



Architectural
Technology

Portfolio

PC van Rooyen
Selected works | 2020 - 2021

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- 01 Opidan Escape
university - residential project
- 02 Furniture Workshop
university - technical project
- 03 Seaboard Place
university - design project

01

[Opidan Escape]

university – residential project

• Contemporary Design Project

• 2020

• Residential

• Central, Gqeberha, South Africa

VISION

Our ever expanding landscape of built structures can easily be deceived by the rush of robust contemporary architecture. Having this new structure flow into the rich history of the surrounding dwellings will ensure that the context of an early developed suburb can continue to provide a comfortable yet bespoke home.





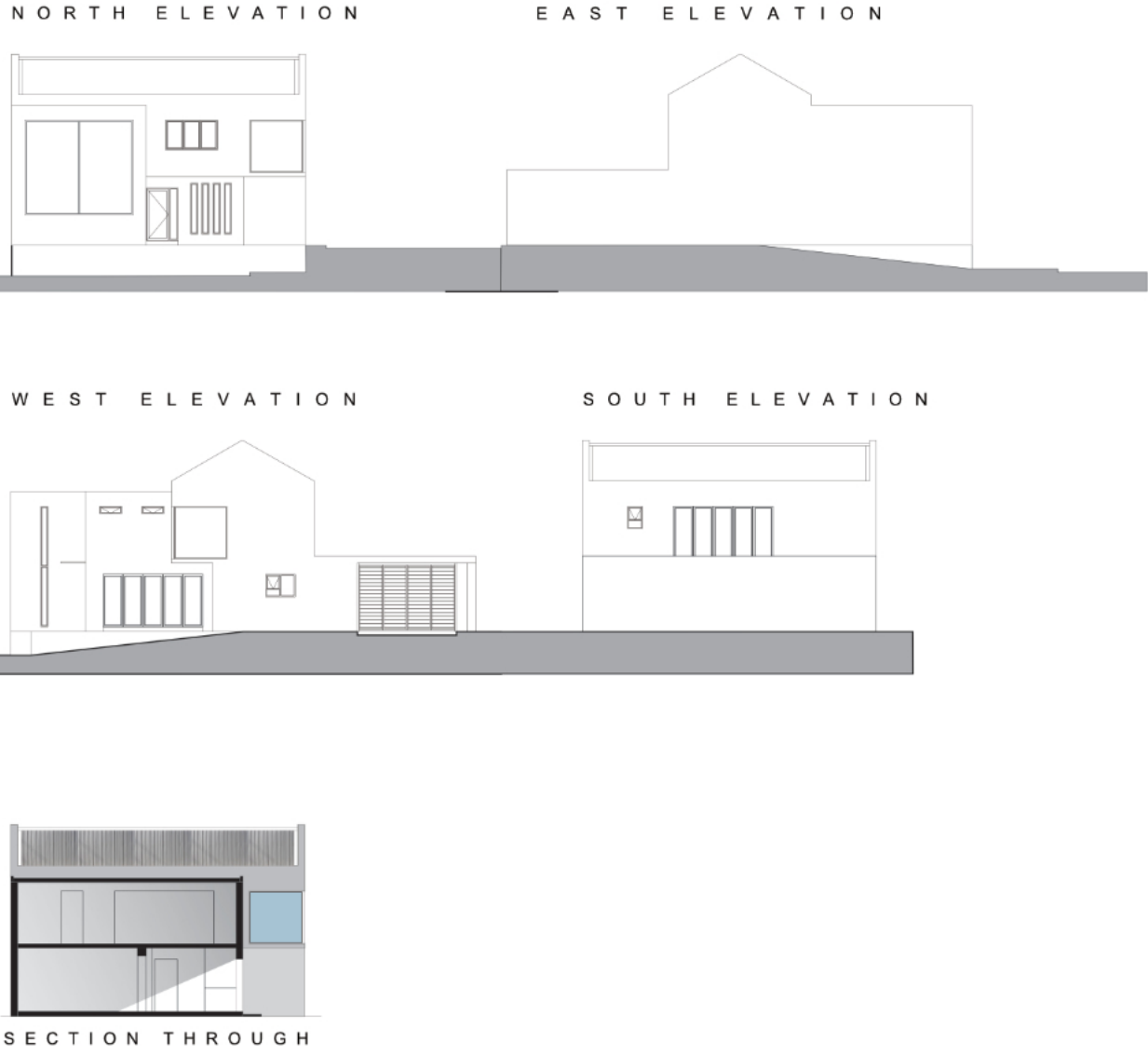
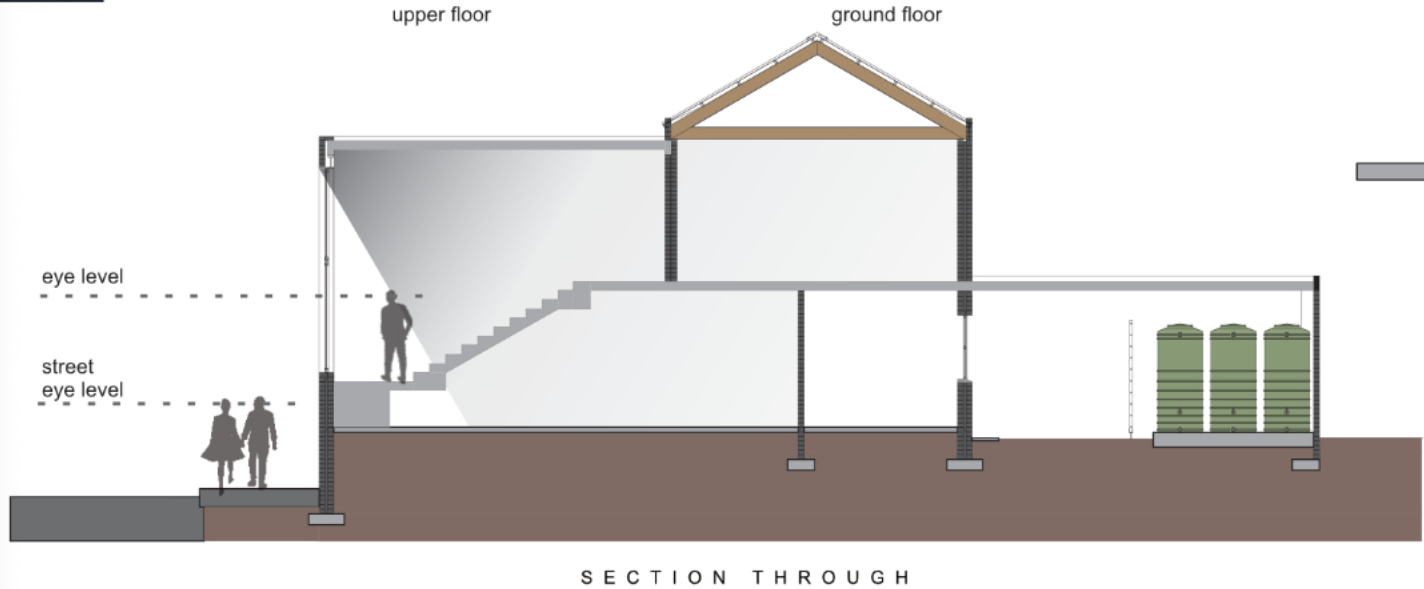
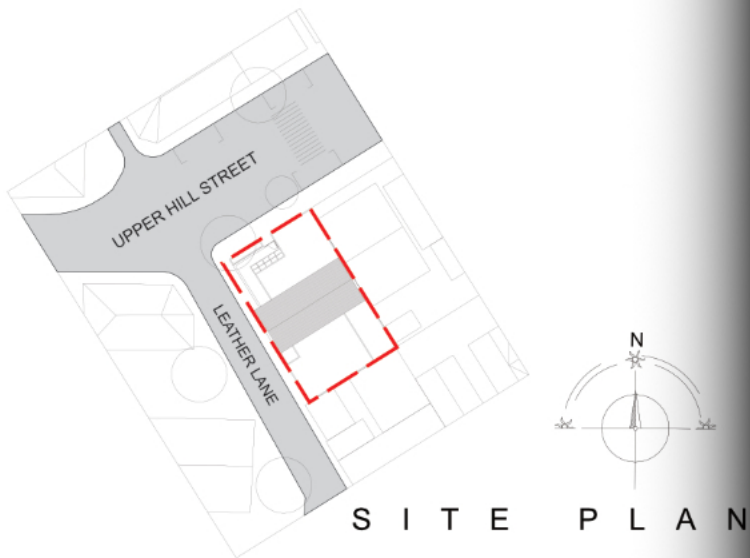
Site

Situated in Central, Port Elizabeth, ERF 2487 sits in the corner of a private and semi-private one way access street, with very relaxed building lines due to the coverage of the site. Butted right up to the street with a curb / parking separating the pedestrians from walking on the street. A tree sitting on the corner acts as a focal point and emphasises the chance in direction between the two streets. Slightly sloped downhill, a 800mm drop raises the structure up from the eye level of people walking on the street, giving some privacy. The surrounding houses have windows in their externals walls which also acts as the boundary wall taking away on privacy and can cause discomfort and in some cases a sense of paranoia of people watching you. Having the height difference cancels out the invasion of privacy.

Respecting the existing Victorian and Cape Dutch style structures by keeping key design elements whilst incorporating new contemporary points into the structure will keep the pattern of the existing structures.

Having the front and back door in one line elongates that space with it branching off to different rooms. Older Victorian homes had walls that acted as barriers between the main passage and rooms, this is due to the technology that was available to them at the time. Modern technology grants us the chance to get rid of these barriers and have free open spaces.

Having the dining room, kitchen and living room connected to the entrance “passage” via open plan design grants this open space. The upper floor is more private and will house a private reading nook, home office and main bedroom with an en-suite with a large balcony over the carport. The tall adjacent building prohibits the use of the mid day sun but is granted generous afternoon sun, slightly shaded down by the existing tree.



02

[Furniture Workshop]

university - technical project

- Economical Production Based Project
- 2020
- Industrial
- Fairview, Gqeberha, South Africa

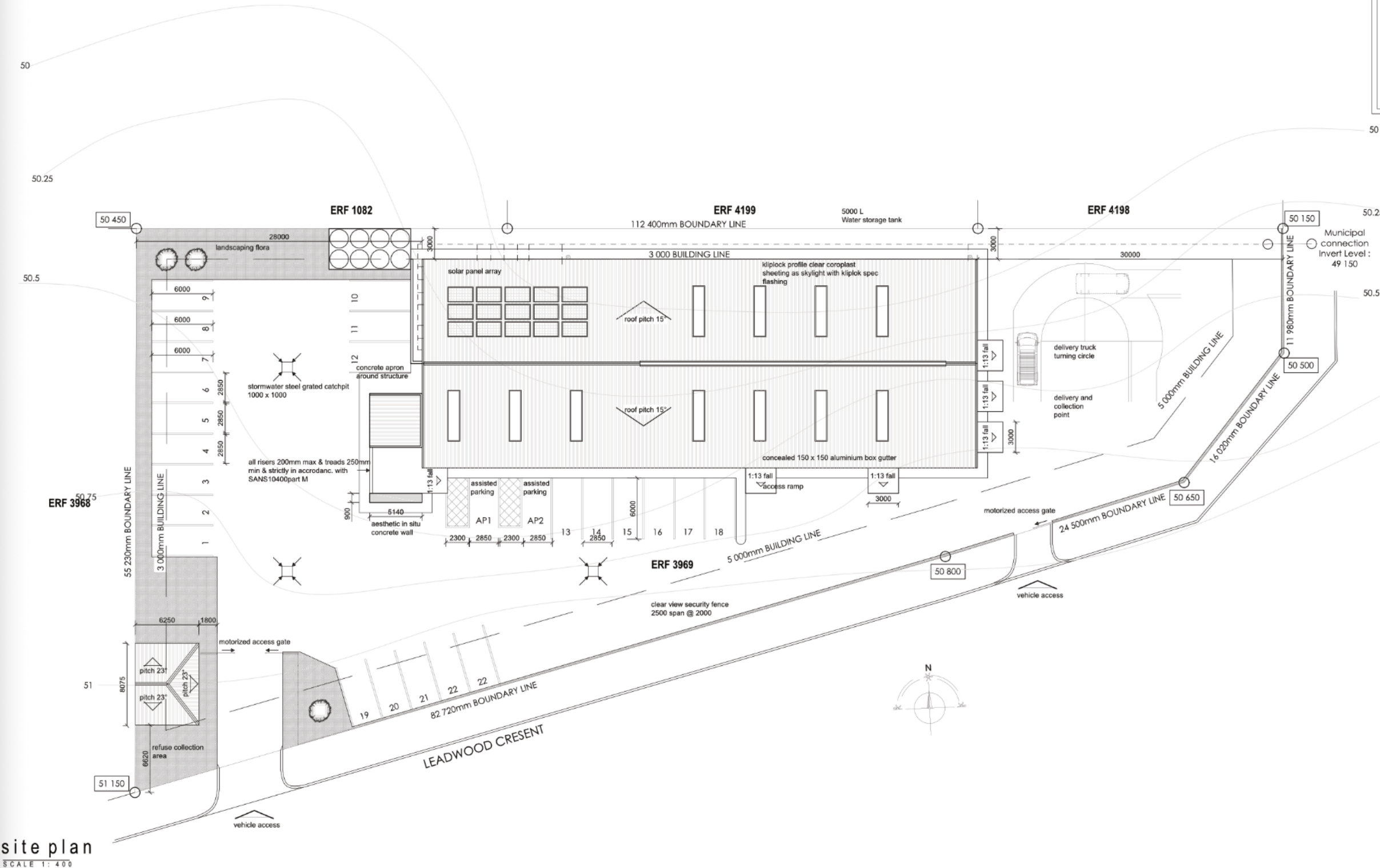
VISION

In the modern world, traveling between a design office space and a workshop area causes unnecessary wastage of time. But a bigger economical factor also needs to be considered. With the constant increase in the cost of living, everything becomes more expensive. This contributes to the cost of complete a project of this size.

By combining A-Grade office space with independent electric inverter system powered by a solar photovoltaic array on the roof, a complete showroom as well as a fully functional production line workshop would increase productivity, customer service and save project funds to allow for more products to be produced and to create a more comfortable environment for the employees who will spend the most time here. Adding external tanks to a capacity of 40 000 L rain water catchment will ensure that should there be a disruption in the municipal water supply that production can continue.

Having a production factory so close to an office space has it's own challenges such as noise pollution, dusty areas, power constraints for bigger machinery. By adding walls to act as barriers will drown out traveling sound as well as stop dust from entering the office block. Having the workshop on a separate 3 Phase distribution board with its own safety nets and switch overs will ensure the office space remains unaffected should there be electrical disruptions in the workshop.

drainage section
SCALE 1:400



List of Drawings	
Drawing number	Drawing Details
L01	Site plan + Drainage
L02	Ground Floor Plan
L03	First Storey Floor Plan
L04	Section AA
L05	Section BB
L06	Elevations East + West
L07	Elevations North + South
A01	Details A- B
C01	Component A
L08	Window + Door Schedule
L09	Electrical Ground Floor Plan
L10	Electrical First Storey
L11	Fire Plan Ground Floor Plan
L12	Fire Plan First Storey

AREA SCHEDULE	
31 Leadwood Cres eff nr.	3969
Proposed Ground Floor	1198 m²
Proposed new dwelling	4%
Existing coverage	27.77%
Proposed coverage	

Parking calculation	number of bays
office (2 / 100m²): 360m² = 7.2	8
manufacturing (1 / 100m²): 411m² = 4.1	5
warehouse (1 / 100m²): 123m² = 1.23	2
storage (1 / 100m²): 113m² = 1.13	2
Total bays	17



clear design
architectural technologist
student

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revision table	revision date

