



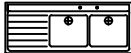






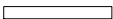






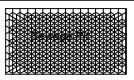








*PROPOSED 4 UNITS OF 2  
BEDROOM BLOCK OF  
FLATS.*

*MECHANICAL SERVICES  
DRAWINGS*

SYMBOLS	DESCRIPTION
	WATER CLOSET WITH 'P' OR S TRAP,COMPLETE WITH ALL NECESSARY FITTINGS.
	WASH BASIN COMPLETE WITH ALL NECESSARY FITTINGS
	SHOWER TRAY COMBO COMPLETE WITH ALL NECESSARY FITTINGS
	WALL MOUNTED SHOWER SPRAY WITH ALL NECESSARY FITTINGS
	STAINLESS STEEL SINK, DOUBLE BOW SINGLE DRAINER.
 F.D  R.D	TRAPPED FLOOR DRAIN / ROOF DRAIN( SIMPHONIC GUTTER TRAP FLANGE)
	COLD WATER SUPPLY PIPELINE , PVC-TECHNOGREEN,G.I-TO BS
	HOT WATER SUPPLY PIPELINE , PVC-TECHNOGREEN,G.I-TO BS
 	100mm SOIL PIPE IN GROUND,ROUTE PIPE TO INSPECTION CHAMBER. 50 BY 75mm WASTE PIPE IN GROUND,ROUTE PIPE TO INSPECTION CHAMBER.
	RAIN WATER PIPE IN ROOF,ROUTE PIPE TO RW MANHOLE FROM SYMPHONIC FLANGE
	PERFORATED RAIN WATER LEATHER /FOOTING DRAIN LINE
	RAIN WATER DOWNSPOUTS COLLECTION DRAIN (Ø100 INTERNAL DIAMETER)
 	WATER HEATER (ARISTON )
	INSPECTION CHAMBER (450mmX450mm)
	CATCH BASIN/ RAINWATER MANHOLE(200MM RAINOUT GUTTER THROUGH BY)
	SEWAGE PIT(SIZE AS SPECIFIED)

	GV	GATE VALVE OF DIAMETER AS SPECIFIED
	NRV	NON RETURN VALVE OF DIAMETER AS SPECIFIED
	SC	STOP COCK
	IC	VALVE PIT (HOUSE CONNECTION POINT) Consisting of 38mm upvc pressure pipe, 38mm Non return valve, Water meter, Gate Valve, Ferrule and saddle clip tapped from the 65mm and 50mm water supply network.
	FH	PUBLIC SYSTEM WET BARREL FIRE HYDRANT CONNECTION
		DIRECTION WITH SLOPE RATIO 1/4 WHERE INDICATED

STORAGE WATER HEATER SCHEDULE

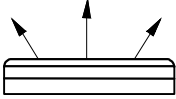










TAG NO.	CAPACITY (GALLON)	POWER (HP)
WH-A	50	1.5
WH-B	20	1.5
AC-C	15	1.5

DIRECTIONS/ SYMBOLS USED IN THIS DESIGN




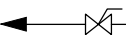
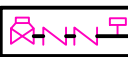




FA	FROM ABOVE
TB	TO BELOW
IW	IN WALL
UT	UNDER TILES
NTS	NOT TO SCALE
HL	HIGH LEVEL
UG	UNDER GROUND
UP	UP
DN	DOWN
IFS	IN FLOOR SLAB
BFS	BELOW FLOOR SLAB
SS	SOIL STACK
WS	WASTE STACK
VS	VENT STACK
FB	FROM BELOW

SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  LEGENDS	
		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWINGNG NO:  M01
LOCATION		APPROVED BY			
		DATE	2002.		

	UNIT BLOW WALL MOUNTED AC EVAPORATOR FAN (INVERTOR INDOOR UNIT)
	FLOOR STANDING UNIT BLOW AC EVAPORATOR FAN (INVERTOR INDOOR UNIT)
	SPLIT UNIT A.C COMPRESSOR/CONDENSER OUTDOOR UNIT (INVERTER CONTROLLER UNIT)
	MULTI-SPLIT UNIT A.C COMPRESSOR/CONDENSER OUTDOOR UNIT (INVERTER CONTROLLER UNIT)
	WALL MOUNT KITCHEN HOOD (DUCTLESS RECYCLING MODE TYPES)
	REFRIGERANT /CONDENSATE 1 1/8" OR AND 5/8" dia 25mm dia UPVC PIPES
	DRAIN PIPE
	EXTRACTOR FAN
	25mm U.G-UPVC HVAC FREE DRAIN CONNECTED TO SITE/ TERRACE DRAIN
	25mm DRAIN CONNECTED TO WHB TOILET DRAIN
	TO 50mm UPVC HVAC FREE DRAIN TO FLOOR LEVEL

AC SCHEDULE			EXTRACTOR FAN SCHEDULE		
TAG NO.	NOMINAL COOLING CAPACITY (BTU/H)	NOMINAL COOLING POWER (HP)	TAG NO.	NOMINAL PERFORMANCE	
				MINIMUM REQUIRED (m³/h)	RECOMMENDED (m³/h)
AC-1	9,000	1.0	EF-1	200	220
AC-2	12,000	1.0	EF-2	120	140
AC-3	18,000	2.0	EF-3	100	100

SYMBOLS & LEGENDS	
	- STANDARD COVERAGE QUICK RESPONSE PENDENT SPRINKLER HEAD
	- EXTENDED COVERAGE QUICK RESPONSE PENDENT SPRINKLER HEAD
	- OS & Y GATE VALVE
	- DRAIN VALVE
	- ZONE CONTROL ASSEMBLY
	- RISER
	- FIRE DEPARTMENT CONNECTION
	- AIR VENT
	- LANDING VALVE

SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  LEGENDS	
		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWINGG NO:  M02
LOCATION		APPROVED BY			
		DATE	2002.		

## PLUMBING SYSTEM

1-DRAWINGS SHOWING THE LOCATIONS OF PLUMBING EQUIPMENT, PIPING, ETC. ARE DIAGRAMMATIC AND JOB CONDITIONS. THE DRAWINGS SHOW THE GENERAL ARRANGEMENTS OF EQUIPMENT, PIPING, ETC. AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHER TRADES WILL PERMIT.

2-PIPE SIZES INDICATED ARE OUTER DIAMETER IN mm AND ALL INVERT LEVELS ARE MEASURED FROM FINISHED FLOOR LEVEL.

3-ALL VALVES AND ACCESSORIES SHALL BE FULL LINE SIZE, PROVIDE ALL NECESSARY UNIONS, REDUCERS, STOPS AS REQUIRED WHEN CONNECTING TO EACH FIXTURE AND/OR EQUIPMENT AND USE BALL VALVE FOR ALL PIPE VALVE.

4-SLOPE OF 1/4 TO 1/2 BY FOOT SHOULD BE MAINTAINED FOR ALL DRAIN AND WASTE PIPES AS VENT PIPE ARE UPVC 4 BAR WHILE DRAINAGE PIPES ARE UPVC 6 BAR.

5-VENT PIPES BETWEEN THE THE SINKS DRAIN AND WASTE PIPES INTERSECTION MUST BE 50mm IN DIAMETER AS WERE DESIGN TO ACTS AS BOTH WASTE AND DRAIN VENT.

6-ALL TOILET WASTE PIPES MUST MAKES A T OR Y WITH THE VENT BOTTOM SUCH THAT THE VENT PIPES GOES VERTICALLY UPWARD FROM THE HORIZONTAL WASTE PIPES

7-ALL WASTE LINES MUST HAVE A Y-SHAPED CLEANOUTS TO AVOID ANY SERIOUS OBSTRUCTIONS WITHIN THE SYSTEM

8-ALL SINKS DRAIN PIPES ARE 40mm IN DIAMETER WHICH CONNECTS TO THE VERTICAL VENTS.

