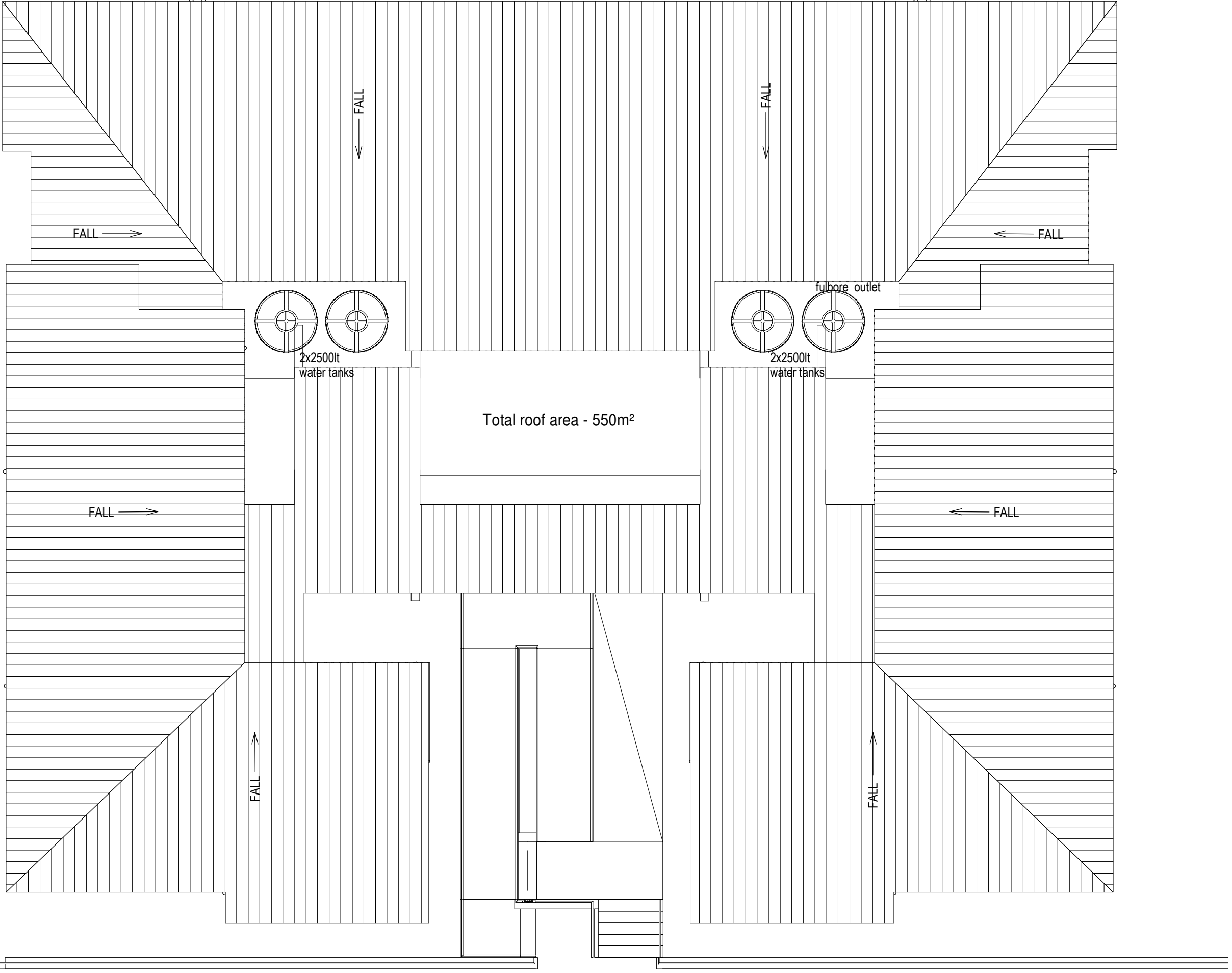
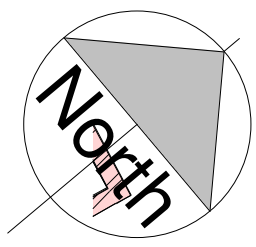