NELSON MANDELA
UNIVERSITY

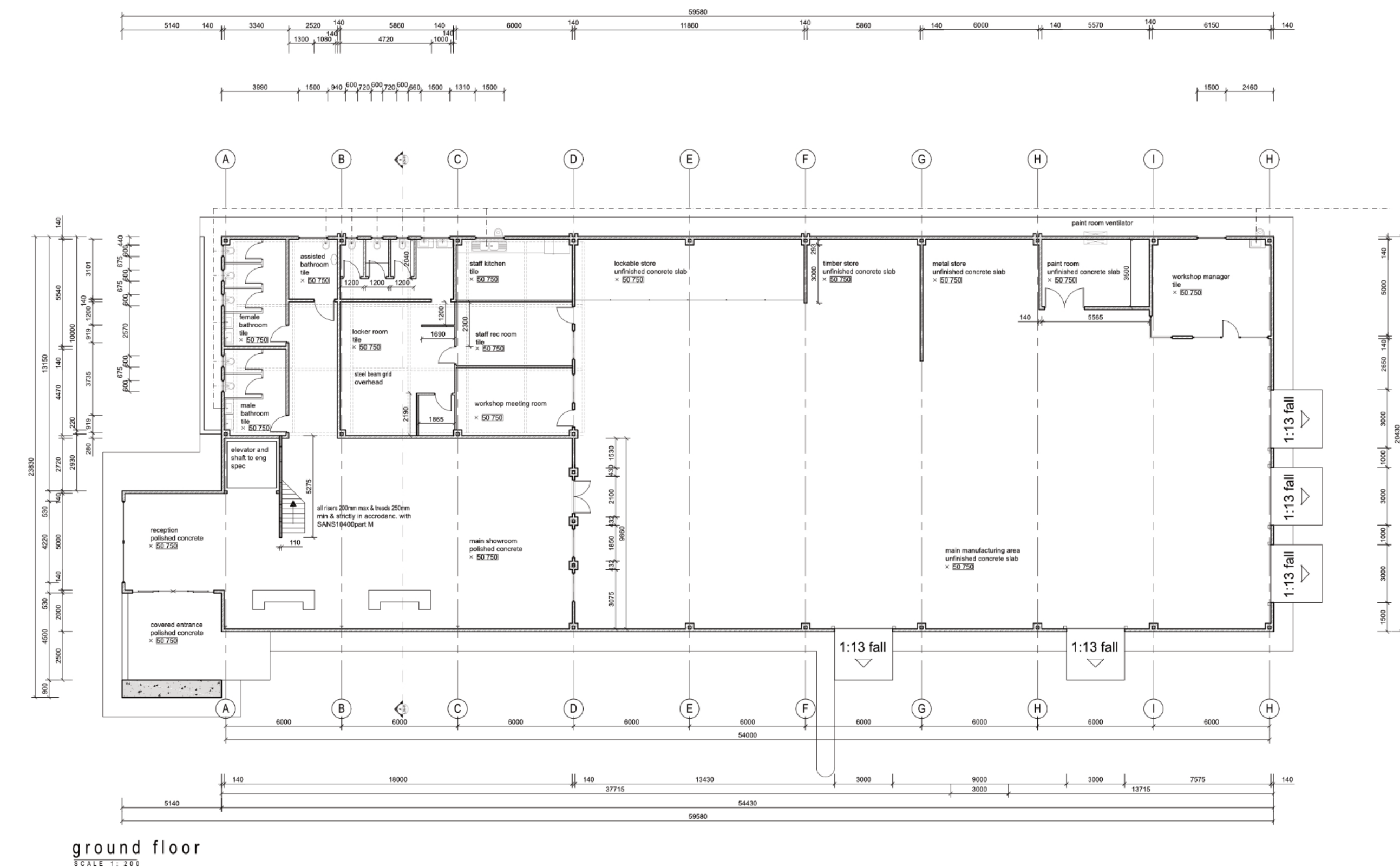
date drawn
02-Dec-2020

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signature
31 Leadwood Cres, Fairview
Port Elizabeth ERF : 3969

project
Portel Frame Structure drawing scale
drawing title
site plan + drainage 1:400

subject code
DSW 3002
project
Project 1 page no.
L-01



WALLS: concrete block plastered (min 15mm thick) and painted acc. to finishing schedule, wall paint to be Placowal 5.4. All wall paint or similar quality, apply one coat plaster primer and at least two final coats Wall 5.4. Sand in between coats - all to be applied strictly in accordance with man. spec.
Skidforce to be built in at every brick course above lintels and in foundation walls to be in accordance with SANS 10400.
ALL WALLS TO BE CONSTRUCTED BY NHBRC REGISTERED BUILDER

LINTELS: Prestressed, precast concrete lintels to be used over openings no more than 3000mm wide, with min. 4 brick courses above. Lintels shall be 300mm longer than the width of the opening unless otherwise specified. Lintels in cavity walls shall be of different widths, the internal lintel 150mm wide and the external lintel 110mm wide. This stepped DPC shall pass between the two lintels. Lintels in T10 and 220mm walls shall be the full width of the wall - unless otherwise specified by appointed structural engineer.
WATERPROOFING: 375 micron Rhinogreen type C continuous DPM below all surface beds. Uniflash 600 with Goflex system (or similar) counter flashing to all slab edges, upstands, copings & parapets.

FLOOR:
Ground: steel floated ref 183 mesh reinforced 100mm thick concrete surface bed on 200 micron Rhinogreen type C continuous DPM on 50mm sand bedding layer on layers of 150mm well rammed (to a density of 95% modified AASHTO) earth fill - note: use rammer not plate compactor.
First Storey: sheluma precast flooring

FOUNDATIONS: all foundations as shown are subject to an engineers report on subsoil conditions. REFER TO ENGINEERS SPECIFICATIONS AND DESIGN.
RAINWATER GOODS: gutters and rainwater downpipes to be made of 150mm and 75 mm Square Aluminium to be filled and cut to size by specialist, supplier to produce necessary SANS certification to satisfy SANS 10400 requirements

STAIRS & STEPS: all risers 200mm max & treads 250mm min & strictly in accordance with SANS 10400 part M.
DRAINAGE: foul water drainage pipes to be 110mm diam PVC soil pipes at min fall of 1:80 and max. fall of 1:10 - all drainage to comply with SANS 10400 part P and local authority requirements.

WINDOWS & DOORS: All NEW windows to be in Anodized aluminium frames refer to window schedule. All external doors to be filled with rubber strip door seals - refer to SANS 2044.4.3.4 - Windowglazing supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204.
IMPORTANT NOTE: Windowglazing supplied by said specialist, supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204

ALL NEW WINDOWS TO BE IN ANODIZED ALUMINIUM FRAMES REFER TO WINDOW SCHEDULE. ALL EXTERNAL DOORS TO BE FILLED WITH RUBBER STRIP DOOR SEALS - REFER TO SANS 2044.4.3.4 - WINDOWGLAZING SUPPLIER TO PROVIDE ALL NECESSARY CERTIFICATION TO SATISFY COMPLIANCE WITH SANS 10400, SANS XA & SANS 204.

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revision table	revision date

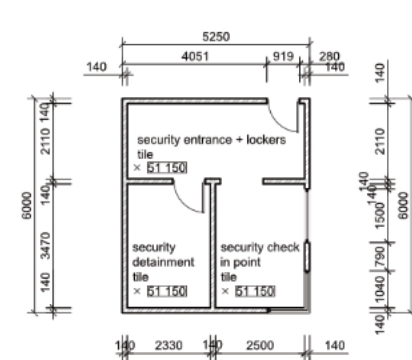
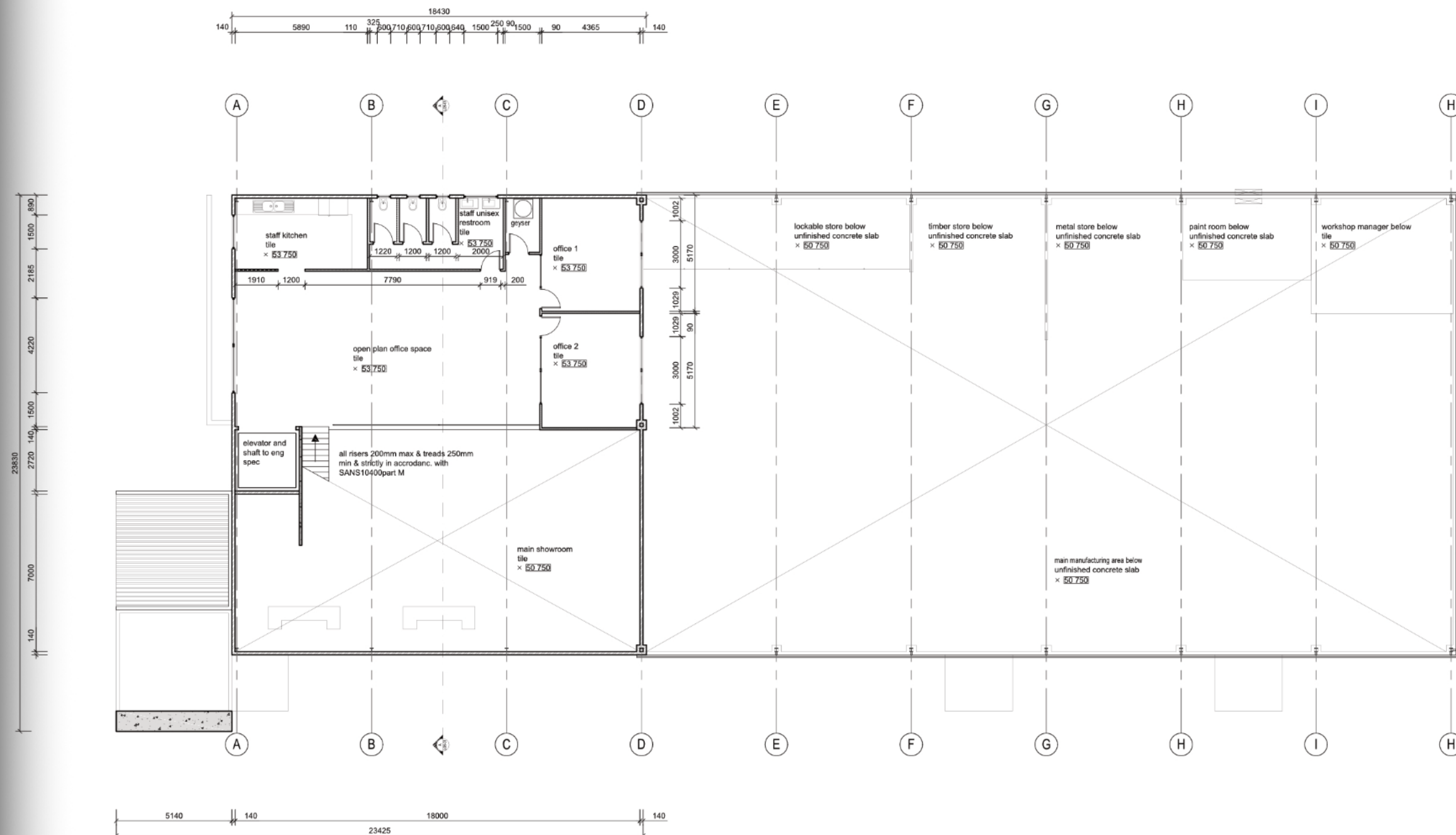
NELSON MANDELA UNIVERSITY
 date drawn
 02 - Dec - 2020

drawn by
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address
31 Leadwood Cres, Fairview
Port Elizabeth

project
Partial Frame Structure
drawing title
ground floor plan
subject code
DSW 3002

project
Project 1
page no.
L-02



WALLS: concrete block plastered (min 15mm thick) and painted acc. to finishing schedule, wall paint to be Placowal 5.4. All wall paint or similar quality, apply one coat plaster primer and at least two final coats Wall 5.4. Sand in between coats - all to be applied strictly in accordance with man. spec.
Skidforce to be built in at every brick course above lintels and in foundation walls to be in accordance with SANS 10400.
ALL WALLS TO BE CONSTRUCTED BY NHBRC REGISTERED BUILDER

LINTELS: Prestressed, precast concrete lintels to be used over openings no more than 3000mm wide, with min. 4 brick courses above. Lintels shall be 300mm longer than the width of the opening unless otherwise specified. Lintels in cavity walls shall be of different widths, the internal lintel 150mm wide and the external lintel 110mm wide. This stepped DPC shall pass between the two lintels. Lintels in T10 and 220mm walls shall be the full width of the wall - unless otherwise specified by appointed structural engineer.
WATERPROOFING: 375 micron Rhinogreen type C continuous DPM below all surface beds. Uniflash 600 with Goflex system (or similar) counter flashing to all slab edges, upstands, copings & parapets.

FLOOR:
Ground: steel floated ref 183 mesh reinforced 100mm thick concrete surface bed on 200 micron Rhinogreen type C continuous DPM on 50mm sand bedding layer on layers of 150mm well rammed (to a density of 95% modified AASHTO) earth fill - note: use rammer not plate compactor.
First Storey: sheluma precast flooring

FOUNDATIONS: all foundations as shown are subject to an engineers report on subsoil conditions. REFER TO ENGINEERS SPECIFICATIONS AND DESIGN.
RAINWATER GOODS: gutters and rainwater downpipes to be made of 150mm and 75 mm Square Aluminium to be filled and cut to size by specialist, supplier to produce necessary SANS certification to satisfy SANS 10400 requirements

STAIRS & STEPS: all risers 200mm max & treads 250mm min & strictly in accordance with SANS 10400 part M.
DRAINAGE: foul water drainage pipes to be 110mm diam PVC soil pipes at min fall of 1:80 and max. fall of 1:10 - all drainage to comply with SANS 10400 part P and local authority requirements.

WINDOWS & DOORS: All NEW windows to be in Anodized aluminium frames refer to window schedule. All external doors to be filled with rubber strip door seals - refer to SANS 2044.4.3.4 - Windowglazing supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204.
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revision table	revision date

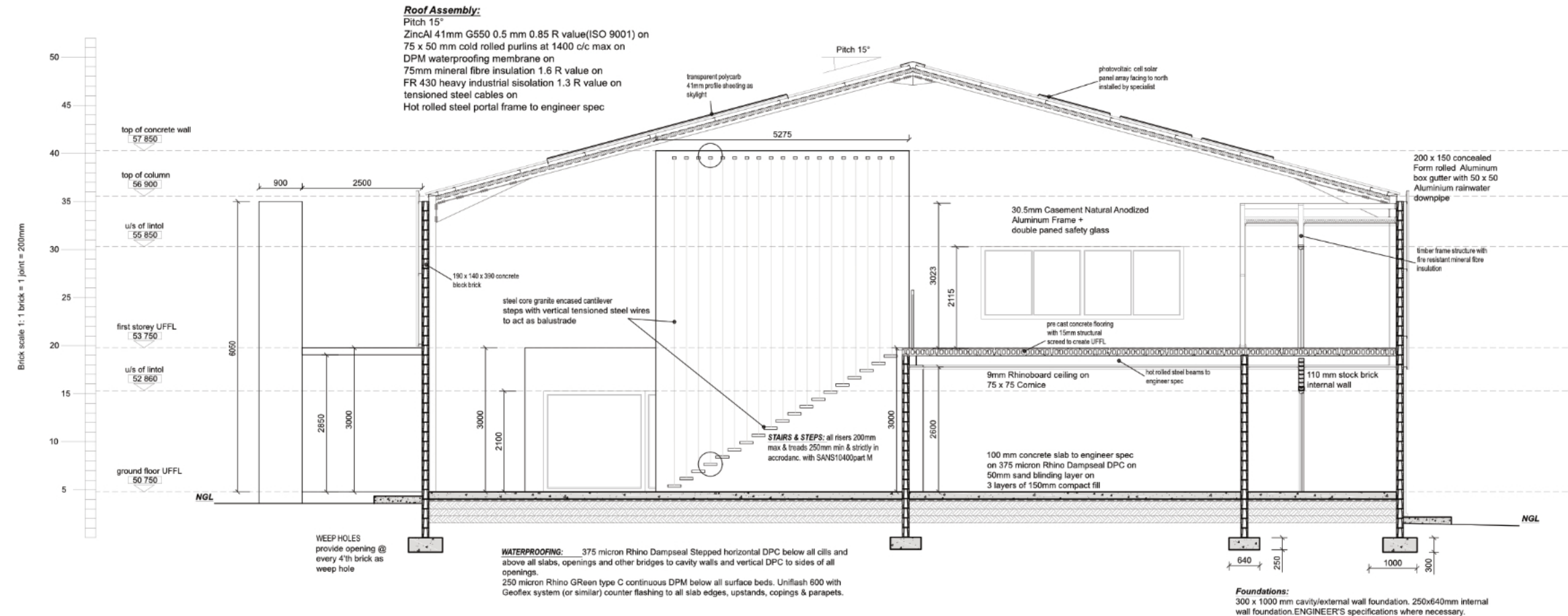
NELSON MANDELA UNIVERSITY
 date drawn
 02 - Dec - 2020

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address
31 Leadwood Cres, Fairview
Port Elizabeth

project
Partial Frame Structure
drawing title
first storey floor plan + security cubicle
subject code
DSW 3002

project
Project 1
page no.
L-03

section AA
SCALE 1:100

Cold Water Demand	
A20 Classification: A21 Occupancy: Cold Water Demand (SANS 10252-1) Area: Total Demand:	G1 1 Person per 15m² 7 - 10 L / person / day 380m³ = 26 persons 10L x 26 = 260L

Hot Water Demand	
A20 Classification: A21 Occupancy: Hot Water Generation: Hot Water Demand (SANS 10252-1) Number of Persons: Total Demand: Hot Water Storage Capacity Required: Capacity Provided:	G1 1 Person per 15m² 200Pa Solar Panel Heat Exchanger 10 - 12 L / person / day 26 12L x 26 = 312L 312L x 35% = 109.2L 1000L

Cold Water Demand	
A20 Classification: A21 Occupancy: Cold Water Demand (SANS 10252-1) Area: Total Demand:	D2 1 Person per 15m² 100 - 200 L / person / day 49 100L x 49 = 4900L

Hot Water Demand	
A20 Classification: A21 Occupancy: Hot Water Generation: Hot Water Demand (SANS 10252-1) Number of Persons: Total Demand: Hot Water Storage Capacity Required: Capacity Provided:	D2 1 Person per 15m² 200Pa Solar Heat Exchanger 40 - 10L / person / day 49 40L x 49 = 1960L 1960L x 35% = 686L 1000L

SANS 10400 XA Part A (3.15) G1 - Office R - Value - Zone 4 - G1 (min 3.7 m²/KW)		
Material	R value	total R value min 3.7 m²/KW
41mm ZincAl Sheeting	0.85 m²/KW	
Sisalation FR 430 315 micron	1.38 m²/KW	
75mm mineral fibre insulation	1.6 m²/KW	
0.85+1.38+1.6	3.75 m²/KW	
min R Value	3.7 m²/KW	
proposed R Value	3.75 m²/KW	PASS
Max energy consumption		

WALLS: concrete block plastered (min 15mm thick) and painted acc. to finishing schedule, wall paint to be Plascon Wall & All wall paint or similar quality, apply one coat plaster primer and at least two final coats Wall & All. Sand in between coats - all to be applied strictly in accordance with man. spec.
Brickwork to be built in at every brick course above lintels and in foundation walls to be in accordance with SANS 10400.
ALL WALLS TO BE CONSTRUCTED BY NMBR REGISTERED BUILDER

LINTELS: Prestressed, precast concrete lintels to be used over openings to more than 300mm wide, with min. 4 brick courses above. Lintels shall be 300mm longer than the width of the opening unless otherwise specified. Lintels in cavity walls shall be of different widths, the internal lintel 150mm wide and the external lintel 110mm wide. The stepped DPC shall pass between the two lintels. Lintels in 110 and 230mm walls shall be the full width of the wall - unless otherwise specified by appointed structural engineer.
WATERPROOFING: 375 micron Rhino Dampseal Stepped horizontal DPC below all eaves and above all slabs, openings and other bridges to cavity walls and vertical DPC to sides of all openings. 250 micron Rhino Green type C continuous DPM below all surface beds. Uniflash 600 with Geoflex system (or similar) counter flashing to all slab edges, upstands, copings & parapets.

