studios

fig1 - section through studios



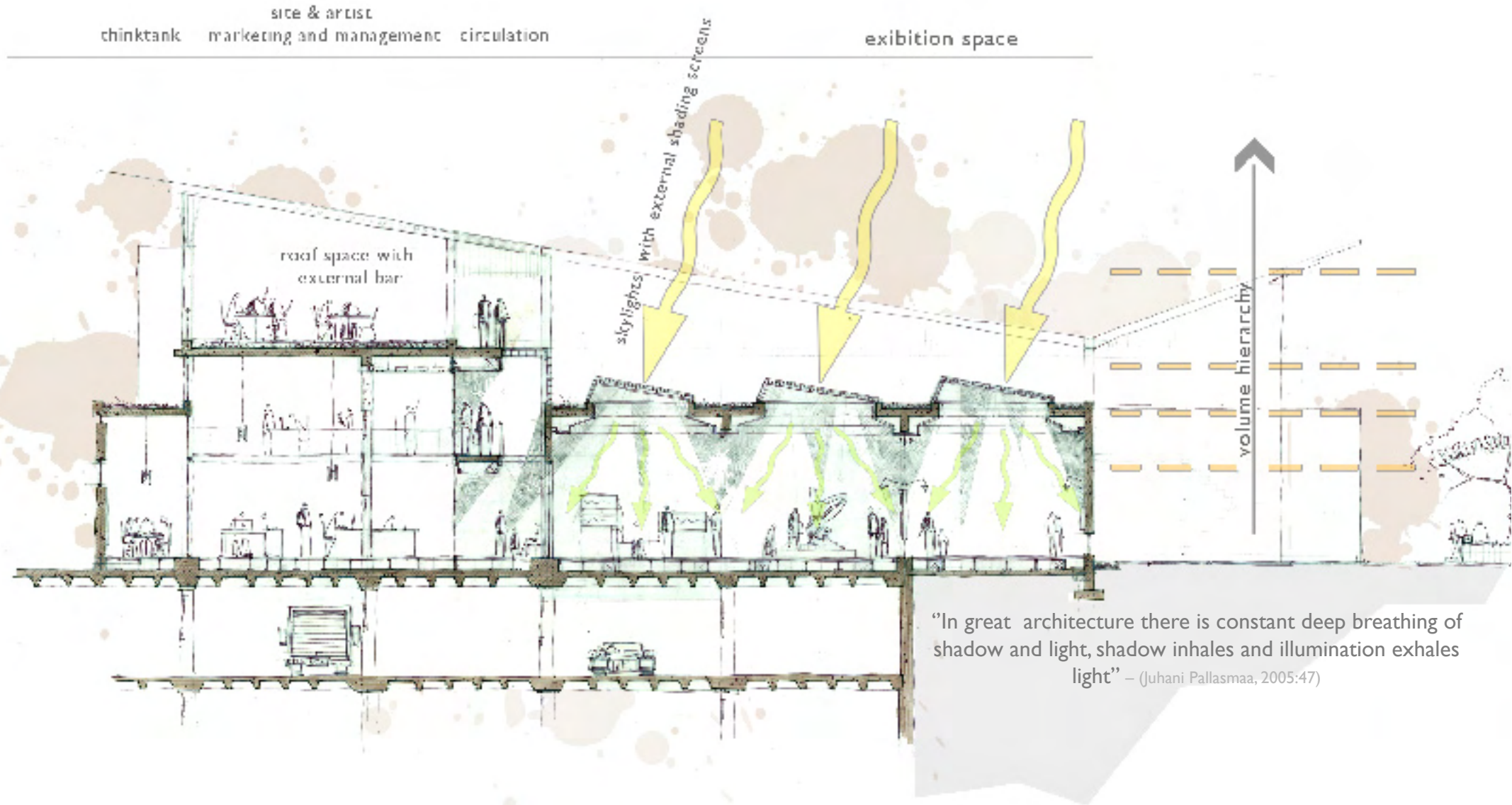
Arthur Erickson (1975:33) "I have been anxious to find, wherever I build, the right response to light"

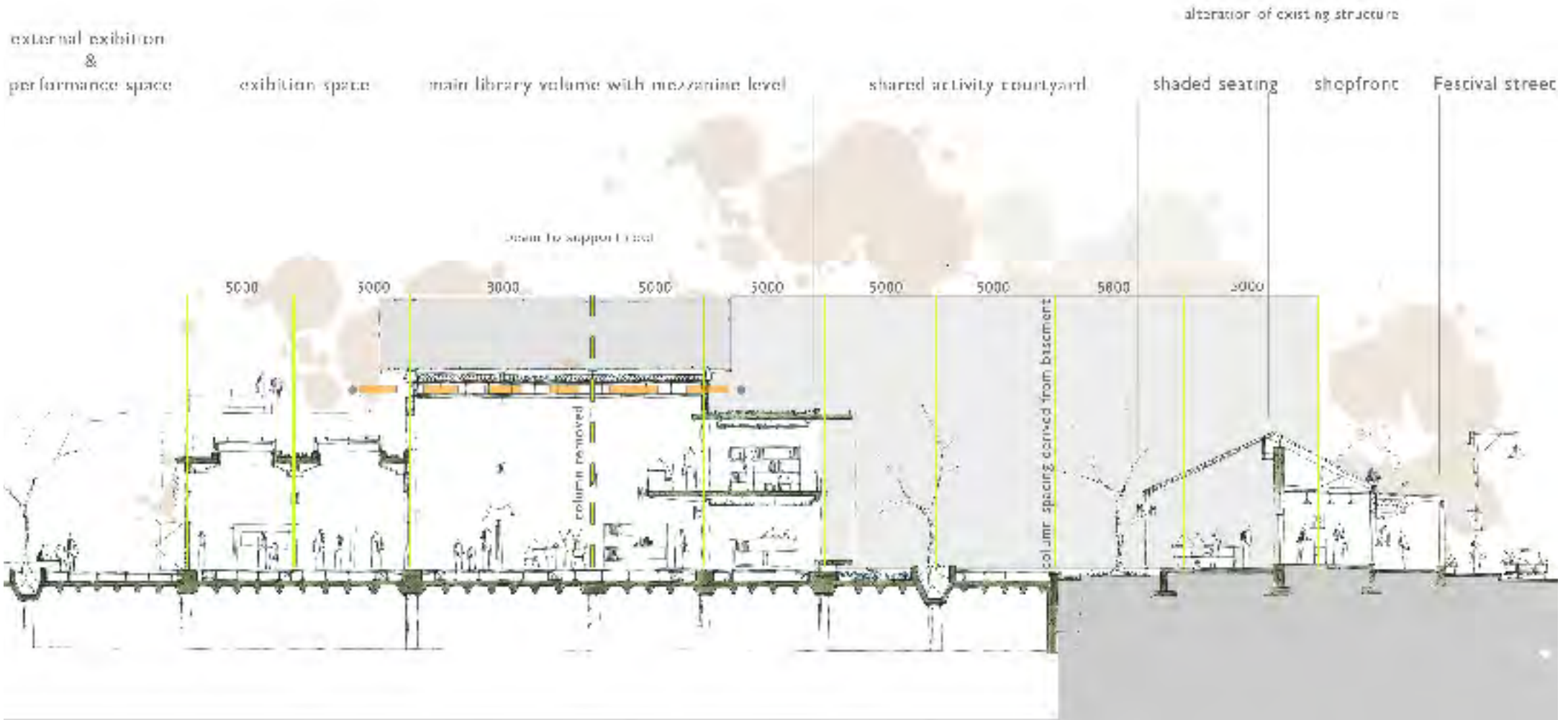
fig2 - section through main library volume



Louis Kahn (Wurman, 1986:257) – “A space can never reach its place in architecture without natural light”