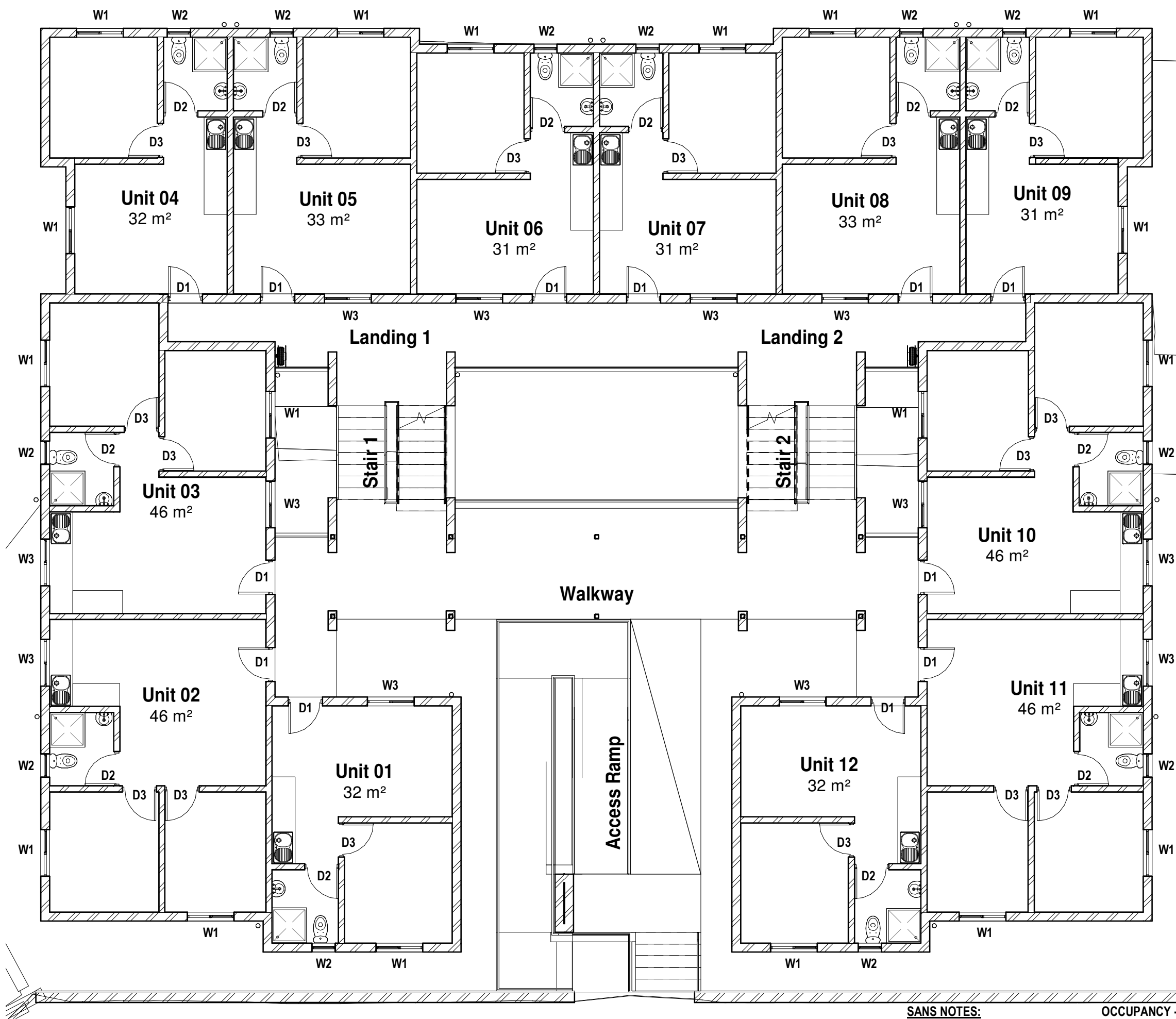