FLOOR:
Ground: steel floated ref 193 mesh reinforced 100mm thick concrete surface bed on 250 micron Rhino Green type C continuous DPM on 50mm sand blinding layer on layers of 150mm well rammed (to a density of 90% modified AASHTO) earth fill - note: use rammer not plate compactor.
First Storey: shikuma precast flooring

FOUNDATIONS: all foundations as shown are subject to an engineers report on subsoil conditions. REFER TO ENGINEERS SPECIFICATIONS AND DESIGN.

RAINWATER GOODS: gutters and rainwater downpipes to be made of 150mm and 75 mm Square Aluminium to be fitted and cut to size by specialist, supplier to produce necessary SABS certification to satisfy SANS 10400 requirements.

STAIRS & STEPS: all risers 200mm max & treads 250mm min & strictly in accordance with SANS 10400 part M.

DRAINAGE: low water drainage pipes to be 110mm diam PVC soil pipes at min fall of 1:50 and max. fall of 1:10 - all drainage to comply with SANS 10400 part P and local authority requirements.

WINDOWS & DOORS: All new windows to be in Anodized Aluminium frames refer to window schedule. All external doors to be fitted with rubber strip door seals - refer to SANS 2044.4.3.4 - Window glazing supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204. All new windows to comply with air infiltration requirements as per SANS 613 and water penetration standards.

IMPORTANT NOTE: Window glazing supplied by said specialist, supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204.



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revision table	revision date

date drawn
02 - Dec - 2020

drawn by
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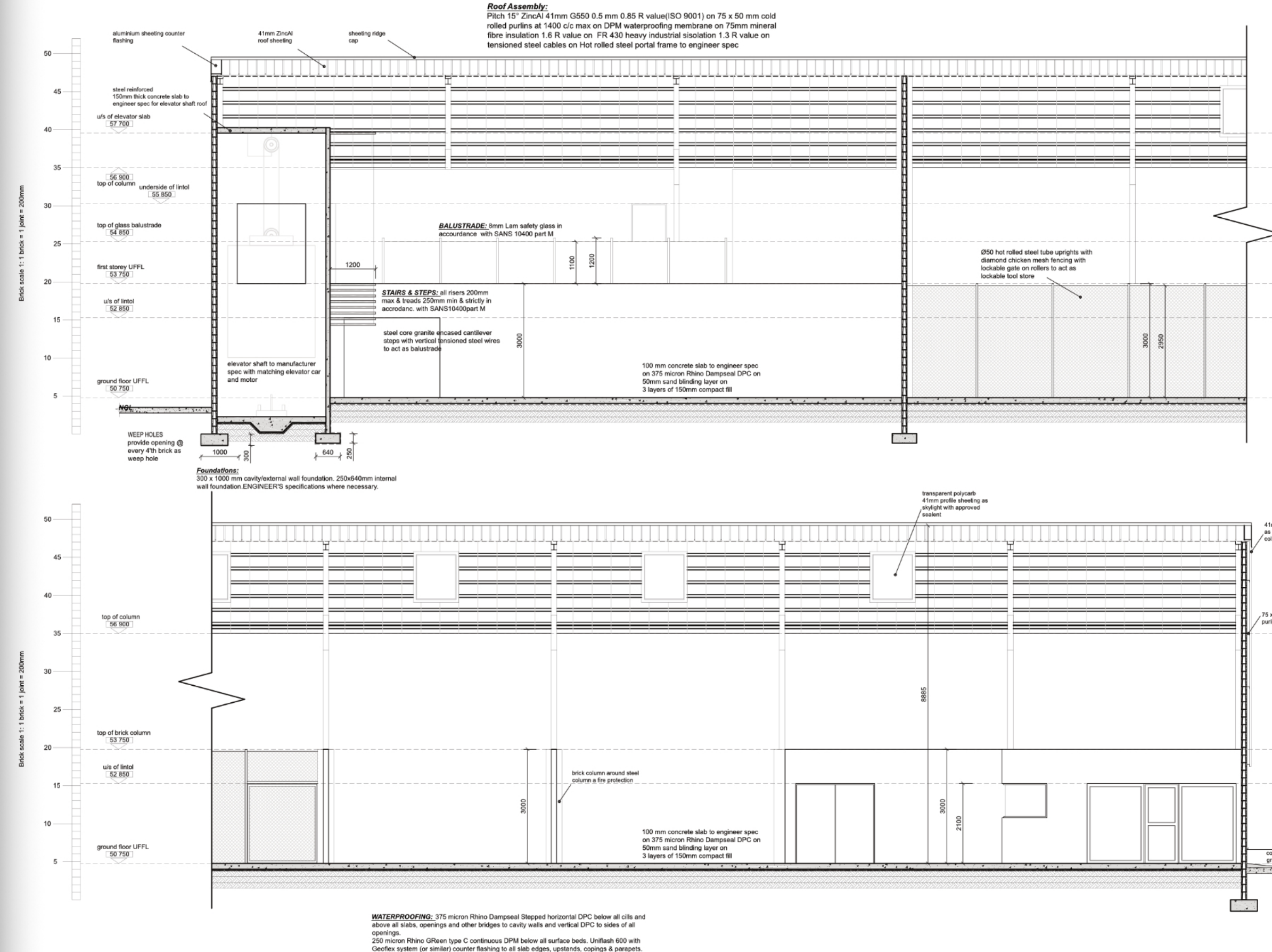
project
Portal Frame Structure

drawing title
section AA

subject code
DSW 3002

project
Project 1

page no.
L-04

section BB
SCALE 1:100

WALLS: concrete block plastered (min 15mm thick) and painted acc. to finishing schedule, wall paint to be Plascon Wall & All wall paint or similar quality, apply one coat plaster primer and at least two final coats Wall & All. Sand in between coats - all to be applied strictly in accordance with man. spec.
Brickwork to be built in at every brick course above lintels and in foundation walls to be in accordance with SANS 10400.
ALL WALLS TO BE CONSTRUCTED BY NMBR REGISTERED BUILDER

LINTELS: Prestressed, precast concrete lintels to be used over openings to more than 300mm wide, with min. 4 brick courses above. Lintels shall be 300mm longer than the width of the opening unless otherwise specified. Lintels in cavity walls shall be of different widths, the internal lintel 150mm wide and the external lintel 110mm wide. The stepped DPC shall pass between the two lintels. Lintels in 110 and 230mm walls shall be the full width of the wall - unless otherwise specified by appointed structural engineer.
WATERPROOFING: 375 micron Rhino Dampseal Stepped horizontal DPC below all eaves and above all slabs, openings and other bridges to cavity walls and vertical DPC to sides of all openings. 250 micron Rhino Green type C continuous DPM below all surface beds. Uniflash 600 with Geoflex system (or similar) counter flashing to all slab edges, upstands, copings & parapets.

FLOOR:
Ground: steel floated ref 193 mesh reinforced 100mm thick concrete surface bed on 250 micron Rhino Green type C continuous DPM on 50mm sand blinding layer on layers of 150mm well rammed (to a density of 90% modified AASHTO) earth fill - note: use rammer not plate compactor.
First Storey: shikuma precast flooring

FOUNDATIONS: all foundations as shown are subject to an engineers report on subsoil conditions. REFER TO ENGINEERS SPECIFICATIONS AND DESIGN.

RAINWATER GOODS: gutters and rainwater downpipes to be made of 150mm and 75 mm Square Aluminium to be fitted and cut to size by specialist, supplier to produce necessary SABS certification to satisfy SANS 10400 requirements.

STAIRS & STEPS: all risers 200mm max & treads 250mm min & strictly in accordance with SANS 10400 part M.

DRAINAGE: low water drainage pipes to be 110mm diam PVC soil pipes at min fall of 1:50 and max. fall of 1:10 - all drainage to comply with SANS 10400 part P and local authority requirements.

WINDOWS & DOORS: All new windows to be in Anodized Aluminium frames refer to window schedule. All external doors to be fitted with rubber strip door seals - refer to SANS 2044.4.3.4 - Window glazing supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204. All new windows to comply with air infiltration requirements as per SANS 613 and water penetration standards.

IMPORTANT NOTE: Window glazing supplied by said specialist, supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204.



pc van rooyen scap num : NA
083 566 4765 / 215166574@mandela.ac.za

revision table	revision date

date drawn
02 - Dec - 2020

drawn by
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215166574@mandela.ac.za

address
31 Leadwood Cres, Fairview
Port Elizabeth

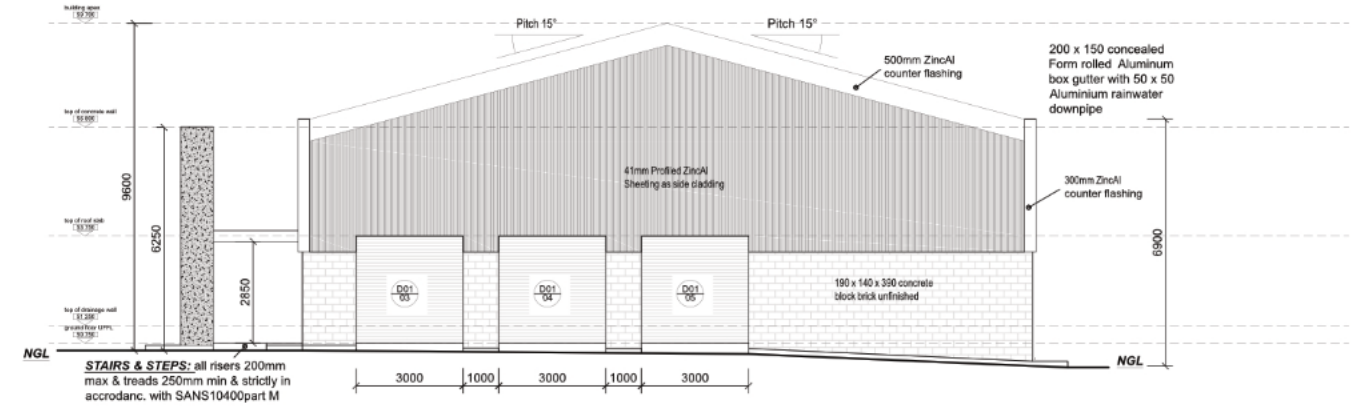
project
Portal Frame Structure

drawing title
section BB

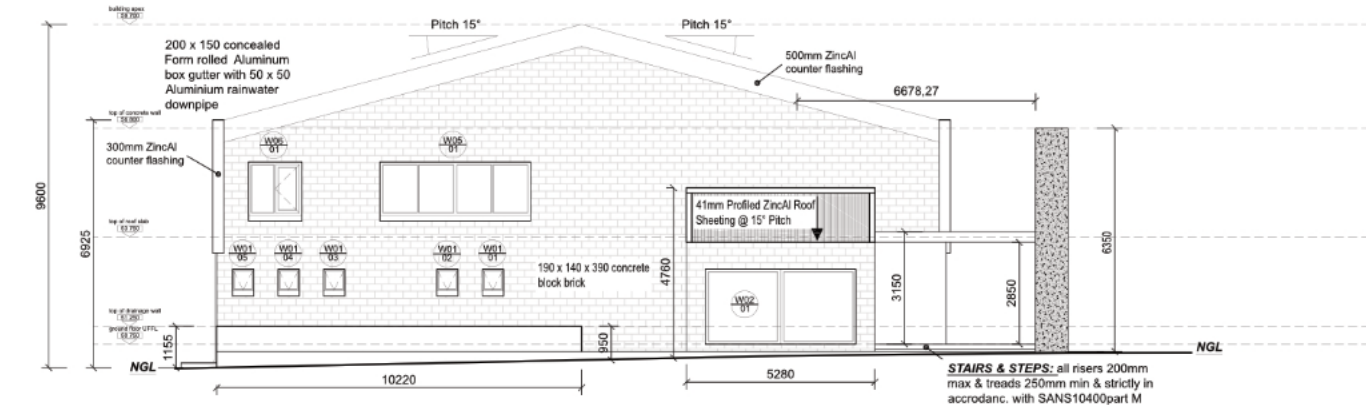
subject code
DSW 3002

project
Project 1

page no.
L-05



east elevation
SCALE 1:200



west elevation
SCALE 1:200

WALLS: concrete block plastered (min 15mm thick) and painted
acc. to finishing schedule, wall paint to be Placow Wall & All wall
paint or similar quality, apply one coat plaster primer and at least
two final coats Wall & All. Sand in between coats - all to be applied
strictly in accordance with man. spec.
Brickwork to be built in at every brick course above lintels and in
foundation walls to be in accordance with SANS
ALL WALLS TO BE CONSTRUCTED BY NHBC REGISTERED
BUILDER

LINTELS: Prestressed, precast concrete lintels to be used over
openings to more than 3000mm wide, with min. 4 brick courses
above. Lintels shall be 300mm longer than the width of the opening
unless otherwise specified. Lintels in cavity walls shall be of
different widths, the internal lintel 150mm wide and the external
lintel 110mm wide. The stepped DPC shall pass between the two
lintels. Lintels in 110 and 220mm walls shall be the full width of the
wall - unless otherwise specified by appointed structural engineer
WATERPROOFING: 375 micron Rhinex Dimpled Staged
horizontal DPC below all eaves and above all sills, openings and
other bridges to cavity walls and vertical DPC to sides of all
openings.
250 micron Rhinex Green type C continuous DPM below all
surface beds. Unifast 600 with Geotex system (or similar) counter
flushing to all side eaves, upstands, copings & parapets.

FLOOR:
Ground : steel floated ref 183 mesh reinforced 100mm thick
concrete surface bed on 200 micron Rhinex Green type C
continuous DPM on 50mm sand bedding layer on layers of 150mm
well rammed (to a density of 98% modified AASHTO) earth fill
note: use tammer not plate compactor
First Storey : shikuma precast flooring

FOUNDATIONS: all foundations as shown are subject to an
engineers report on subsoil conditions. REFER TO ENGINEERS
SPECIFICATIONS AND DESIGN
RAINWATER GOODS: gutters and rainwater downpipes to be
made of 150mm and 75 mm Square Aluminum to be fitted and cut
to size by specialist, supplier to produce necessary SANS
certification to satisfy SANS 10400 requirements

STAIRS & STEPS: all risers 200mm max & treads 250mm min &
strictly in accordance with SANS10400part M
DRAINAGE: low water drainage pipes to be 110mm diam PVC
soil pipes at min fall of 1:80 and max. fall of 1:10 - all drainage to
comply with SANS 15400 part F and local authority requirements

WINDOWS & DOORS: All new windows to be in Anodized
aluminum frames refer to window schedule All external doors to be
fitted with rubber strip door seals - refer to SANS 2044.4.3.4 -
Windowglazing supplier to provide all necessary certification to
satisfy compliance with SANS 10400, SANS 1640, SANS 1641 & SANS 204
All new windows to comply with air infiltration requirements as per
SANS 813 and water penetration standards
IMPORTANT NOTE: Windowglazing, supplied by said specialist,
supplier to provide all necessary certification to satisfy compliance
with SANS 10400, SANS 1640 & SANS 204



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revision table	revision date

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UNIVERSITY

date drawn
02 - Dec - 2020

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address
31 Leadwood Cres, Fairview
Port Elizabeth

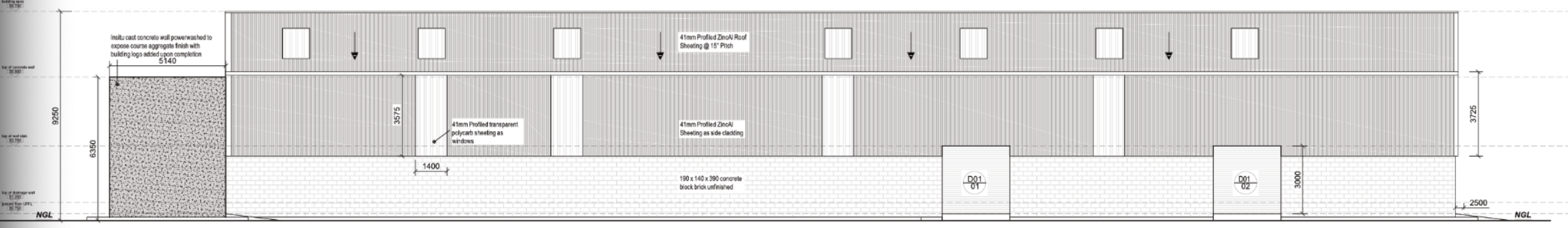
project
Portal Frame Structure

drawing title
south + west elevations

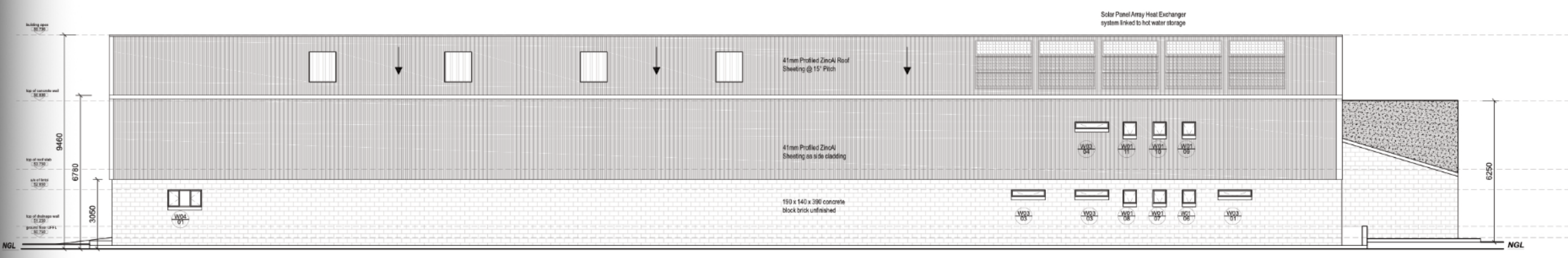
subject code
DSW 3002

project
Project 1

page no.
L-06



south elevation
SCALE 1:200



west elevation
SCALE 1:200

WALLS: concrete block plastered (min 15mm thick) and painted
acc. to finishing schedule, wall paint to be Placow Wall & All wall
paint or similar quality, apply one coat plaster primer and at least
two final coats Wall & All. Sand in between coats - all to be applied
strictly in accordance with man. spec.
Brickwork to be built in at every brick course above lintels and in
foundation walls to be in accordance with SANS
ALL WALLS TO BE CONSTRUCTED BY NHBC REGISTERED
BUILDER