fig3 - section through office and exhibition space





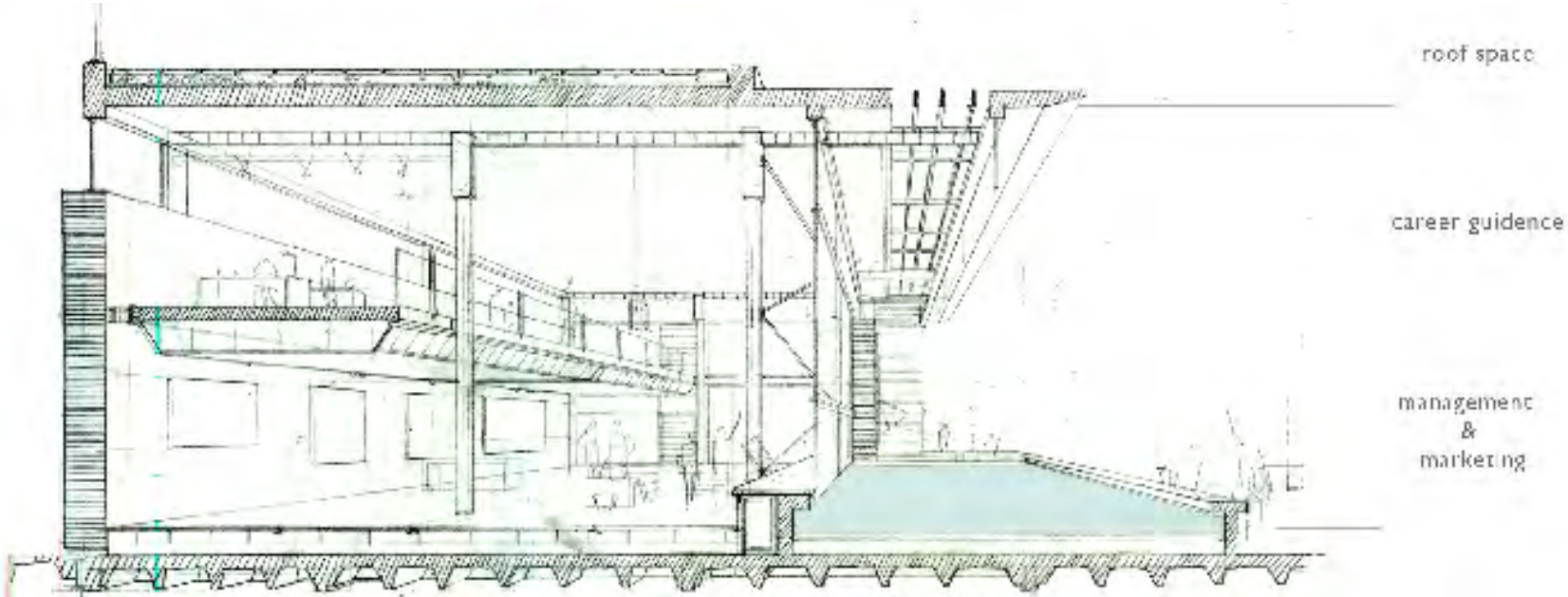


fig5 - Perspective section through office

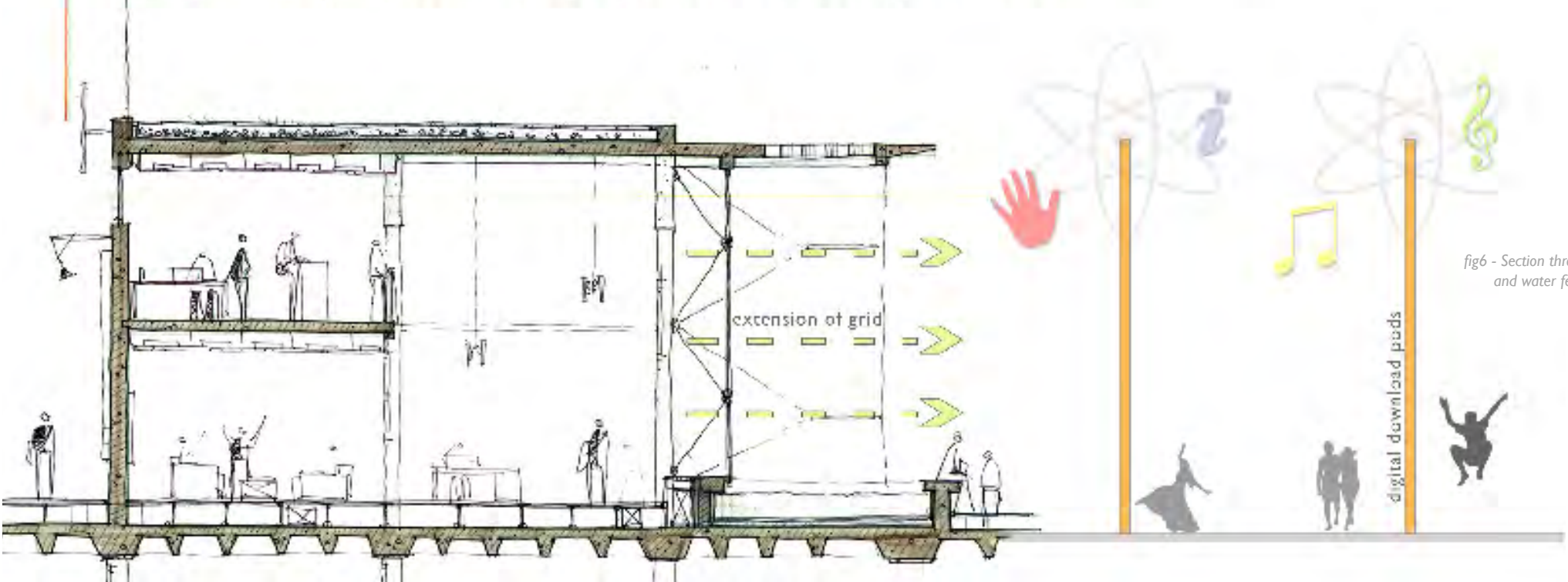


fig6 - Section through office and water feature

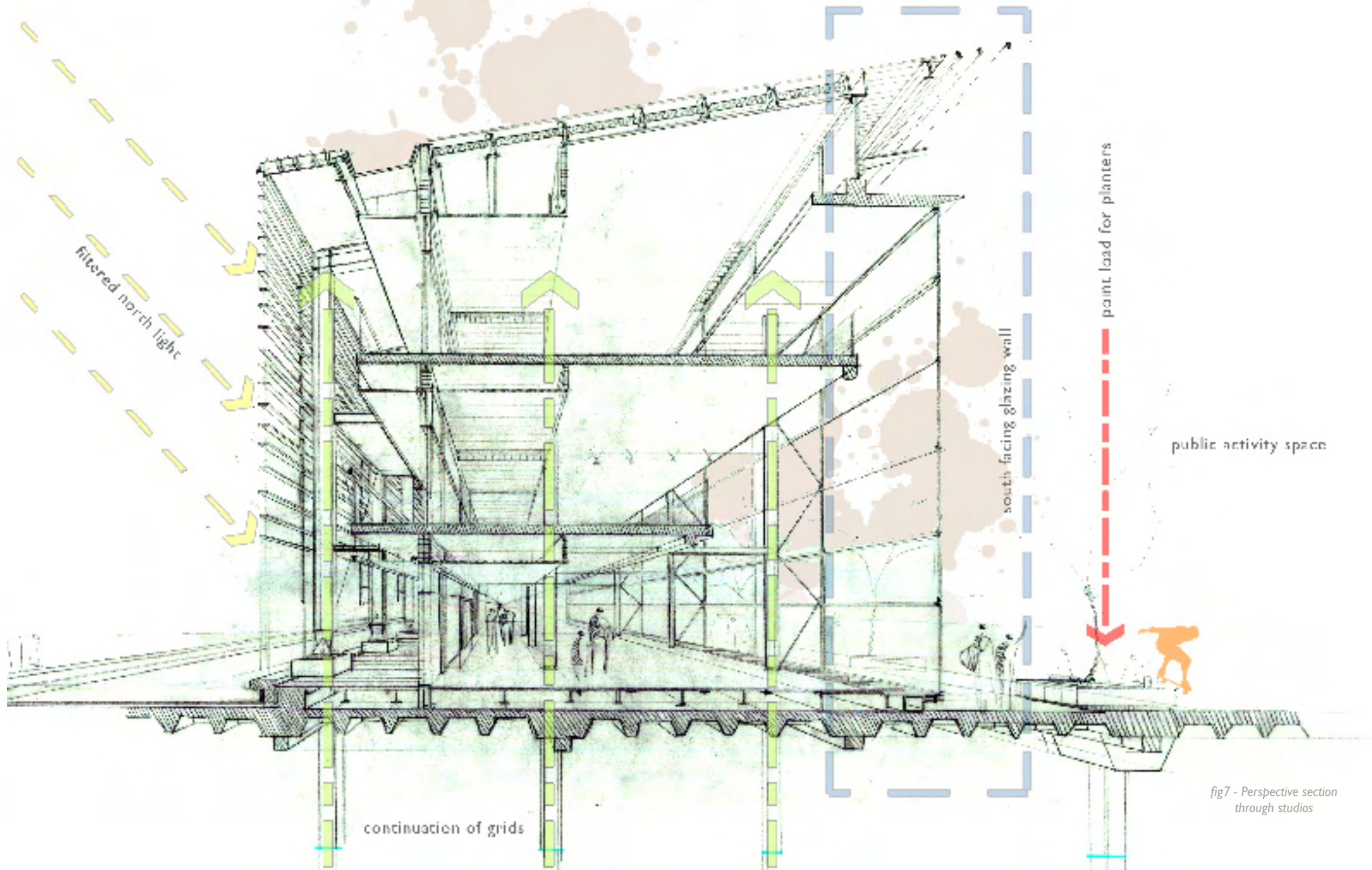
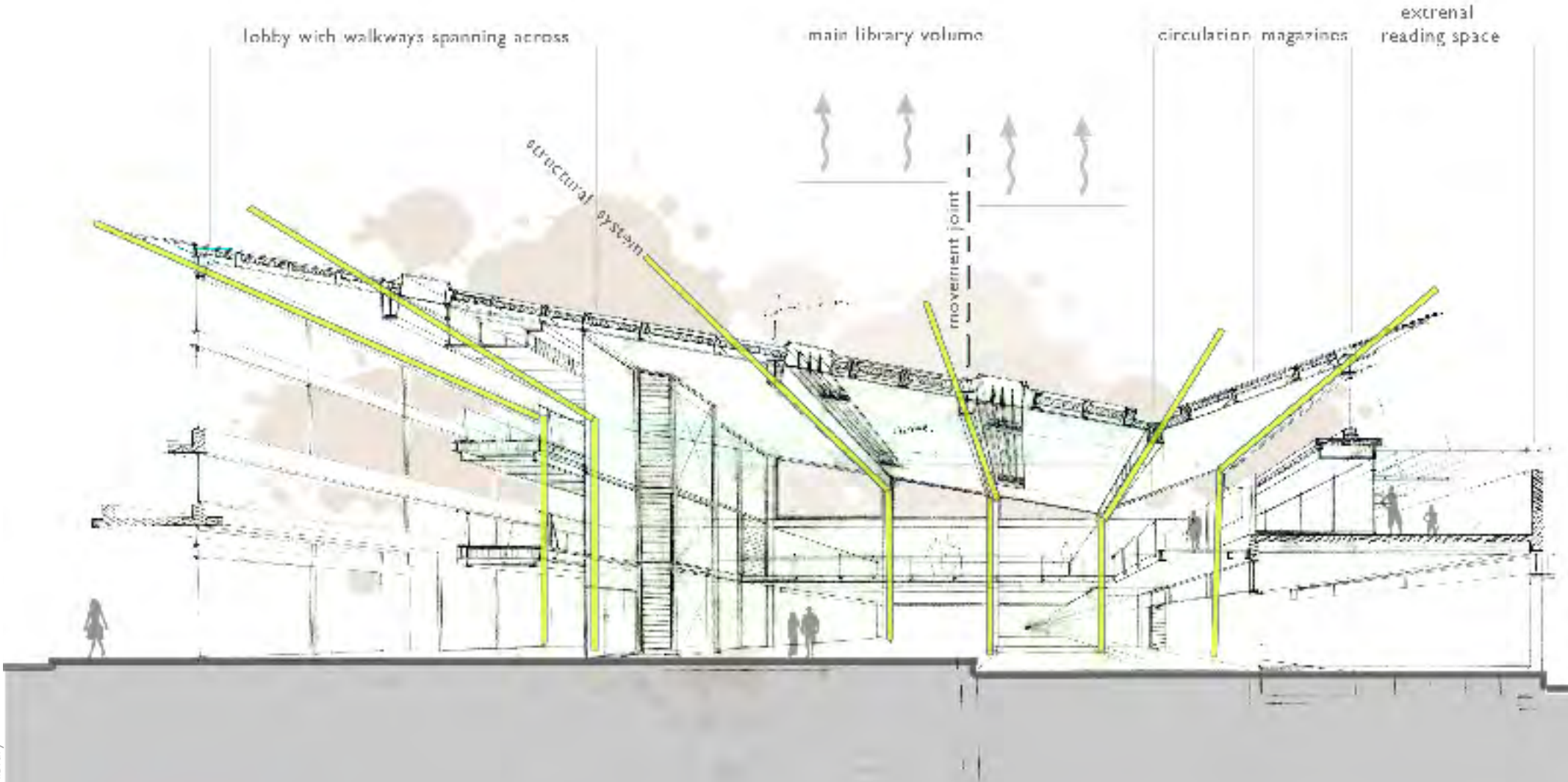


fig7 - Perspective section through studios



lobby with walkways spanning across

main library volume

circulation magazines

external reading space

structural system

movement joint

removed column line

Louis Kahn (Wurman, 1986:6) - "...structure is the maker of light. When you decide on the structure, you are deciding on light. In old buildings, the columns were an expression of light. Light, no light, light, no light, you see. The module is also light, no light."

LIGHT

summary

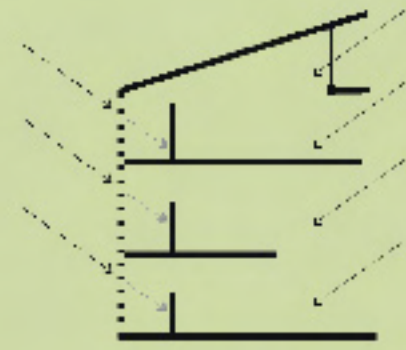
The application of light is guided by the three primary facets of architectural light, namely : Northern light, direct light and broken or diffused light. It is near impossible to fully quantify the exact light quality that will be attained, but this methodology helps to rationalize the application of light to space.

● screen

● northern light

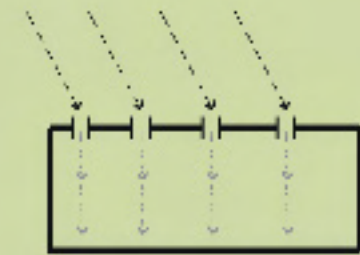
● direct light

● broken light



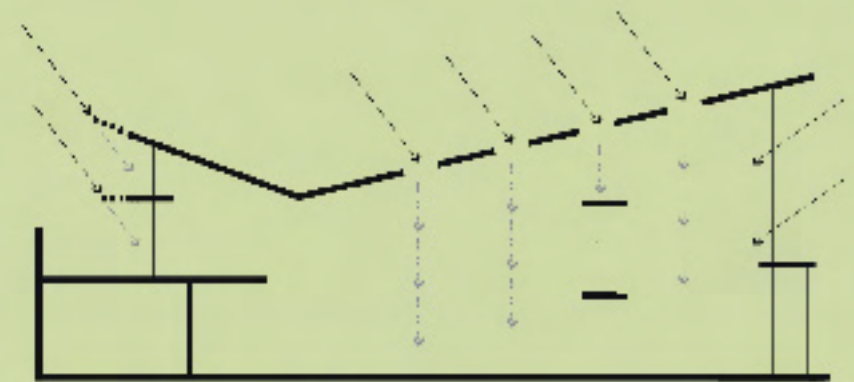
studios

fig9 -Studios_ light quality diagram



exhibition

fig10 -Exhibition space_ light quality diagram



library

fig11 -Library_ light quality diagram

a b s t r a c t

Air is sucked in through sculptural intake ducts which points in the direction of the predominant wind direction. This air is then circulated through copper pipes in a water storage tank, which lowers the air temperature with a few degrees. This cool, filtered air is then distributed through the building via a mechanical ventilation network.

The water in the storage tank is harvested from the site surface. This water is collected via a network of flat full-bores with downpipes, cast into columns, and drainage channels distributed across the site. This water is collected in a 192,000L primary collection tank, and then distributed to three smaller storage tanks where it is implemented in the ventilation strategy.



