

Proposed Residential Unit

RESL/NIA/1034



Dakkada Towers
AKWA IBOM



INTRODUCTION

Aim

- To design a residential unit for a family of 5 who live within the monthly income of N200,000 to N300,000.
- The mandatory use of royal engineered stones on internal walls, floors and other interior surface in all appropriate sketch drawings.
- To design a residential unit that satisfies all the local planning regulations especially with respect to waste disposal, set backs and external work.
- To design an energy efficient building considering macro and micro climatic conditions. Derivation of design should be from family structure and demography emerging from the immediate environment.

Design Features

DAYLIGHTING: Maximization of natural ventilation and the use of sun shading devices in areas where needed.

ENERGY EFFICIENCY: Utilization of sustainable materials in the environment while saving on energy usage. The use of solar panels to generate electricity instead of non-renewable resources that are toxic to the environment. The use of light colored roof tiles which helps to reflect heat radiation and keeps the interior cool.

WATER EFFICIENCY: Installation of specifically engineered systems to purify water. It enables water recycling and allows for alternative sources of water such as rain water. This development not only save the vital natural resources but protect clean water sources for the future

OPTIMAL SOLAR RADIATION: The building is oriented in a way that solar radiating into the building is optimal.

COST ESTIMATE

ESTIMATE OF MATERIAL & LABOUR FOR PROPOSED 3 BEDROOM BUNGALOW							
S/NO	DESCRIPTION OF WORKS	QTY	UNIT	RATE	LABOUR		SUBTOTAL
	SUBSTRUCTURAL WORK						
A	EXCAVATION & EARTHWORKS						
1	Clear site of bushes, trees, shrubs etc	450	m ²	100.00	45,000.00		
2	Excavate topsoil, average depth, 150mm	187	m ²	120.00	22,440.00		
3	Excavate foundation trench, depth not exceeding 1000mm height	39	m ³	1,200.00	46,800.00		
	Pit excavation - 1000mm deep:						
4	Excavate column pit, size 900 x 900	2.43	m ³	1,200.00	2,916.00		
5	Levelling & compacting	264	m ²	120.00	31,680.00		
6	Anti-termite solution	456	m ²	169.00	77,064.00		
7	Backfilling of excavated materials	25	m ³	450.00	11,250.00		
8	Carting away off surplus excavated materials	16	m ³	650.00	10,400.00		
	EXCAVATION & EARTHWORKS CARRIED TO SUMMARY						247,550.00
B	CONCRETE WORK						
	Blinding						
1	Blinding to column pits	2.43	m ³	6,500.00	15,795.00		
2	Operator / Fuelling of concrete mixer		day	7,000.00	0.00		
3	Cement	1	Bag	3,900.00		3,900.00	
4	Granite Stone	1	Ton	15,000.00		15,000.00	
5	Sharp Sand	0.45	Ton	2,700.00		1,215.00	35,910.00
	Column Bases						
6	Casting of column bases	1	m ³	6,500.00	6,500.00		
7	Operator / Fuelling of concrete mixer	1	day	7,000.00	7,000.00		
8	Cement	6	Bag	3,900.00		23,400.00	
9	Granite Stone	1.5	Ton	15,000.00		22,500.00	
10	Sharp Sand	0.88	Ton	2,700.00		2,376.00	61,776.00
	Columns						
11	Casting of column	0.1	m ³	6,500.00	650.00		
12	Operator / Fuelling of concrete mixer		day	7,000.00	0.00		
13	Cement	0.6	Bag	3,900.00		2,340.00	
14	Granite Stone	0.13	Ton	15,000.00		1,980.00	
15	Sharp Sand	0.09	Ton	2,700.00		237.60	5,207.60

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COST ESTIMATE

	<u>Foundation Footing</u>							
16	Casting of foundation footing, 225mm	7.34	m ³	6,500.00	47,710.00			
18	Operator / Fuelling of concrete mixer	1	day	7,000.00	7,000.00			
19	Cement	29.4	Bag	3,900.00		114,504.00		
20	Granite Stone	10.8	Ton	15,000.00		161,847.00		
21	Sharp Sand	6.46	Ton	2,700.00		17,439.84	348,500.84	
	<u>Floor Slab & Steps</u>							
22	Cast of floor slab & steps, 150mm	25	m ³	6,500.00	162,500.00			
23	Operator / Fuelling of concrete mixer	1	day	7,000.00	7,000.00			
24	Cement	100	Bag	3,900.00		390,000.00		
25	Granite Stone	36.8	Ton	15,000.00		551,250.00		
26	Sharp Sand	22	Ton	2,700.00		59,400.00	1,170,150.00	
	CONCRETE WORK CARRIED TO SUMMARY						1,621,544.44	
C	<u>BLOCKWORK</u>							
1	Laying of 6" block wall in foundation	1238	No	80.00	99,040.00			
2	Supply or mould 6" sandcrete blocks	1238	No	250.00		309,500.00		
3	3	19	Bag	3,900.00		74,280.00		
4	Sharp Sand	11	Ton	2,700.00		29,700.00		
	BLOCKWORK CARRIED TO SUMMARY						512,520.00	
D	<u>FILLING</u>							
	<u>Laterite Filling</u>							
1	Laterite filling and compaction to make up levels	69	m ³	600.00	41,400.00			
2	Imprted laterite	9	Trip	25,000.00		225,000.00	266,400.00	
	<u>Hardcore filling</u>							
3	Break,fill and granite hardcore against laterite	138	m ²	250.00	34,500.00			
4	Fine sand blinding to receive oversite concrete	138	m ²	80.00	11,040.00			
5	Supply granite hardcore	29	Ton	9,890.00		286,810.00		
6	Supply fine sand	11	Ton	2,700.00		29,700.00	362,050.00	
	FILLING CARRIED TO SUMMARY						628,450.00	

COST ESTIMATE

E	DAMP PROOF MEMBRANE								
1	Lay damp proof membrane against concrete blinding	138	m ²	100.00	13,800.00				
2	Supply nylon sheet	2	Roll	12,000.00		24,000.00	37,800.00		
	DAMP PROOF MEMBRANE CARRIED TO SUMMARY						37,800.00		
F	REINFORCEMENT								
1	Bind & install reinforcement column bases	43	kg	60.00	2,580.00				
2	Bind & install reinforcement columns	32	kg	60.00	1,920.00				
3	Y12mm reinforcement bars in column bases	0.04	Ton	375,000.00	0	15,000.00			
4	Y12mm reinforcement bars in columns	0.02	Ton	375,000.00	0	7,500.00			
5	Y10mm reinforcement bars	0.01	Ton	400,000.00	0	4,000.00			
	Binding wire	4	kg	800.00		3,200.00			
	REINFORCEMENT CARRIED TO SUMMARY						34,200.00		
G	FORMWORK								
1	Carpentry work to columns	2	m ²	600.00	1,200.00				
2	Carpentry work to floor slab	54	m	120.00	6,480.00				
3	Carpentry work to steps	12	m	350.00	4,200.00				
4	1 x 12 x 12 plank	22	No	1,600.00		35,200.00			
5	2 x 3 x 12 props for bracing	20	No	400.00		8,000.00			
6	3" nails	1	Bag	16,000.00		16,000.00			
7	Sawing		Sum			1,000.00			
	FORMWORK CARRIED TO SUMMARY						72,080.00		

COST ESTIMATE

H	PLUMBING PIPE WORK						
1	Allow for plumbing pipe work in slab:	Sum		30,000.00	120,000.00	150,000.00	
2	4" UPVC Pipes (4bars)						
3	2" UPVC Pipes (4bars)						
4	4" Bend						
5	2" Bend						
6	4" Tees						
7	2" Tees						
8	PVC gum (Ambro)						
9	Miscellaneous						
	PLUMBING PIPE WORK CARRIED TO SUMMARY					150,000.00	
	SUB-STRUCTURAL WORK SUMMARY						
A	EXCAVATION & EARTHWORKS					247,550.00	
B	CONCRETE WORK					1,621,544.44	
C	BLOCKWORK					512,520.00	
D	FILLING					37,800.00	
	DAMP PROOF MEMBRANE					150,000.00	
E	REINFORCEMENT WORK					34,200.00	
F	CARPENTRY WORK					72,080.00	
G	PLUMBING PIPE WORK					150,000.00	
	SUB-STRUCTURAL WORK						
	CARRIED TO GENERAL SUMMARY					2,825,694.44	

COST ESTIMATE

	SUPERSTRUCTURAL WORK							
A	CONCRETE WORK							
	<u>Columns</u>							
6	Cast 150 x 150mm column	0.2	m ³	6,500.00	1,300.00			
7	Operator / Fuelling of concrete mixer	1	day	7,000.00	7,000.00			
8	Cement	1	Bag	3,900.00		3,900.00		
9	Granite Stone	0.26	Ton	15,000.00		3,960.00		
10	Sharp Sand	0.18	Ton	2,700.00		475.20	16,635.20	
	<u>Ring lintel</u>							
11	Cast ring lintel	4	m ³	6,500.00	26,000.00			
12	Operator / Fuelling of concrete mixer	2	day	7,000.00	14,000.00			
13	Cement	24	Bag	3,900.00		93,600.00		
14	Granite Stone	5.28	Ton	15,000.00		79,200.00		
15	Sharp Sand	3.52	Ton	2,700.00		9,504.00	222,304.00	
	CONCRETE WORK CARRIED TO SUMMARY						238,939.20	
B	BLOCKWORK							
1	Laying of 6" block wall in superstructure	3168	No	90.00	285,120.00			
2	Supply or mould 6" sandcrete blocks	3168	No	250.00		792,000.00		
3	Cement	48.7	Bag	3,900.00		190,080.00		
4	Sharp Sand	33	Ton	2,700.00		89,100.00		
	BLOCKWORK CARRIED TO SUMMARY						1,356,300.00	