9-WHERE MAIN PIPE SIZE IS NOT INDICATED BETWEEN BRANCH CONNECTIONS ON THE DRAWING, THE PIPE SIZE SHALL BE OF THE LARGER PRECEDING PIPE SIZE.

## HVAC SYSTEM

1 -The wall-hung splits are *designed* for high wall mounting, a minimum of 2400mm from the floor.

2-You must ensure that both “liquid” and suction lines are *insulated* and *preference* should be for ceiling surface route over wall routing.

3-Wire the power supply to the indoor unit directly from the outdoor unit without using a junction box or an indoor disconnect switch.

4-The use of multi-connector 14AWG wire line set option is *recommended*.

5-Polanty is very important when wiring the system and ensure hood to be connected to their dedicated power line.

6-The range hood should be installed 700mm to 800mm above the cocktop and a 12mm minimum space must be provided between cabinet wall and the hood head.

7-The hood should always be installed over a backsplash (don't cut or frame a hood into a backsplash) and are to be attached to a structural beam or joist.

8-The Switches are to be located at the spaces entrance.

## SUPPRESSION SYSTEM

1 -THE DESIGN IS A WET STAND ALONE SYSTEM OF LIGHT HAZARD CONFIGURATION (*Tree Configuration*).

2-STANDARD OF NFPA 13D #13R.

3-THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE OTHER MECHANICAL SERVICES, ELECTRICAL , STRUCTURAL AND ARCHITECTURAL DRAWINGS.

4-PIPES SHALL BE CPVC SCH 80 AND TO BE CARRY A RATED WORKING PRESSURE OF 175psi AT 150F AND JOINT ARE VICTAULIC.

5-DISTRIBUTION AND RANGE PIPES SIZES ARE INDICATED IN THE DIAGRAM WHILE ALL SPRINKLER PIPES ARE 25mm FOR THE SPRINKLERS.

6-PIPE SUPPORT HANGER ON CROSS MAINS REQUIRE TRAPEZE HANGERS WHILE FIRST HANGER SHOULD NOT EXCEED 900 MM FROM THE BEGINNING OF BRANCH.

7-HYDRO TEST THE SYSTEM TO 150% OF THE WORKING PRESSURE FOR AT LEAST FOUR (4) HOURS WITH CLEAN WATER, NO LEAKAGE ALLOWED DURING THIS PERIOD.

8-ALL PIPES PASS THROUGH WALL OR SLAB SHALL BE THROUGH PIPE SLEEVES.

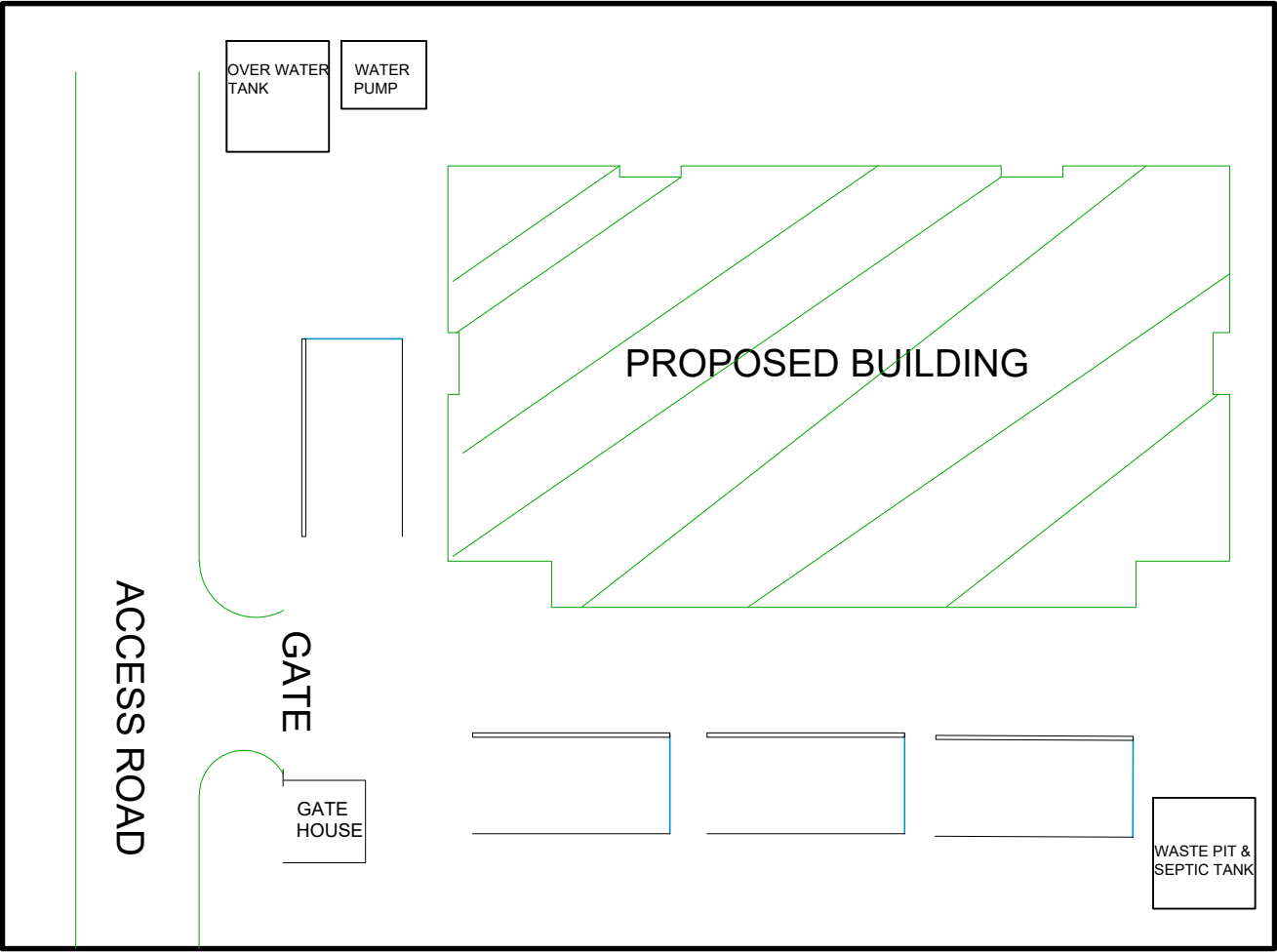
9-THE PIPING NETWORK SHALL BE INSTALLED SO THAT THE SYSTEM MAY BE DRAINED.

10-ALL EXPOSED PIPES SHALL BE PROPERLY INSULATED ACCORDING TO SPECIFIED INSULATING MATERIAL.

11-PROVIDE EXPANSION LOOP/ CONNECTION WHERE NECESSARY AND ALL PIPES SHALL BE GROUNDED.