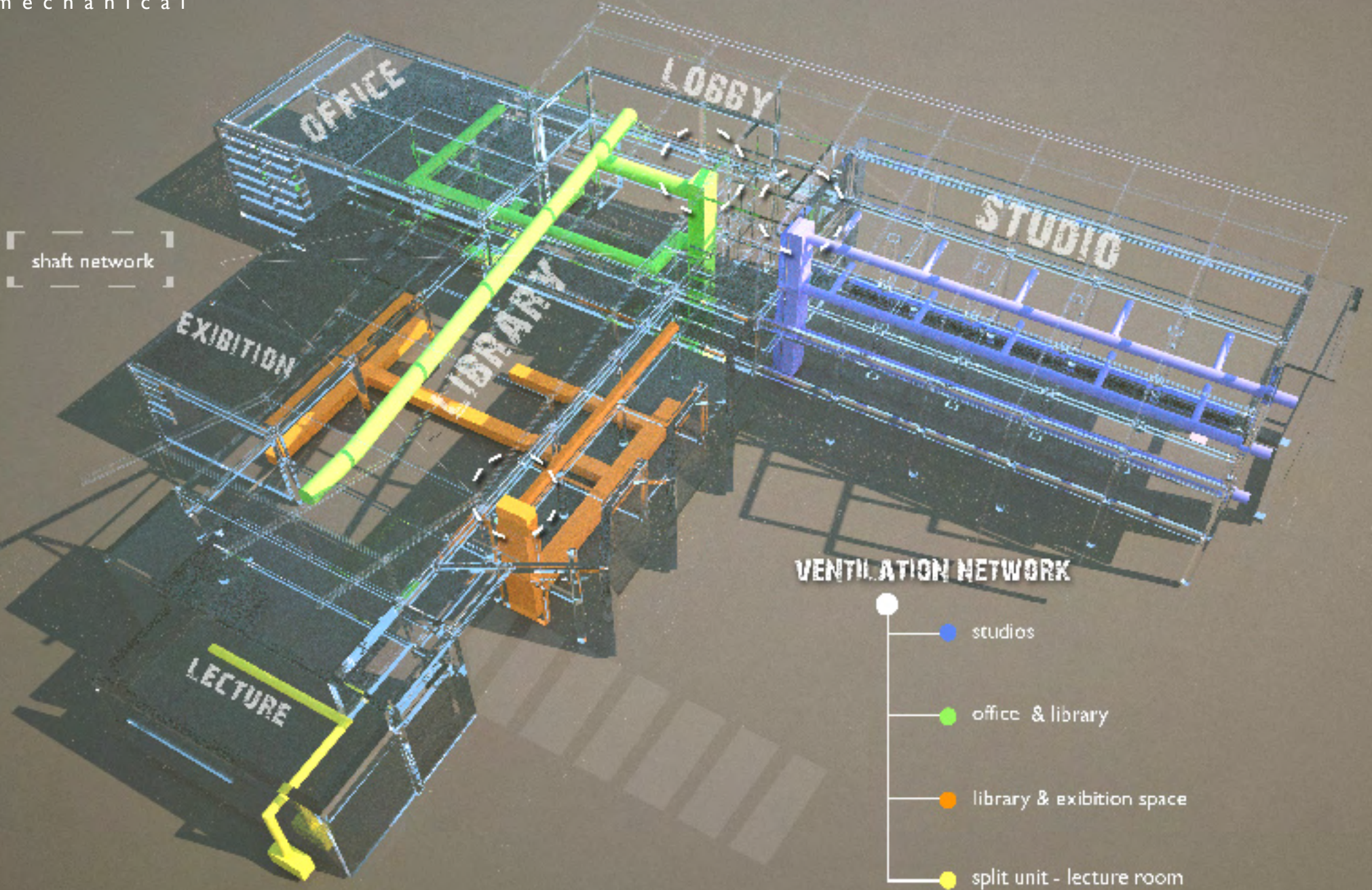


fig 14 - 3D Mechanical ventilation system

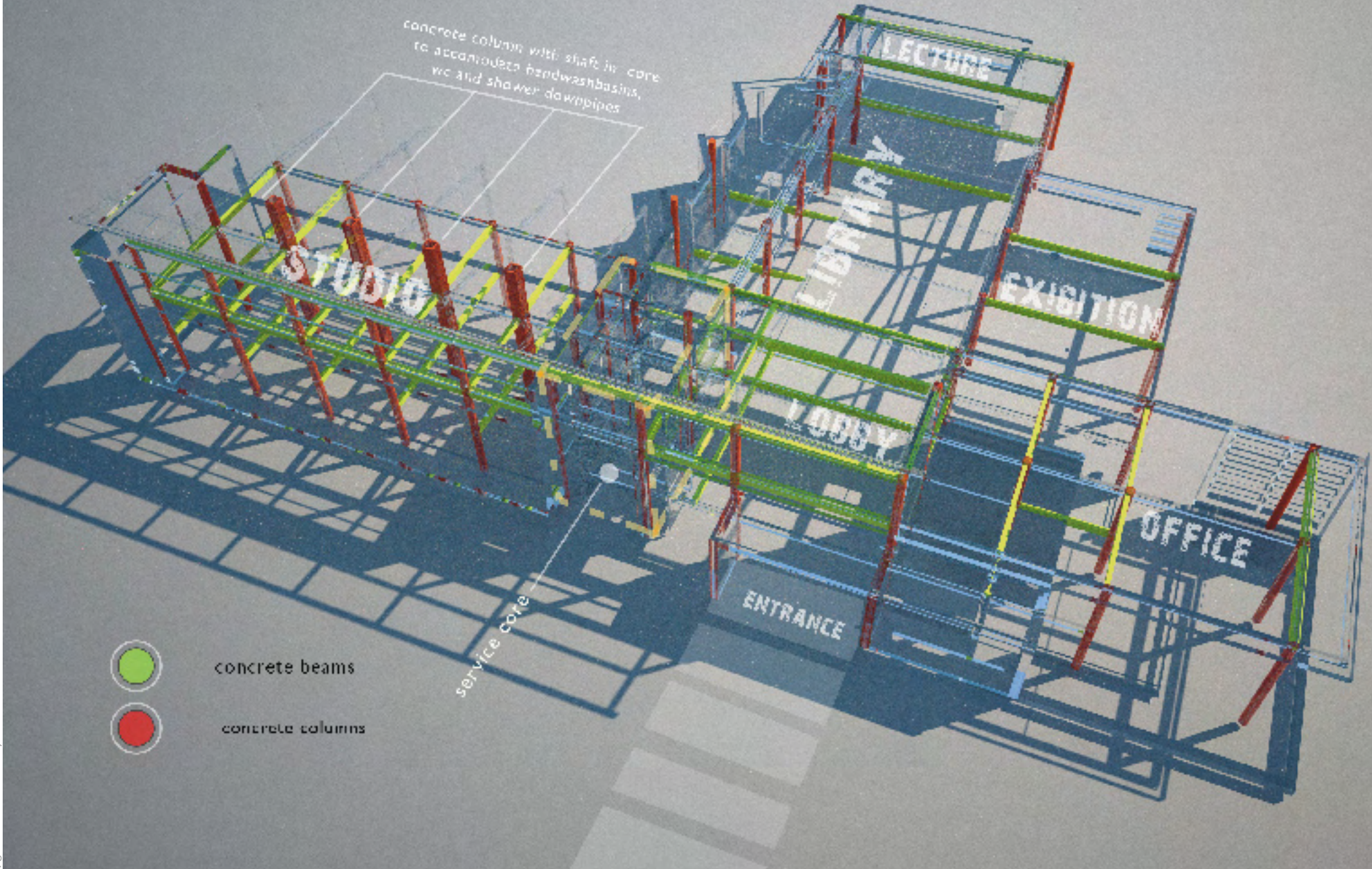
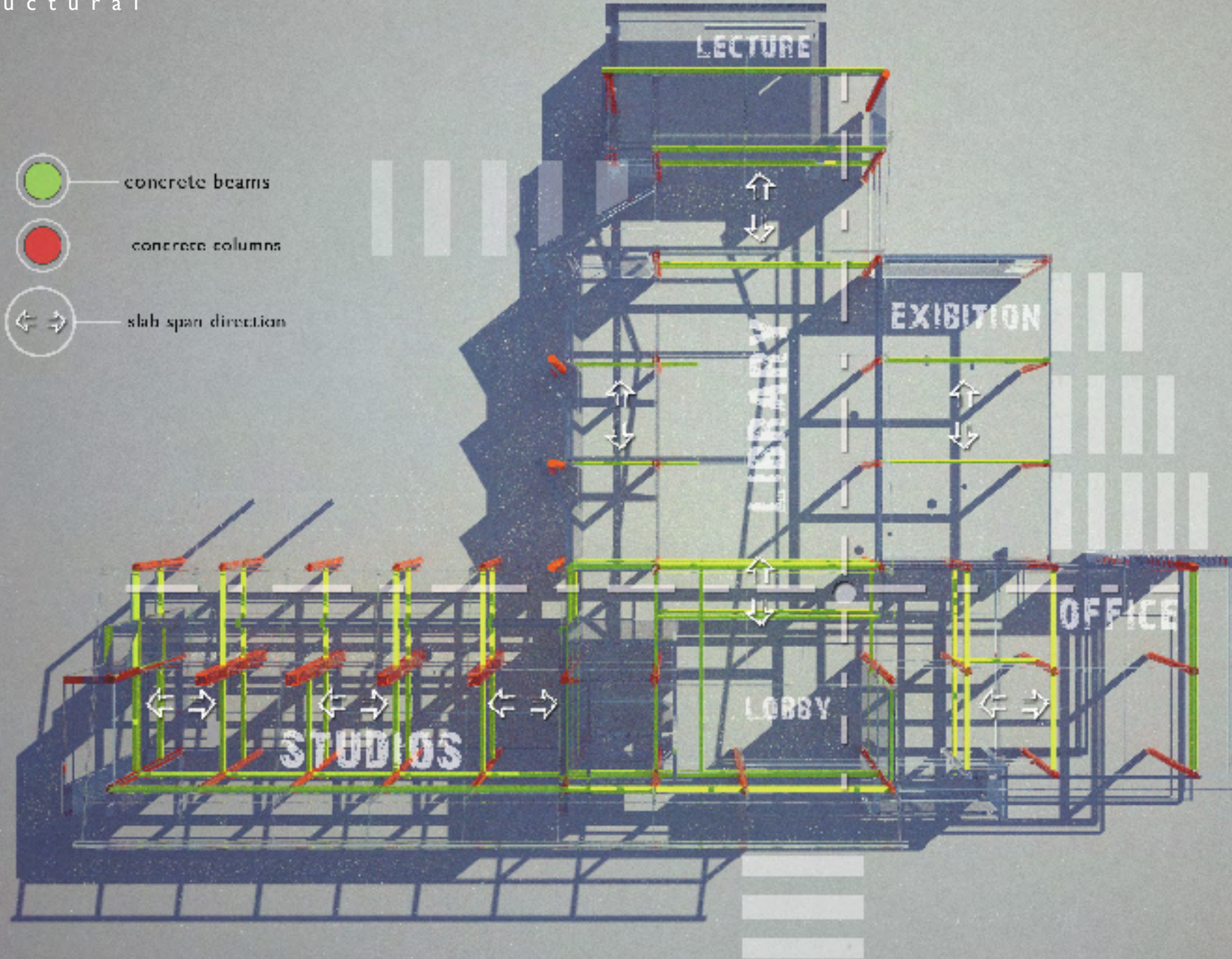