COST ESTIMATE

C	ROOF							
	<u>Carpentry work</u>							
	Sawn treated hardwood nail against headwall		Sum		200,000.00			
	2 x 4 x 18" wall plate	10	No	1,400.00		14,000.00		
	2 x 4 x 18" tiebeam	45	No	1,400.00		63,000.00		
	2 x 4 x 18" rafters	60	No	1,400.00		84,000.00		
	2 x 4 x 18" struts & wedges	45	No	1,400.00		63,000.00		
	2 x 3 x 12" purlins	200	No	400.00		80,000.00		
	2 x 3 x 12" noggings & ceiling joist	300	No	400.00		120,000.00		
	4" nails	2	bag	16,000.00		32,000.00		
	3" nails	3	Bag	16,000.00		48,000.00	704,000.00	
	<u>Roof covering</u>							
3	0.45mm stucco long span roof covering nailed against hardwood purlins	238	m ²	180.00	42,840.00			
	0.45mm stucco long span roof covering	238	m ²	4,200.00		999,600.00		
4	Accessories		Sum			20,000.00	1,062,440.00	
	ROOF CARRIED TO SUMMARY						1,766,440.00	
	<u>WINDOWS</u>							
	<u>Fabricate and install white powder coated aluminium casement swing window complete with ironmongeries & mesh fly screen, size:</u>							
1	1200 X 1500	9	No	85,600.00		770,400.00		
2	700 X 700mm	4	No	42,500.00		170,000.00		
3	900 X 1500	1		76,500.00		76,500.00		
	WINDOWS CARRIED TO SUMMARY						1,016,900.00	

COST ESTIMATE

A	DOORS							
	Supply & install solid core flush door internally							
1	900 X 2100mm	2	No	90,000.00		180,000.00		
2	750 X 2100mm	4	No	70,000.00		280,000.00		
	Fabricated and well polished metal panel door							
3	Size, 1200 x 2100mm	1	No	100,000.00		100,000.00		
4	Size, 900 x 2100mm	1	No	65,000.00		65,000.00		
	DOORS CARRIED TO SUMMARY						625,000.00	
B	WALL FINISHING							
	Plastering & Dressing							
1	Mix & apply cement & sand mortar on wall internally & externally	681	m ²	600.00	408,600.00			
2	Cement & sand mortar to reveals of windows, doors & beams internally & externally	123	m	855.00	105,165.00			
3	Cement	150	bag	3,900.00		585,000.00		
4	Plastering sand	44	Ton	2,700.00		118,800.00	1,217,565.00	
	Wall tiling							
5	Lay tiles on wall in wet areas	97	m ²	600.00	58,200.00			
6	Cement to lay wall tiles	20	bag	3,900.00		78,000.00		
7	250 x 400 x 8mm glazed wall tiles	65	carton	6,200.00		403,000.00		
8	White cement	5	bag	3,000.00		15,000.00	554,200.00	
	WALL FINISHING CARRIED TO SUMMARY						1,771,765.00	
C	FLOOR FINISHING							
1	Cement & sand screeded bed	152	m ²	500.00	76,000.00			
2	Cement	33	bag	3,900.00		128,700.00		
3	400 x 400 x 8mm glazed wall tiles	152	m ²	5,000.00		760,000.00		
4	White cement	6	bag	3,000.00		18,000.00		
5	Plastering sand	44	Ton	2,700.00		118,800.00		
	FLOOR FINISHING CARRIED TO SUMMARY						1,101,500.00	

COST ESTIMATE

D	CEILING FINISHING								
	<u>Internally</u>								
1	Lay abestos cement ceiling against nogging	152	m ²	600.00	91,200.00				
2	Abestos cement sheet, 1200 x 1200mm	106	No	3,500.00		371,000.00	462,200.00		
	<u>Externally</u>								
3	Lay abestos cement ceiling against nogging	40	m ²	600.00	24,000.00				
4	Abestos cement sheet, 600 x 600mm	28	No	3,500.00		98,000.00			
5	Nails & accessories		Sum			50,000.00	172,000.00		
	CEILING FINISHING CARRIED TO SUMMARY						634,200.00		
A	PLUMBING SERVICES INSTALLATION								
1	Allow for plumbing pipe work in superstructure		Sum		150,000.00				
2	Allow for supply & installation of sanitary wares/fittings & installation accessories		Sum			300,000.00			
	PLUMBING SERVICES INSTALLATION CARRIED TO SUMMARY						450,000.00		
B	ELECTRICAL SERVICES INSTALLATION								
1	Allow for electrical pipe work in superstructure		Sum		550,000.00	150,000.00	700,000.00		
2	Allow for supply & installation of electrical fittings & installation accessories		Sum		500,000.00	150,000.00	650,000.00		
	ELECTRICAL SERVICES INSTALLATION CARRIED TO SUMMARY						1,350,000.00		

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COST ESTIMATE

	GENERAL SUMMARY								
A	SUBSTRUCTURE						2,825,694.44		
B	CONCRETE WORK						238,939.20		
C	BLOCKWORK						1,356,300.00		
D	ROOF						1,766,440.00		
E	WINDOWS						1,016,900.00		
F	DOORS						625,000.00		
G	WALL FINISHING						1,771,765.00		
H	FLOOR FINISHING						1,101,500.00		
J	CEILING FINISHING						634,200.00		
K	PLUMBING SERVICES INSTALLATION						450,000.00		
L	ELECTRICAL SERVICES INSTALLATION						1,350,000.00		
	SUPER-STRUCTURAL WORK								
	CARRIED TO GENERAL SUMMARY						13,136,738.64		

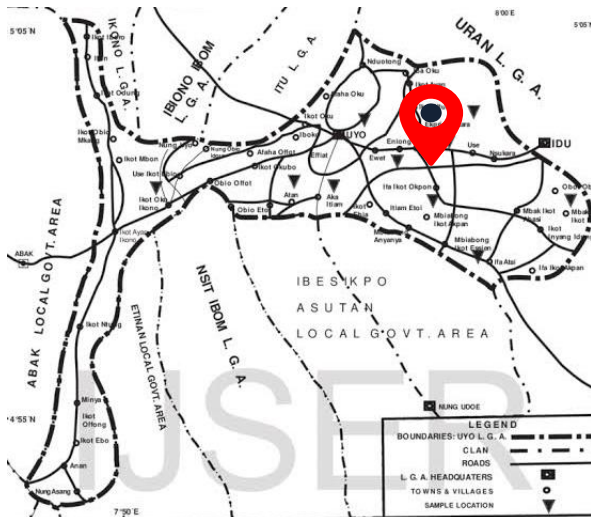
COST ESTIMATE

	SUMMARY							
	PRELIMNARIES						525,469.55	
	3 BEDROOM BUNGALOW						13,136,738.64	
	ESTIMATED TOTAL COST OF COMPLETING THE PROPOSED PROJECT CARRIED TO SUMMARY					N	13,662,208.19	

SITE ANALYSIS

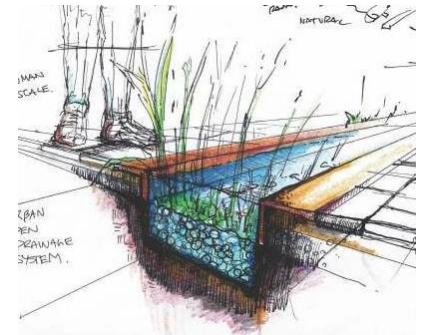
LOCATION

The site is located at IKOT NTUEN UYO, AKWA IBOM STATE. The site is located at the outskirts of the capital city. It is surrounded by neighboring residential buildings which follow a street network pattern.



DRAINAGE

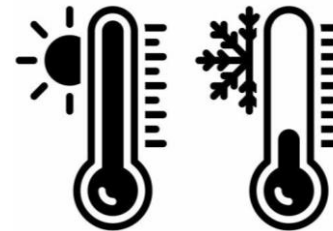
There is provision of gutters in the street which channels water to the major highway gutters down to the major drainage system`



GEOLOGY

The landscape of Uyo is mostly flat. This is because the underlying geology of the state is predominantly coastal plain sediments. The coastal nature of the state makes it the natural

CLIMATE



Uyo can be described as a tropical rainy type which experiences abundant rainfall with very high temperature. Naturally, maximum humidity is recorded in July while the minimum occurs in January. The state experiences two main seasons. The wet or rainy season lasts between eight to nine months starting from mid- march till the end of November. The dry season has a short duration of between the last week of November or early December and lasts till early march. Despite the seasonal variations, rainfall is expected every month of the year.



SITE ANALYSIS

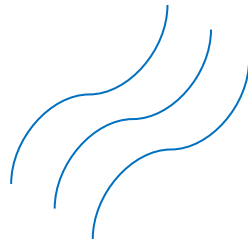
ACCESSIBILITY

The site can be easily accessed by vehicles and pedestrians. The building lies along a street which leads to a major road.