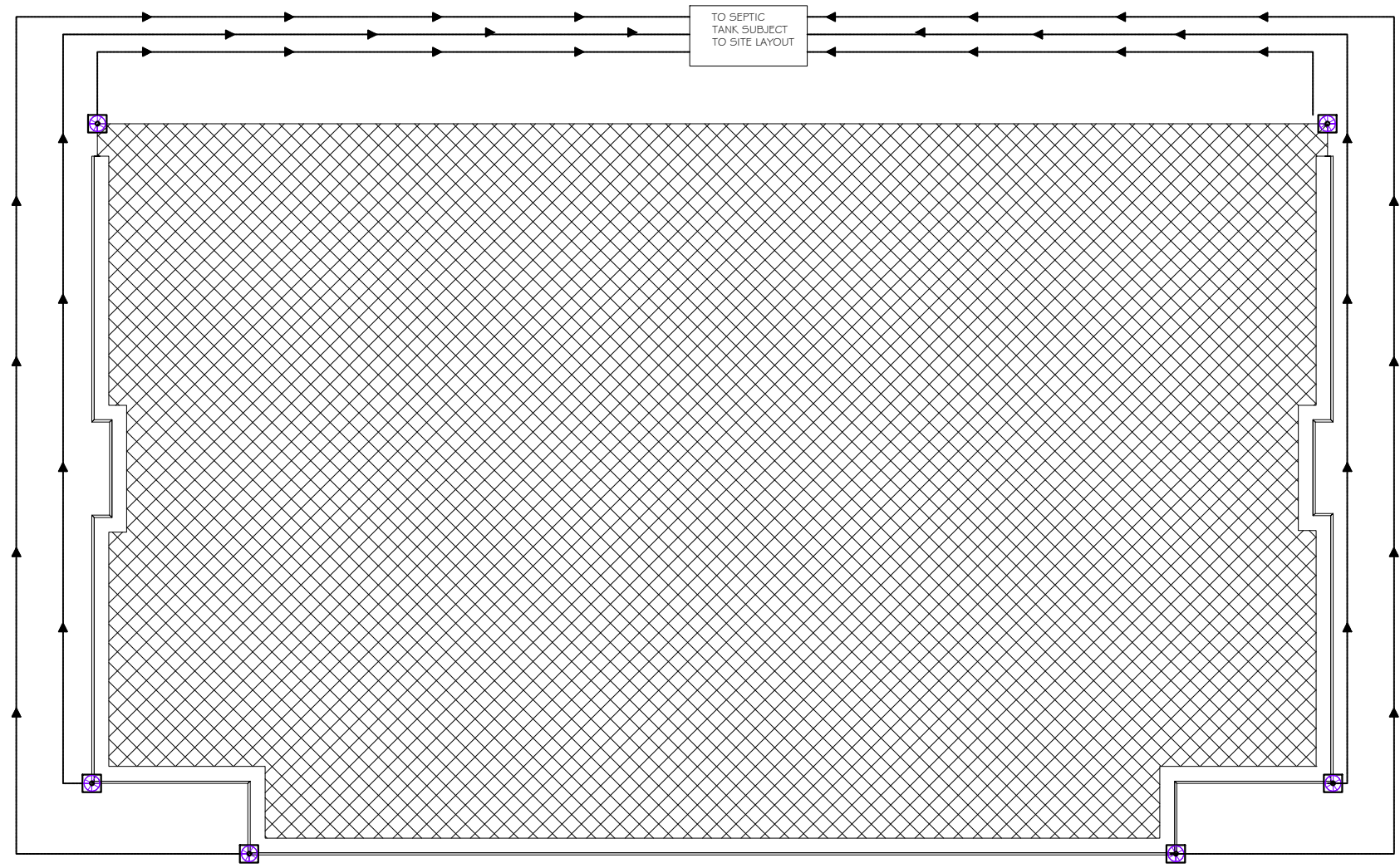
SEAL

PROJECT TITLE	DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  GENERAL INSTRUCTIONS	
	DESIGNED BY	IWEIBO S.E		
	CLIENT	ALHAJI ABUBAKAR	DRAWING SCALE:	DRAWINNG NO:
	LOCATION		N.T.S.	M03
	APPROVED BY			
	DATE	2002.		



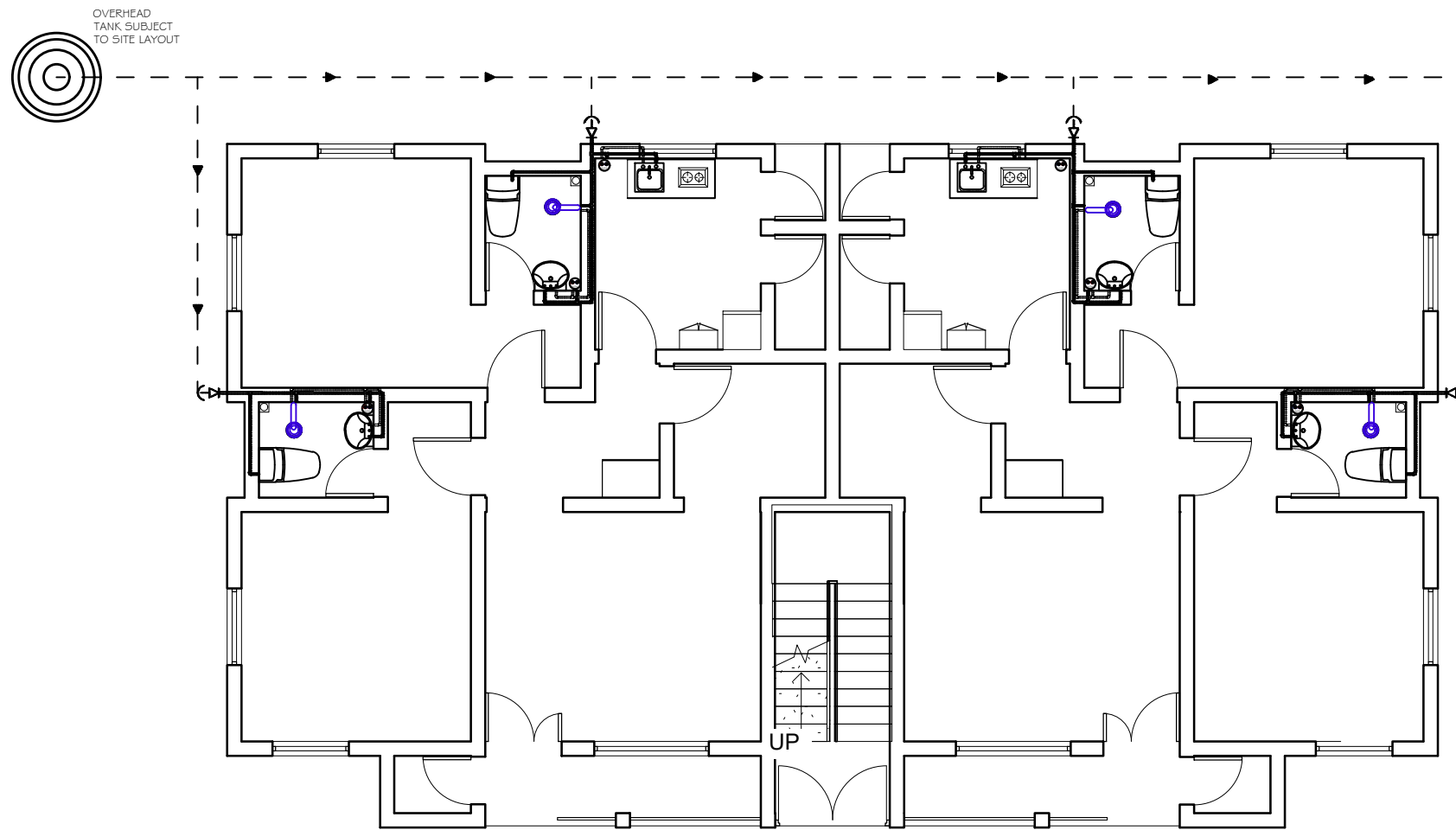
SEAL

PROJECT TITLE	4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE: SITE LAYOUT	
	CLIENT ALHAJI ABUBAKAR		DESIGNED BY	IWEIBO S.E	DRAWING SCALE: N.T.S.	DRAWINGG NO: M04
			CHECKED BY			
LOCATION			APPROVED BY			
			DATE	2002.		