LINTELS: Prestressed, precast concrete lintels to be used over
openings to more than 3000mm wide, with min. 4 brick courses
above. Lintels shall be 300mm longer than the width of the opening
unless otherwise specified. Lintels in cavity walls shall be of
different widths, the internal lintel 150mm wide and the external
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lintels. Lintels in 110 and 220mm walls shall be the full width of the
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WATERPROOFING: 375 micron Rhinex Dimpled Staged
horizontal DPC below all eaves and above all sills, openings and
other bridges to cavity walls and vertical DPC to sides of all
openings.
250 micron Rhinex Green type C continuous DPM below all
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Ground : steel floated ref 183 mesh reinforced 100mm thick
concrete surface bed on 200 micron Rhinex Green type C
continuous DPM on 50mm sand bedding layer on layers of 150mm
well rammed (to a density of 98% modified AASHTO) earth fill
note: use tammer not plate compactor
First Storey : shikuma precast flooring

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to size by specialist, supplier to produce necessary SANS
certification to satisfy SANS 10400 requirements

STAIRS & STEPS: all risers 200mm max & treads 250mm min &
strictly in accordance with SANS10400part M
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soil pipes at min fall of 1:80 and max. fall of 1:10 - all drainage to
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IMPORTANT NOTE: Windowglazing, supplied by said specialist,
supplier to provide all necessary certification to satisfy compliance
with SANS 10400, SANS 1640 & SANS 204



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revision table	revision date

NELSON MANDELA
UNIVERSITY

date drawn
02 - Dec - 2020

drawn by
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215166574@mandela.ac.za

address
31 Leadwood Cres, Fairview
Port Elizabeth

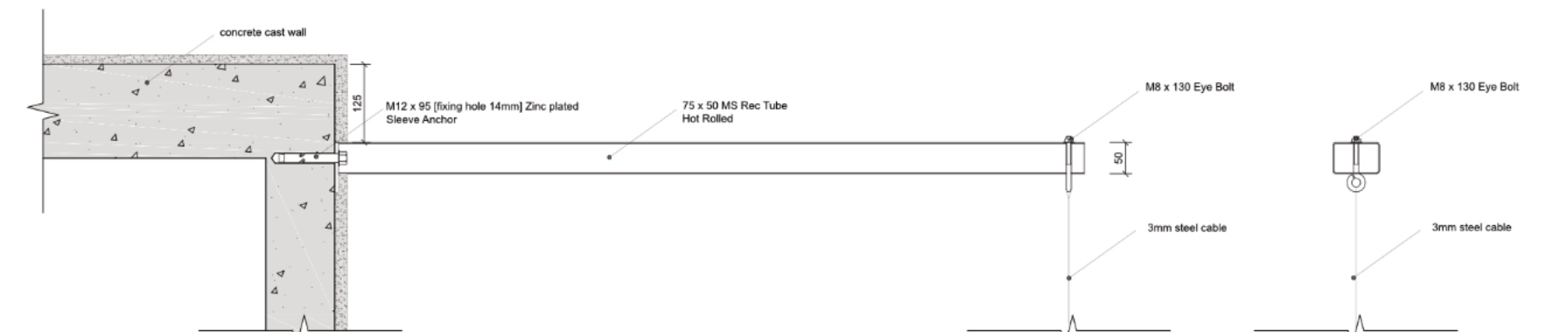
project
Portal Frame Structure

drawing title
south + west elevations

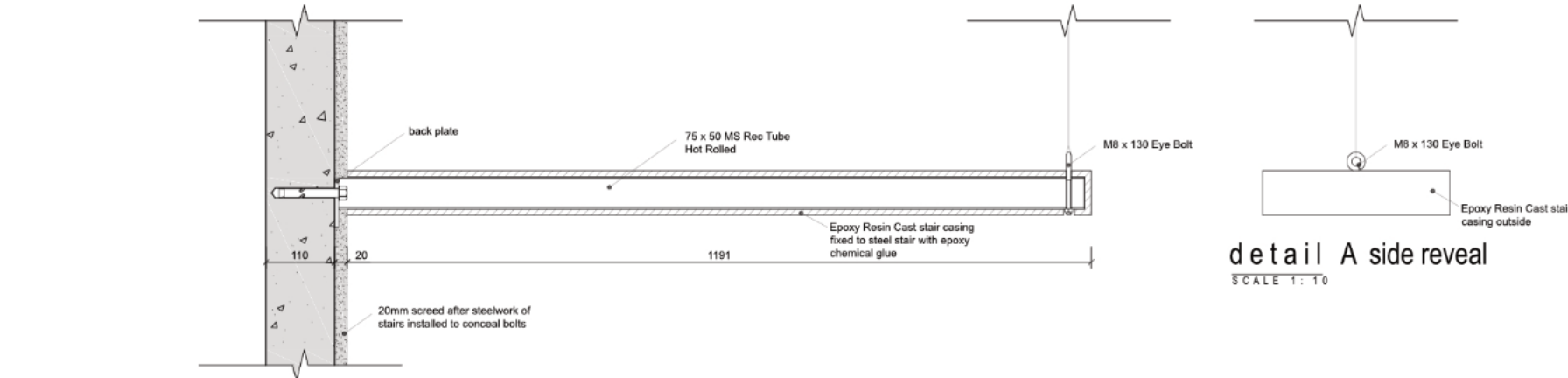
subject code
DSW 3002

project
Project 1

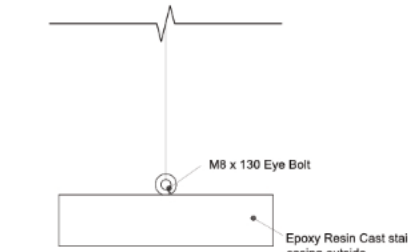
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L-06



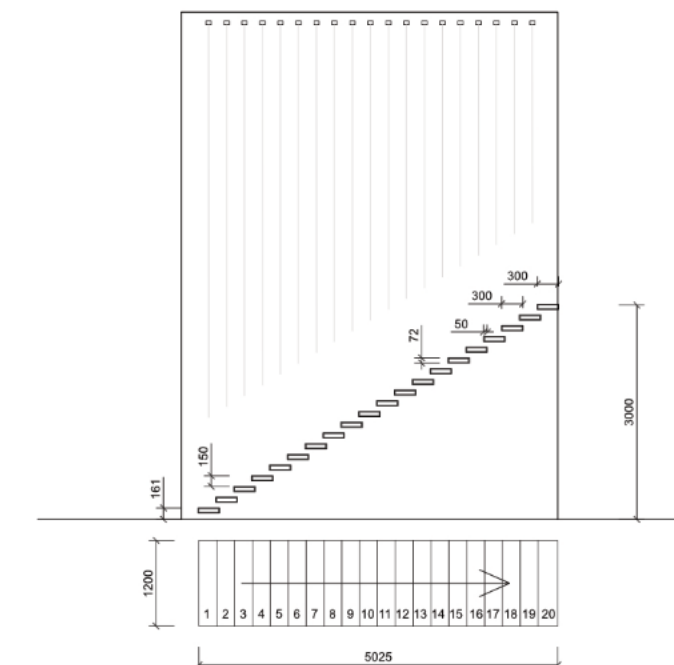
detail B
SCALE 1:5



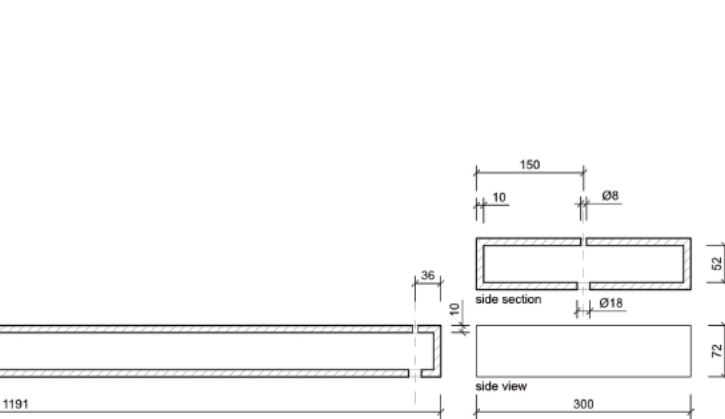
detail B side reveal
SCALE 1:5



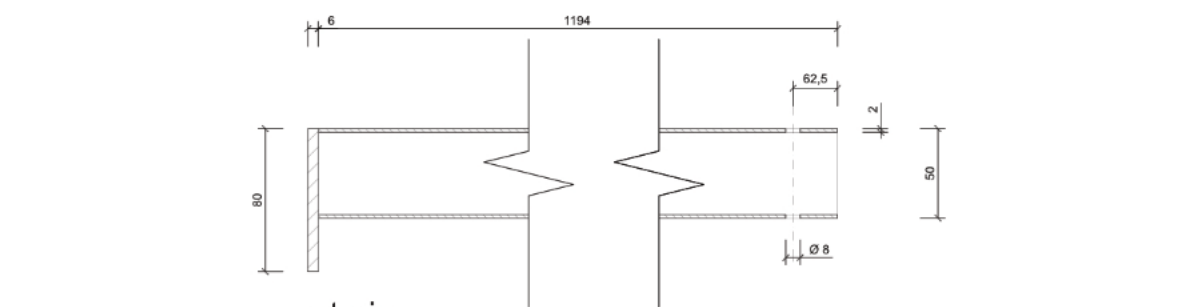
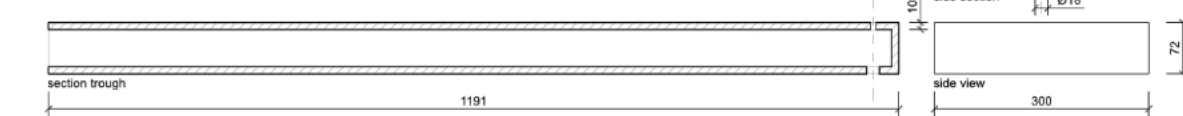
detail A side reveal
SCALE 1:10



staircase
SCALE 1:100



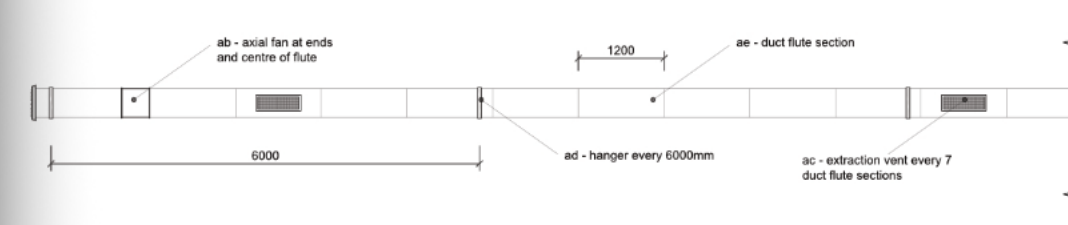
AE Epoxy Resin Cast stair casing
SCALE 1:10



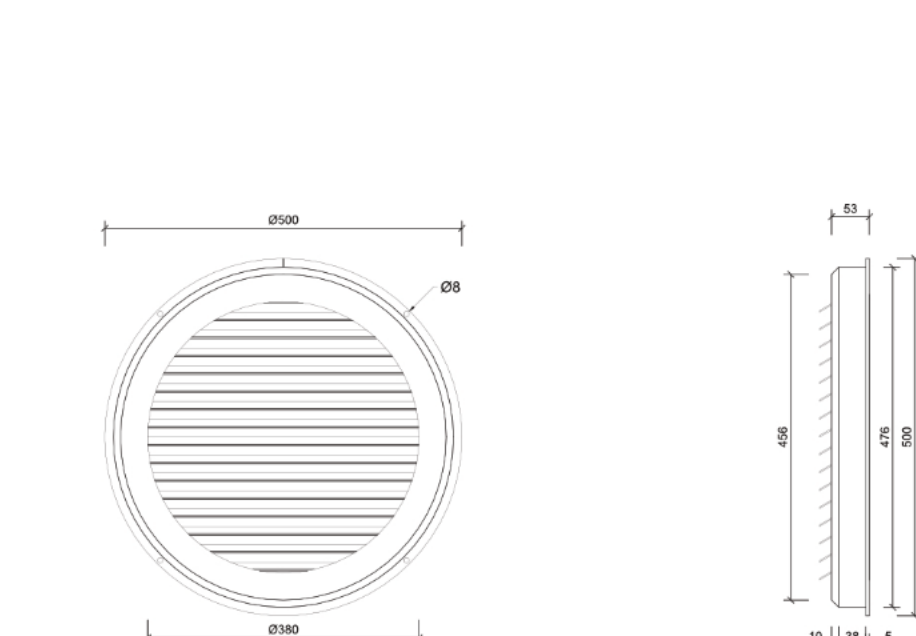
stair
SCALE 1: 4

Theoretical Weight	
component	material
detail A	
aa	80 x 6 Flatbar @ 3,768kg/m = 1.27
ab	Zinc plated ST = 0.250
ac	50x502 ms ST @ 3,03kg/m = 3.64
ad	75x502 ms ST @ 3,84kg/m = 13
ae	resin casing @ 650m ² = 5.54
af	M8 eye bolt = 0.135
	total estimate = 24kg
detail B	
ba	80 x 6 Flatbar @ 3,768kg/m = 0.51
bb	Zinc plated ST = 0.250
bc	50x502 ms ST @ 3,03kg/m = 3.64
bd	M8 eye bolt = 0.135
	total estimate = 4.8kg

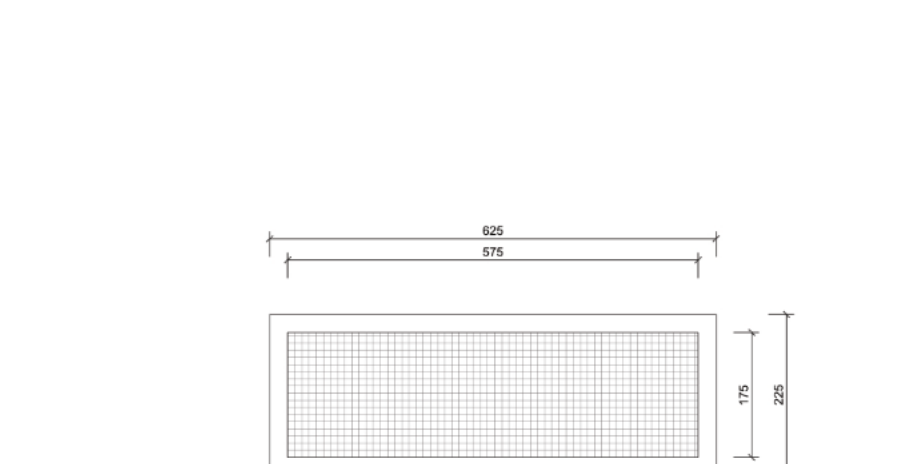
STAIRS & STEPS: all risers 200mm max & treads 250mm min & strictly in accordance with SANS10400 part M