SUNSET

The sun sets at the west and comes with high intensity.

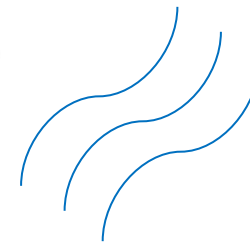


SOUTH WEST TRADE WIND

The vegetation of the site is characterized by grass shrubs and trees.



NORTH-EAST TRADE WIND



The vegetation of the site is characterized by grass shrubs and trees.



SUNRISE

The sun rises in the east and comes with little altitude.

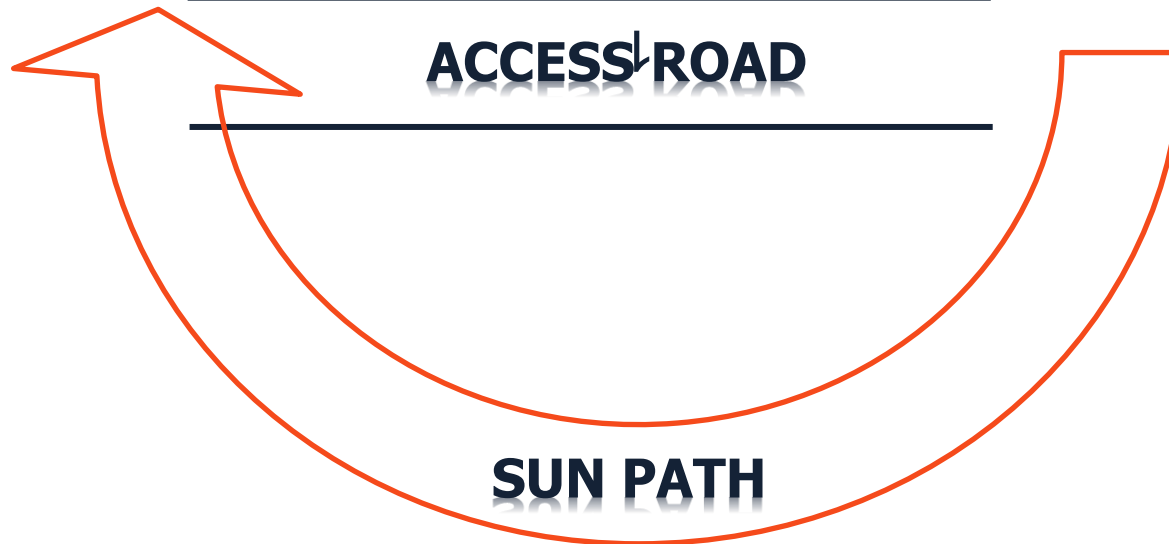


SOIL TYPE

The soil type present in the site is loamy soil which is suitable for construction and should be treated to avoid termites.



ACCESS ROAD



SUN PATH

MIDDAY SUN

It passes through the south pole with higher solar radiation between 12noon to 4pm.

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SITE PLAN



SITE ANALYSIS/ DETAILS

AREA OF SITE	450.000	SQ. MTRS
AREA OF BUILDING	159.049	SQ MTRS
AREA OF UNBUILT SPACE	301.191	SQ. MTRS
AREA OF GREEN AREA	101.824	SQ MTRS
% OF BUILT AREA	35.34%	
%OF UNBUILT AREA	64.66%	
%OF GREEN AREA	22.62%	
TOTAL NOs OF BUILDING	1	
TOTAL NOs OF FLOORS	1	
NO OF PARKING	2	

GENERAL NOTES

1. KERBS-100X450mm TOP EDGED BEVELLED CONC. KERB TO S/ENGR'S DETAILS
2. CAR PARK AND DRIVEWAY CONC. INTERLOCKING PAVING STONES ON SAND BED
3. CAR PARK MARKING-ENAMEL WHITE PAINT

NOTE:

- A. REFERENCE LEVEL OF +000 TO BE ESTABLISHED ON SITE IN ACCORDANCE TO EXISTING SITE TOPOGRAPHY
- B. SPOT LEVELS ON THE DRAWINGS ARE INDICATIVE OF SPOT DIFFERENCES ONLY AND SHOULD BE SET OUT IN RELATION TO EXISTING SITE TOPOGRAPHY
- C. SITE REFERENCES OF +000 **MUST** BE AT LEAST 150MM HIGHER THAN THE EXISTING ROAD

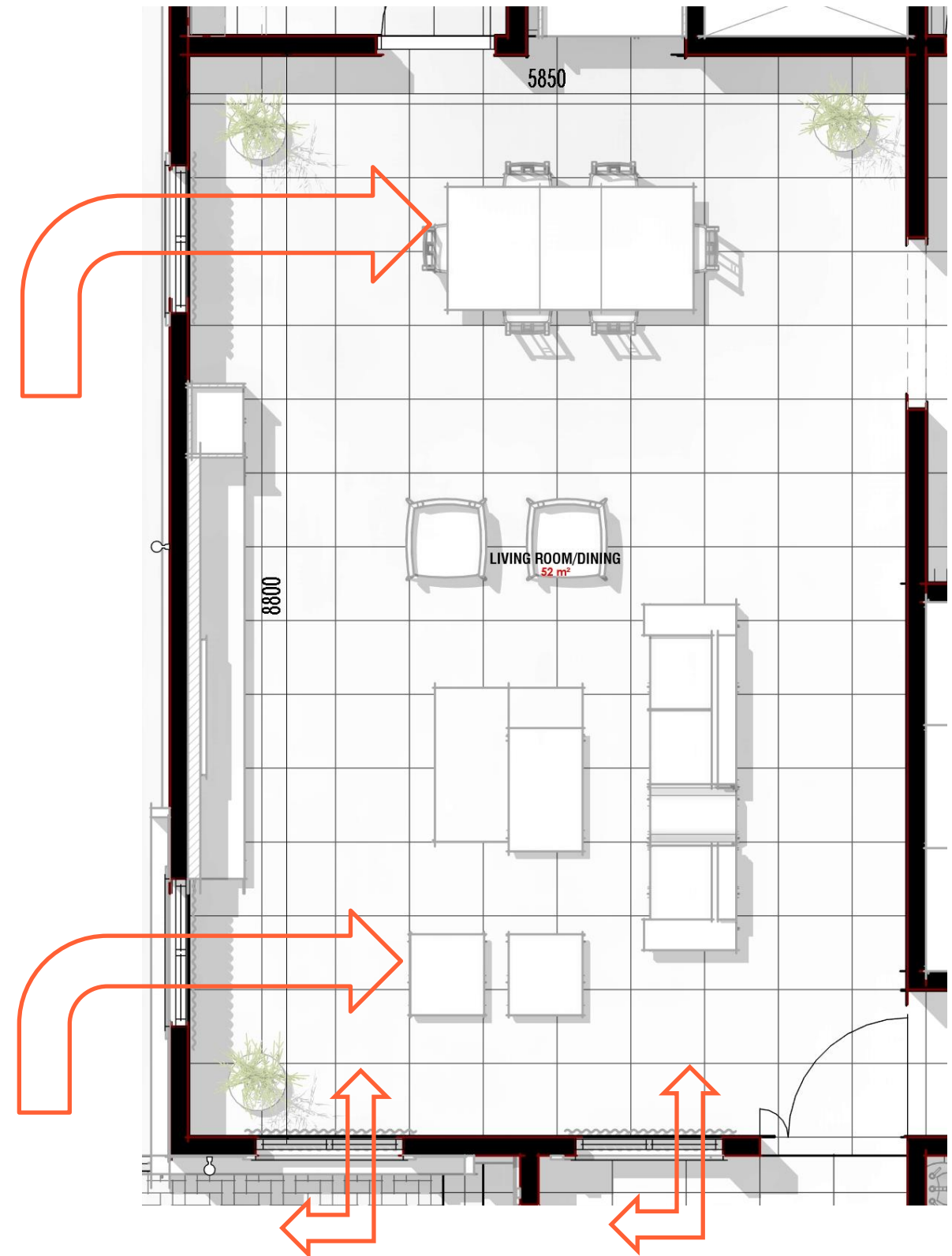


CALL-OUT PLAN

The living room uses the contemporary interior style. The contemporary styles are more fluidic in nature. Thus, this can be altered as per the interest of the seeker.

FEATURES OF THE SPACE

1. Natural light is used.
2. It includes open spaces.
3. Use of natural and textural fabrics.
4. Either very dark or very light material tones.
5. Neutral colors.
6. Proper cross ventilation.
7. Free Circulation space for occupants.