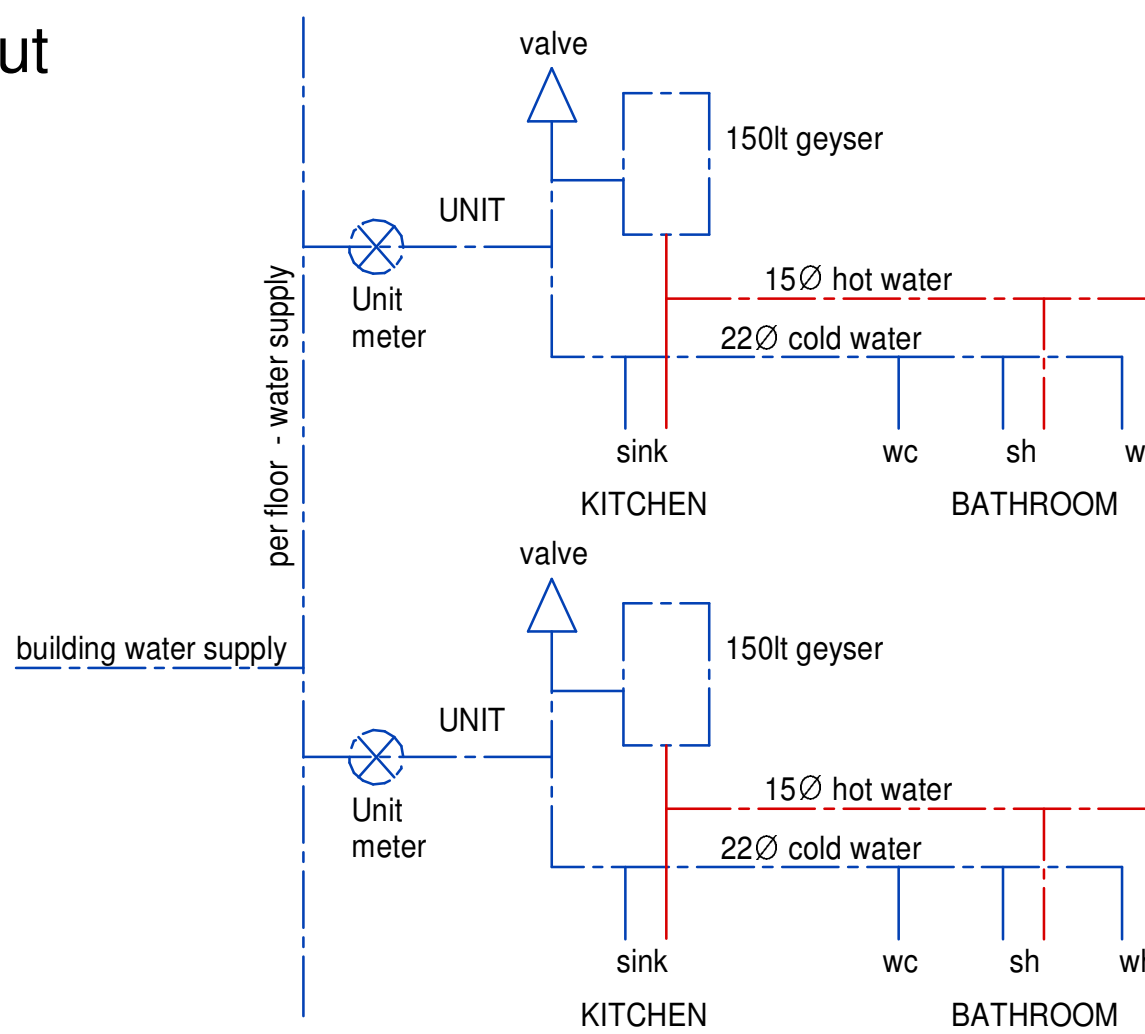


2 Typical Floor Layout 1 : 100

FENESTRATION CALC'S - UNITS 1/4/5/6/7/8/9/12	
Nett Floor area Ground FI = 24.0m²	
TOTAL GLAZING AREA	
W1 = 1.44 m²	W3 = 1.44 m²
Total = 2.88 m²	
(24.00/100) x 15 = 3.60	
Total Glazing Area = 2.88	
2.88/24.00 = 12%	
Max. permitted Conductance = 24.00 x 1.4 = 33.60	
Max. Solar Heat Gain = 24.00 x 0.11 = 2.64	
Natural light is within 15%	

FENESTRATION CALC'S - UNITS 2/11	
Nett Floor area Ground FI = 37.0m²	
TOTAL GLAZING AREA	
W1 = 1.44 m²	W1 = 1.44 m²
W3 = 1.08 m²	
Total = 3.96 m²	
(37.00/100) x 15 = 5.55	
Total Glazing Area = 3.96	
3.96/37 = 10.7%	
Max. permitted Conductance = 37.00 x 1.4 = 51.57	
Max. Solar Heat Gain = 37.00 x 0.11 = 4.07	
Natural light is within 15%	

FENESTRATION CALC'S - UNITS 3/10	
Nett Floor area Ground FI = 37.0m²	
TOTAL GLAZING AREA	
W1 = 1.44 m²	W1 = 1.44 m²
W3 = 1.08 m²	W3 = 1.08 m²
Total = 4.6 m²	
(37.00/100) x 15 = 5.55	
Total Glazing Area = 4.6	
4.6/37 = 12.4%	
Max. permitted Conductance = 37.00 x 1.4 = 51.57	
Max. Solar Heat Gain = 37.00 x 0.11 = 4.07	
Natural light is within 15%	



SANS NOTES:

OCCUPANCY - H3

FIRE: to comply with Part T

- Exit doors to comply with 4.17
- Marking and sign postings to comply with 4.29
- Position of fire fighting equipment to comply with 4.32
- Fire hose reels to comply with 4.34
- Fire extinguishers to comply with 4.37
- Emergency escape route to comply with 4.19.5
- Fire hydrants to comply with 4.35
- Water reticulation to comply with 4.33 and 4.4
- Access for fire fighting to comply with 4.55
- Ceilings to comply with 4.13