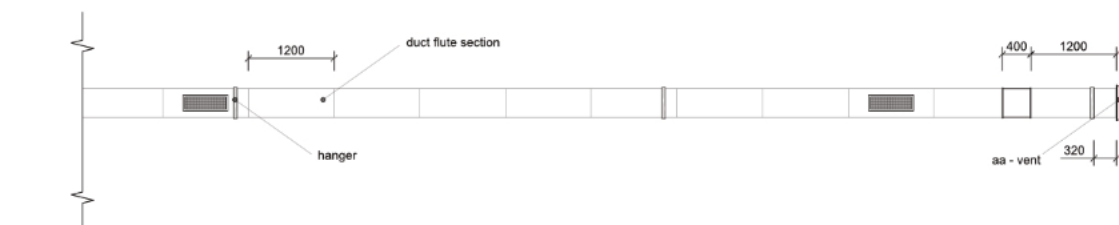
extraction duct
SCALE 1: 100



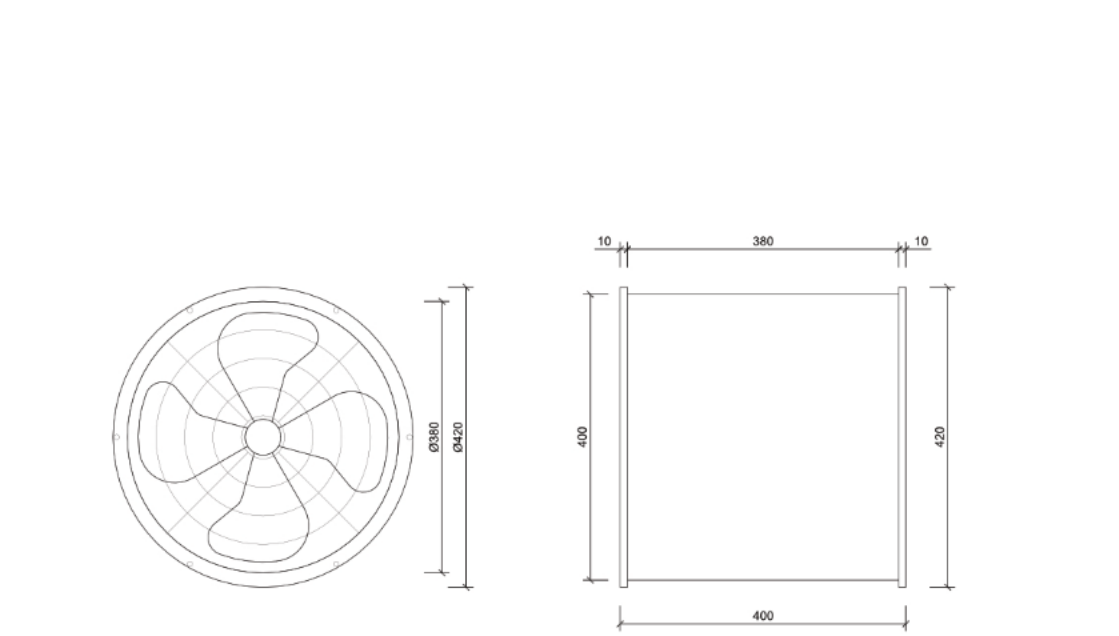
aa - vent
SCALE 1: 10



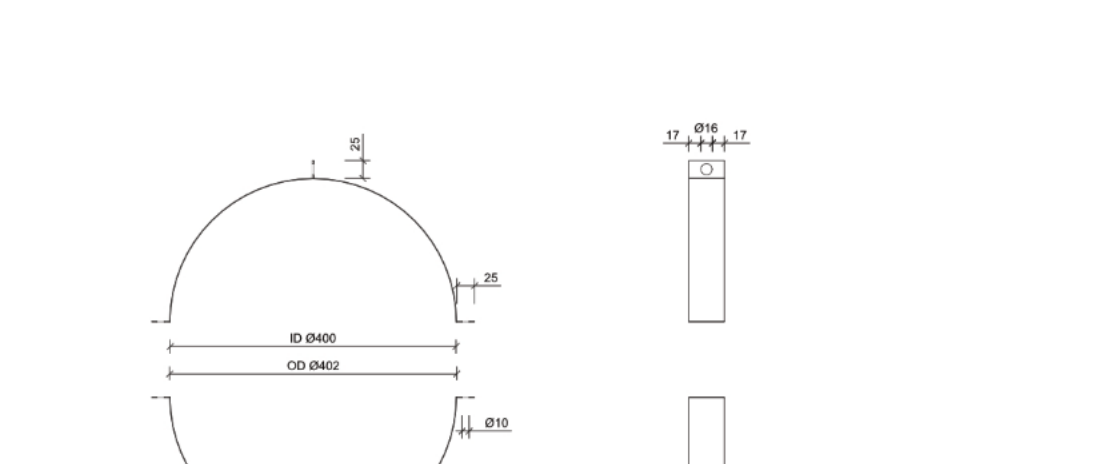
ac - extraction vent
SCALE 1: 10



extraction duct
SCALE 1:100



ab - axial fan
SCALE 1: 10



ad - hanger
SCALE 1:10

[illegible]

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revision table	revision date

NELSON MANDELA
UNIVERSITY

date drawn

02 - Dec - 2020	
drawn by	signature

PC van Rooyen 215166574@mandela.ac.za	
address	

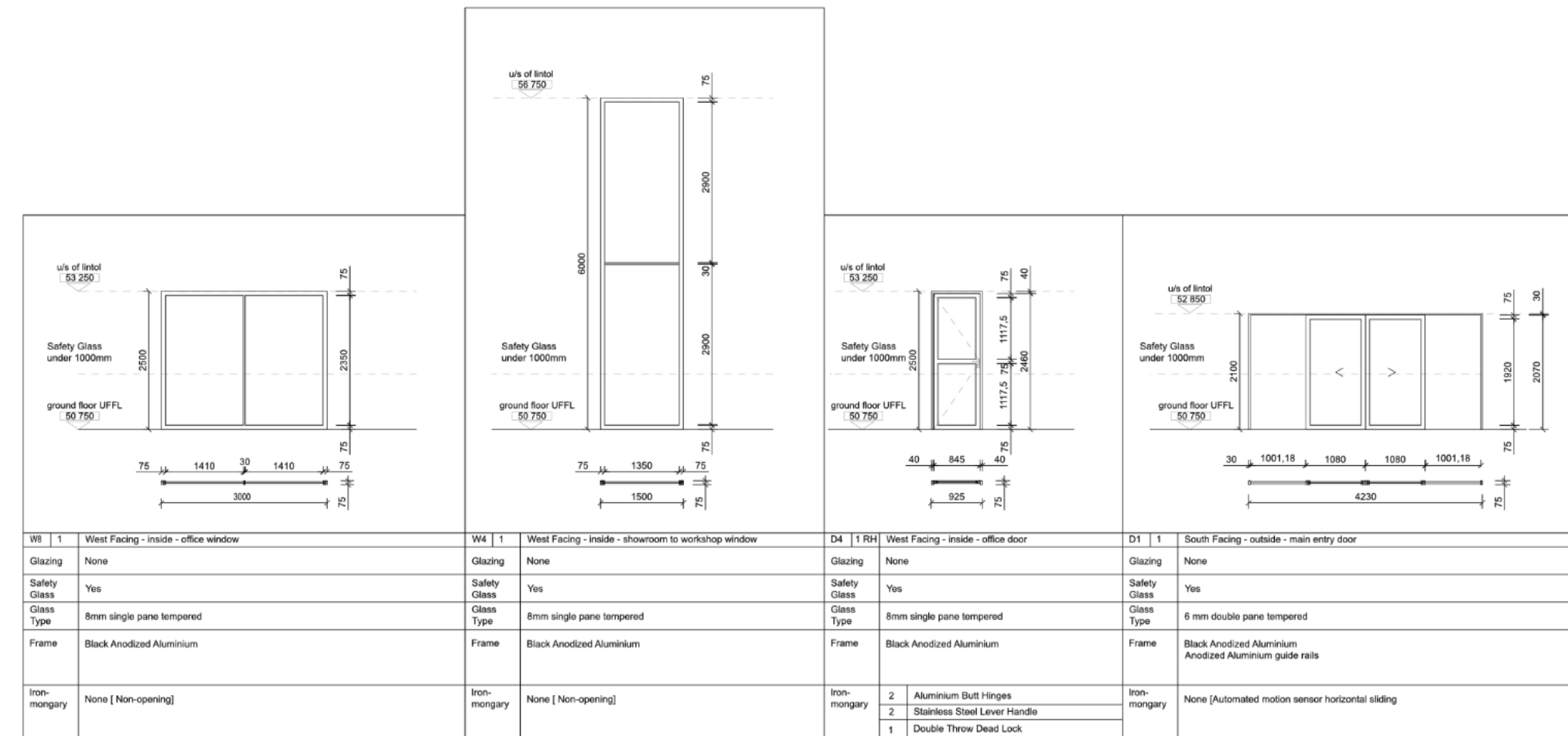
31 Leadwood Cres, Fairview ERF : 3069
Port Elizabeth

project	
Portal Frame Structure	
drawing title	drawing scale

Component A [duct]	1 : 10 : 100
subject code	DSW 3001

project	page no.
B. i. 1.1	2.2

Project 1	C-01
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WINDOWS & DOORS: All NEW windows to be in Anodized aluminum frames refer to window schedule-All external doors to be fitted with rubber strip door seals - refer to SANS 2044.4.3.4 - Windowglazing supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204 All new windows to comply with air infiltration requirements as per SANS 613 and water penetration standards

IMPORTANT NOTE: Windowglazing supplied by said specialist, supplier to provide all necessary certification to satisfy compliance with SANS 10400, SANS XA & SANS 204

[illegible]

clear design
architectural technologist
student

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[illegible]

date drawn
02 - Dec - 2020

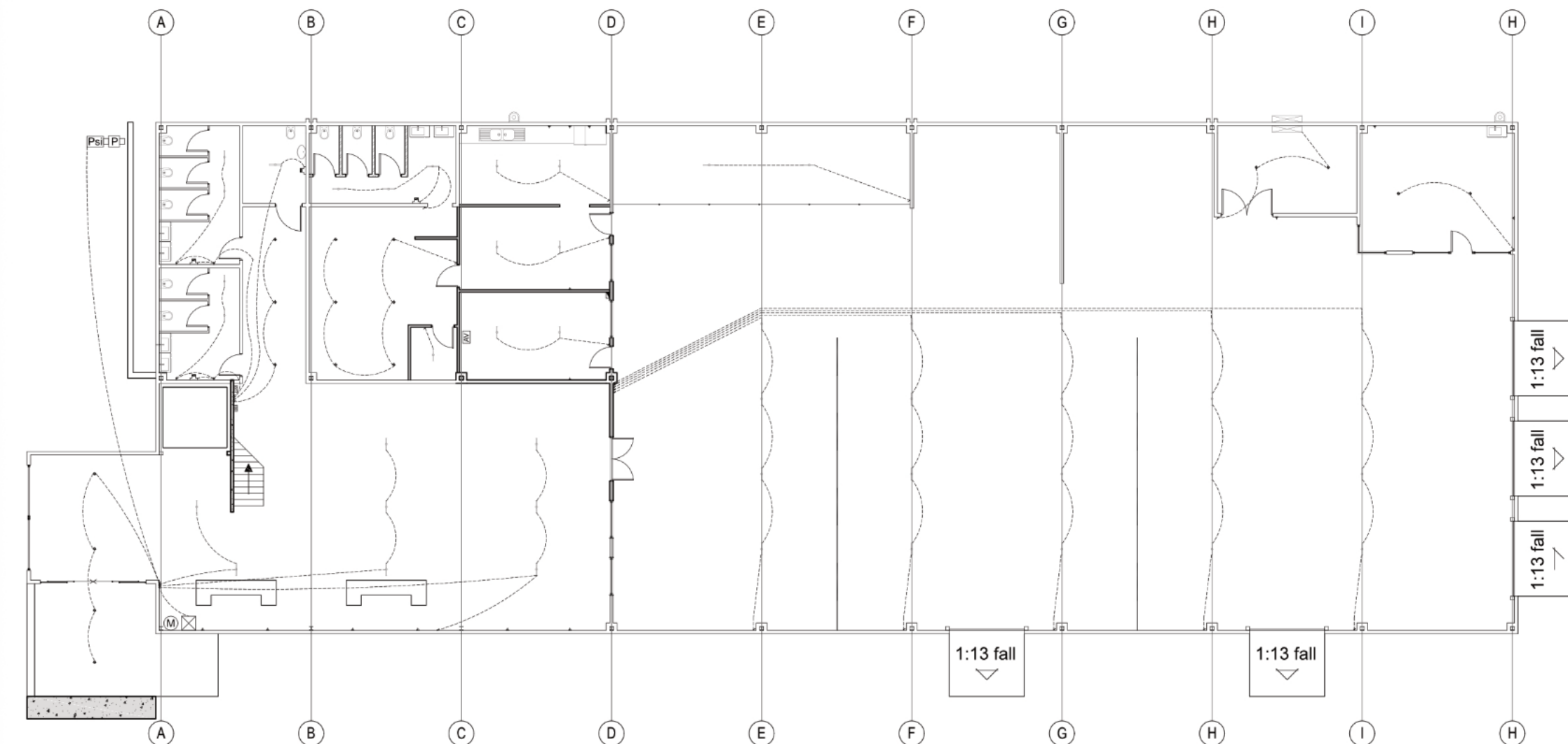
drawn by PC van Rooyen 215166574@mardeja.ac.za	signature
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address	
31 Leadwood Cres, Fairview	ERF : 3969
Port Elizabeth	

project	
Portal Frame Structure	
drawing title	drawing scale

Window + Door Schedule	1 : 100
subject code	DSW 3002

Project 1 L-08



ground floor
SCALE 1:200

Electrical Legend		
8W LED recessed light		6 off 48W
4W LED wall-mounted light		4 off 32W
4W LED tube light		11 off 176W
Three prong wall plug		as shown
two way switch		as shown
one way switch		as shown
power strip / lighting		as shown
Distribution Board		as shown
Sub Distribution Board		as shown
Air Dryer		5 off 2500W
Audio + Visual		as shown
Motor Box		as shown
Geyser point		as shown
Access control		as shown
Solar Panel Control		as shown
Pump with pressure control		1 off 250W

Maximum lighting consumption calc.	
G1 lighting demand - 1198 x 5W	5990W MAX
proposed - 3006W / 5990 sqm	.501W / sqm PASS
Annual consumption	
1198 x 5kWh / sqm	5990kWh MAX
proposed 3.006kW x 1820 hours	5476kWh PASS



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architectural technologist
student

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revision table	revision date



date drawn
02 - Dec - 2020

drawn by PC van Rooyen 215166574@mandela.ac.za	signature
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address	
31 Leadwood Cres, Fairview Port Elizabeth	ERF : 3969

project	
Portal Frame Structure	
drawing title	drawing scale

Electrical Plan Ground floor 1 : 200

subject code **DSW 3002**

project **Project 1** page no. **L-09**



Maximum lighting consumption calc.	
G1	
lighting demand - 1198 x 5W	5990W MAX
proposed - 3006W / 5590 sqm	.501W / sqm PASS
Annual consumption	
1198 x 5kWh / sqm	5990kWh MAX
proposed 3,006kW x 1820 hours	5470kWh PASS



pc van rooyen		seccup num : NA	
2156654765 / 215166574@mandela.ac.za			
revision table		revision date	
NELSON MANDELA UNIVERSITY		Drawing No: 0000000000	
cde drawn			
02- Dec - 2020			
drawn by PC van Rooyen 215166574@mandela.ac.za		signature	
address 11 Leekwater Cms, Fairview Port Elizabeth		ERF : 3969	
project Jozini Farm Structure		drawing scale	
drawing title Electrical Plan First Storey		1 : 200	
project code		DSW 3002	
subject		page no	
Project 1		L-10	

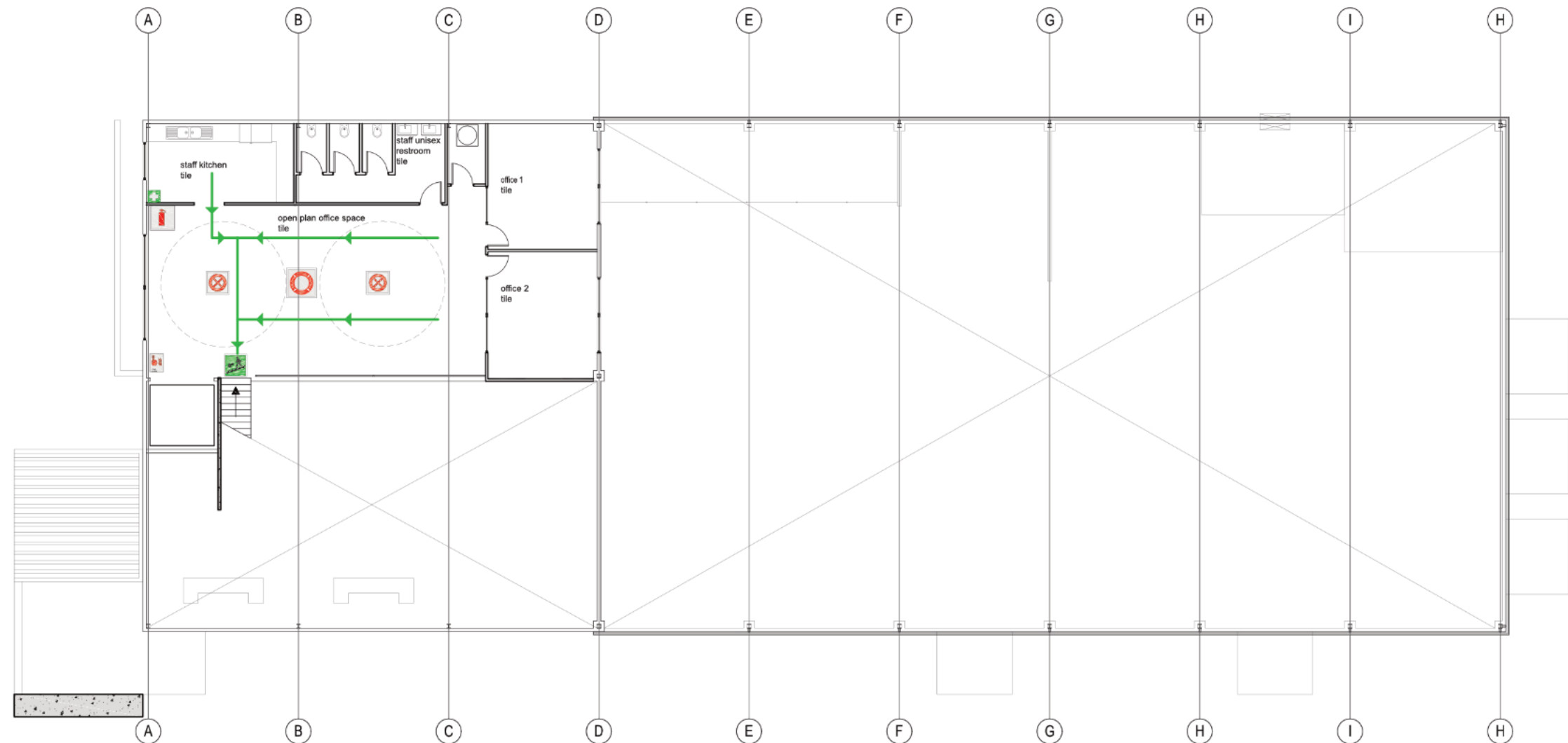


Office	
Classification :	G1
Occupancy :	1 Person per 15m ²
Area :	380m ²
Storeys :	2
Hose Reel 1 / 500m ² :	no, 2x 5kg CO, Fire Extinguisher