SEAL

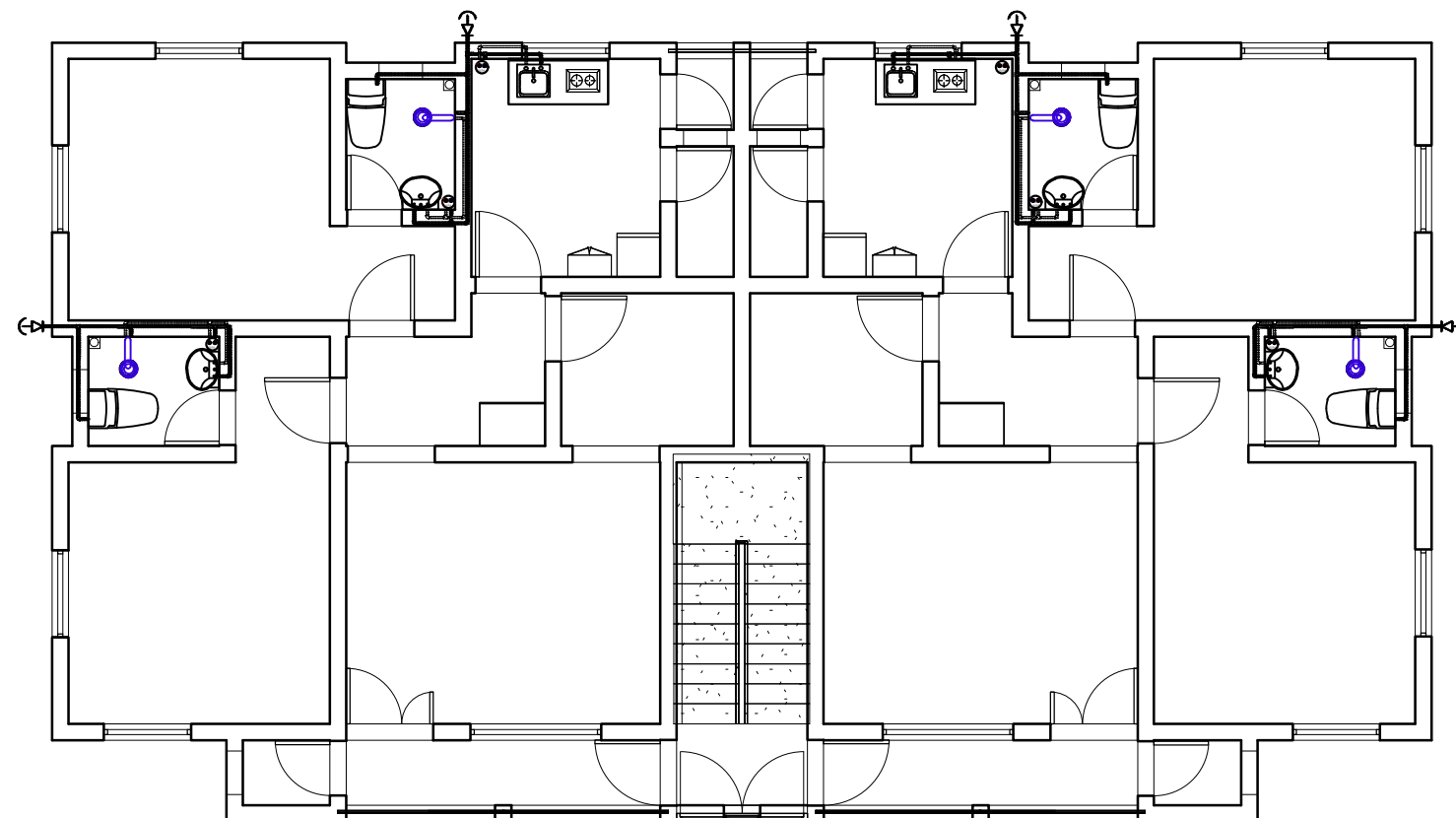
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	DESIGNED BY	IWEIBO S.E		
CLIENT  ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWINNG NO:  M05
LOCATION	APPROVED BY			
	DATE	2002.		



**GROUND FLOOR**

SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  WATER SUPPLY PLAN	
		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWING NO:  M06
LOCATION		APPROVED BY			
		DATE	2002.		

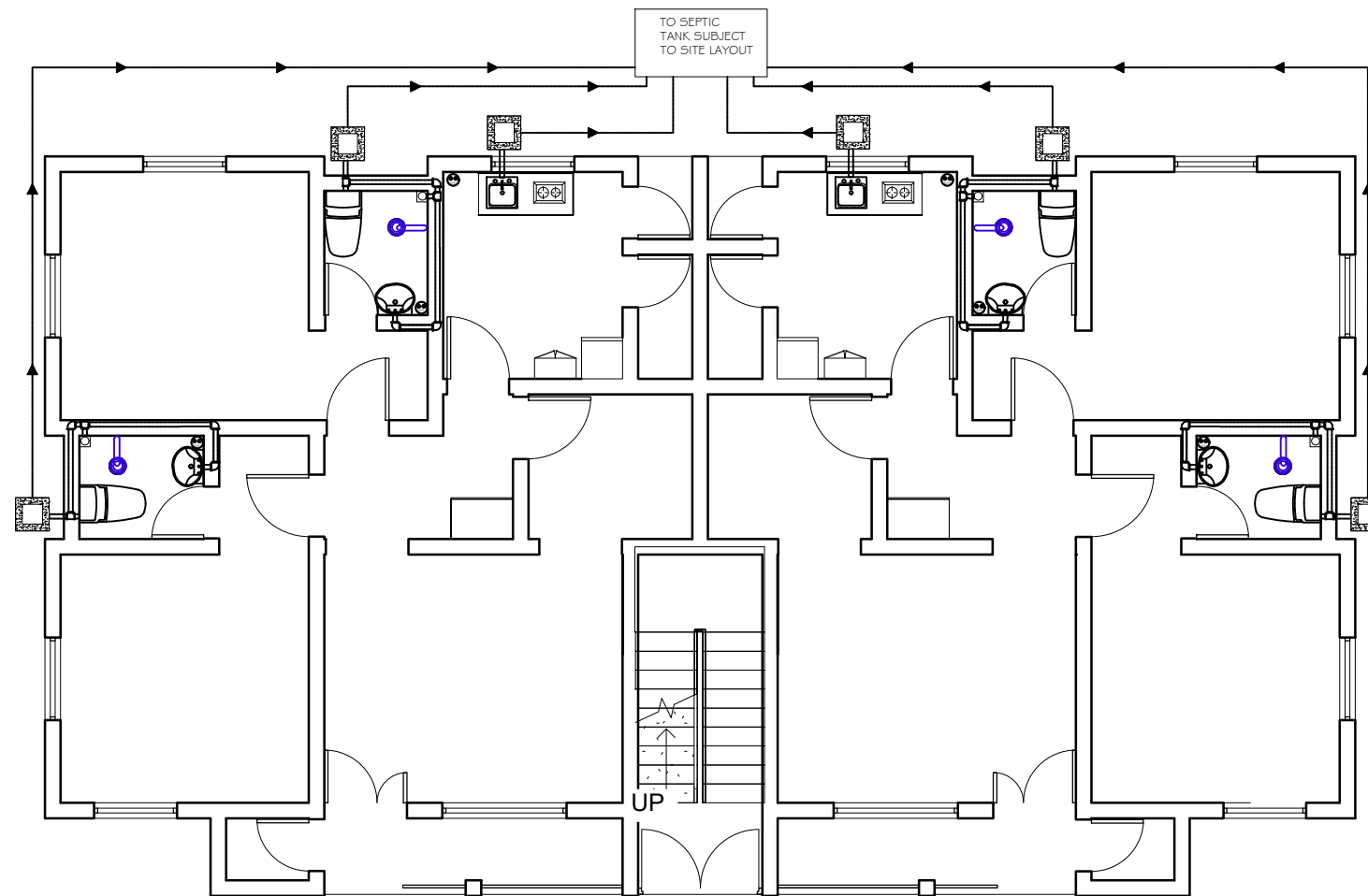


**FIRST FLOOR**

SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  WATER SUPPLY PLAN	
		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWING NO:  M07
LOCATION		APPROVED BY			
		DATE	2002.		