fig 15 - 3D Structural system

SYSTEM

structural



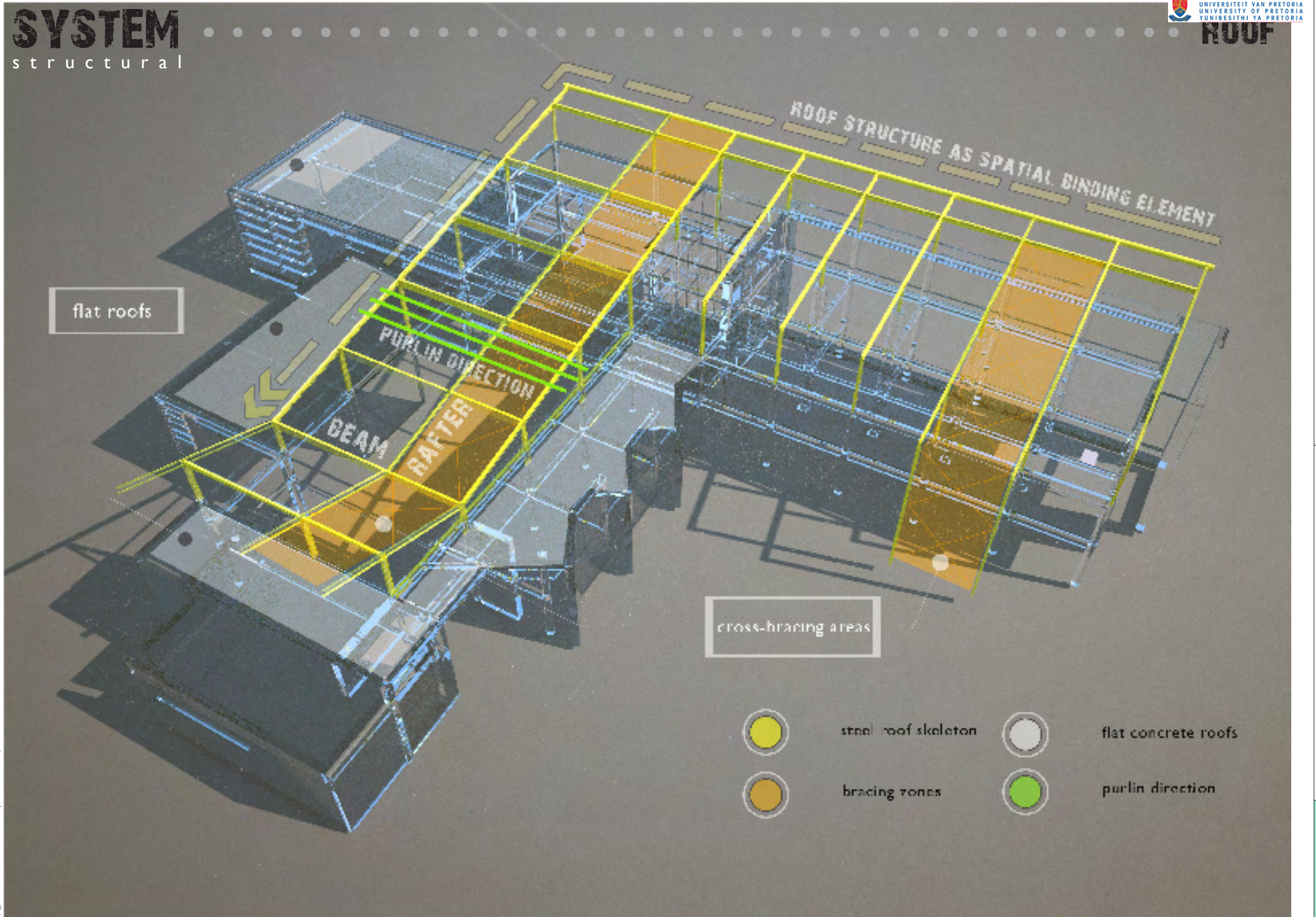
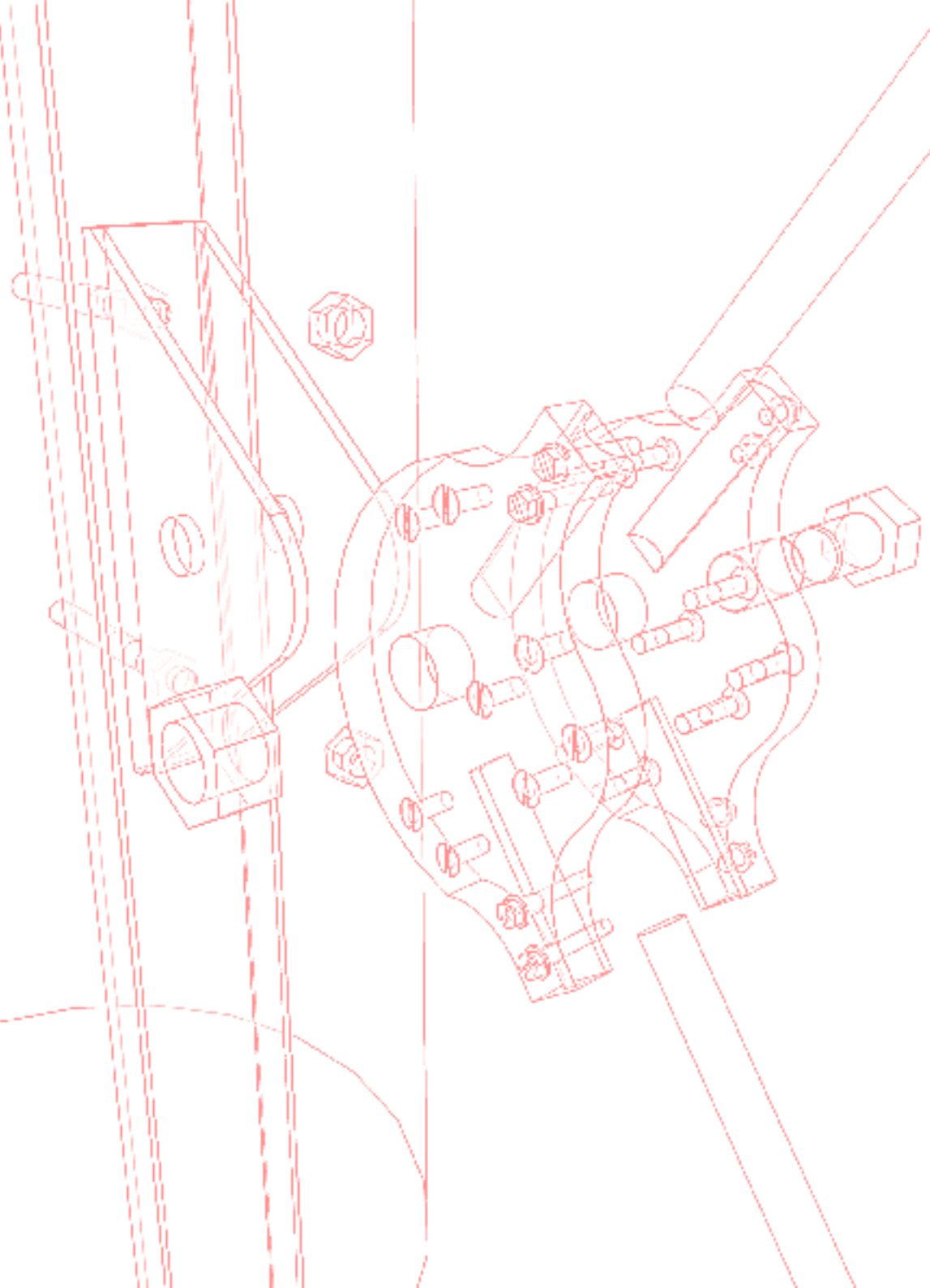
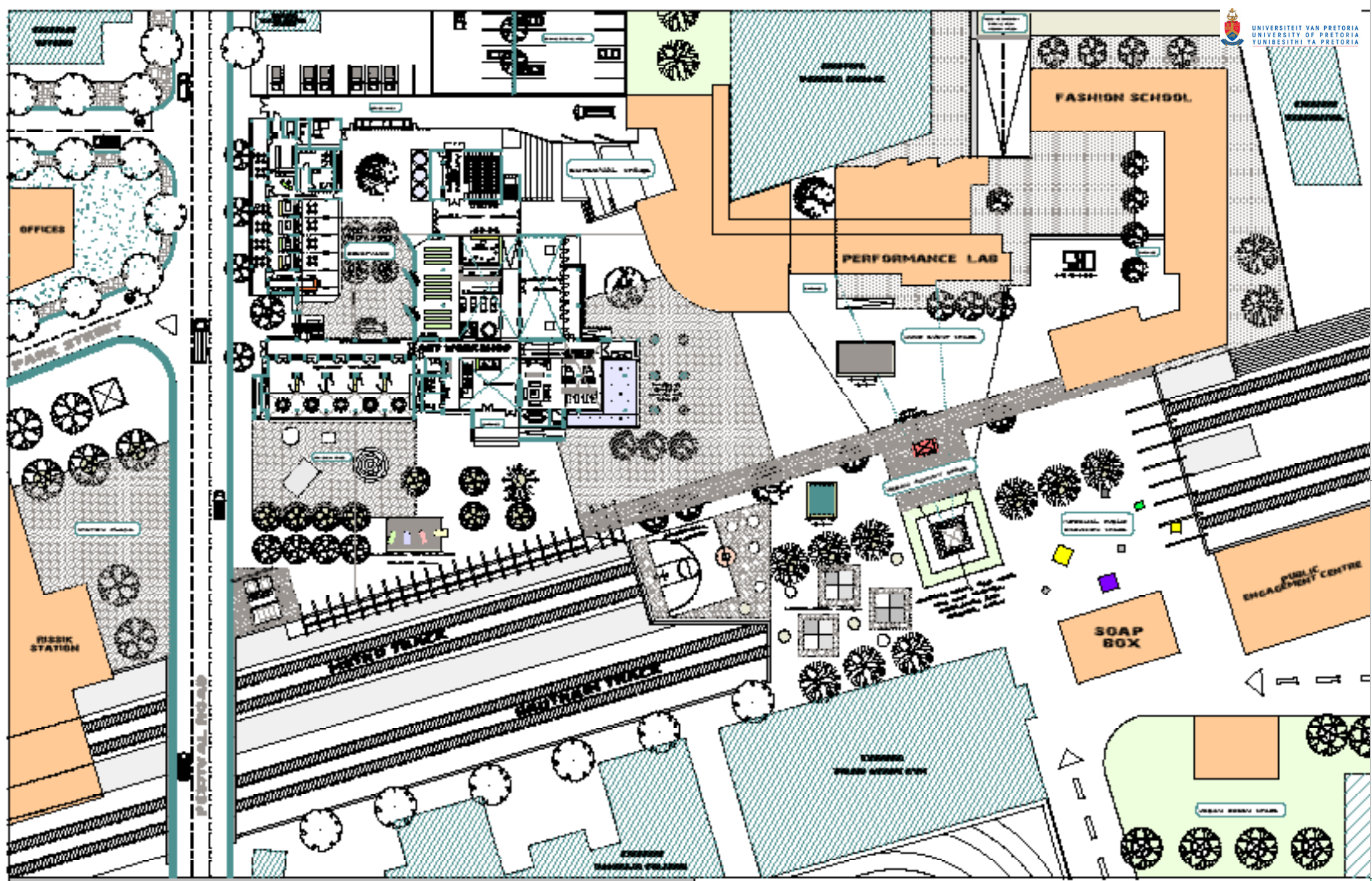


fig.17 - 3D Structural system : Roof

fig18 - 3D_Stick glazing rod clamp



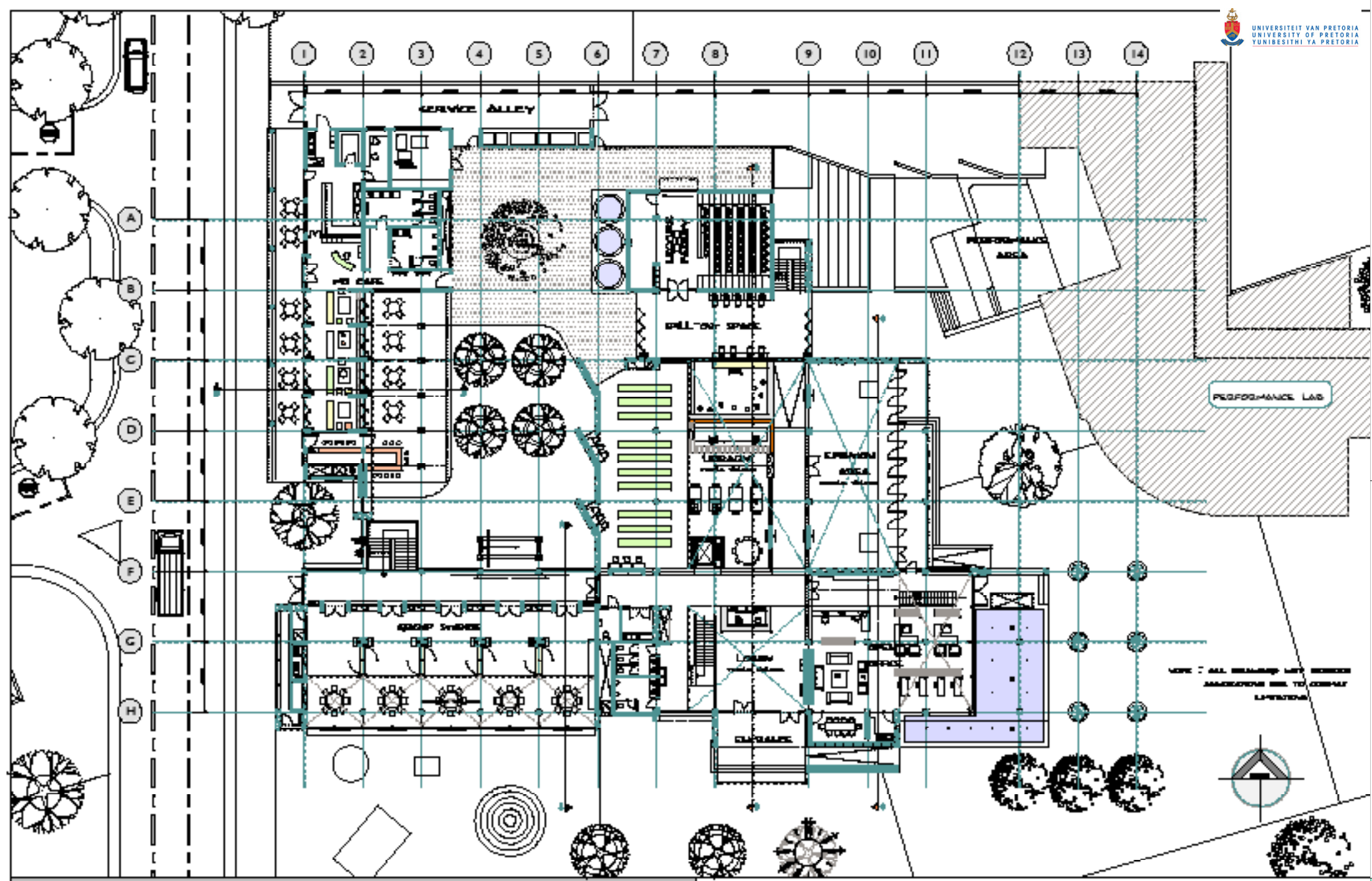
T E C H N I C A L
d o c u m e n t a t i o n