Living Room/Dining

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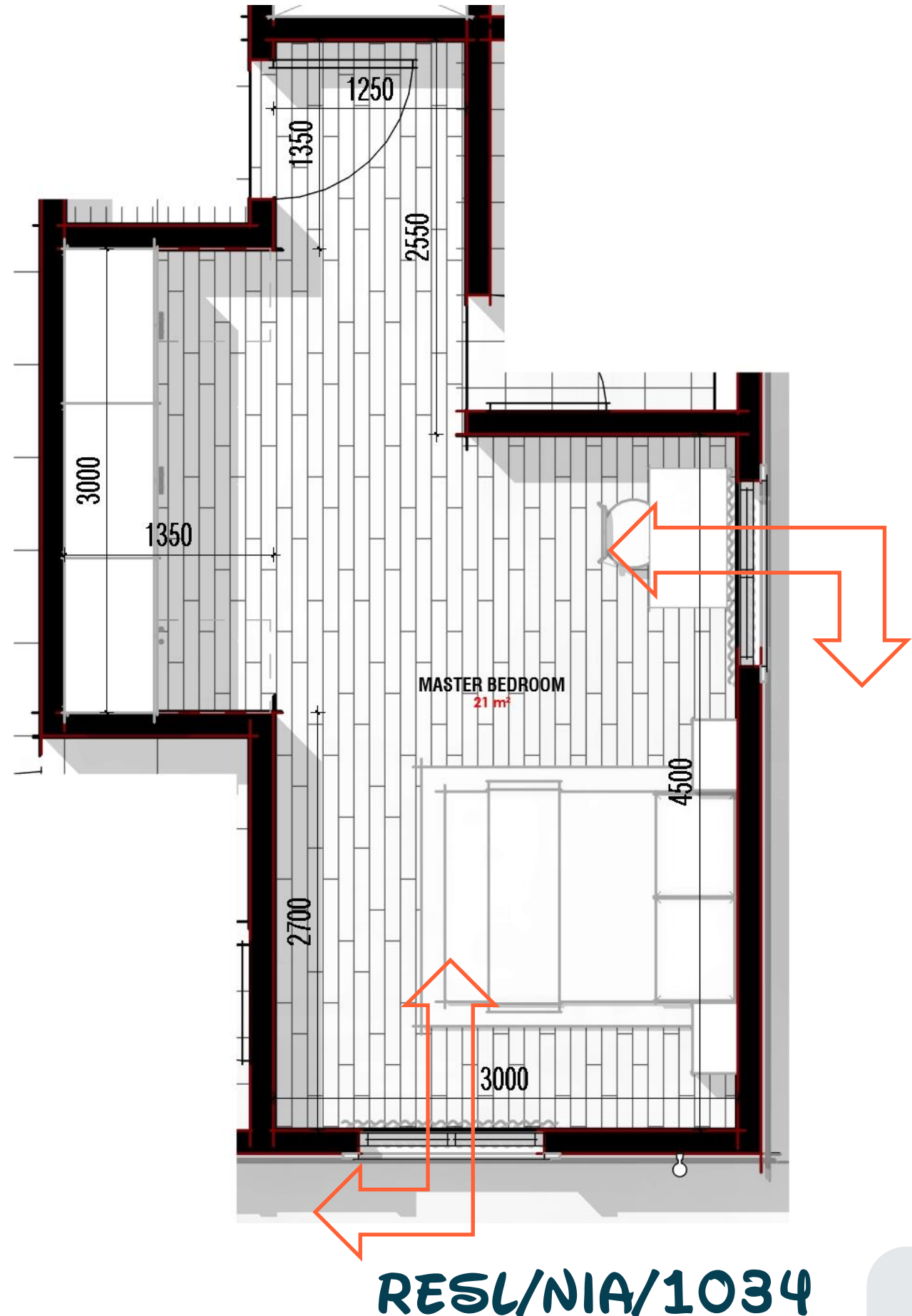
CALL-OUT PLAN

The bedroom is a private space which is oriented at the eastern part of the site so as to receive sunlight in the morning.

The Master bedroom is larger than the other rooms designed and it's oriented in front of the building which makes it more suitable for security reasons.

There is provision of closet for maximum comfortability for the spouses.

There is proper circulation and space management around the bedroom.



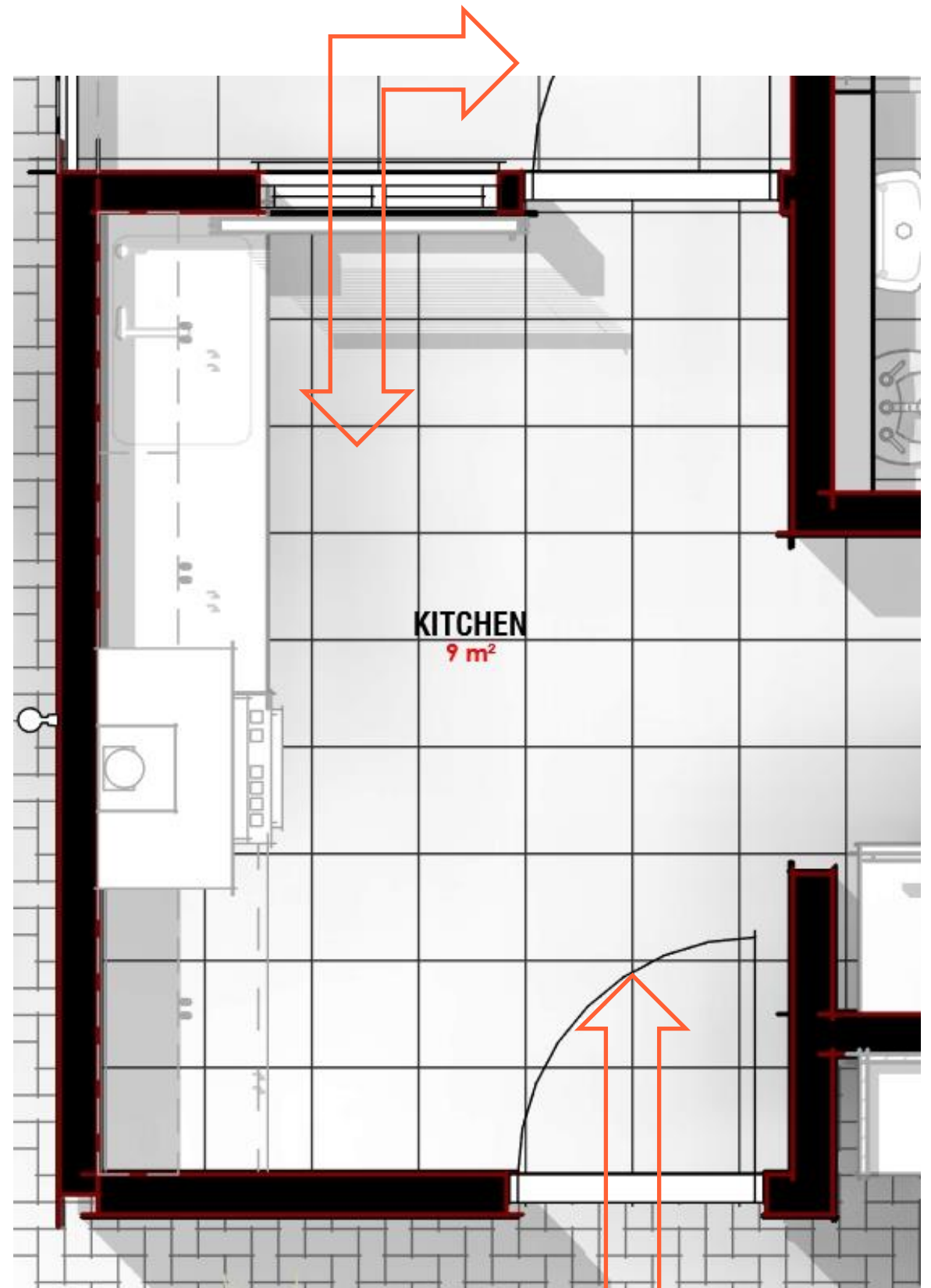
Master Bedroom

CALL-OUT PLAN

The kitchen is a semi private space which is oriented along the western part of the site which is considered suitable because it is not a living space.

A store is provided for the storage of food items or for other ancillary use.

There is free movement of people in the space and free flow of air in and out of the space.