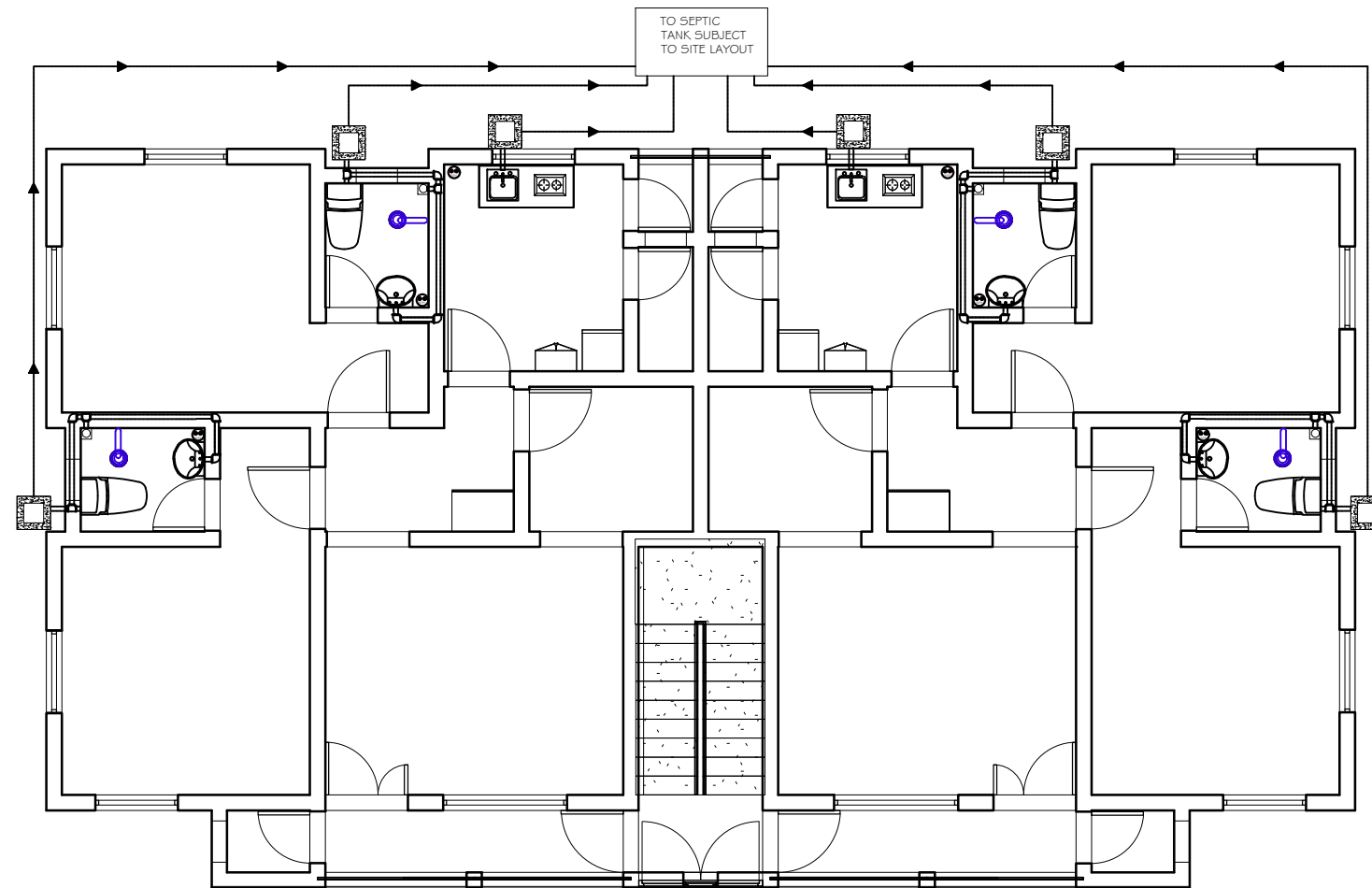




**GROUND FLOOR**

SEAL

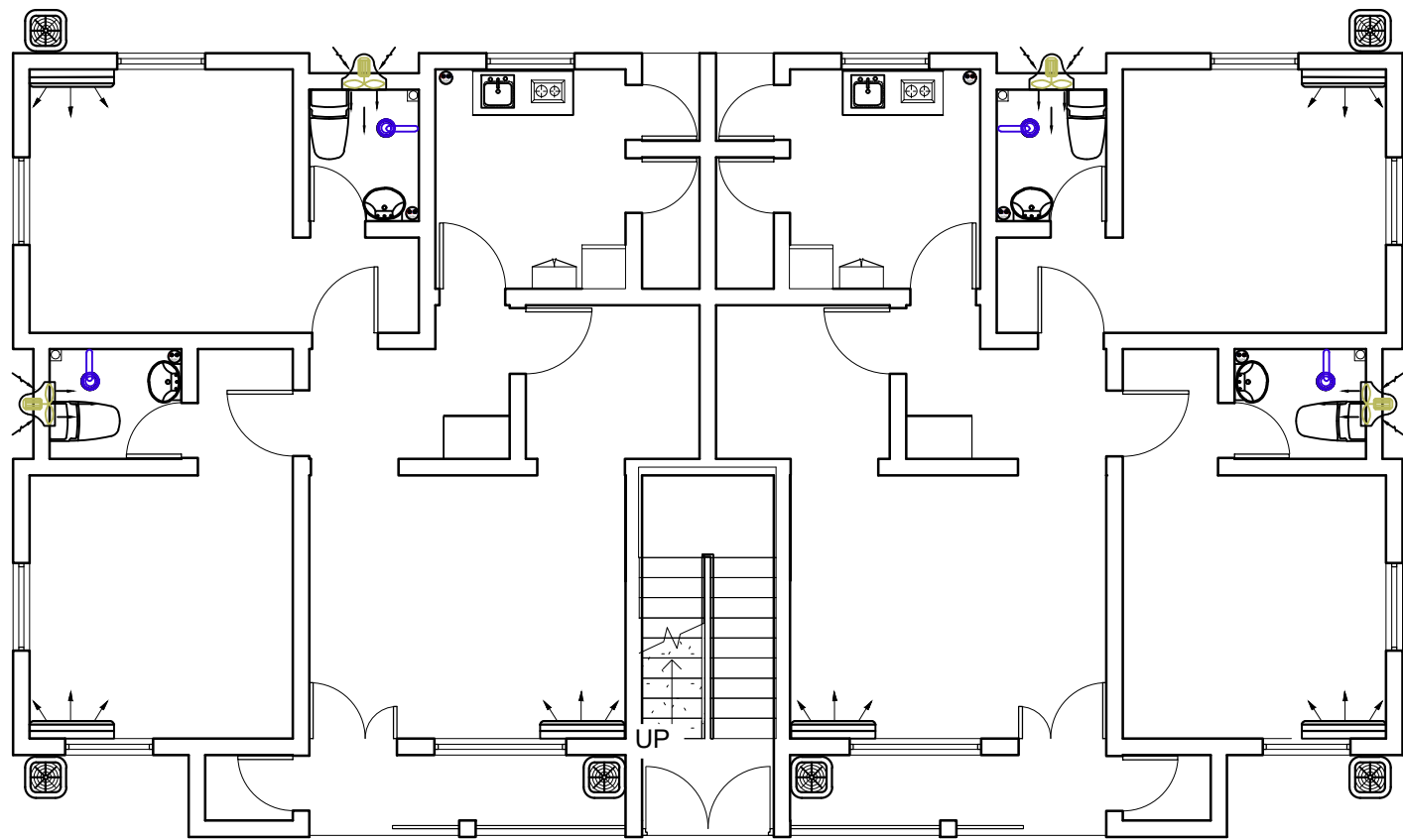
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			DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR		CHECKED BY		DRAWING SCALE:	DRAWING NO:
LOCATION			APPROVED BY		N.T.S.	M08
			DATE	2002.		