ART WORKSHOP



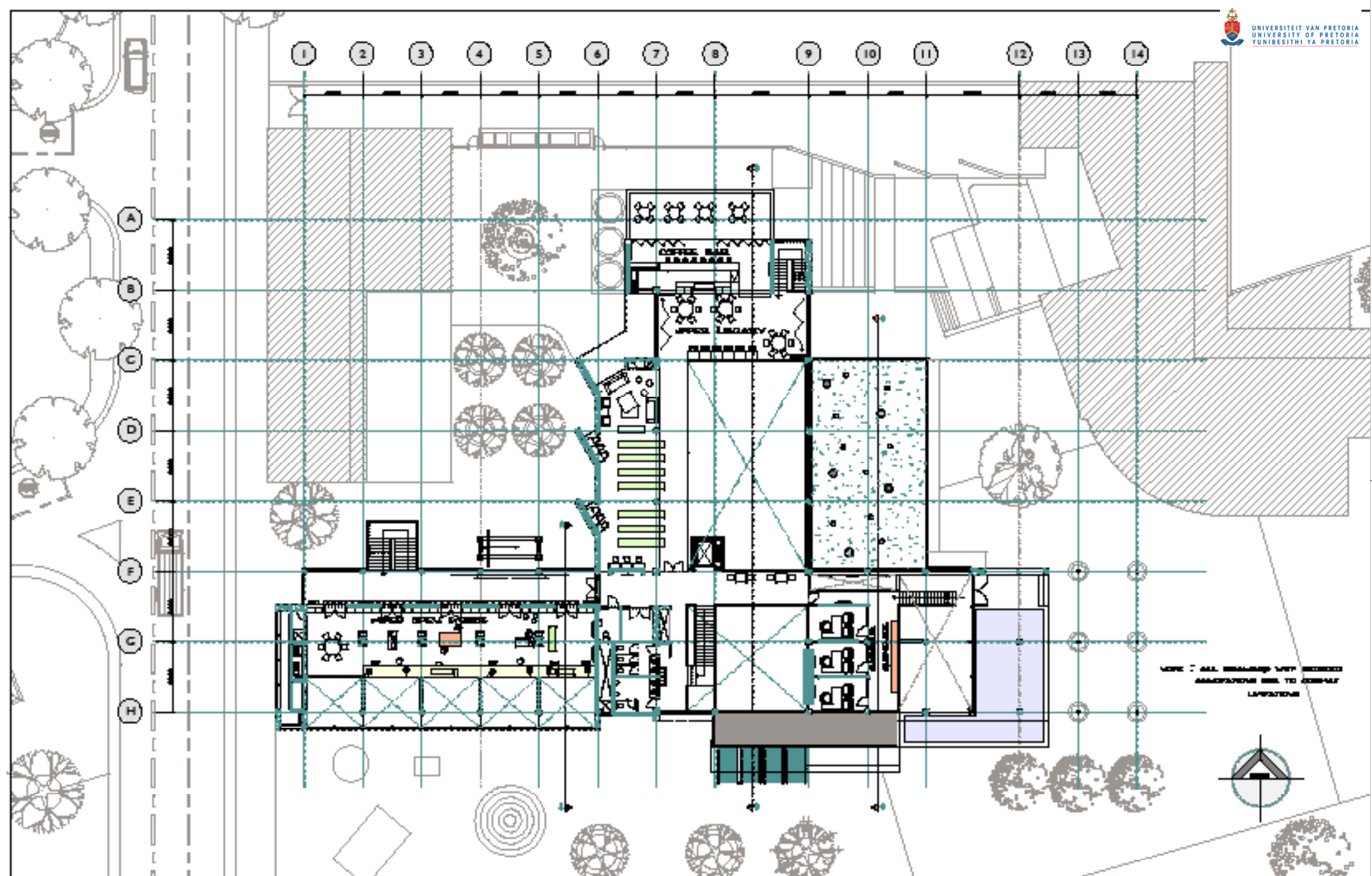
SITE PLAN
SCALE 1:500



ART WORKSHOP



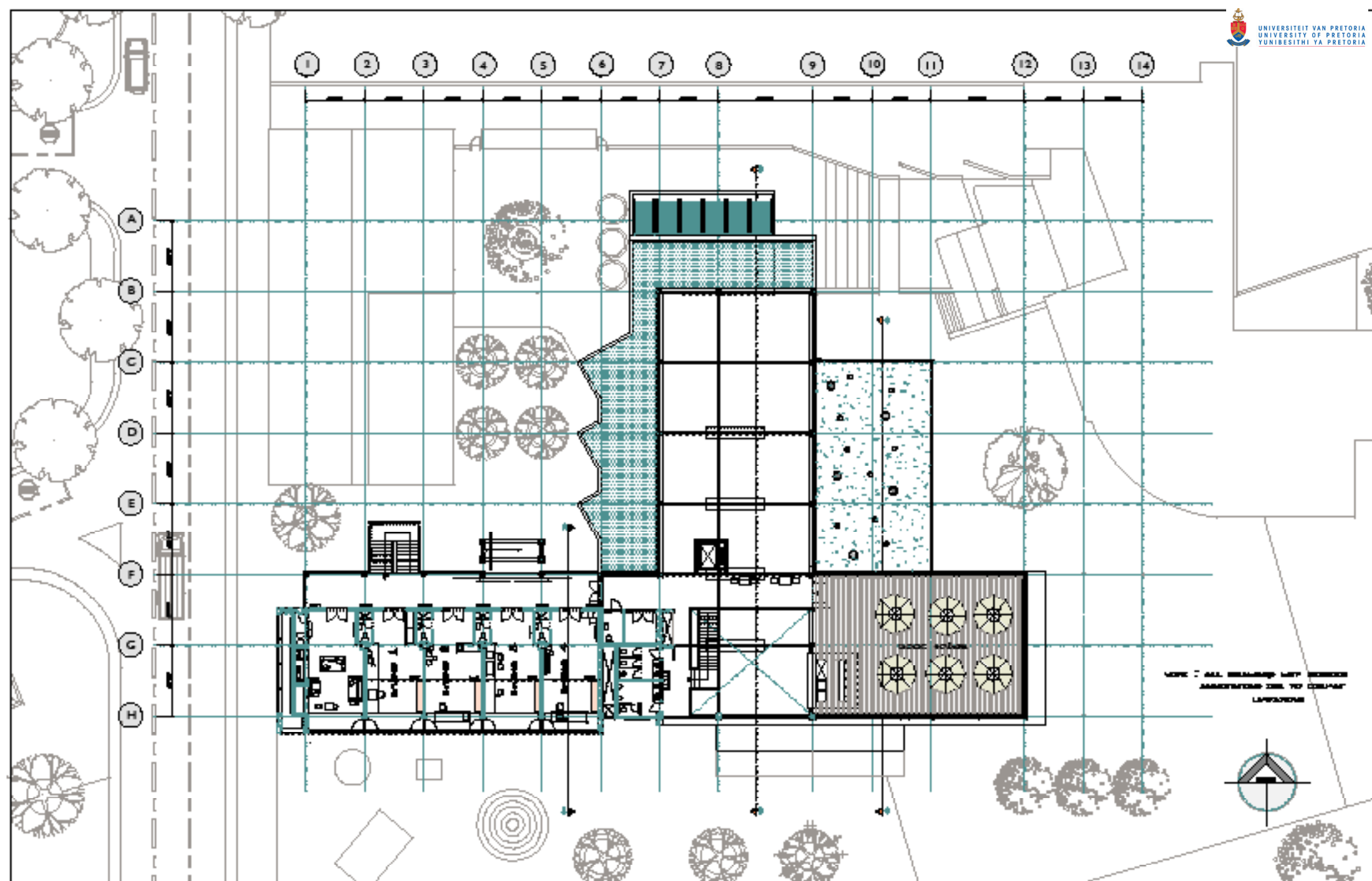
GROUND FLOOR
SCALE 1:400



ART WORKSHOP



FIRST FLOOR
SCALE 1:400

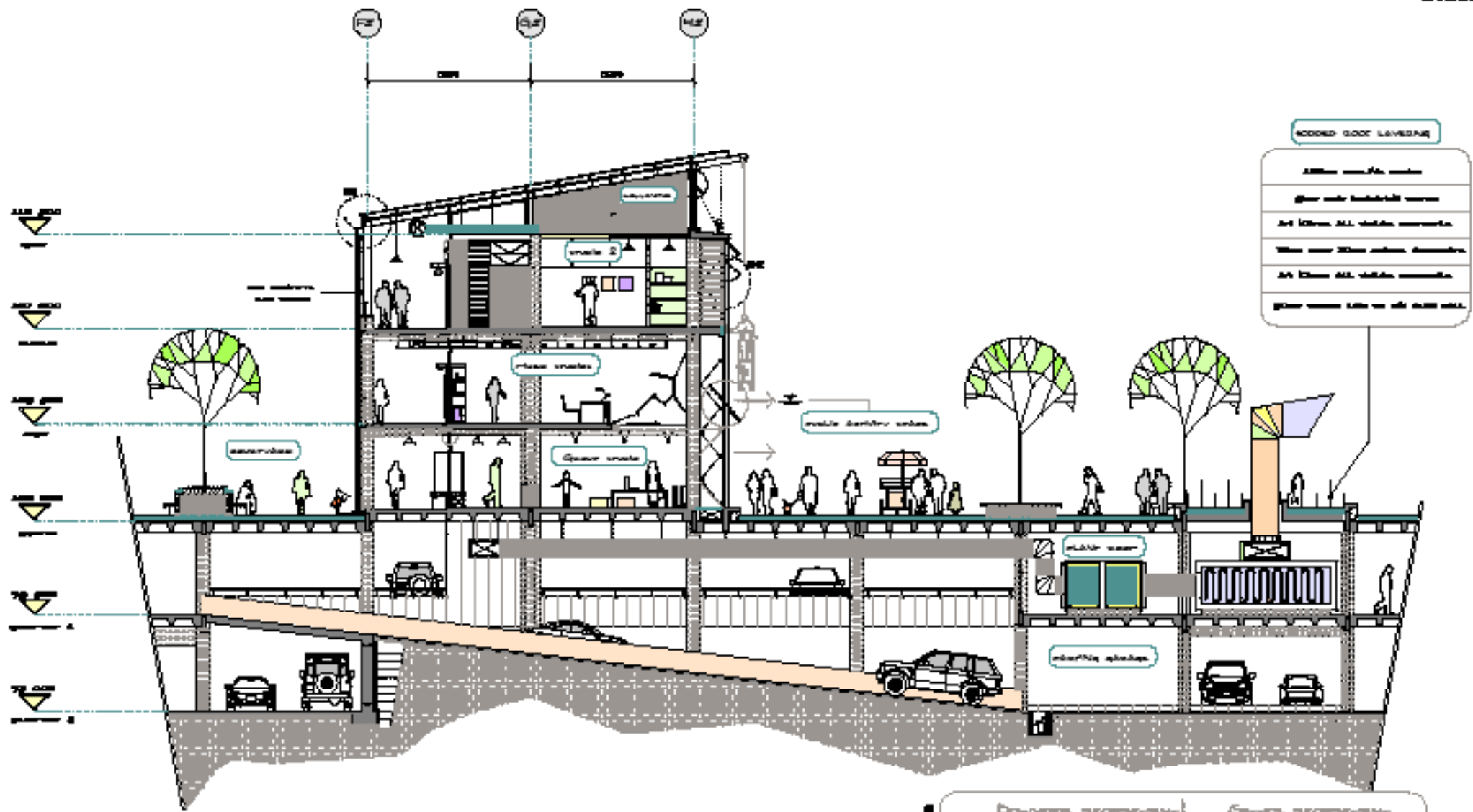


NOTE: ALL WALLS TO BE REMOVED
AND RECONSTRUCTED TO FORM
LABORATORY

ART WORKSHOP



SECOND FLOOR
SCALE 1:400



NOTED GOOD PRACTICES

- Active rooftop garden
- Green walls throughout facade
- Art Glass ALL window openings
- View over other urban developments
- Art Glass ALL window openings
- Green spaces like on all levels

SECTION A A
SCALE 1 : 200

CONCRETE REQUIREMENTS

- Roof slab concrete - 25MPa = 35MPa
- Columns 30MPa
- Beams 25MPa
- Slabs 20MPa

STEEL REQUIREMENTS

- Roof slab reinforcement - 250MPa = 350MPa
- Columns 300MPa
- Beams 250MPa
- Slabs 200MPa

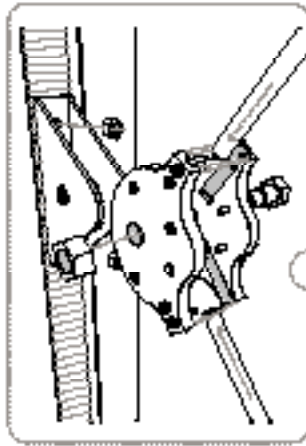
ART WORKSHOP



LINE SCALE 1 : 200

STICK GLAZING

PIVOT CONNECTION



ALUMINUM WALL FORMING BRACKET BOLTED TO
WOODEN BULK STRUCTURE ON EXTERIOR WITH
M6 CLASS 4 NUT, TO SANS1700

ALUMINUM WALL END CLAMP WITH PIVOT CONNECTION,
BOLTED TO FORMING BRACKET WITH M6 CLASS 4 BOLT
AND M6 CLASS 4 WASH, TO SANS1700