Workshop	
Classification :	D2
Occupancy :	1 Person per 15m ²
Area :	725m ²
Stores :	2, double volume
Hose Reel 1 / 500m ² :	yes(1) + 2x10kg CO ₂ Fire Extinguisher



pc vin: rooyen		scsacp num: 1 NA	
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revision table		revision date	
NELSON MANDELA UNIVERSITY		Project Name L-11	
date drawn 02-Dec-2020			
drawn by PC van Rooyen 215166574@mandela.ac.za		signature	
address 21 Lanchester Ck, Fairview Port Elizabeth		ERF : 3969	
project Portia Frame Structure		drawing scale 1 : 200	
sheet Fix Flat Ground Floor		drawing scale 1 : 200	
subject code		DSW 3002	
project Project 1		page no L-11	



first storey
SCALE 1:200

Fire Legend

- fire alarm
- fire aid station
- fire extinguisher
- exit
- direction of exit
- sprinkler system
- smoke detector
- fire hose
- path of travel
- stairs

Office

Classification :	G1
Occupancy :	1 Person per 15m²
Area :	190m²
Storeys :	2, open volume
Notes:	1x Bag CO, Fire Extinguisher

IMPORTANT NOTES FOR OWNER AND CONTRACTOR
Construction work must commence within 1 year of building plan approval. The owner is to be named in writing to building control. All work to be completed at least 1 month in advance of supply of approval.
In case of a newly built building to be completed for the client to avoid proposed building at the MREC prior to construction.
It is compulsory for the client to obtain Municipality in writing at least 4 working days prior to commencement of construction (SANS 10400 part A22:148).
It is compulsory for the client to obtain Municipality in writing at least 2 working days in advance for compulsory inspections of 1. Structural foundation for foundation, 2. Drainage installation & completion of building work (SANS 10400 part A22.1). The contractor must obtain the approved completion of project/contract at least one week prior to commencement of construction (as per SANS 10400 requirement) and a weekly progress by at least every Friday in order to determine & arrange for necessary site inspections.
Approved contractor must be registered with NMBRC.
Owner is to ensure that all workers used for the proposed structure shall be trained against fire & wood burner safety and a large display in accordance with SANS 10001 and verified by SANAS/SABS (SANS 10001 part A15-18).
All building materials to be certified by SANAS/SABS.
Any distortion and damage of structural system during construction period must be reported by contractor to the owner & designer.
Contractor to check and verify all dimensions and levels on site and compare against drawings prior to construction.
All construction work to comply with NMBRC 10400 & 204.
Any discrepancies or variations are to be brought to the attention of CLEAR DESIGN ARCHITECTURAL TECHNOLOGIST prior to construction.
All work to be done for design and drawings for municipal approval to be paid for by the client once the approval is granted. Any commencement of construction work in terms of this proposal shown on this drawing/document will be regarded as an official notice.
Consent on the construction/owner to obtain occupancy certificate from building control or completion of the structure and no change in structure to be made without prior agreement with CLEAR DESIGN ARCHITECTURAL TECHNOLOGIST STUDENT.

clear design
architectural technologist
student

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revision table	revision date

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date drawn
02-Dec-2020

drawn by
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signature

address
31 Leadwood Cres, Fairview
Port Elizabeth

project
Portal Frame Structure

drawing title
Fire Plan First Storey

subject code
DSW 3002

project
Project 1

ERF : 3989

drawing scale
1 : 200

page no.
L-12

03

[Seaboard Place]

university - design project

- Sustainable Building - Affordable Housing
- 2021
- Multi Level Residential
- Summerstrand, Gqeberha, South Africa

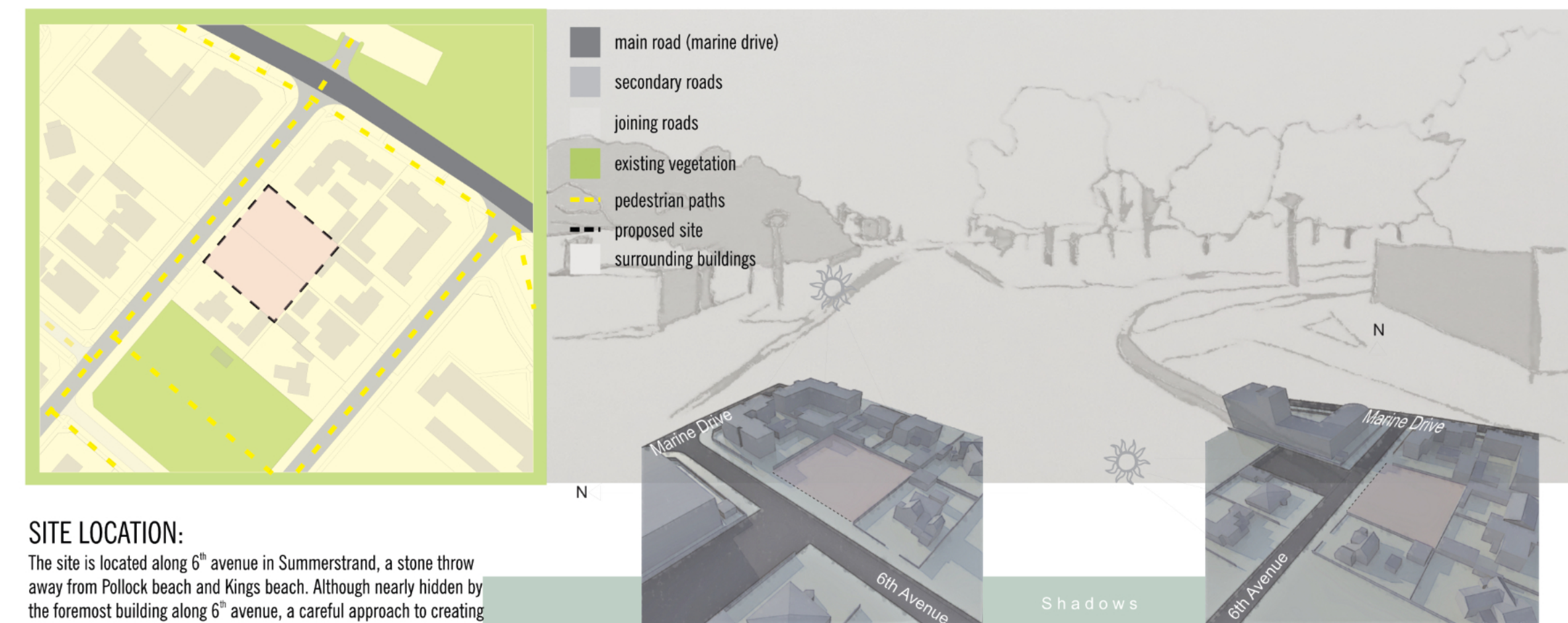
VISION

Apartments provide housing for numerous persons on a small scale, which reduces the footprint making it a viable option for future development. However, analyzing the social living patterns of people will determine the conceptualization on the structure. In order to accommodate this type of structure we will have to look into the sensitive surrounding context and existing structures on a large scale. The street nature will also be affected as the access road is a branch off of a main road with constant traffic. Implementing public services such as a laundromat and public ablutions will ease the building into the living space of the suburb whilst still giving privacy to the residence. Taking into consideration that a building of this scale would need constant low level maintenance work on it's services, due regard needs to be taken into the design to allow for easy work and allowance of safety equipment for workers.



View of Site from Marine Drive





SITE LOCATION:

The site is located along 6th avenue in Summerstrand, a stone throw away from Pollock beach and Kings beach. Although nearly hidden by the foremost building along 6th avenue, a careful approach to creating a key point on the site is essential and will be incorporated within the design proposal. This key point will allow the design to stand out against its overshadowing neighbors.

Where marine drive, a prominent road, and 6th avenue meet the site is gently revealed on the approach. And with the node of Marine drive and 6th Avenue being created, it guide the view along the street and through to the Ocean which becomes a prominent feature within its immediate surrounding.

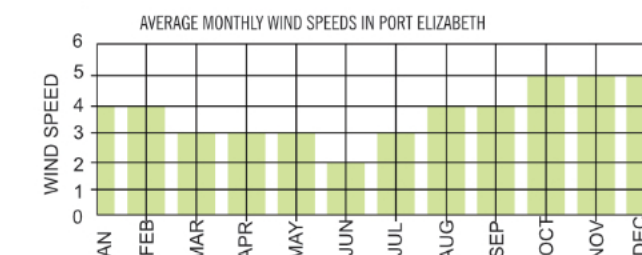
A note to keep as much of this created view in the design is important.

SHADOW DIAGRAM:

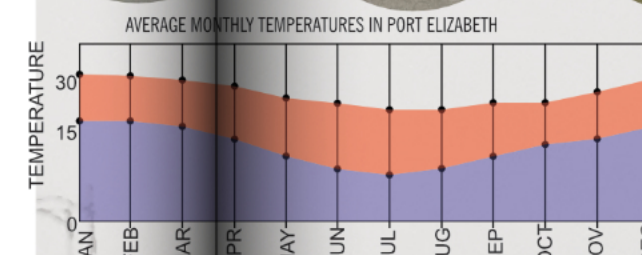
Morning Shadows
The neighboring site casts a shadow over the selected site which needs to be dealt with by minimizing open elements to that side and maximizing passive cooling systems to draw from cooler daytime shadows. If done correctly and incorporated correctly into the design, this will reduce the use of mechanic cooling systems and in term lower energy usage of the building.



Evening Shadows



AVERAGE MONTHLY WIND SPEEDS IN PORT ELIZABETH



AVERAGE MONTHLY TEMPERATURES IN PORT ELIZABETH

VEGETATION:

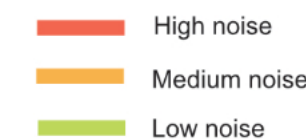
With Summerstrand's urban outfit, nature has almost lost its ground and has been forgotten about in this context. It is important to try and reconnect the area with as much greenery as possible. Evergreens are the better option as to keep the natural softening element prevalent throughout the year. This element allows for the hard building edges and shadows created by surrounding buildings to be gradually softened and even eliminated entirely. The use of vegetation on the proposed design and around the site is of utmost importance.

SOIL CONDITIONS:

With Summerstrand being near the beach, soil types would be more towards sand will large masses of rock. Sand soil conditions typically are low in structural strengths, have poor to no water retention properties and are high in permeability rates. Understanding these soil conditions allows the use of correct foundation types to be incorporated for. Foundations would have to be extensive and rather deep to shift the large weight of a 2/3 storey building through to stronger earth below. Further investigation suggested that pile foundations would work the best for this type of installment allowing the foundations to reach these stronger soil conditions.

NOISE DIAGRAM:

As indicated on the diagram, the noise patterns of surrounding activities need to be addressed so that the noise towards the site is minimized. The use of buffering elements and pushing more private sections toward the back will reduce the noise factor considerably. As there is only 1 access road to the site, the positions of bedrooms and private areas need to be considered properly so that they are incorporated properly. A privacy gradient study will resolve at which positions the various units will be placed. More public functions of the building will be used as buffering elements within the design as to minimize noise circulation. Material selection will also play a considerable part in the reduction of minimizing noise. Site access to the neighboring sites are directly next to the proposed site, so considering this challenge during the design process will allow the issue to be addressed and help reduce the noise from traffic to the abutting sites.



BUILT ENVIRONMENT:

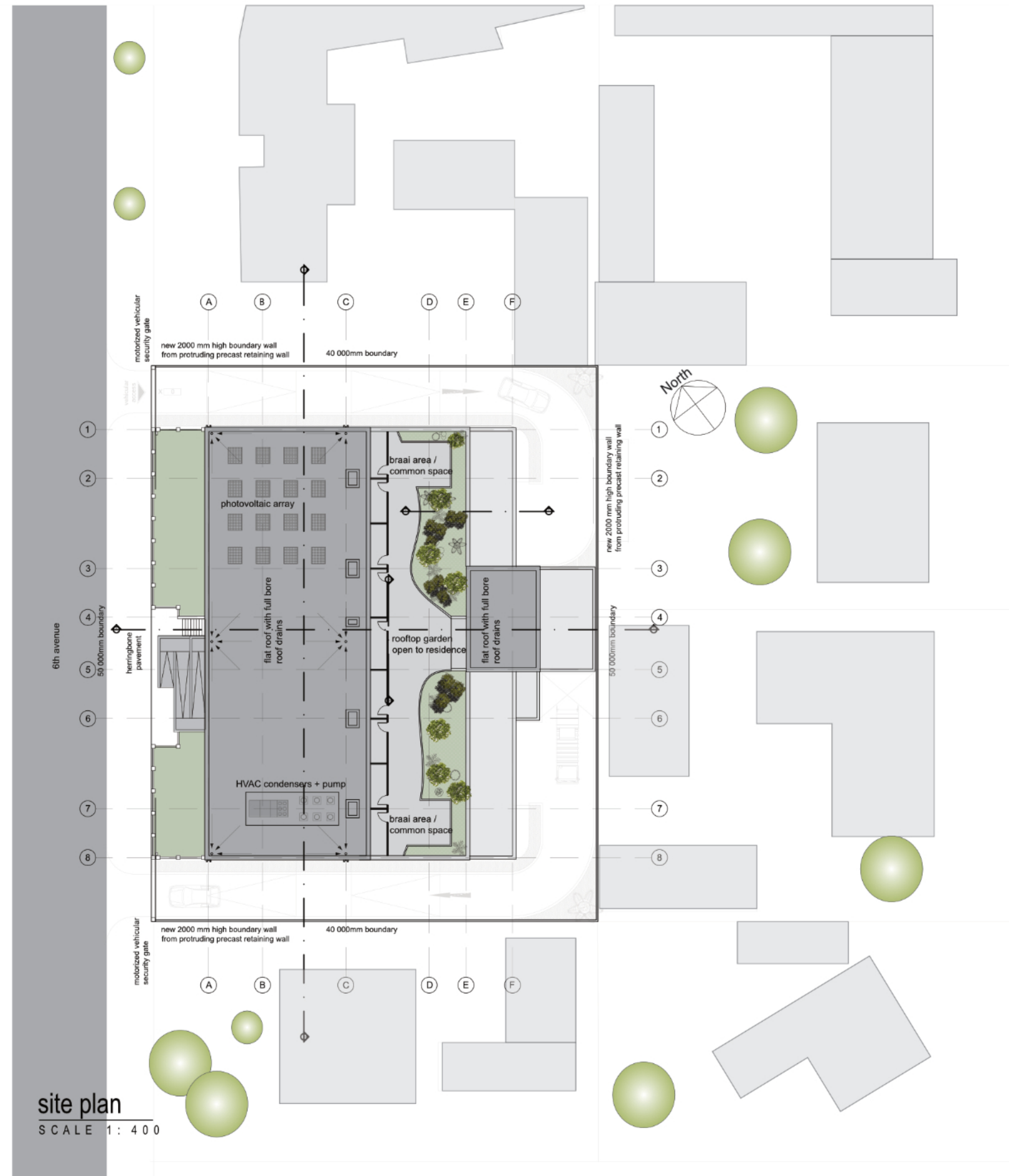
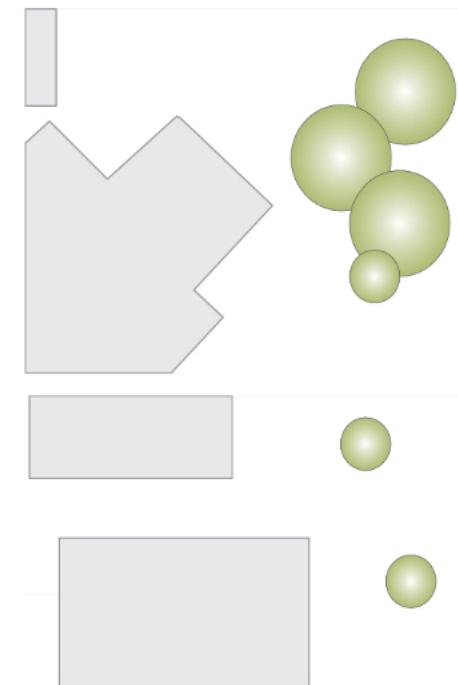
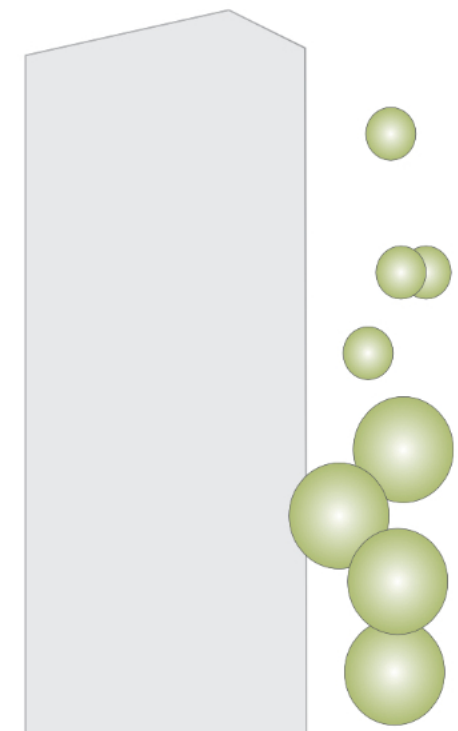
With the surrounding context in its urban context, the building masses clearly create a defined building line of 5m. Due to the defined edge, this requires the proposed design to acknowledge and respond to it with respect. Pushing the building back and off the direct street edge will allow for a gentle transition from street level to built level. With the softening of the edge, the form of the proposed design will require to be softer in nature with refined material use and no harsh over-exaggerated elements that protrude from the proposed design. On closer inspection of the surrounding context, it is noted that along the built edge a clear modular system of "building blocks" becomes noticed. To incorporate a modular system, in response to its surroundings, would allow the building to comfortably fit into its context. The use of materials will allow the building to make its presence within the area, so incorporating more modern materials becomes an interesting feature within the area. This will allow the building to not only stand out in the area but respectfully sit in its context.