**FIRST FLOOR**

SEAL

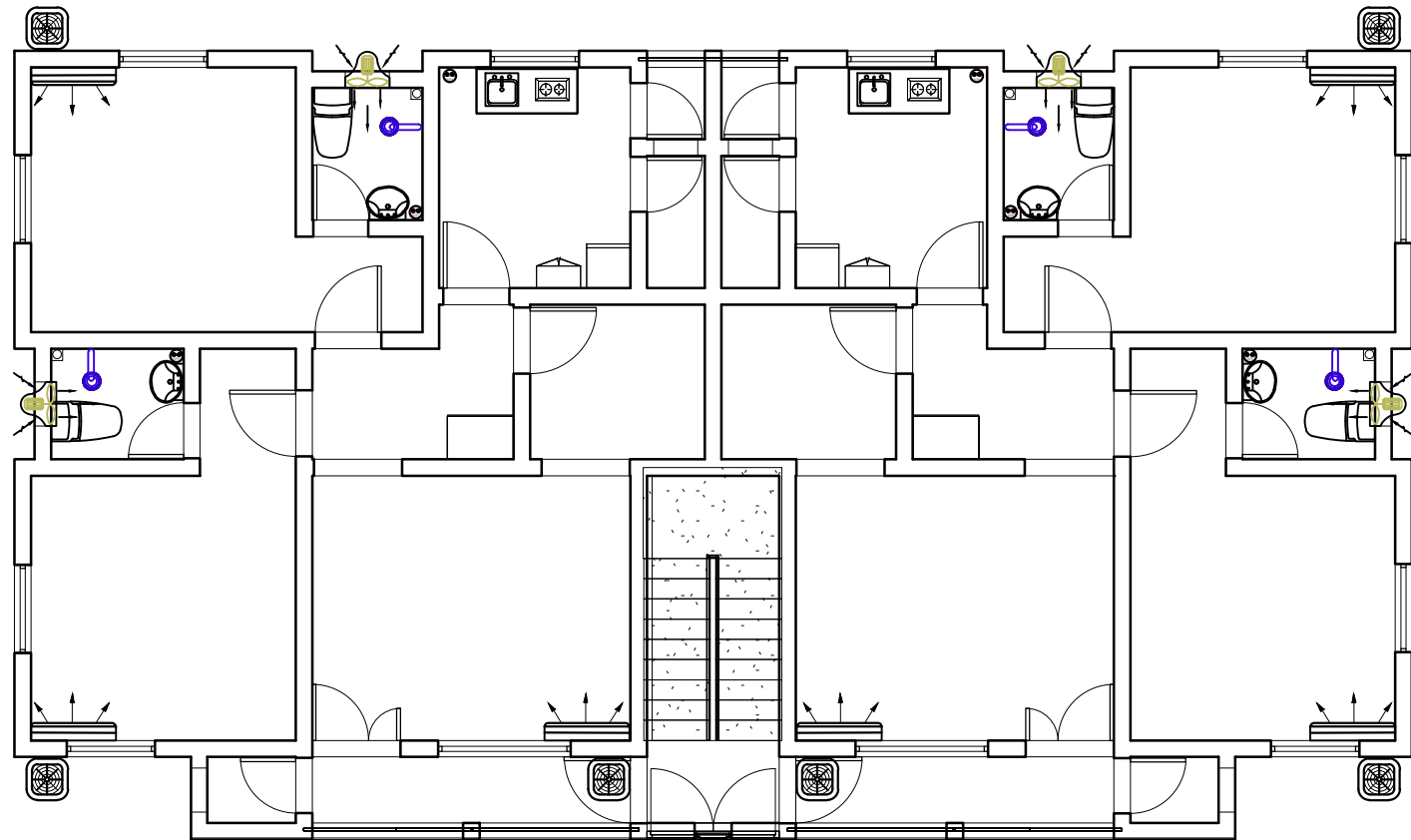
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		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWING NO:  M09
LOCATION		APPROVED BY			
		DATE	2002.		



**GROUND FLOOR**

SEAL

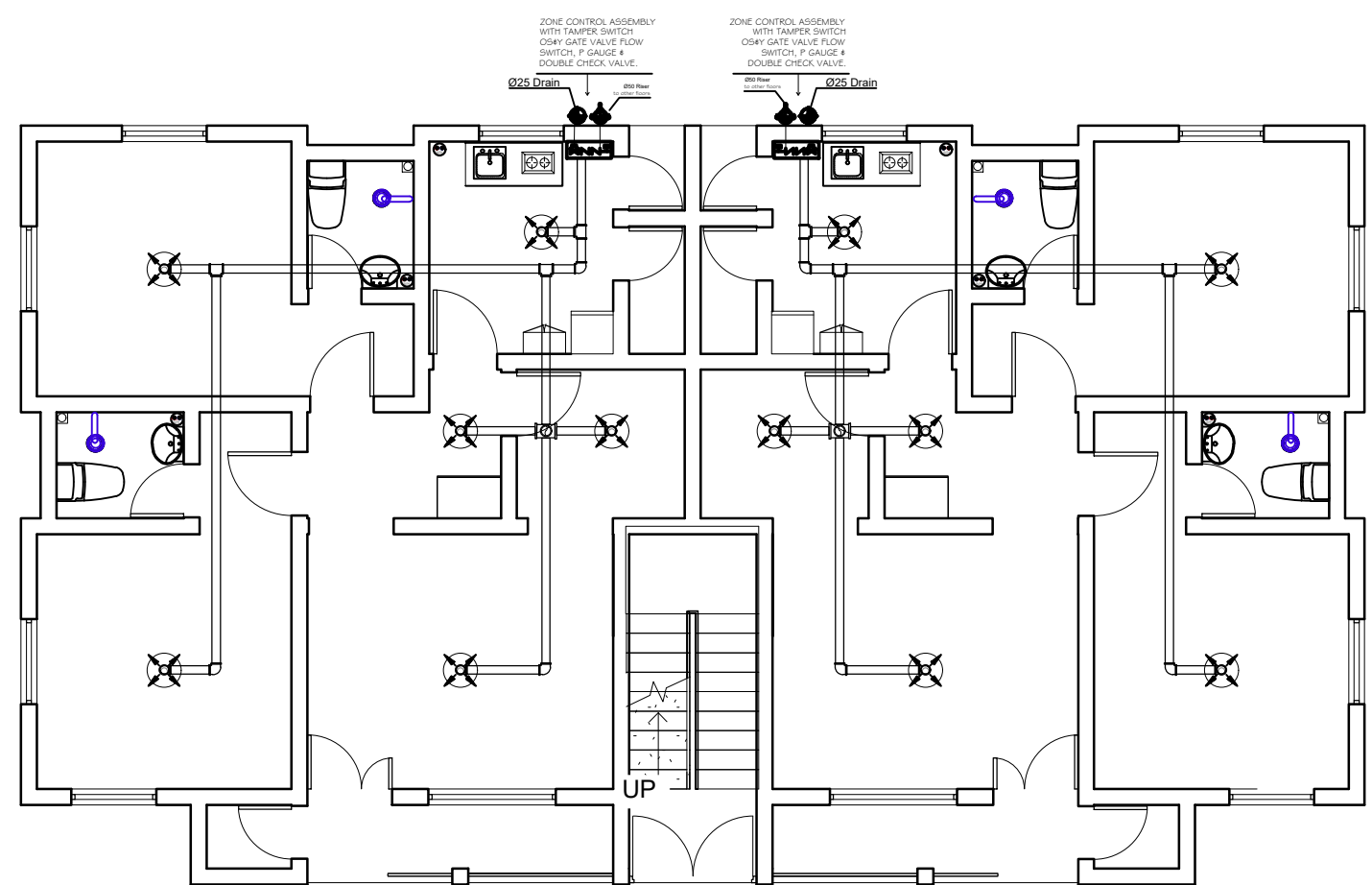
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		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWINNG NO:  M10
LOCATION		APPROVED BY			
		DATE	2002.		