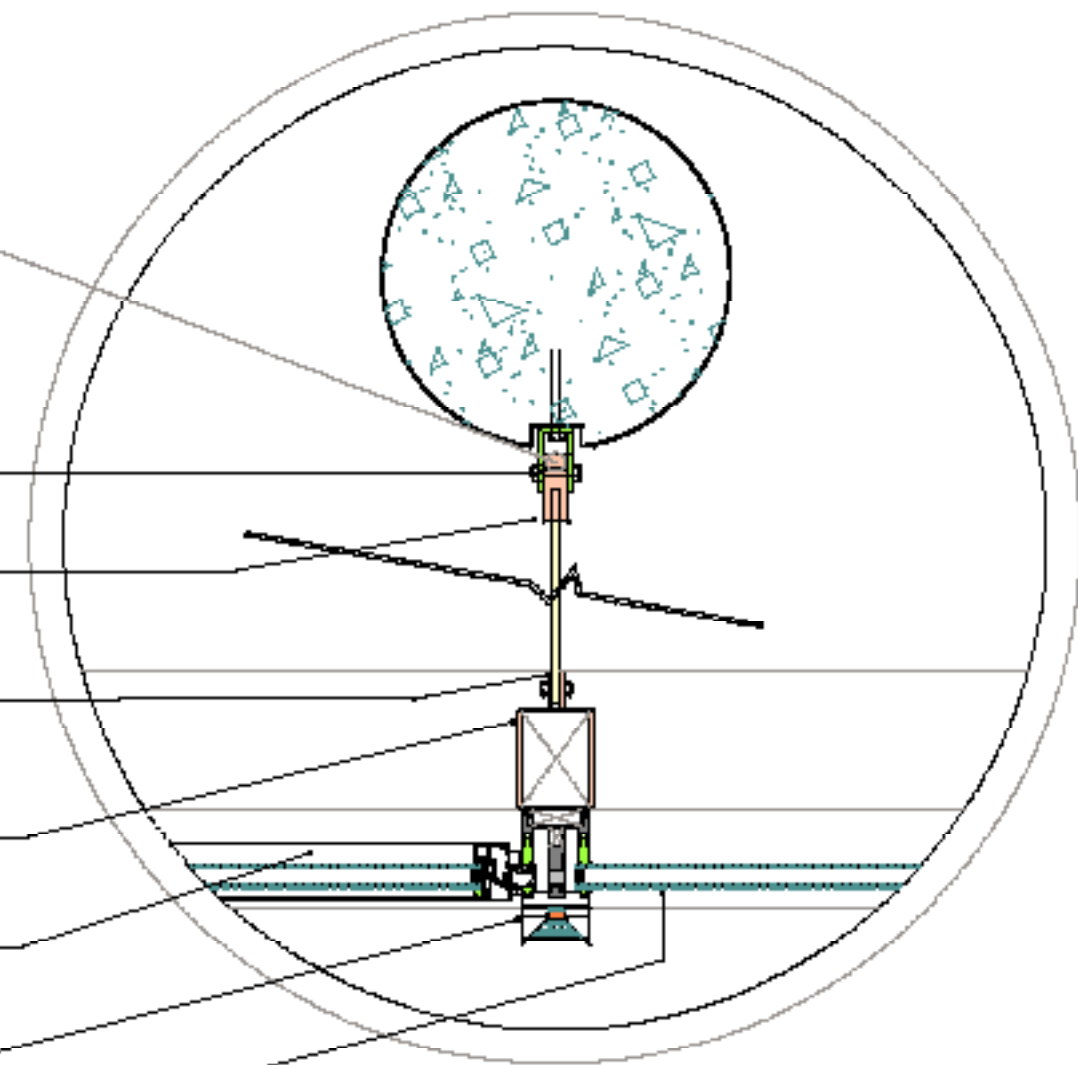
WALL END BRACKETING END PLATED BY GUP,
BOLTED TO FORMING WALL WITH M6 CLASS 4 B
BOLT AND M6 CLASS 4 WASH, TO SANS1700

EXTERIOR INSULATION WALL WITH LEAN AIR TO MANUFACTURER'S
SPEC, BRACKETED WITH 20MM BRACKET WALL BRACK
TO INSULATION AND GLASS

ALUMINUM FRAME WITH DOUBLE INSULATING GLAZING
GLAZING SYSTEM TO COMPLY WITH SANS1661

ALUMINUM WINDOW COVER WITH LED LIGHT INTEG,
TO COMPLY WITH SANS1661

INSULATING GLAZING INCLUDING GLASS AIR



DETAIL 2

SCALE 1:10

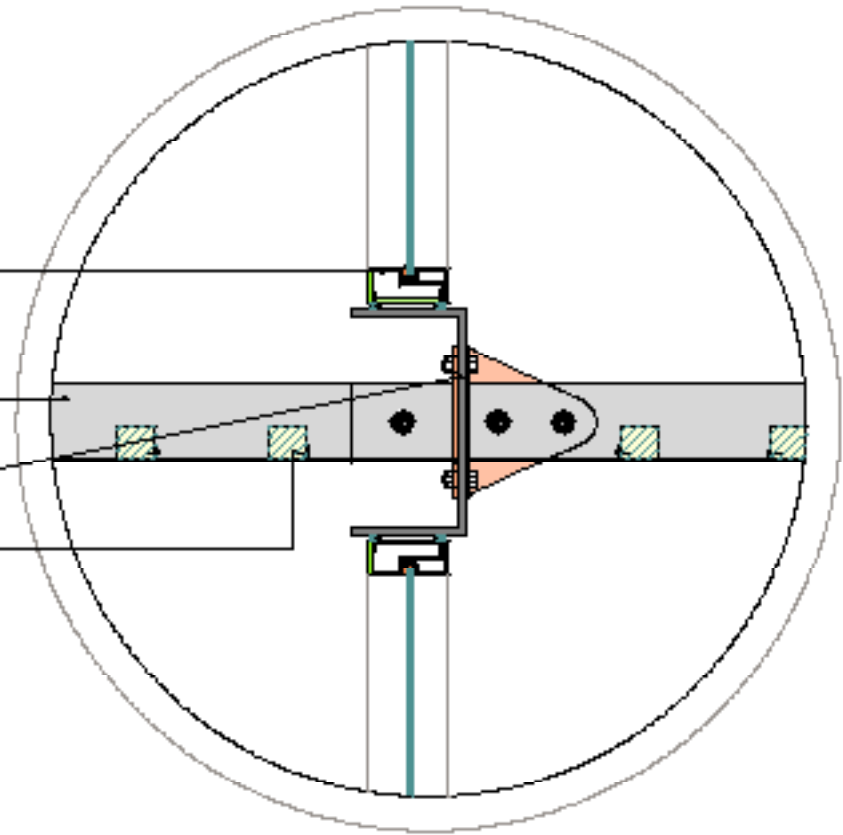
ENTRANCE CANOPY

ALUMINIUM FRAME WITH EXTRUSION GROUNDGLASS
MULTIPLE-LAYER GLASS SECTION FIXED TO GALVANNEED
STEEL STRUCTURE WITH CONCRETE SLAB, TO EXISTING
WALL STRUCTURE

125 x 75 x 10 GALVANNEED STEEL ANGLE BOLTED TO
STEEL FORMING PLATE WITH ONE M16 CLASS 4.8 BOLT
AND CLASS 4 WASH

GALVANNEED STEEL FORMING PLATE BOLTED TO CONCRETE
STRUCTURE WITH 4x M16 CLASS 4.8 BOLTS AND CLASS 4 WASH

85 x 85 x 4mm THICK BRASS OR STEEL ANGLE BOLTED TO
PRECASTED CONCRETE WITH THICK BRASS



DETAIL 3

SCALE 1:10



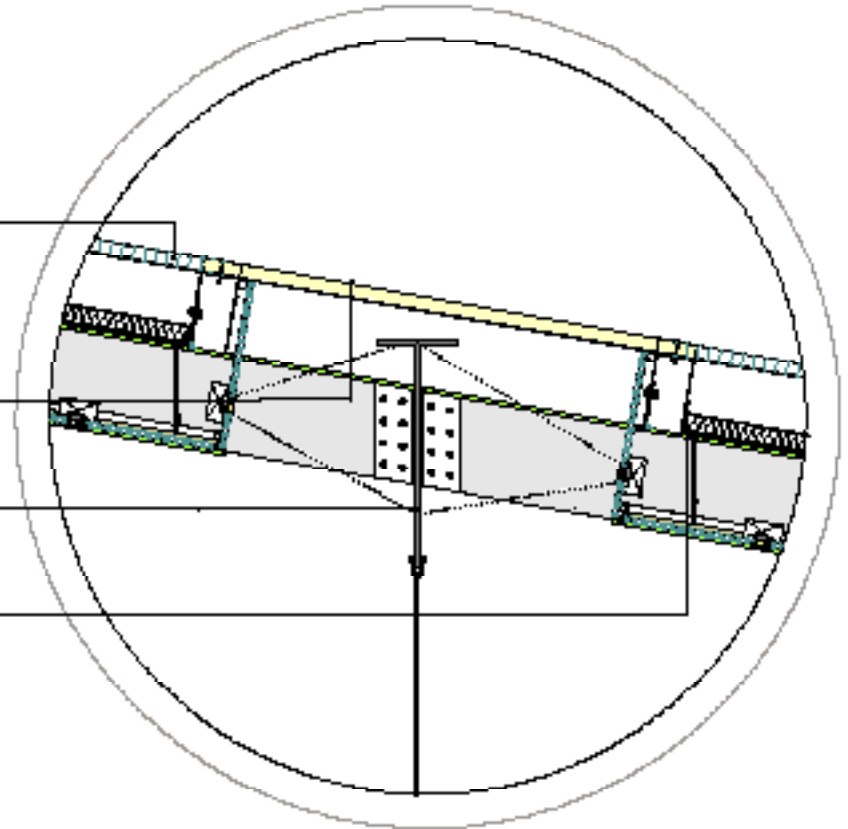
ROOF LIGHT

CHANGING PILE STEEL. ALL ROOF LIGHTS ARE TO BE MADE UP OF GALV. Z275 GALVANIZED TO COMPLY WITH SANS 2057, CORR. PROTECT. ABOVE TO STEEL DECKING WITH 200mm CORRUGATED GALVANIZED ROOF SHEETS ON THE BEHIND OF WHICH SHOULD BE CORRUG. INS. WITH THE LAMB SPACING AT 900mm CENTER WITH 200mm CORRUGATED SELF-TAPPING SCREWS WITH MINIMUM LENGTH 25mm GALVANIZED STEEL SHEET, WITH APPROXIMATE BEARING WIDTH ALONG ALL LENGTH OF THE LAMB

POLYURETHANE INS. ROOF SHEET WITH APPROXIMATE LAYER OF UV STABILIZED POLYURETHANE TO MATCH ROOF DECKING, CORR. PROTECT. ABOVE TO STEEL DECKING WITH 200mm CORRUGATED GALVANIZED ROOF SHEETS ON THE BEHIND OF WHICH SHOULD BE CORRUG. INS. WITH THE LAMB SPACING AT 900mm CENTER WITH 200mm CORRUGATED SELF-TAPPING SCREWS WITH MINIMUM LENGTH 25mm GALVANIZED STEEL SHEET, WITH APPROXIMATE BEARING WIDTH ALONG ALL LENGTH OF THE LAMB

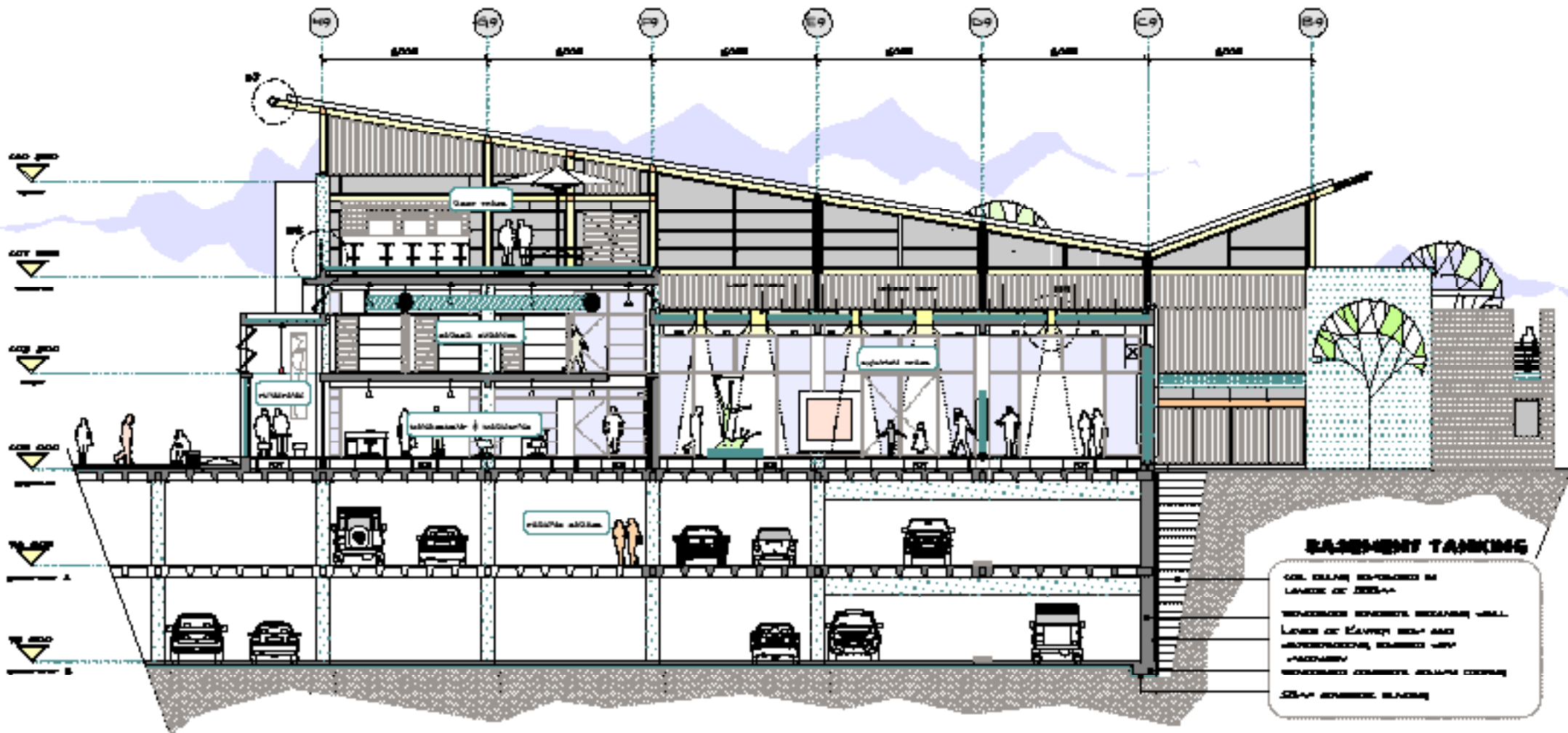
150 x 200 x 1000mm STEEL T-BEAM WITH BENTONITE CLAY INS. ABOVE, BEARING ACCORDING TO SANS 2057, BEARING WITH APPROXIMATE PROTECTIVE COAT TO COMPLY WITH SANS 2057, BEARING WITH APPROXIMATE PROTECTIVE COAT TO COMPLY WITH SANS 2057, BEARING WITH APPROXIMATE PROTECTIVE COAT TO COMPLY WITH SANS 2057