- Booster connection to comply with 4.35
- Structural elements to comply with 4.7/4.9
- Water supply to FHR to be min. 250
- Roof: metal roof sheeting to comply with 4.12
- Floor finishes to comply with 4.14
- Occupancy-separating element to comply with 4.6
- Partition walls and partitions to comply with 4.8/4.9
- Fire escape stairs to comply with 4.23
- Fire rational design as per mechanical engineer

CHANGE IN LEVELS: to comply with Part D

- Where there is a change in level and staircases, a 1m balustrade or wall is to be provided to comply with SANS 10400 Part D 4.2

GLAZING: to comply with Part N

- Safety glass to comply with SANS 10400 Part N 4.4.2
- All windows with a sill height of less than 700mm. Abutments with glazing at less than 1800mm to be 4mm Toughened Safety glass to comply with SANS 10400 Part N 4.4.2
- Doors with glazing, to be 6mm Toughened Safety glass
- All door glazing to comply with SANS 10400 Part N 4.4.2

DRAINAGE: to comply with Part P

- All fittings to comply with SANS 10400 Part P 4.1 & 4.2
- Sanitary fixtures to comply with SANS 10400 Part P 4.3/4.5

Part XA:

- Ventilation to Mechanical engineer's rational design

Area Per Building		
Level	Comments	Area
Level 1	1 Bed Units	346 m²
Level 1	2 Bed Units	92 m²
Level 1	Common Area	153 m²
		591 m²
Level 2	1 Bed Units	343 m²
Level 2	2 Bed Units	90 m²
Level 2	Common Area	109 m²
		542 m²
Level 3	1 Bed Units	344 m²
Level 3	2 Bed Units	89 m²
Level 3	Common Area	108 m²
		541 m²
Level 4	1 Bed Units	346 m²
Level 4	2 Bed Units	90 m²
Level 4	Common Area	109 m²
		545 m²
Grand total		2219 m²