**FIRST FLOOR**

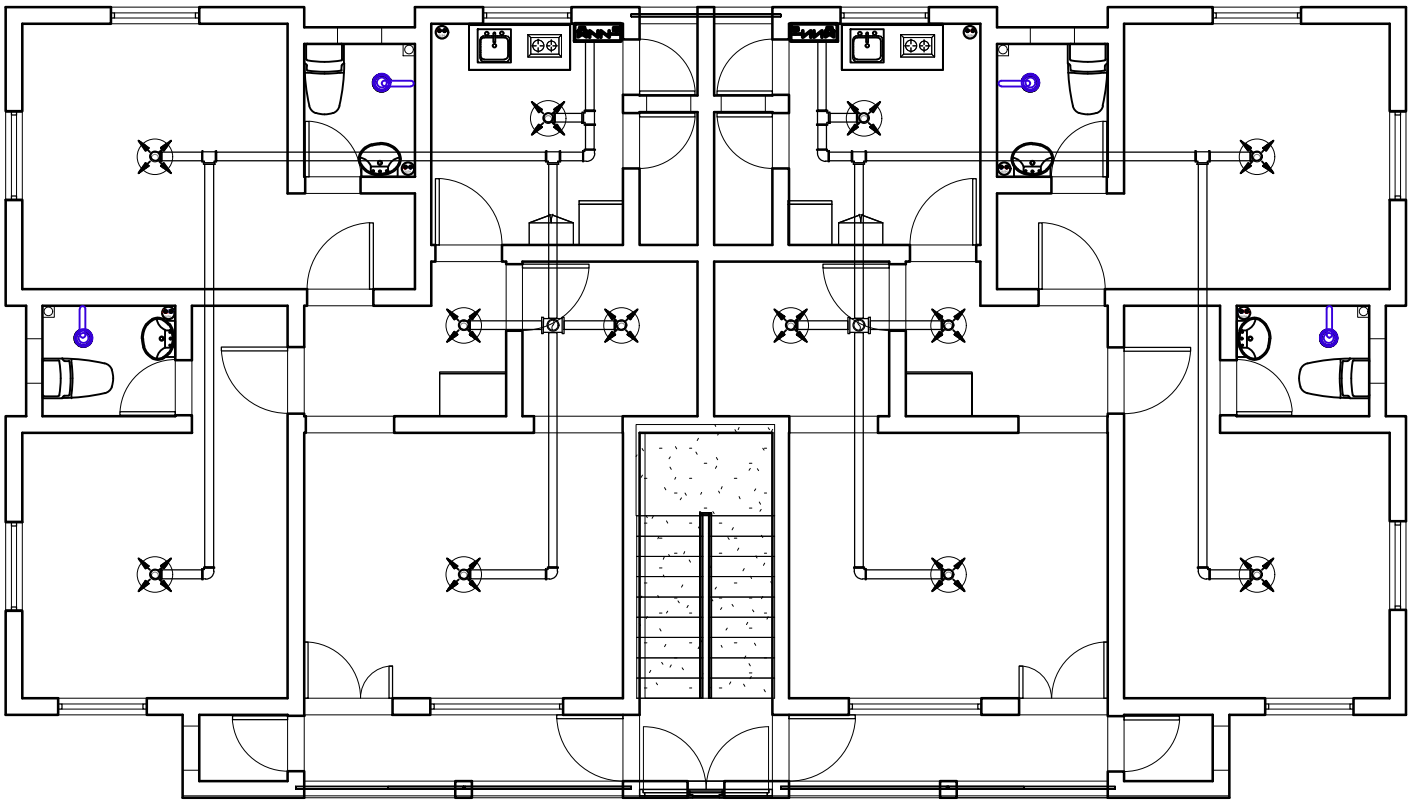
SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  HAVC LAYOUT	
		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWING NO:  M11
LOCATION		APPROVED BY			
		DATE	2002.		



**GROUND FLOOR**

SEAL	PROJECT TITLE	DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:	
	4 UNIT OF 2 BEDROOM BLOCK OF FLAT			FIRE SUPPRESSION LAYOUT	
	CLIENT	DESIGNED BY	IWEIBO S.E	DRAWING SCALE:	
	ALHAJI ABUBAKAR	CHECKED BY		N.T.S.	DRAWING NO: M12
	LOCATION	APPROVED BY			
		DATE	2002.		