Kitchen

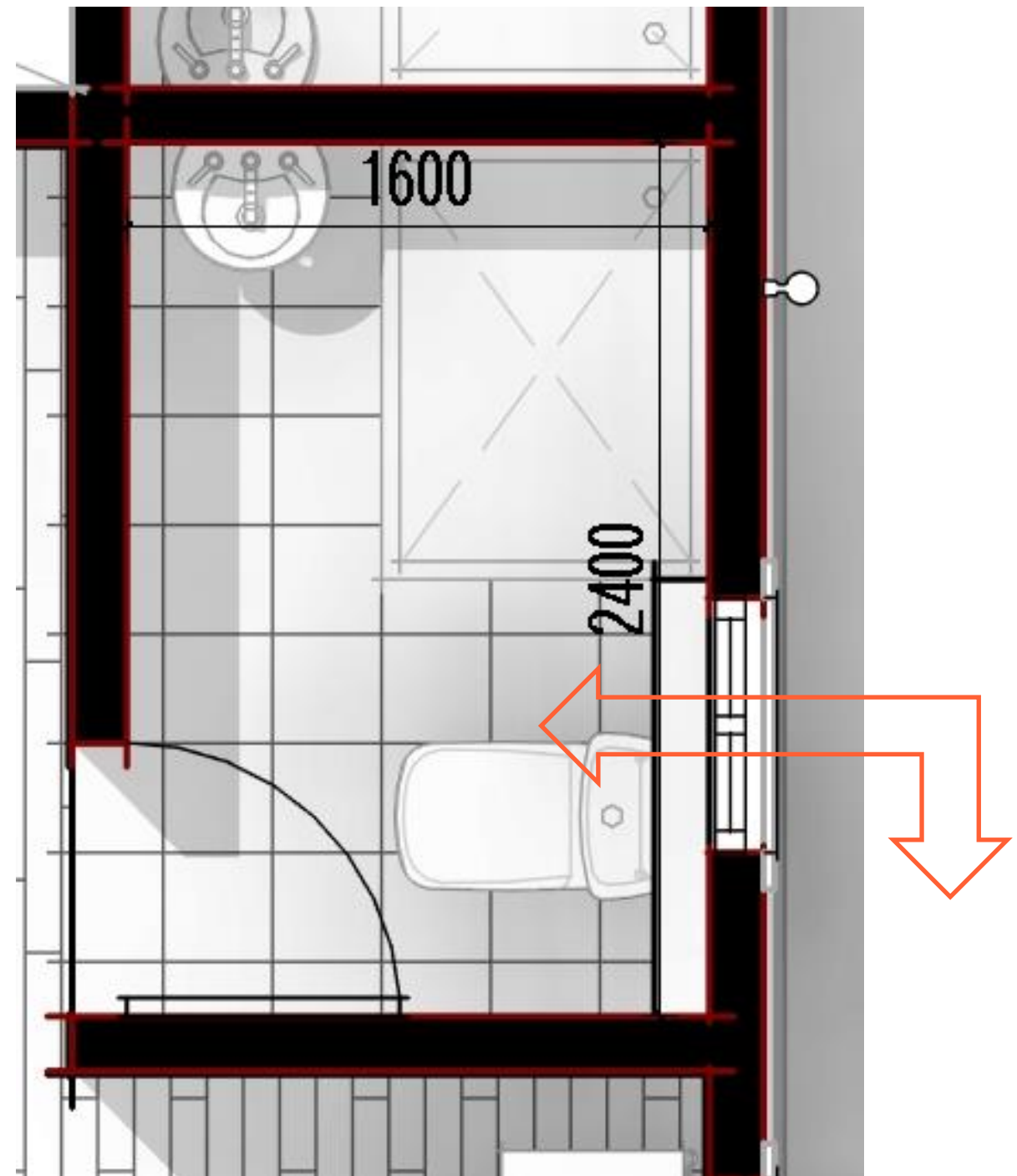
RESL/NIA/1034

CALL-OUT PLAN

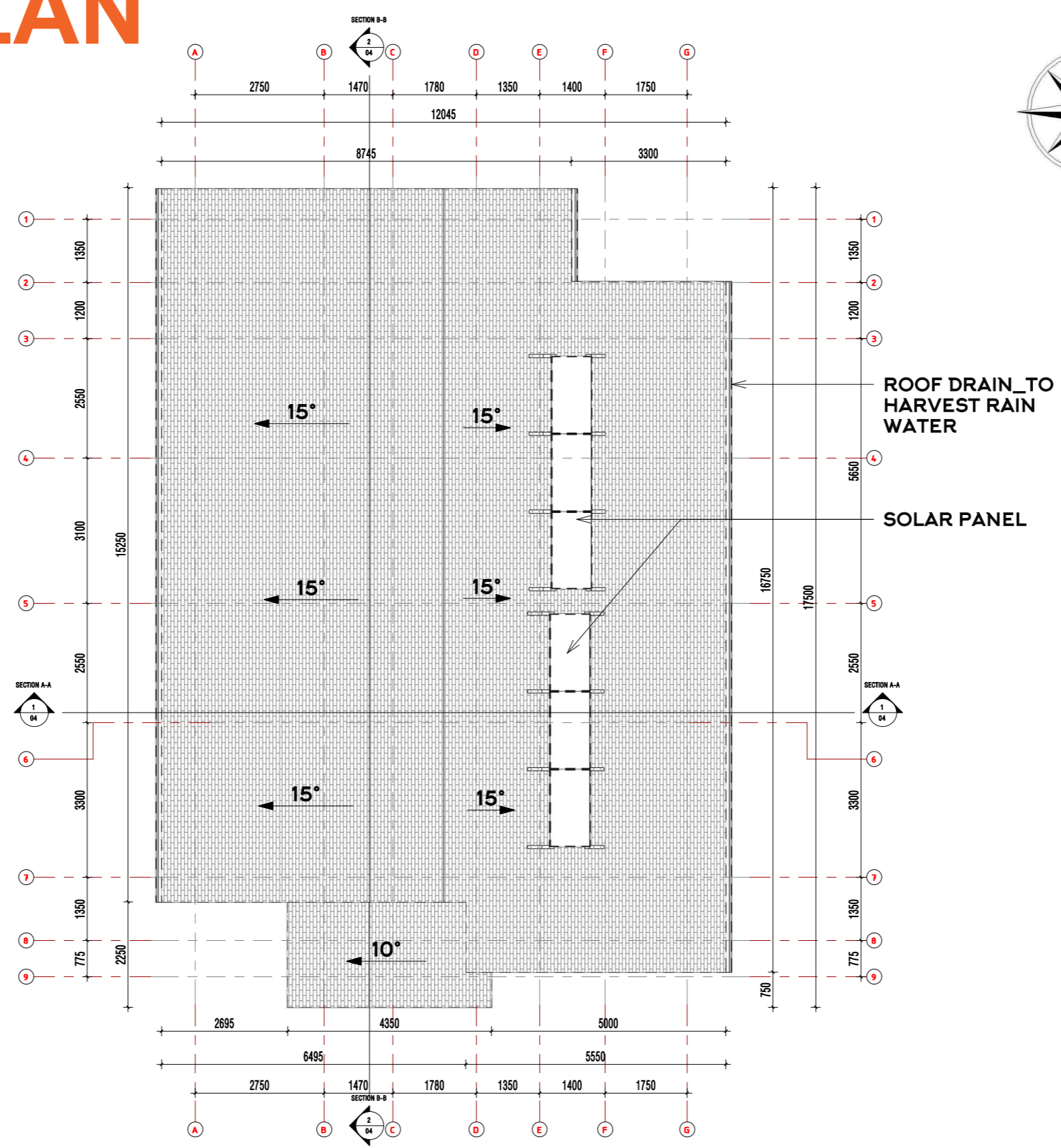
The toilet consists of a shower, wash hand basin and a water closet.

There is maximization of natural lighting in the space.

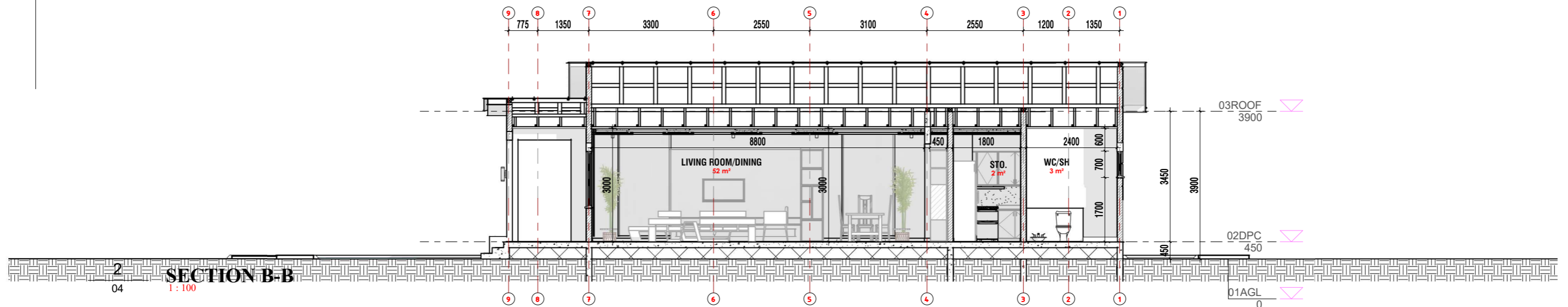
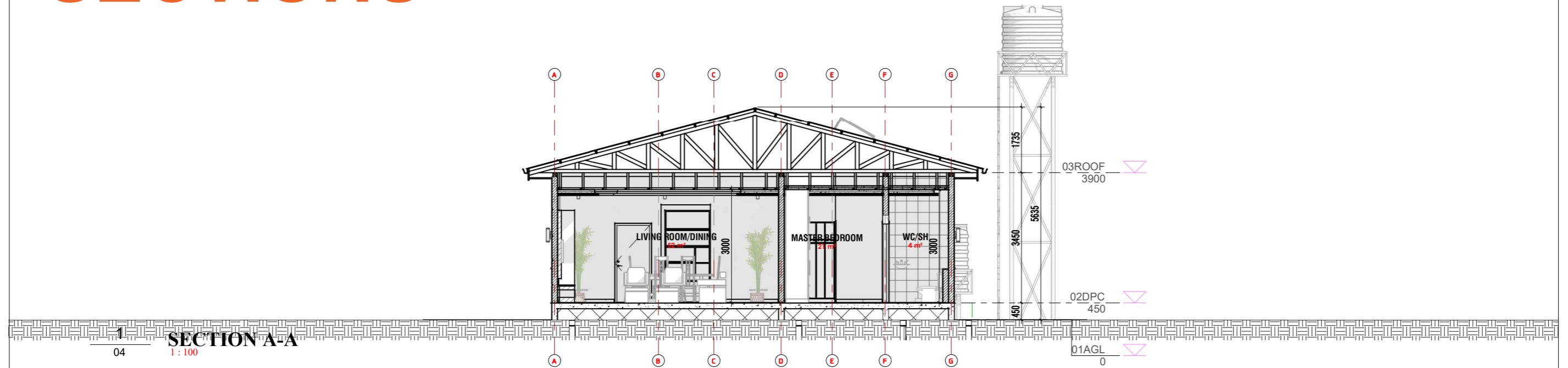
There is provision of appropriate appropriate space.