ROOF AND CEILING CALCULATIONS	
Minimum required R-Value : 2.7m.k/w	
Direction of heat flow : Down	
Roof R-value : 0.41	
Required insulation R-value = 2.29	
HF2 double sided aluminium foil = 2.20	
2.20 x 0.25 = 0.55	
= 55mm	
Outside thermal conductance co-efficient= 20 Wm²K⁻¹	
Inside thermal conductance co-efficient= 11.0 Wm²K⁻¹	
Thickness of corrugated metal roof sheeting = 0.0012m	
corrugated metal roof sheeting thermal conductance = 0.48 Wm²K⁻¹	
Roof air space R-value = 0.18m Wm²K⁻¹	
Sisalation Residential Thermal Resistance insulation = 1.103 m²KW⁻¹	
Sisalation Residential HF2 insulation = 0.055m	
Thermal conductance of Sisalation Residential HF2 insulation = 0.091 m²KW⁻¹	
Thickness of gypsum ceiling board= 0.0127m	
Thermal conductance of gypsum = 0.17 Wm²K⁻¹	
R = 1/20 + 1/11 + 0.0012/0.48 + 1.103/1 + 0.18 + 0.055/0.091 + 0.0127/0.17	
= 0.05 + 0.09 + 0.01 + 1.103 + 0.18 + 1.15 + 0.61	
= 3.20 m²KW⁻¹	

WALLS CALCULATIONS	
R = 1/U	
R = 1/20 + 1/9.4 + 1/6.2 + 0.110/0.82 + 0.110/0.82	
= 0.05 + 0.11 + 0.16 + 0.13 + 0.13	
= 0.58 m²KW	

LIGHTING AND POWER - per floor	
Nett Area = 438.00m²	
Population = 24	
Energy Demand = 5 Wm²	
5x 438.00m² = 2190.00 Wm²	
Energy consumption = 5 kWh.a	
5x 438.00m² = 2190.00 kWh.a	

ACTUAL LIGHTING AND POWER	
Total lights = 1152W	
Lighting period = 5hrs/day	
52(weeks) x 7(days) x 5(hours) = 1820h.a	
1152W = 1.152kW	
1.152kW x 1820h.a = 2.096.64kWh.a (<2190.00kWh.a)	
Energy consumption complies	

1 Roof 1 : 100

ELECTRICAL/LIGHTING LEGEND			
Type of Fitting	No. of	kW	Total
LED Tube Light	12	16	192
Wall mounted lights	6	12	72
Low volt Downlights	0	8	0
Ceiling Bulkhead light	36	23	828
Geyser/Water heater	12	5	60
Total Power Usage for Light Fittings - per Floor			1152

HOT WATER SERVICES SANS 10400 XA - per Unit	
Occupancy	H3-Domestic residence (Low Rental: 80-115 l/capita/day)
No of persons	2 per bedroom/ day
Assumed daily water consumption	690 l
50% Held in storage	345 l
Assumed annual hot water	251.16 Kl- Based on daily design occupancy per week
50% of Annual hot water consumption	125.58 Kl- To be provided by means other than electrical resistance heating
Thermal insulation requirements	
Internal Diameter of Hot water pipe ≤80mm	
Min. Required R-Value for pipe insulation 1.0	
Hot water Vessel Tank	
Min. Required R-Value for pipe insulation 2.0	
HOT WATER DEMAND - per floor	
Average	Population
Drinking, food prep	20 l
Washing dishes	10 l
WC Flushing	36 l
Laundry	12.5 l
Bathing	25 l
Washing dishes	10 l
WC Flushing	36 l
Total	
4884 l	
DESIGN FLOW RATES - per floor	
No. of	Design Flow
Drinking, food prep	12
Washing dishes	10
WC Flushing	15
Laundry	12
Bathing	5
Washing dishes	12
WC Flushing	20
Total	
504	
Probable flow demand calculations using Qp=(ΣQ)/n	
Where	
Qp is the probable flow demand in litres per minute	
ΣQ is the arithmetic sum of the design flow rates of the individual fittings supplied by the pipe, in litres per minute	
n' according to table 4 of SANS 10252-1 = 0.6	
Therefore Qp = (504) 0.6	
= 302.40 l/min	