CIRCULATION:

Circulation to and around the site is found purely in 6th avenue as the surrounding sites hug the site in use. A double lane is found here in 6th avenue and allows for ease of access to and from the site, this will allow vehicular access to become simple to get onto site. Pedestrian circulation in correlation to the site becomes quite busy as this is the main way that the residential sections are able to flow towards the main access (marine drive) and towards the beach. Taking note of foot traffic and its intensity allows for the site to incorporate more pedestrian movement and less vehicular movement. However, with the tightness of the site, vehicular parking will be moved into a basement parking. This brings a certain noise factor onto the entire site as the parking isn't able to be moved away from certain sectors, such as the accommodation. As well as the surrounding sites, vehicular movement brings noise to the site due to its high volume of vehicle movement as there is hotel parking directly across from the proposed site. And with holiday makers, the beach will be a must, so in the surrounding context, pedestrian noise within the adjacent street forces noise directly onto the site.





MASSING AND MORPHOLOGY:

Due to the sites compact nature, the proposed design will call for a smaller horizontal scale and a larger/taller vertical scale. This means that, because of the compact area surrounding the site, the proposed design will need to take a taller massing and be far more compact to allow for more units on the site. This makes the design process more challenging as this will require a more tedious form of spacial planning and perfecting circulation on the horizontal plane of the building.

The morphology of the building as a whole should be considered as there are numerous challenges that need to be considered. With all these challenges in mind, the buildings shape from beginning concept to finalizing of the design will continually change and adapt. Not only will the design change but the building should be able to change and adapt to its immediate environment.

SPILL-OVER SPACE:

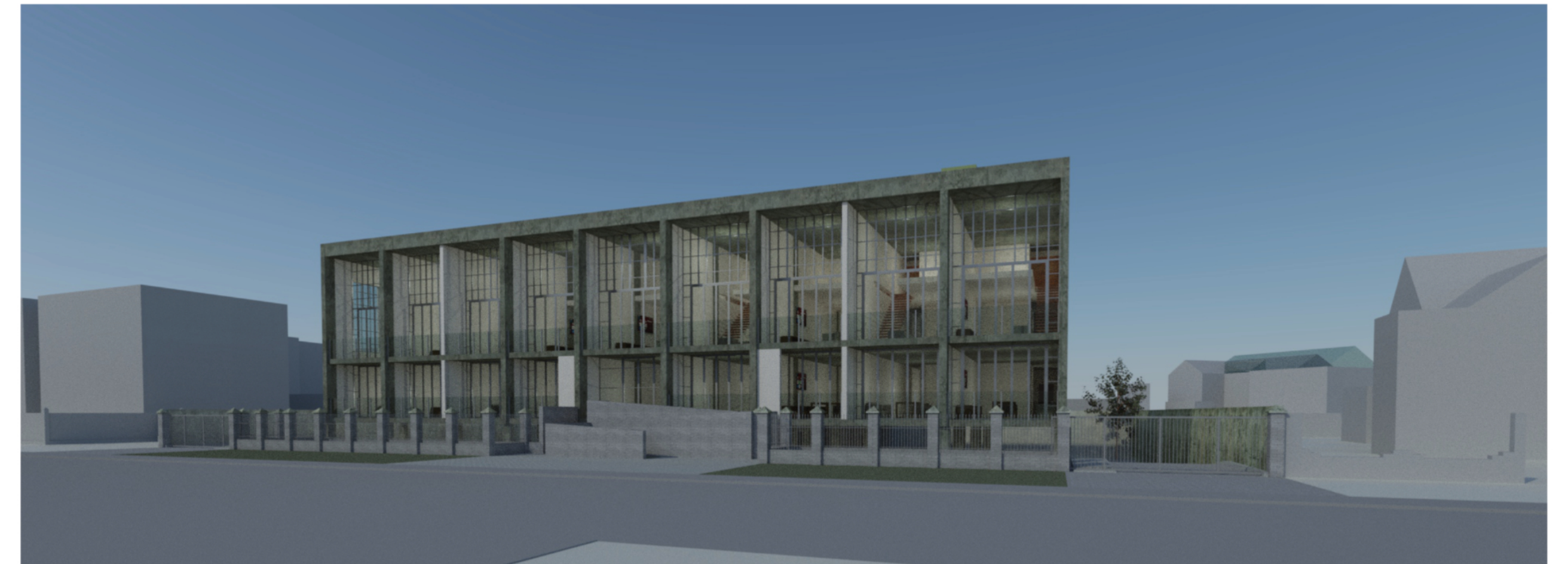
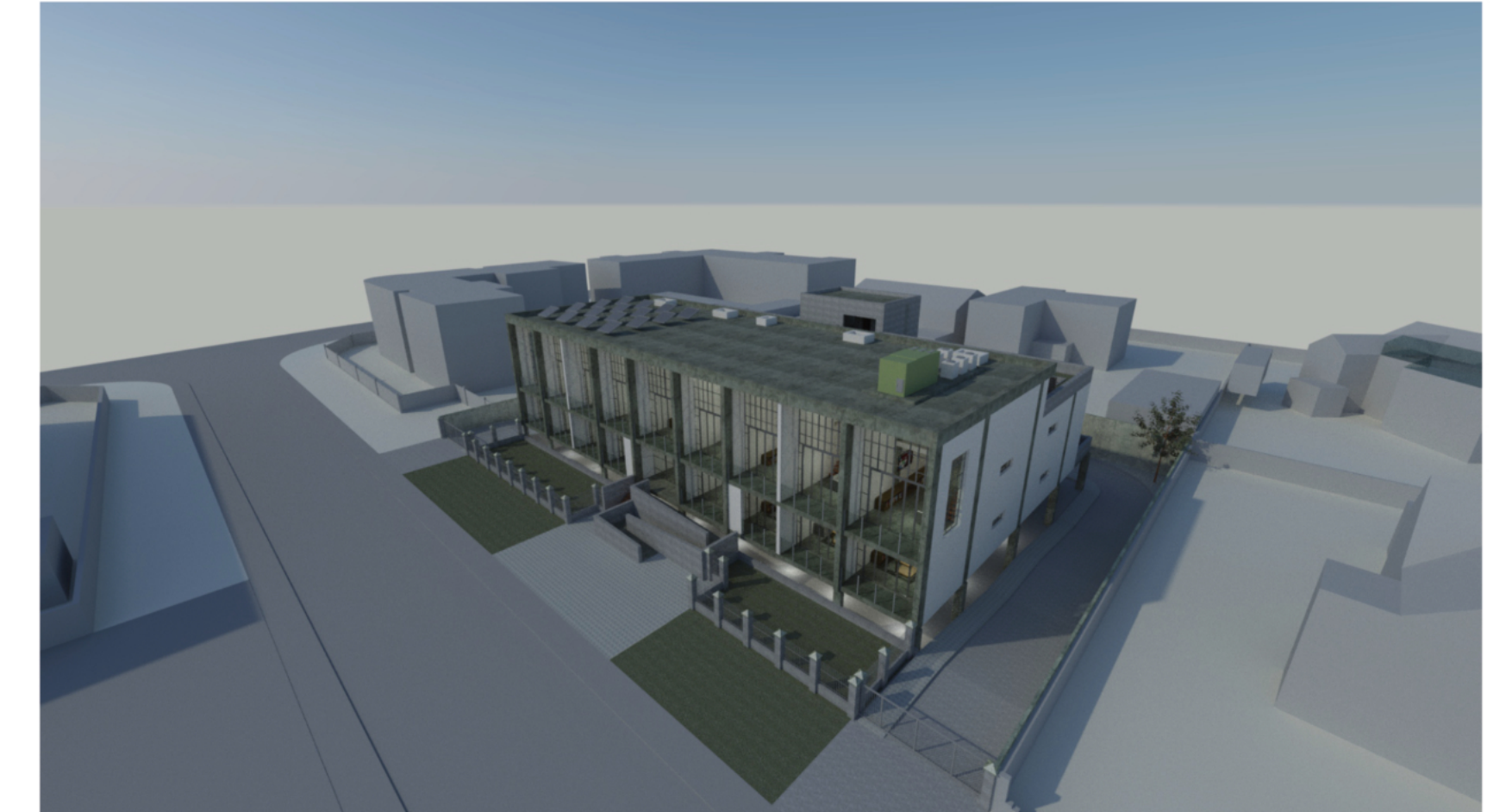
Municipal owned land, next to marine drive, allows for a spill over zone to be created. This area could be used for a variety of functions such as festivals etc, to create an attraction towards the area and site. With the use of spill over space, this will create an interest in the site and allow for more pedestrian movement. This will create an influx of social activity, behold what already exists, and due to the visual connection of the site to this spill over space it will peak even more of an interest.

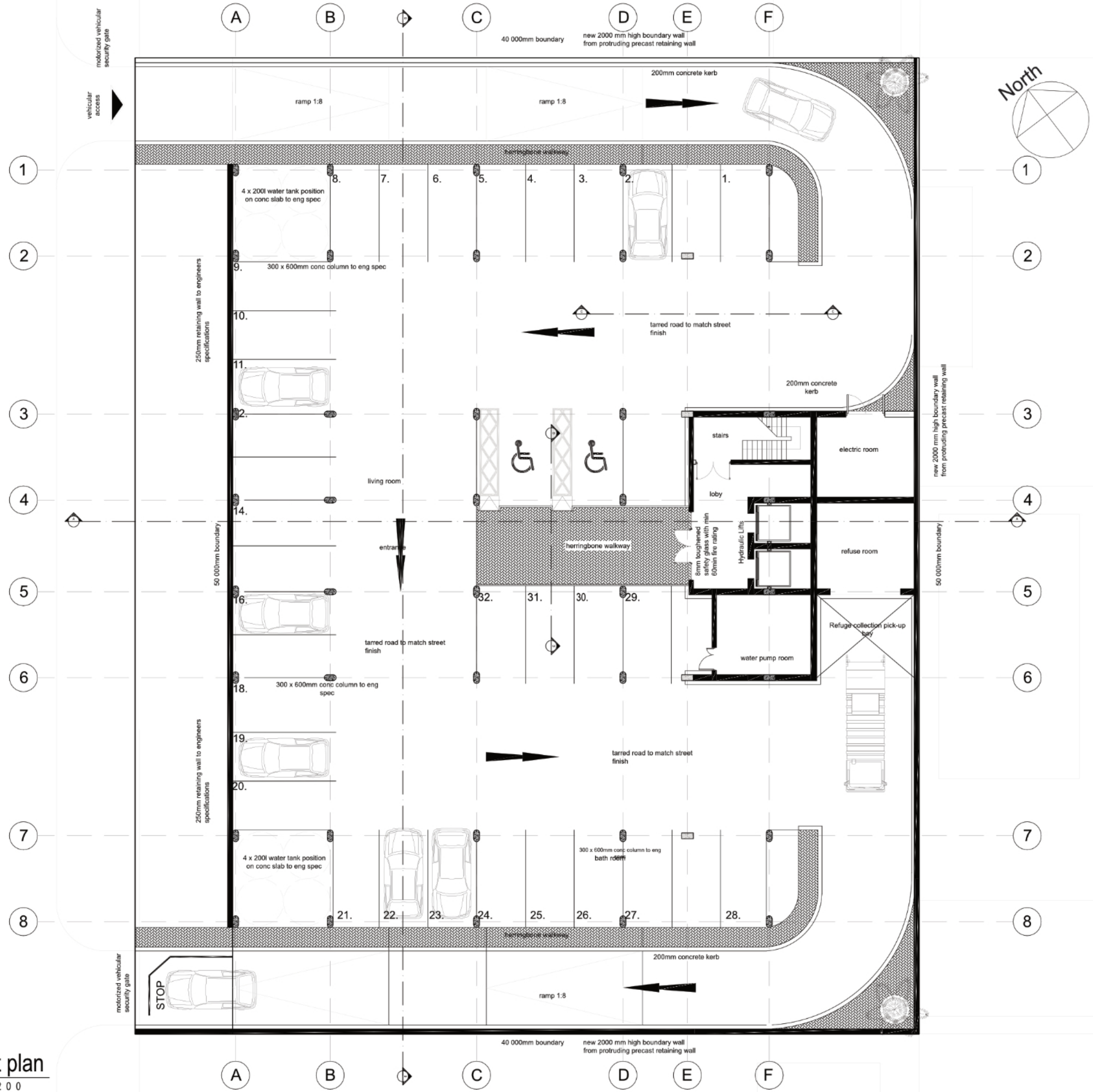
Considering this, the built form of the proposed design would need to attract more visual interest on its site. Simple square blocks with interesting uses of material choice would create a visual interest. With more pedestrian movement towards the recommended spill over space and the beach further down, this will gain more physical exposure for the proposed design.

SERVICE CONNECTIONS:

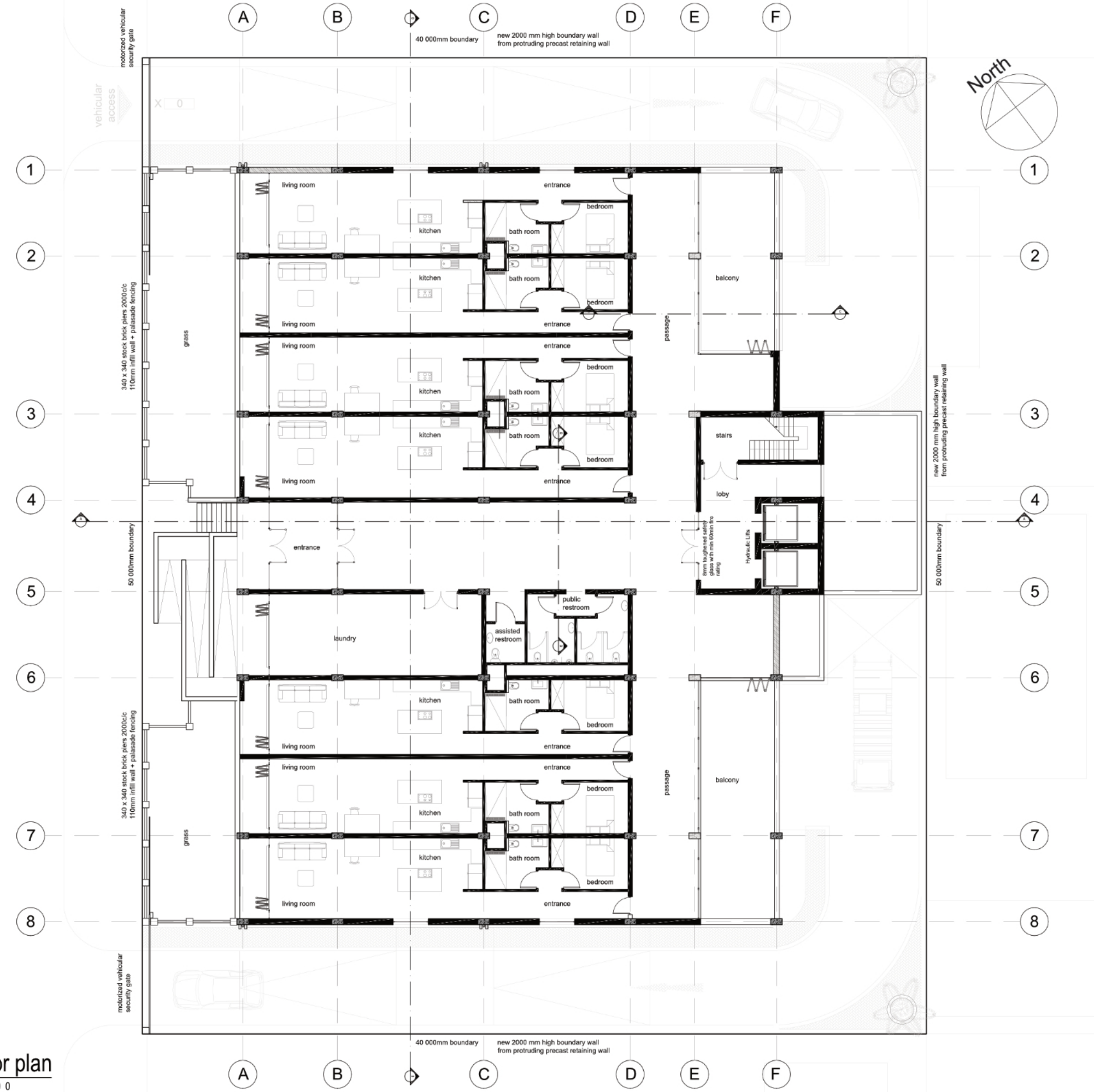
With this site, it is fortunate that the only road where services would be placed and connected off of is easily accessed. The ease of service connection access allows for a multitude of design concepts and doesn't affect or limit the design process. A challenge within the design in terms of service connections would be the basement parking by means of hiding these services and their connections.