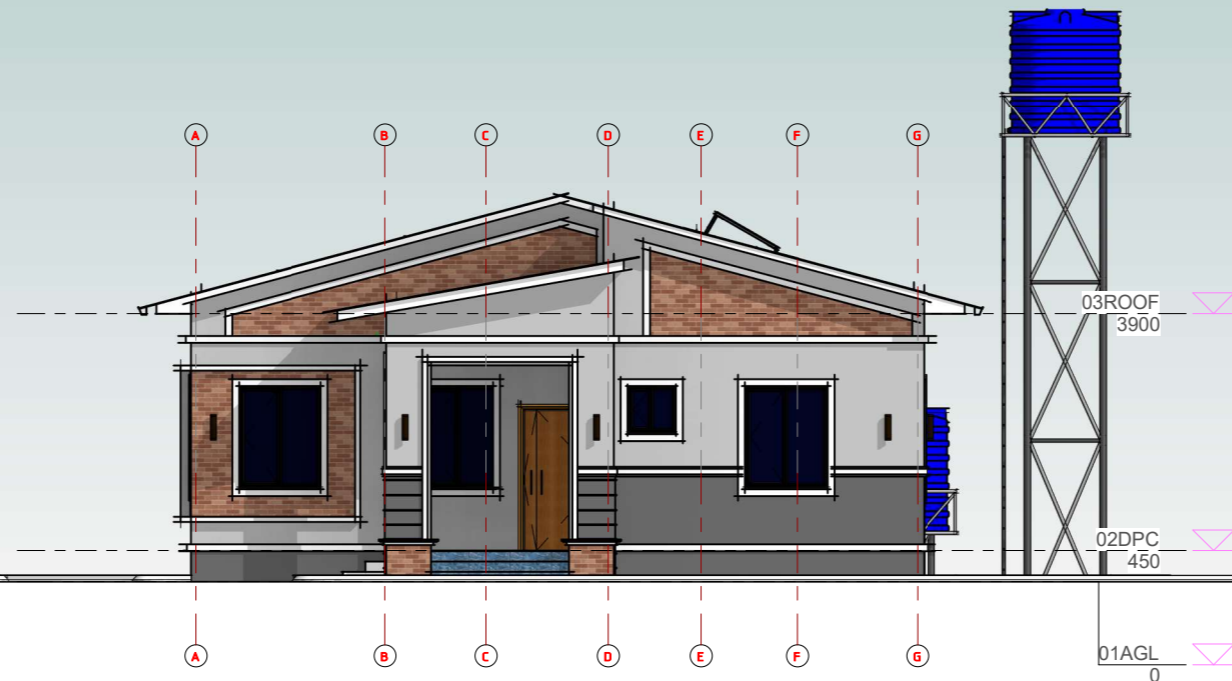
ROOF PLAN



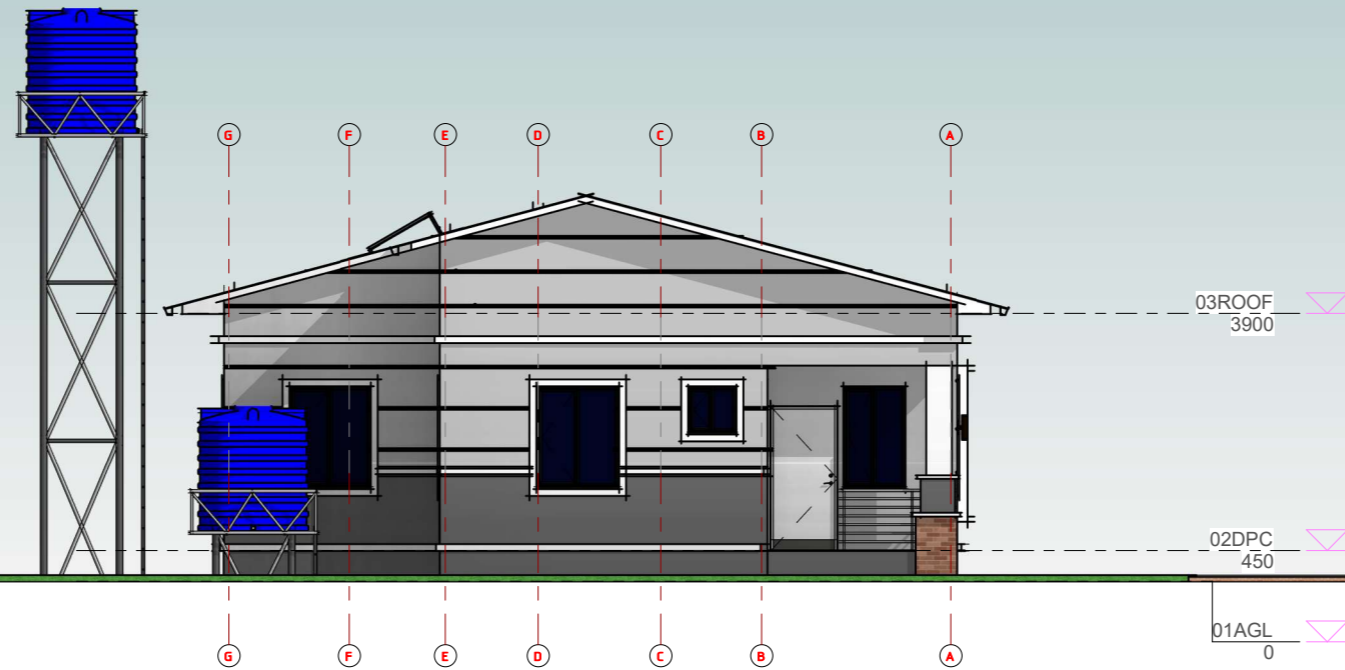
SECTIONS



ELEVATIONS

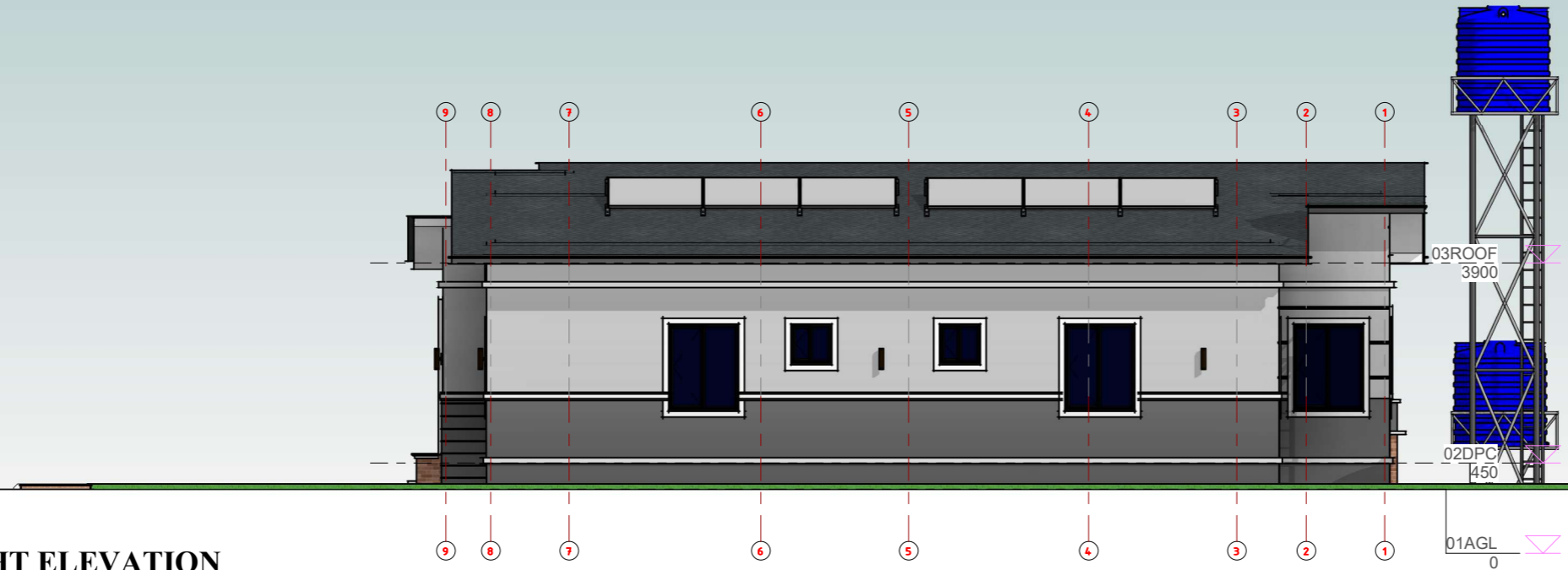


1
05 **01 APPROACH ELEVATION**
1 : 100

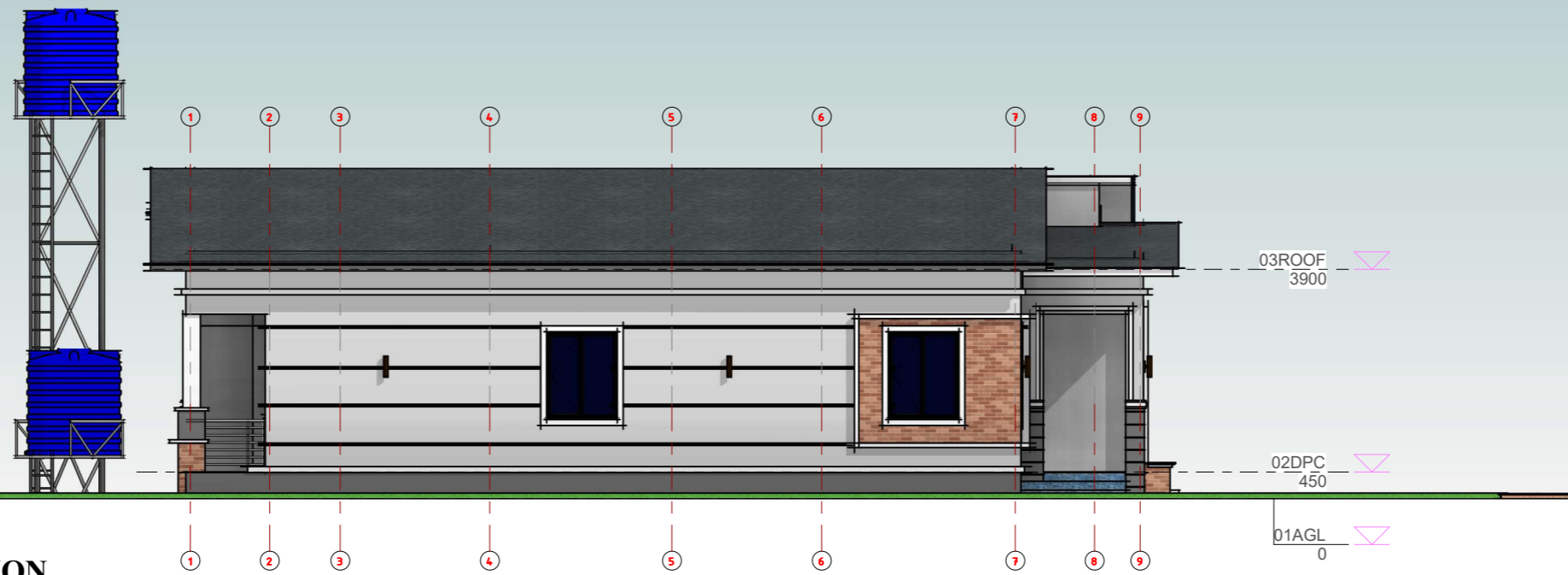


2
05 **02 REAR ELEVATION**
1 : 100

ELEVATIONS

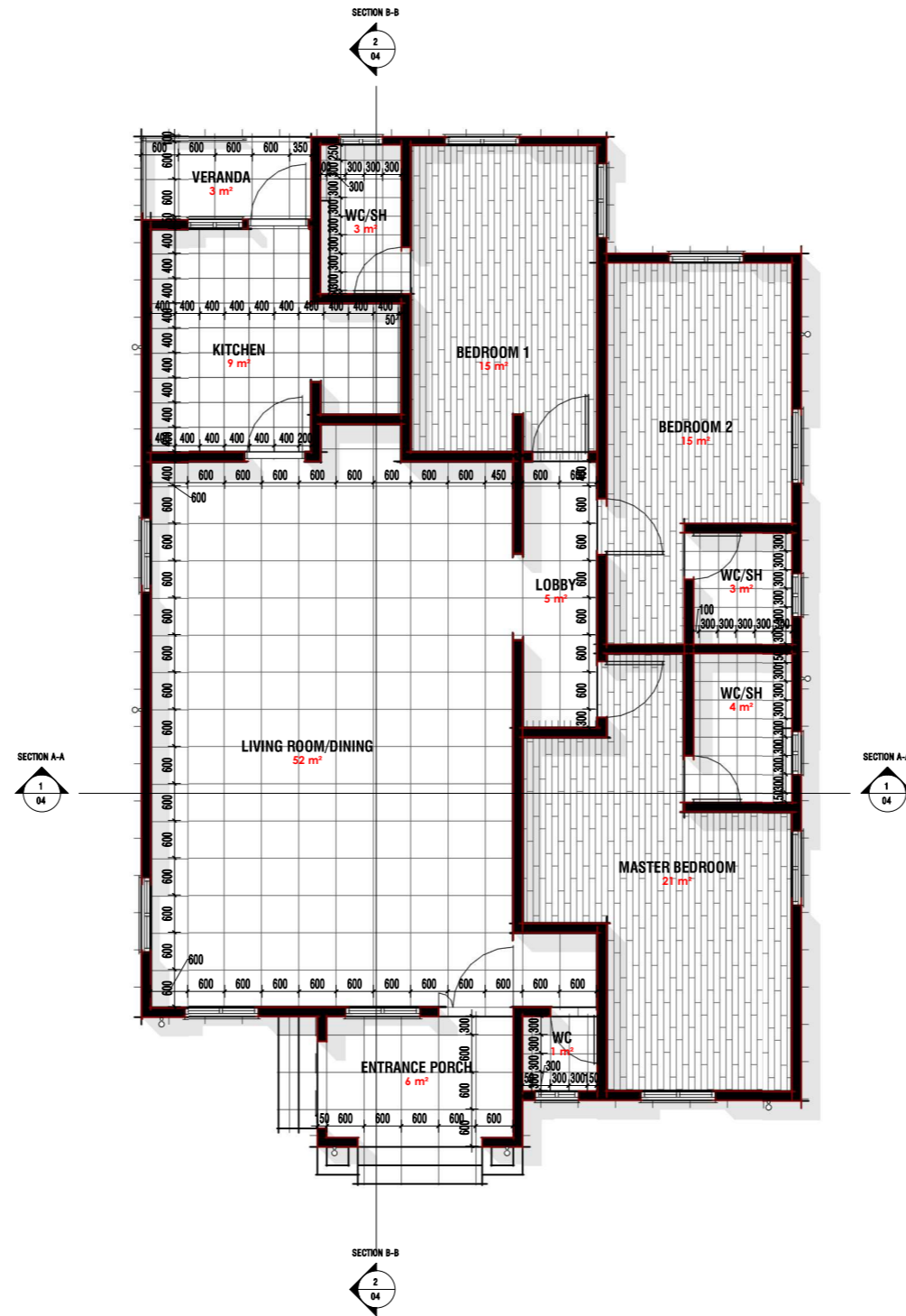


1
06 **04RIGHT ELEVATION**
1 : 100



2
06 **03LEFT ELEVATION**
1 : 100

FLOOR TILING PATTERN

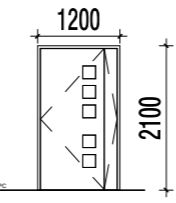
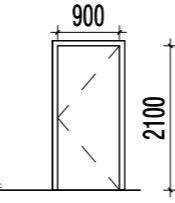
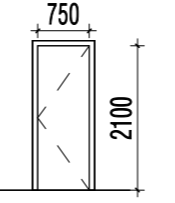
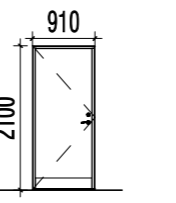


FINISHES SCHEDULE

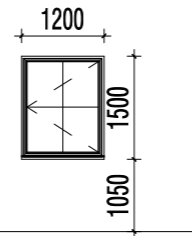
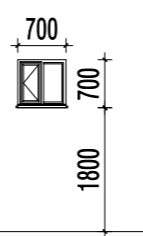
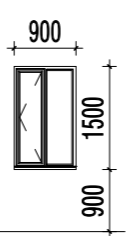
SCHEDULE OF FINISHES													
SPACES	FLOORS							WALLS			CEILINGS		
	INTER LOCKING PAVING STONES	SUPER POLISH SERIES (BIDASAR MARBLE)	SUPER POLISH SERIES (NATURE MARBLE)	DIGITAL MATT SERIES (GLADIOLI)	DIGITAL FLOOR SERIES(CAROLINA BEIGE)	DOUBLE CHARGED SERIES (ALMOND FLOWER WHITE)	RUSTIC SERIES (RUSTIC GREY)	GVT SERIES (SUPER WHITE MATT)	EMULSION PAINT FINISH	SUPER POLISH SERIES (STONE CROP MARBLE)	DIGITAL WALL EXTERIOR (IBILEO BROWN GLOSSY)	P.O.P PLASTER BOARD FINISH	
WALKWAYS	●												
CAR PARK	●												
EXTERIOR									●		●	●	