200x200mm STEEL TOPFLAT DECKING, FINISHED WITH BENTONITE PROTECTIVE COAT TO COMPLY WITH SANS 2057, BEARING TO CORRUGATED GALV. ON STEEL TRUCKED @ 1200mm CENTER WITH 100mm CORRUG. SELF-TAPPING SCREWS WITH MIN. LENGTH 25mm TO COMPLY WITH SANS 1200



DETAIL 4

SCALE 1:20



SECTION C C

SCALE 1 : 200

ART WORKSHOP



LINE SCALE 1 : 200

documentation

technical investigation

5.56

ROOF DECK

75 x 25mm GALVANIZED STEEL STRUCTURAL FOLLOW COVER PANELS
WELDED TO 25mm GALVANIZED STRUCTURAL FOLLOW COVER PANELS
ALL WELDING TO COMPLY WITH SANS10131, ALL WELDING
TO COMPLY WITH SANS10001-C34

25mm VIBRA PLANKS WITH OPEN JOINTS ON STRUCTURAL VIBRA FLOOR
JOINT, FIXED WITH 2x CONCEALED WOOD SCREWS ON EACH JOINT

25mm GALVANIZED STRUCTURAL FOLLOW COVER
PANELS WELDED TO 5mm GALVANIZED STEEL BACKLAP
ALL WELDING TO COMPLY WITH SANS10001-C34

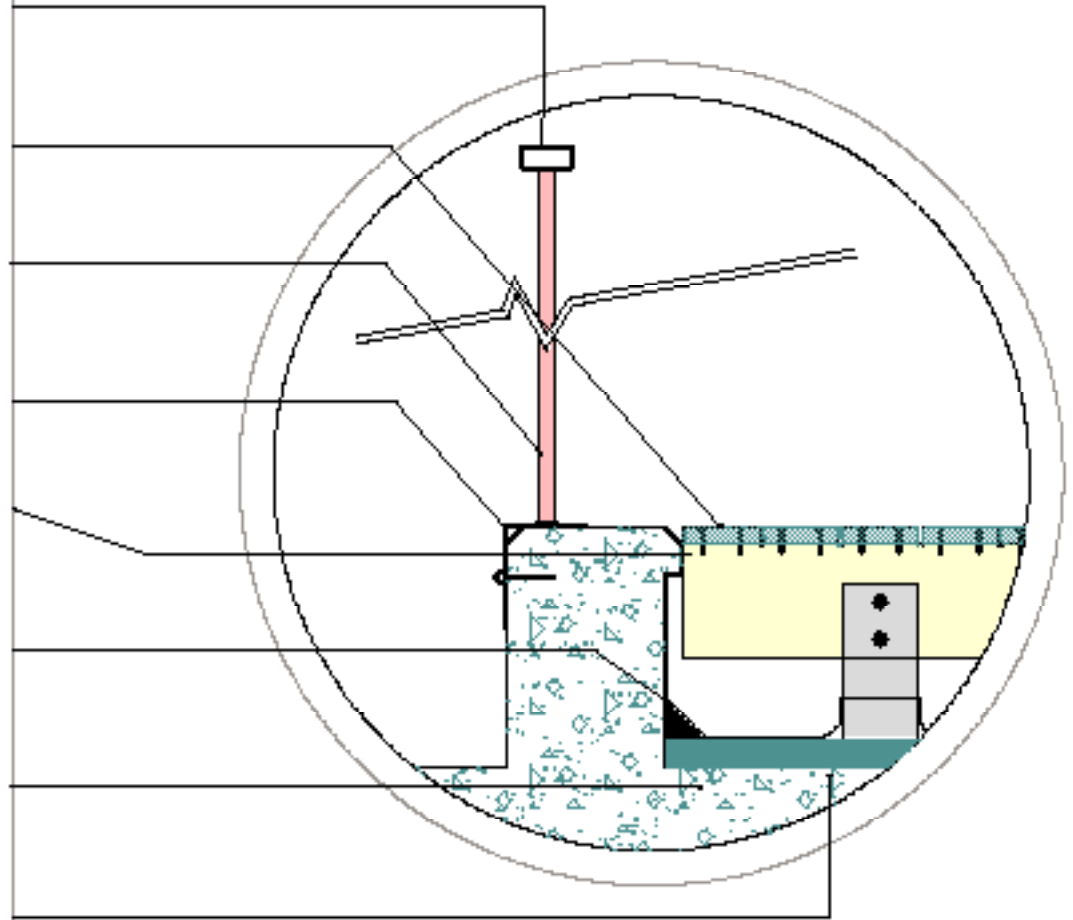
STEEL BACKLAP WELDED TO CONCRETE STRIPS WITH DOWEL
BOLTS @ 50mm INTERVALS

VIBRA JOINT BOLTED TO GALVANIZED STEEL BRACKET WITH
2x 10mm CLASS 4.8 BOLTS AND CLASS 4 WASHERS

LAYER OF KANUPA BUSH ON DELTA-ROOF FIBREGLASS SHEATH
MEMBRANE WATERPROOFING, ALL SURFACES TO BECOME
WATERPROOFING TO COMPLY WITH SANS110221

REINFORCED CONCRETE SLAB TO COMPLY WITH SANS10100, MIN
40mm COVER, LAB TO RATIO OF 1:20 (W/B 1.5:1) TO DRAIN

GALVANIZED STEEL HEAVY BRACKET BOLTED TO REINFORCED
CONCRETE SLAB WITH DOWEL BOLTS



DETAIL 6

SCALE 1:10

LIGHT CANON

6.4M SAFETY GLASS FITTED TO 245MM DEVIANCE
PROOF CONCRETE DECK WITH SUBSTRATE GLASS,
TO COMPLY WITH SANS 5007/2/1265 PART 1

100MM GRANITE FLOOR

8MM BOND BEARING ENJOINT LAB TO MANUFACTURER'S SPEC.

70MM DEEP, 20MM WELL-BONDED SAND BALLAST
ALWAYS OVER GIRD

24 KAWNEER ALL-GLASS SYSTEMS, TO COMPLY
WITH SANS 5007/2/1265

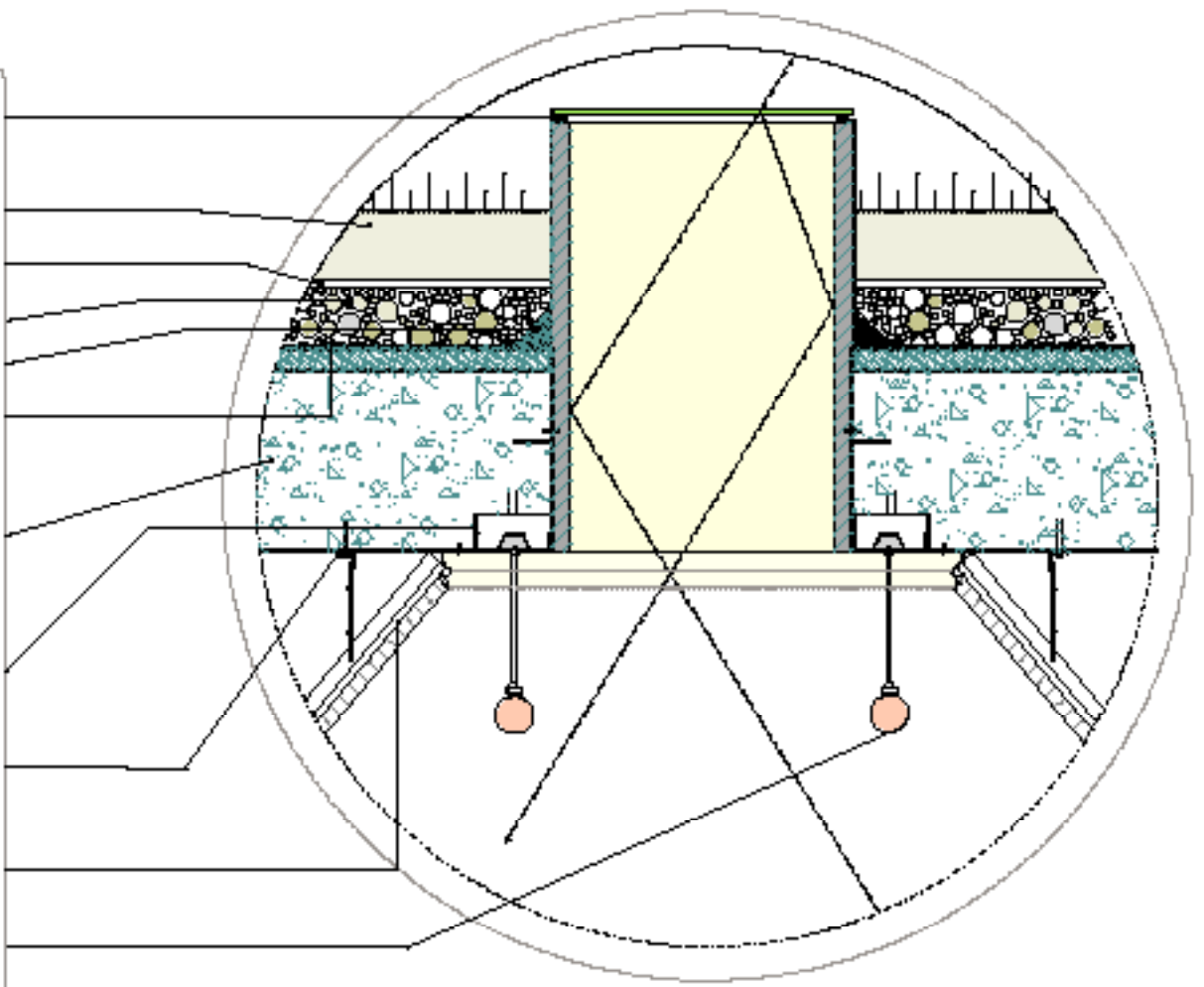
REINFORCED CONCRETE SLAB TO COMPLY WITH SANS 5010/1/00,
WITH 40MM COVER, LAB TO STANDARD OF 1:20 (USE L.F. 3)
TO COMPLY