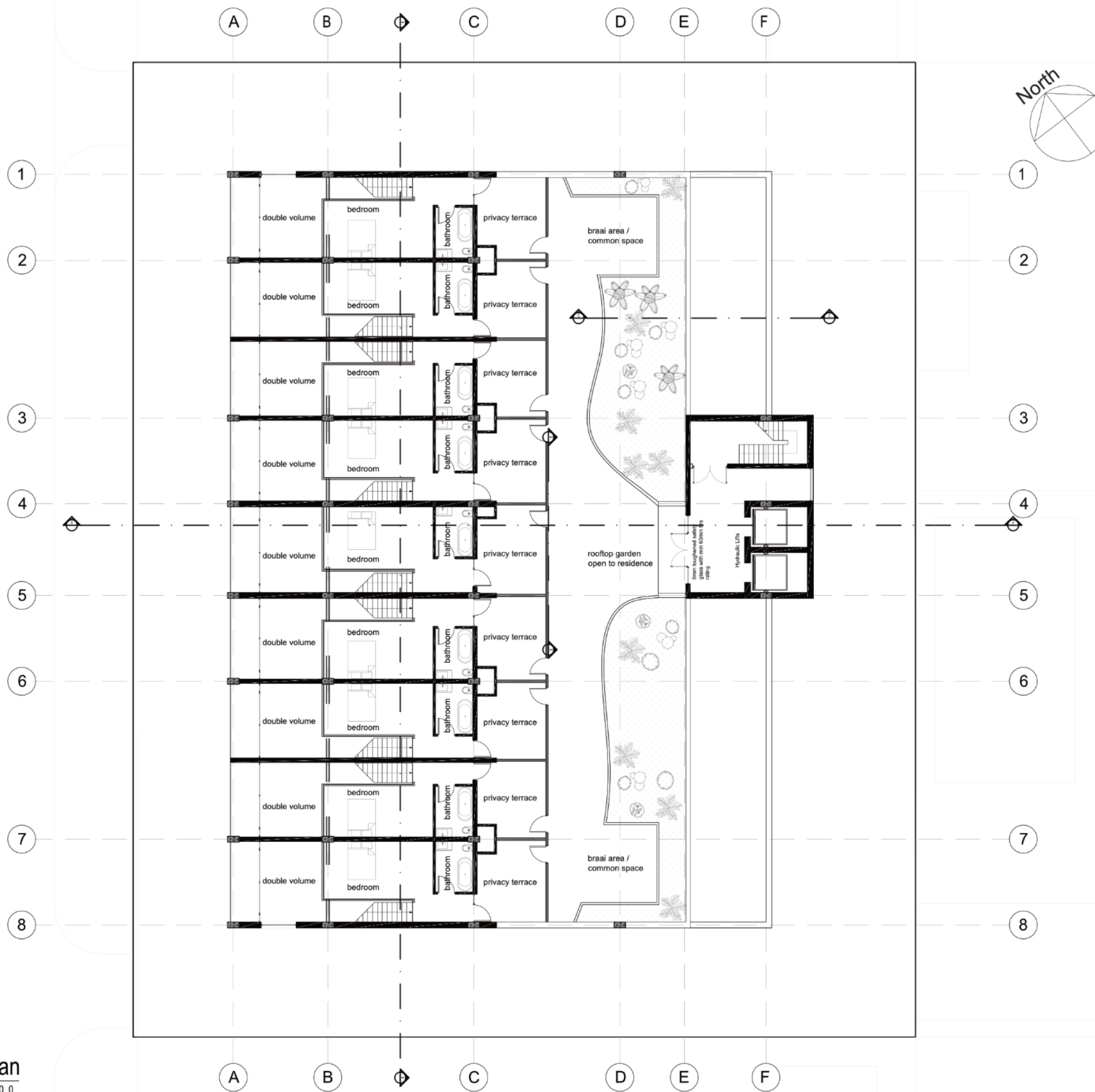
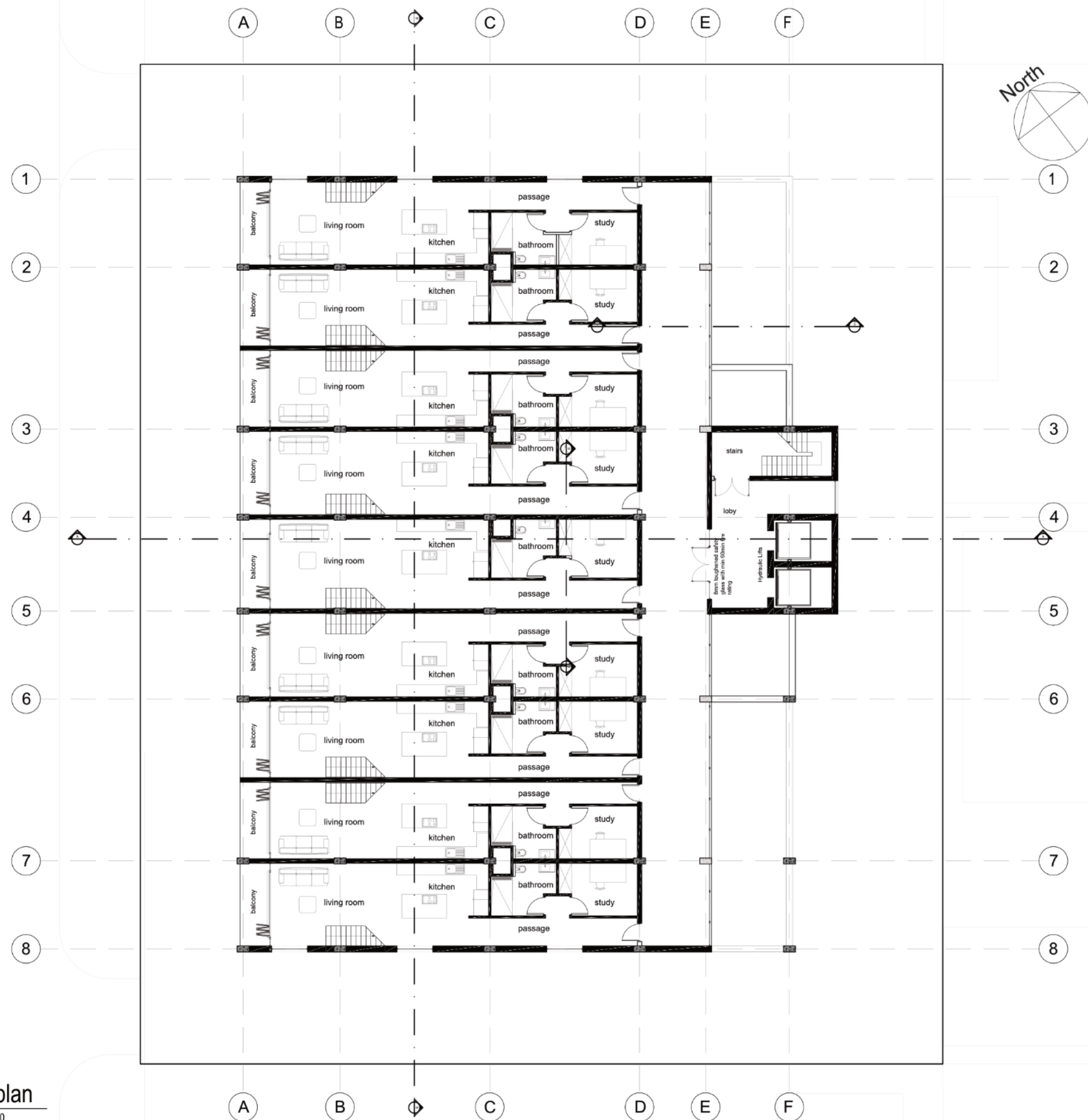
It is important to consider to capture and re-use any grey water, so grey-water tanks/systems should be incorporated into the planning of the building, as SANS 10 400 says, each new building should have rainwater connection. With the addition of grey-water tanks and then further rainwater collection points, this will make the building more sustainable. This water can be used to be put back into the building, such as being used in Water Closets or by watering any vegetation etc.

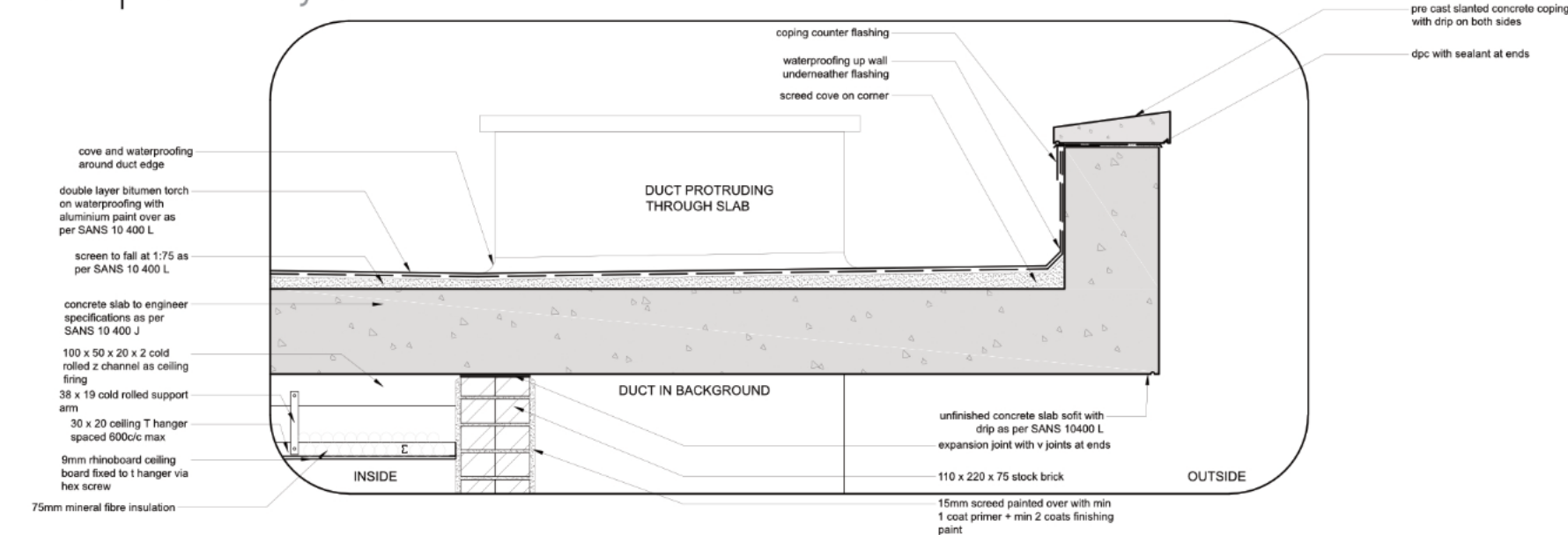




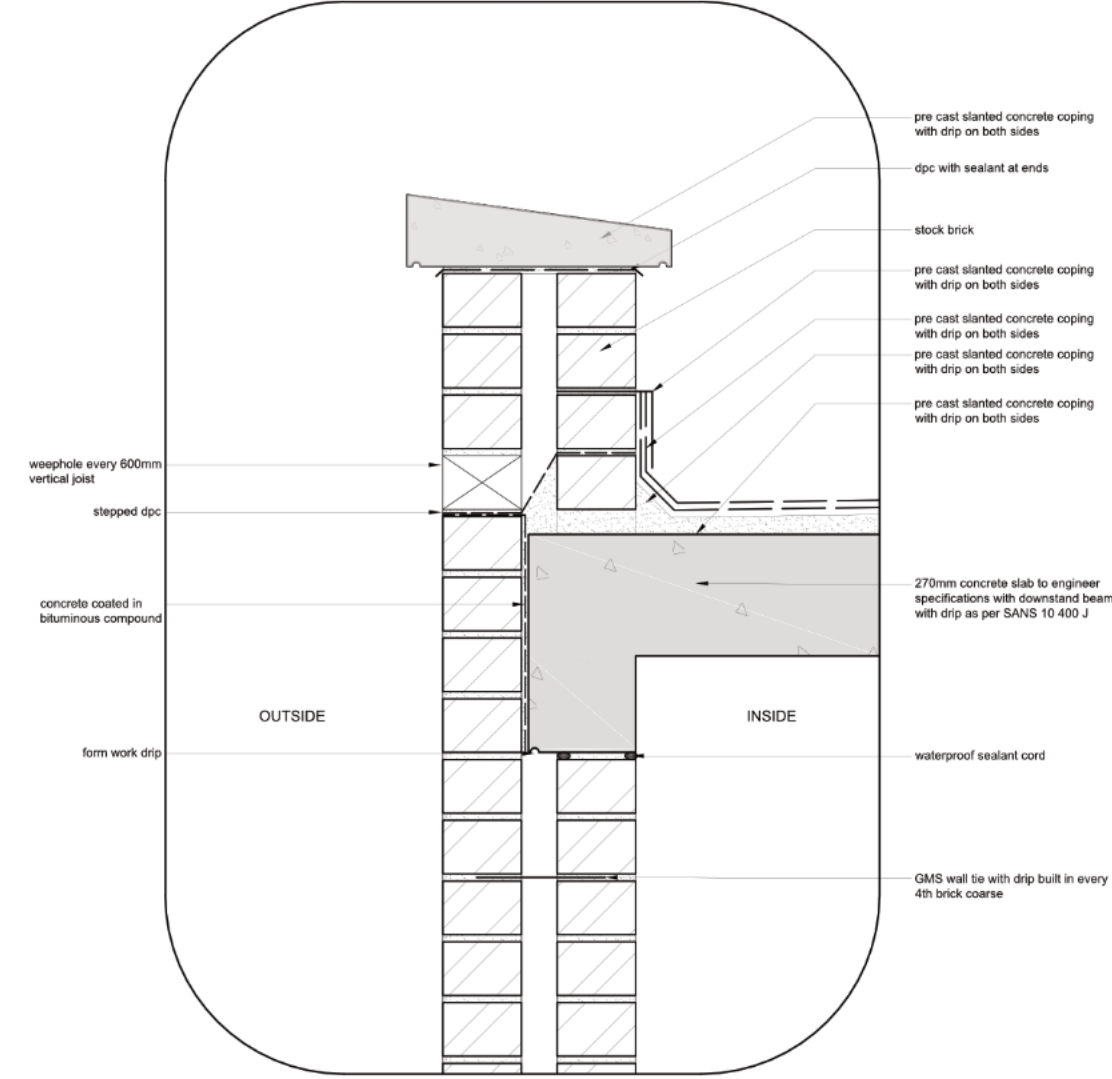
ground floor plan
SCALE 1: 200



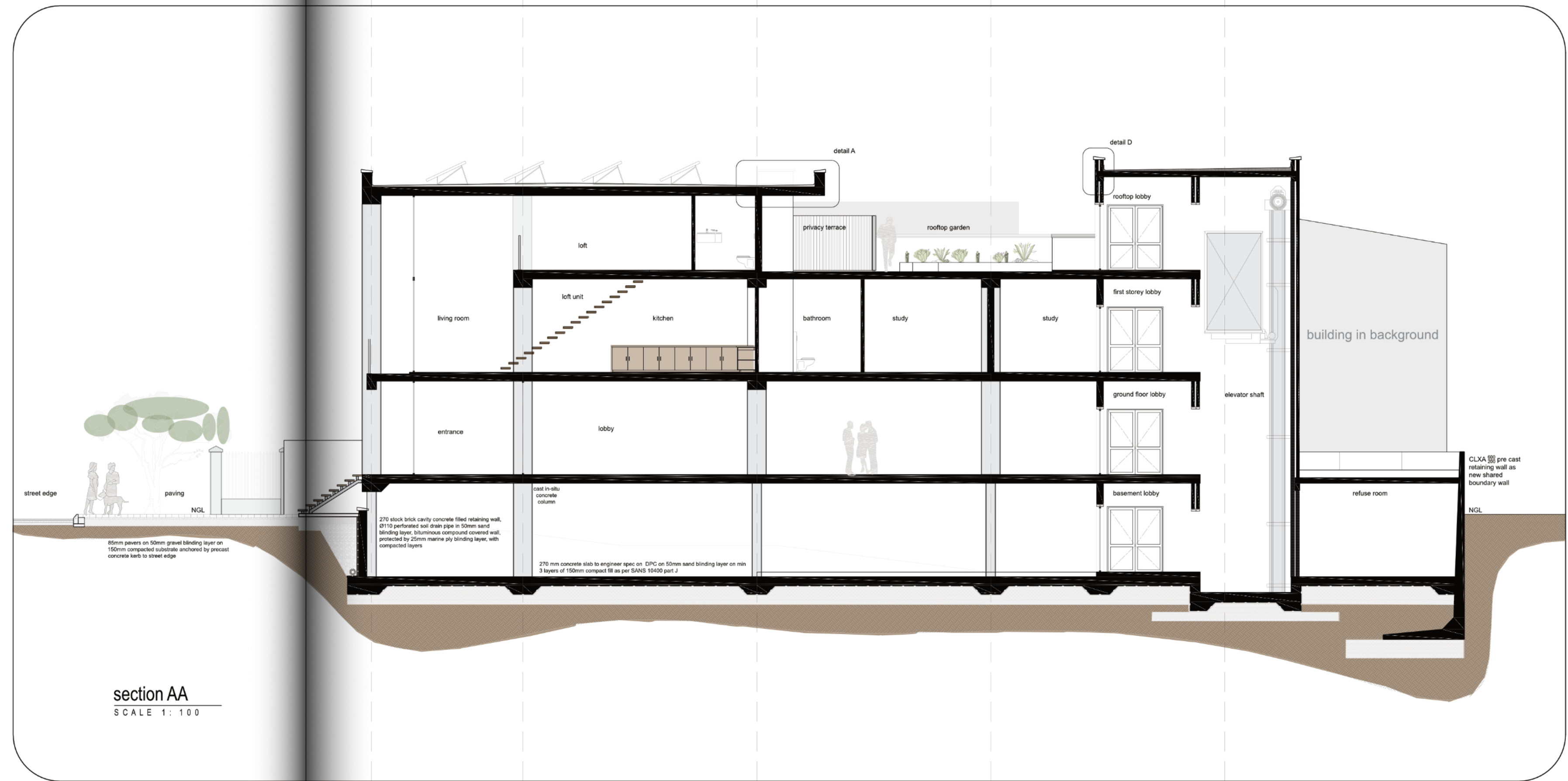




detail A - concrete parapet and coping
SCALE 1:20



detail D - downstand beam on roof slab
SCALE 1:10



section AA
SCALE 1:100