ENTRANCE						●			●			●	
LIVING ROOM/DINNING		●				●			●	●		●	
BEDROOMS				●					●			●	
TOILETS							●	●				●	
KITCHEN			●		●					●		●	
LOBBY		●							●			●	

DOORS AND WINDOWS SCHEDULE

DOOR SCHEDULE
1 : 100

D1		D2		D3		D4	
							
DOOR SIZE	1200 X 2100	DOOR SIZE	900 X 2100	DOOR SIZE	750 X 2100	DOOR SIZE	750 X 2100
DOOR DESCRIPTION	Double leaf, Double swing Asymmetrical, semi-core (mahogany), panel glazed door complete with stainless steel handles and hinges including 75mm timber architrave to manufacturer's detail and architect's approval	DOOR DESCRIPTION	Single leaf, single swing, semi-core (mahogany), flush door complete with stainless steel handles and hinges including 75mm timber architrave to manufacturer's detail and architect's approval	DOOR DESCRIPTION	Single leaf, single swing, semi-core (mahogany), flush door complete with stainless steel handles and hinges including 75mm timber architrave to manufacturer's detail and architect's approval	DOOR DESCRIPTION	Single leaf, single swing, semi-core (FIRE RATED), flush door complete with stainless steel handles and hinges including 75mm timber architrave to manufacturer's detail and architect's approval
LOCATION	MAIN ENTRANCE	LOCATION	BEDROOMS,	LOCATION	BATH/TOILETS,	LOCATION	KITCHEN,
TOTAL	1 NO.	TOTAL	3 NOS.	TOTAL	4 NOS.	TOTAL	1 NOS.