NOTE:			
DOORS BY SPECIALIST.			
All Aluminium to comply with AAAMSA standards.			
Glass thickness to comply with SANS Part-N. Safety glass to comply with SANS SANS Part-N. Manufacturer to provide necessary Compliance Certificates.			
All glazing in BATHROOMS and KITCHEN to be safety glass to comply with SANS Part-N			
WINDOW NO:	D1 - 48 of (Main Door)	D2 - 66 of (External Door)	D3 - 48 of (Internal doors)
FRAME MATERIAL:	Pressed Metal GMS frame	Pressed Metal GMS frame	Pressed Metal GMS frame
PANEL TYPE:	813x2032x44mm thick Hardwood panel Door	813x2032x44mm thick semi-solid panel Door	813x2032x44mm thick semi-solid panel Door
GLAZING MATERIAL & THICKNESS:	Nil	Nil	4 mm
NO. OF SIDES GLASS SUPPORTED:	Nil	Nil	4 sides frames
HINGE, HANDLE, LOCK:	- Door Set 1	- Door Set 2	- Door Set 2

NOTE:			
WINDOWS BY SPECIALIST.			
All Aluminium to comply with AAAMSA standards.			
Glass thickness to comply with SANS SANS Part-N. Safety glass to comply with SANS SANS Part-N. Manufacturer to provide necessary Compliance Certificates.			
All glazing in BATHROOMS and KITCHEN to be safety glass to comply with SANS Part-N			
WINDOW NO:	W1 - 72 of	W2 - 48 of	W3 - 32 of
FRAME MATERIAL:	Aluminium	Aluminium	Aluminium
FRAME TYPE:	Top hung sashes	Top hung sashes	Top hung sashes & Fixed Glass
GLAZING MATERIAL:	Monolithic annealed & Toughened safety glass.	Monolithic annealed & Toughened safety glass.	Monolithic annealed & Toughened safety glass.
NO. OF SIDES GLASS SUPPORTED:	4 sides frames	4 sides frames	4 sides frames
GLAZING PANE - MIN THICKNESS:	4 mm	4 mm	4 mm
GLAZING PANE - MAX AREA:	0.72 m²	0.54 m²	1.08 m²

Window & Door Schedule 1 : 50

- NOTES
- GENERAL
- 0 dimensions to be used in preference to scaling
 - 0 all building work must comply to SANS 10400 standards.
 - 0 all dimensions, boundary beacons & levels to be checked, exposed and demarked prior to commencement of work.
 - 0 all specifications are applicable for standard conditions, if any abnormal conditions are encountered. It must be reported to the plan producer

PRELIMINARY ISSUE



eThekweni Municipality

OWNER'S SIGNATURE:



P O BOX 22085, GLENASHLEY 4022 Tel: 031 569 1310

1ST FLOOR BLOCK 3, ISLAND OFFICE PARK Fax: 082 648 3899

35 ISLAND CIRCLE, DURBAN 4051 cell: 072 354 5426

Pr. Architect: B A Shange - SACAP 7755 admin@econocom.co.za

PROJECT The Design and Construction Monitoring of

192 New Units at KwaMashu Community

Residential Units - CRU - Contract No.

1H-46254

TITLE Energy Calculations

SCALE As indicated DRAWN BAS

DESIGN BAS CHECKED BAS

DRWG NO. DATE 22/03/2022

2101 - AR - SK104

Occupancy - H3