REINFORCED GULL DECKED CHANNEL OVER AND
REINFORCED CONCRETE SLAB

CEILING CHANNEL DETACHED FROM GULL ANGLE,
BOLTED TO SURFACE OF SLAB WITH DOWEL BOLTS

CONCRETE BOLTED BY DOWEL

OVERHANG BOLTED LIGHT FITTING WITH CLIP-IN BRACKET



DETAIL 8

SCALE 1:10

CARRY ARM

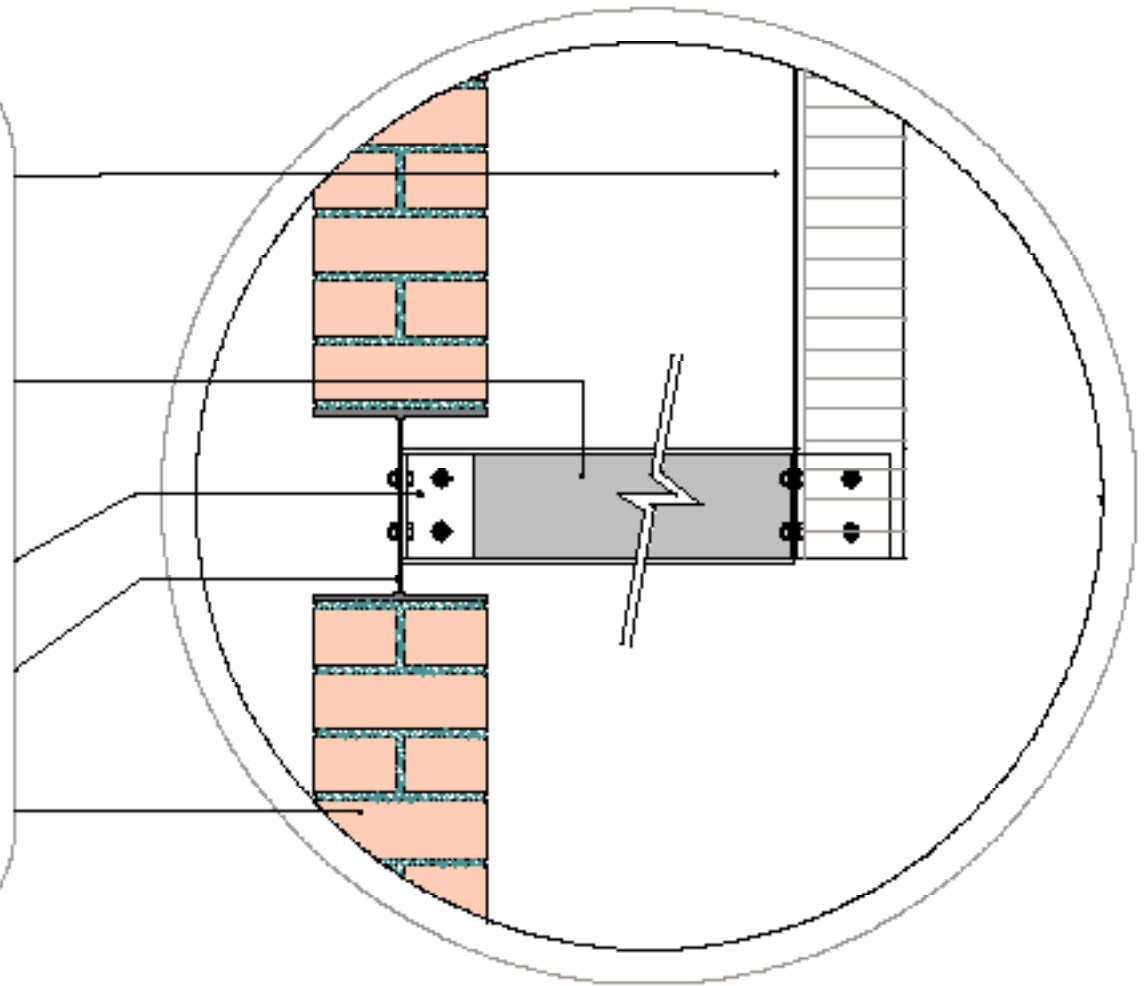
125 x 75 x 8mm steel vertical angle, welded according to SAAS10064, spaced with corrosion protection paint to comply with SAAS12944, bolted to steel section with 2x M16 class4.8 bolts and class4 nuts

140x100x8mm steel I-section with welded close end and covered web, welded according to SAAS10064, spaced with corrosion protection paint to comply with SAAS12944, bolted to I-profile with gusset plates with 2x M16 class4.8 bolts and class4 nuts. All welding to comply with SAAS10064-C34

galvanized steel gusset plates bolted to steel section with 4x M16 class4.8 bolts and class4 nuts

254 x 280 x25mm steel I-section, welded according to SAAS10064, spaced with corrosion protection paint to comply with SAAS12944, bolt and 280mm maximum wall thickness joint to comply with SAAS10064

250mm masonry wall, laid in drybrick bond with a vertical crack every 400mm level, to comply with SAAS10049



DETAIL 9

SCALE 1:10

RAFTER TO POST

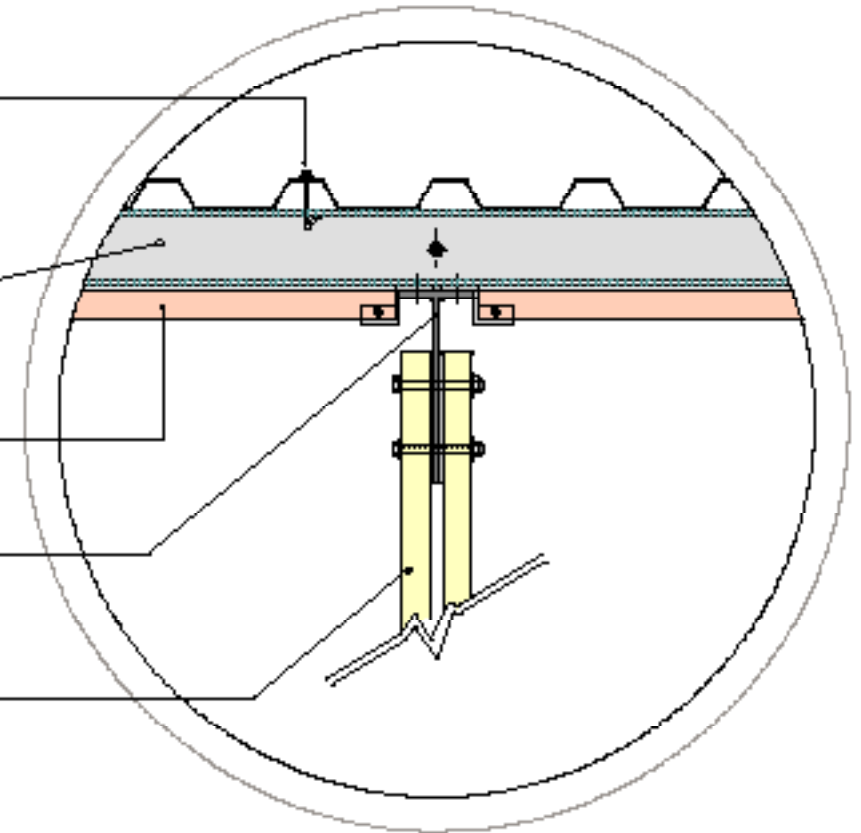
Polypropylene fibre mesh with cotton-wool layer of UV stabilised polymer, to prevent water droplets, moss formation to steel surface with 50% moisture sal-vapour proof seal on the roof of every second and third bay, with one bay sealed to 100% sealed with 50% moisture sal-vapour sealant and vapour barrier and galvanized steel roof, with approved ceiling over along full length of one bay.

102 x 51 x 12.5mm steel I-section rafter, painted with corrosion protection paint to comply with SANS 113944, sealed to post-welded deck on steel rafter @ 1200mm centres with the class 4 seal and the class 4 seal to comply with SANS 1702

20 x 20mm brass rivets on 50% galvanized steel ceiling straps with post-welded deck @ 750mm centres, fixed with wood screws

170 x 102 x 19mm steel I-section rafter with 50% galvanneal steel and welded rafter plate @ one bay only, covered according to SANS 113944, painted with corrosion protection paint to comply with SANS 113944 and the rafter to be sealed with the class 4 seal and class 4 seal to comply with SANS 1702. All welds to comply with SANS 2001-251

20 x 20mm galvanized steel pipe sealed to steel rafter. To comply with SANS 113944



DETAIL 10

SCALE 1:10

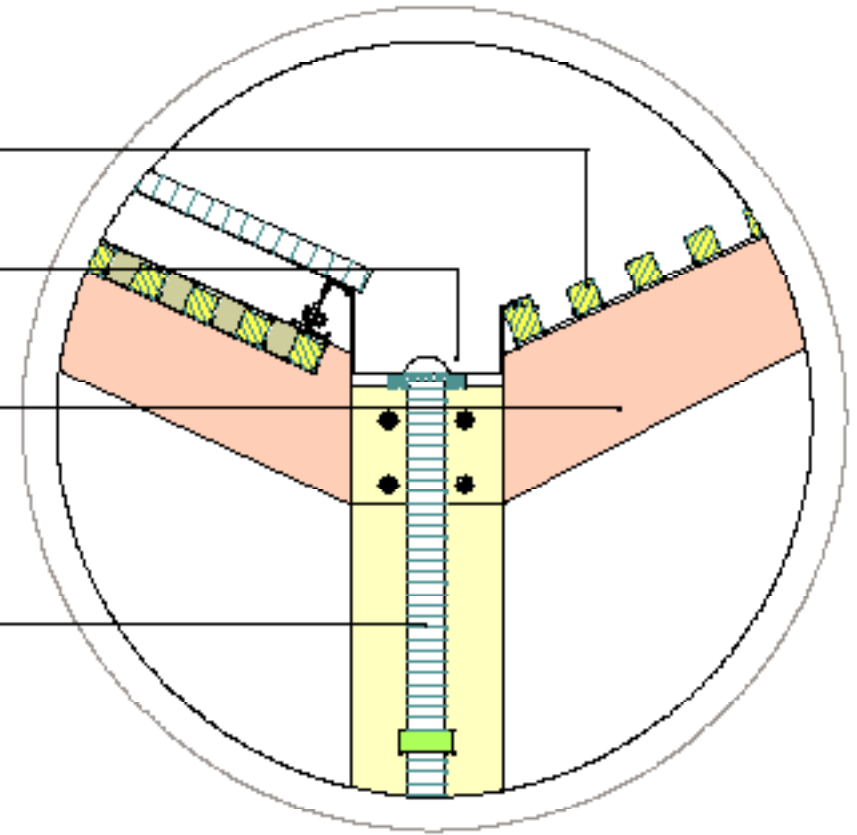
RAFTER JUNCTION

100 x 100 mm timber rafters on 200 galvanized steel
truss members with 200x200x100 mm steel
bracing and 100x100 mm steel

100 mm concrete poured over the rafter and steel
truss members with 200x200x100 mm steel
bracing and 100x100 mm steel

170 x 100 x 10 mm steel I-beam rafter and 100 mm
dia. dia. steel, welded rafter plate to top flange
and drilled to 10 mm dia. holes, 100 mm concrete
to 200x200x100 mm steel truss members, 100 mm
concrete to 200x200x100 mm steel truss members, 100 mm
concrete to 200x200x100 mm steel truss members, 100 mm
concrete to 200x200x100 mm steel truss members.

200 mm concrete (100 mm) over steel truss members,
concrete poured over the rafter and steel
truss members with 200x200x100 mm steel
bracing and 100x100 mm steel
bracing and 100x100 mm steel



DETAIL 11

SCALE 1:10

POST TO FOOTING

200 x 225 mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

50mm x 50mm x 1000mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

100mm x 100mm x 1000mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

200 x 225 mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

50mm x 50mm x 1000mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

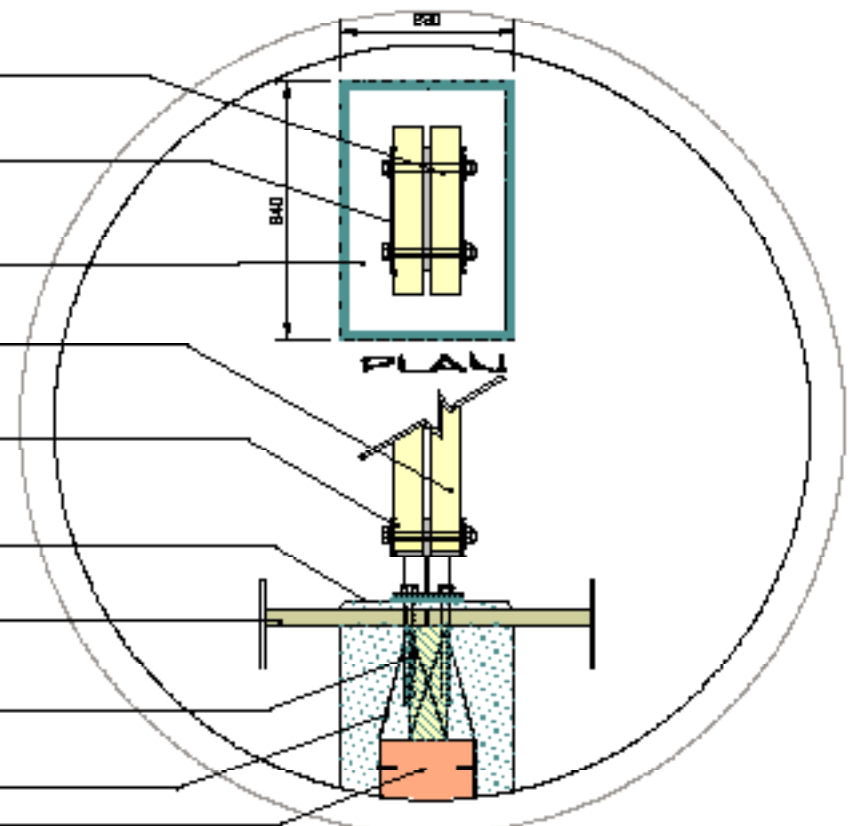
100mm x 100mm x 1000mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

25mm x 25mm x 1000mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

100mm x 100mm x 1000mm Laminated veneer ply board (LVPB) sheet, 18mm thick, fixed to the wall with 25mm x 25mm x 100mm nails, 100mm apart, staggered.

50 x 1.6 galvanized steel mesh anchor.

125mm x 125mm x 100mm concrete block.



DETAIL 12

SCALE 1:10