WINDOW SCHEDULE
1 : 100

W01		W02		W03	
					
SIZE	1200mm x 1500mm	SIZE	700mm X 970mm	SIZE	750mm X 900mm
DESCRIPTION	DOUBLE PANEL OUTWARD LEAF WHITE POWDER COATED ALUMINIUM CASEMENT WINDOW WITH OPENABLE ALUMINIUM MESH FLY SCREEN FITTED TO INNER FRAME COMPLETE WITH STAINLESS STEEL IRONMONGERY SET TO ARCHITECTS APPROVAL. ALL ACCESSORIES TO BE COLOUR MATCHED.	DESCRIPTION	DOUBLE PANEL OUTWARD LEAF WHITE POWDER COATED ALUMINIUM CASEMENT WINDOW WITH OPENABLE ALUMINIUM MESH FLY SCREEN FITTED TO INNER FRAME COMPLETE WITH STAINLESS STEEL IRONMONGERY SET TO ARCHITECTS APPROVAL. ALL ACCESSORIES TO BE COLOUR MATCHED.	DESCRIPTION	DOUBLE PANEL OUTWARD LEAF WHITE POWDER COATED ALUMINIUM CASEMENT WINDOW WITH OPENABLE ALUMINIUM MESH FLY SCREEN FITTED TO INNER FRAME COMPLETE WITH STAINLESS STEEL IRONMONGERY SET TO ARCHITECTS APPROVAL. ALL ACCESSORIES TO BE COLOUR MATCHED.
FRAME	White epoxy coated aluminium	FRAME	White epoxy coated aluminium	FRAME	White epoxy coated aluminium
SUB-FRAME	-	SUB-FRAME	-	SUB-FRAME	-
GLASS	5mm tinted glass	GLASS	5mm tinted glass	GLASS	5mm tinted glass
LOCATION	Living room, Dining, Bedrooms	LOCATION	Toilets	LOCATION	KITCHEN
QUANTITY		QUANTITY		QUANTITY	
TOTAL QTY.	9 NOS.	TOTAL QTY.	4 NOS.	TOTAL QTY.	1 NOS.
WINDOW TYPE	W01	WINDOW TYPE	W02	WINDOW TYPE	W02

INTERIOR PERSPECTIVE



WALL: SUPER POLISH SERIES Stone
crop marble

FLOOR SUPER POLISH SERIES Bidasar
marble

SKIRTING DOUBLE CHARGED SERIES
Almonds flower white

Living Room/Dining
RESL/NIA/1034

INTERIOR PERSPECTIVE



WALL: SUPER POLISH SERIES Stone
crop marble

FLOOR SUPER POLISH SERIES Bidasar
marble

SKIRTING DOUBLE CHARGED SERIES
Almonds flower white

Living Room/Dining

RESL/NIA/1034

INTERIOR PERSPECTIVE



WALL: SUPER POLISH SERIES Stone crop marble

FLOOR SUPER POLISH SERIES Bidasar marble

SKIRTING DOUBLE CHARGED SERIES Almonds flower white

Living Room/Dining

RESL/NIA/1034

INTERIOR PERSPECTIVE



WALL: SUPER POLISH SERIES Stone
crop marble

FLOOR SUPER POLISH SERIES Bidasar
marble

SKIRTING DOUBLE CHARGED SERIES
Almonds flower white

Living Room/Dining

RESL/NIA/1034

INTERIOR PERSPECTIVE



WALL PAINT WHITE

FLOOR DIGITAL MATT SERIES
Gladioli

SKIRTING DOUBLE CHARGED SERIES
Almonds flower white

Bedroom

RESL/NIA/1034

INTERIOR PERSPECTIVE



WALL PAINT WHITE

FLOOR DIGITAL MATT SERIES
Gladioli

SKIRTING DOUBLE CHARGED SERIES
Almonds flower white

Bedroom
RESL/NIA/1034

INTERIOR PERSPECTIVE



WALL PAINT
White

FLOOR DIGITAL FLOOR SERIES
Carolina Beige

SKIRTING SUPER POLISH SERIES
Stone Crop Marble

kitchen

RESL/NIA/1034

INTERIOR PERSPECTIVE



WALL PAINT
White

FLOOR DIGITAL FLOOR SERIES
Carolina Beige

SKIRTING SUPER POLISH SERIES
Stone Crop Marble

kitchen

RESL/NIA/1034

EXTERIOR PERSPECTIVE



WALL DESIGN DIGITAL WALL EXTERIOR
Ibileo Brown Glossy

WALL PAINT LIGHT GREY AND DARK GREY
COLOUR

ENTRANCE FLOOR DOUBLE CHARGED SERIES
Almond Flower White

RESL/NIA/1034

EXTERIOR PERSPECTIVE



WALL DESIGN DIGITAL WALL EXTERIOR
Ibileo Brown Glossy

WALL PAINT LIGHT GREY AND DARK GREY
COLOUR

ENTRANCE FLOOR DOUBLE CHARGED SERIES
Almond Flower White

RESL/NIA/1034

EXTERIOR PERSPECTIVE



WALL DESIGN DIGITAL WALL EXTERIOR
Ibileo Brown Glossy

WALL PAINT LIGHT GREY AND DARK GREY
COLOUR

ENTRANCE FLOOR DOUBLE CHARGED SERIES
Almond Flower White

RESL/NIA/1034

EXTERIOR PERSPECTIVE



WALL DESIGN DIGITAL WALL EXTERIOR
Ibileo Brown Glossy

WALL PAINT LIGHT GREY AND DARK GREY
COLOUR

ENTRANCE FLOOR DOUBLE CHARGED SERIES
Almond Flower White

RESL/NIA/1034

SUMMARY

The design focusses on the following:

Design efficiency: This is the concept part of Green/sustainable building and has large impact on life cycle cost and overall performance. The main function is to reduce the lifecycle cost and provide healthy and user-friendly environment.

Energy efficiency: This principle focusses on reducing the active energy requirement of building by utilization of passive energy. The utilization of energy can be reduced by proper orientation of building in such way that maximum natural light and air should be a utilized for ventilation purpose hence it requires proper placement of door and window opening in structure and also require thermal insulating wall, ceiling and floor to achieve energy efficiency.

Water efficiency: To reduce the consumption of water and maintain the quality of water it is necessary to focus on collecting water, use water, purification of water and reuse the purified water. one way to achieve water efficiency is **RAIN WATER HARVESTING.**

Materials efficiency: To reduce the environment impact it is necessary to use recycled material obtain from the agricultural waste or industrial waste. A best example of this are solar power panels. solar panels not only provide lighting but also provide valuable energy source.

Waste reduction: This can be achieved by using waste for beneficial purpose for example grey water (water from washing machine, bathroom, dishwasher) which can be easily reused for the purpose such as toilet flush and it also can be turned into fertilizer.

Biophilic design: The use of natural materials and planting to increase wellbeing. incorporation of biophilic design to connect people to nature and natural processes Creating a better environment that has a beneficial effect on people's health. plants inside can allow people to see and interact with natural forms.

SUMMARY

Proper roofing: The use of Gable roof which provides excellent drainage for rain. It is more weather resistant than shed roof and more cost effective than hip roof. Gable roofs work well for people on a budget. The simplicity of gable roof designs means they don't require the same number of materials as other roof designs, and their styles vary while staying affordable.

Implementation of sustainable strategies such as the installation of specifically engineered system to purify water. Rain water harvesting. A water tank is provided to contain harvested rain water for purification and usage.

Rain Water Harvesting (RWH) Rain water harvesting is the process of collecting rain water as much as possible and store it for further beneficial use. Rain water is fresh water, it is said that water is the liquid gold. Hence it is necessary to store as much as possible.

Components Of Rooftop Rain Water Harvesting

Catchments: Catchment is an area which collects rain water which fall over the surface It may be terrace, courtyard, or paved or unpaved open ground.

Transportation: Water collected by catchment area is diverted towards the gutter provided at the edge of roofing system, and it is further shifted to down pipe through wired mesh to prevent entry of floating matter. Pipes should be provided with sufficient dimension depending upon intensity of rainfall.

First flush system: First flush is a provision made to flush off the water received in first shower. The first shower of rain may contain pollutants which contaminates storable or rechargeable water. It also helps in cleaning silt deposited in dry season. For flushing first shower simple manually operated valve is provided to down pipe to flush off first shower.

Filter unit: There are some minute or dissolved impurities are always remained in water which cause contamination of ground/storable water if proper filter unit is not provided.

USE OF SPONGE FILTER: It is a simple filter made from PVC drum having a layer of sponge in the middle of drum. It is the easiest and cheapest type of filter, suitable for small residential units.