FIRST FLOOR

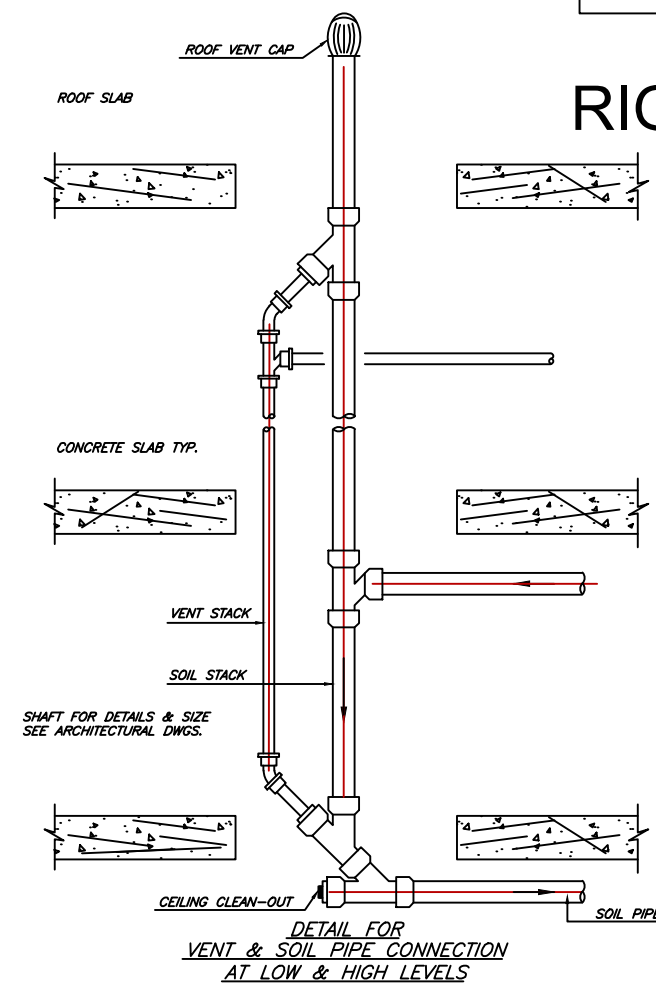
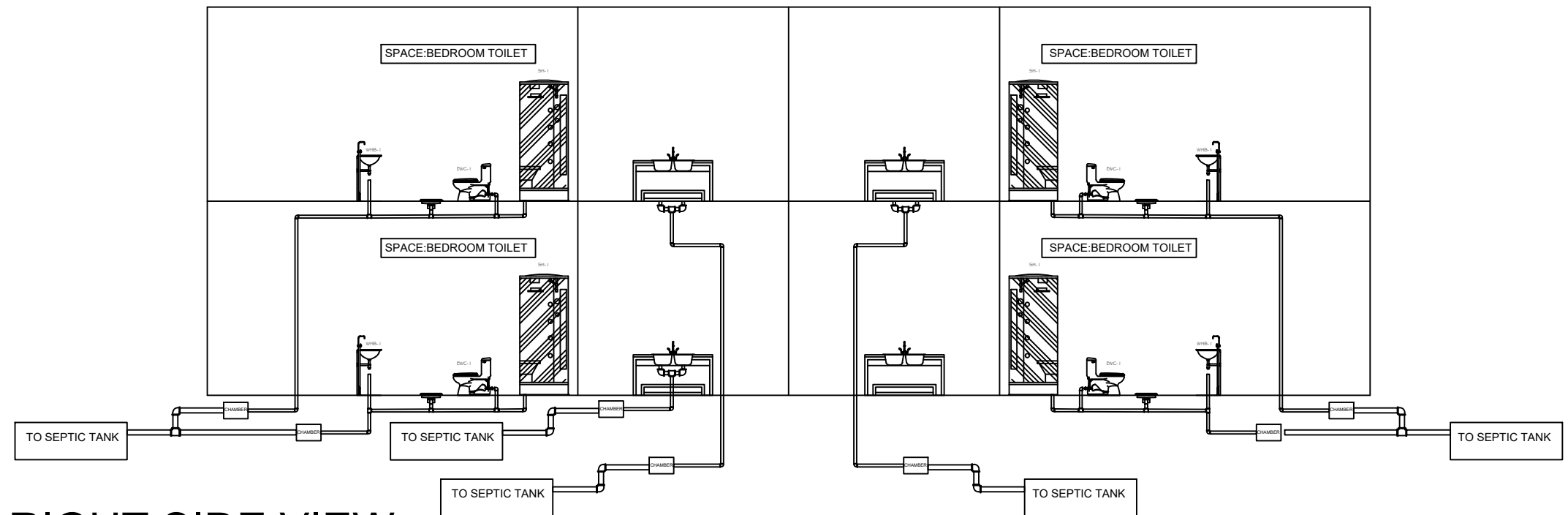
SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT	DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:	
			FIRE SUPPRESSION LAYOUT	
	DESIGNED BY	IWEIBO S.E		
CLIENT  ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWINNG NO:  M13
LOCATION	APPROVED BY			
	DATE	2002.		



SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT	DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  SUPPLY RISER DIAGRAM	
	DESIGNED BY	IWEIBO S.E		
CLIENT  ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWINNG NO:  M14
LOCATION	APPROVED BY			
	DATE	2002.		



### drainage pipe fillings

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  WASTE DRAINAGE LINE DIAGRAM	
		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWING NO:  M15
LOCATION		APPROVED BY			
		DATE	2002.		



S/NO.	SANITARY APPLIANCES	NO. OF APPLIANCES	LOADING UNITS (L)	STORAGE (L)
1	Water closet (WC)	2	180	360
2	Wash hand basin(WHB)	2	170	340
3	Shower	2	200	400
4	Kitchen Sink	1	200	200
5	Heater	3	180	540
6				1440
TOTAL				1840
ADD 40% FOR FIRE FIGHTING, SWIMMING POOL & EXTERNAL WATER USE				736
& FUTURE EXPANTION				1000
TANKS SIZE PER DAY			3576	

\*NOTE: THIS DEMAND SCHEDULE IS FOR A SINGLE APARTMENT, WITH THE TOTAL WATER USAGE CALCULATED BELOW.

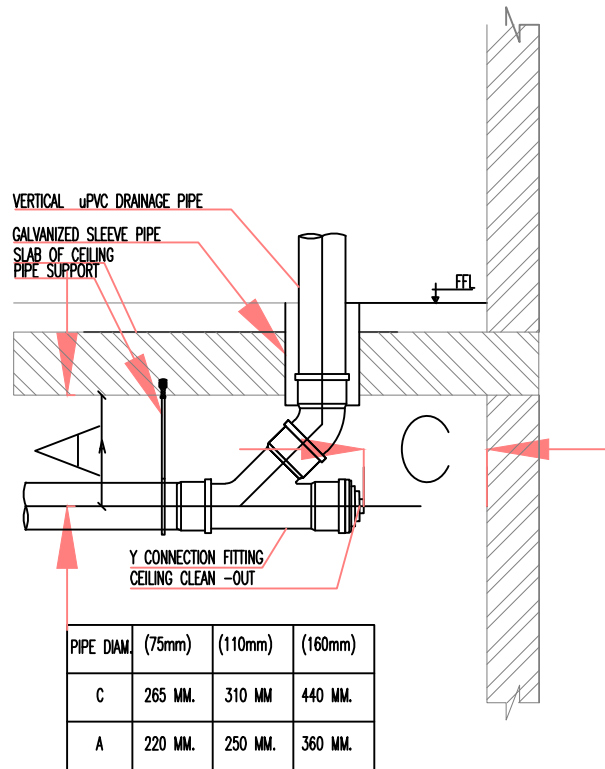
BUILDING WATER DEMAND  
(TOTAL OF 4 APARTMENTS)

$3576 \times 4 = 14304$ LITERS  
 $\approx 15000$  LITERS

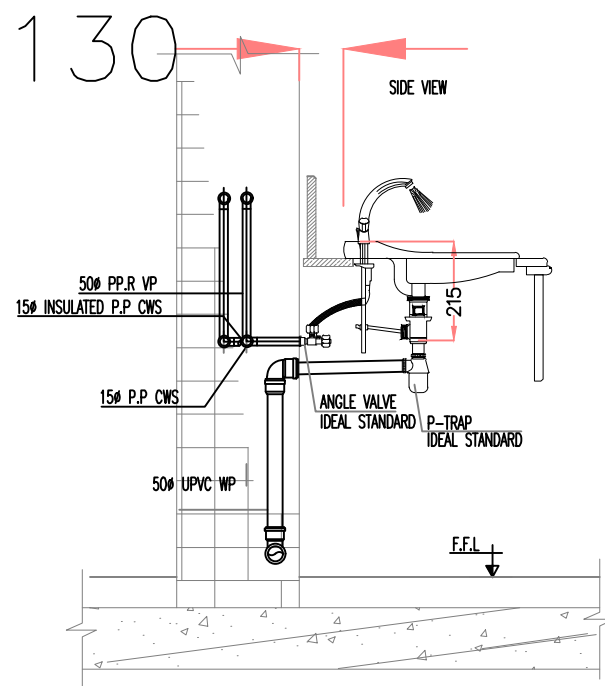
TANK SIZE

4 SET OF 4000LITRES PLASTIC STORAGE TANK

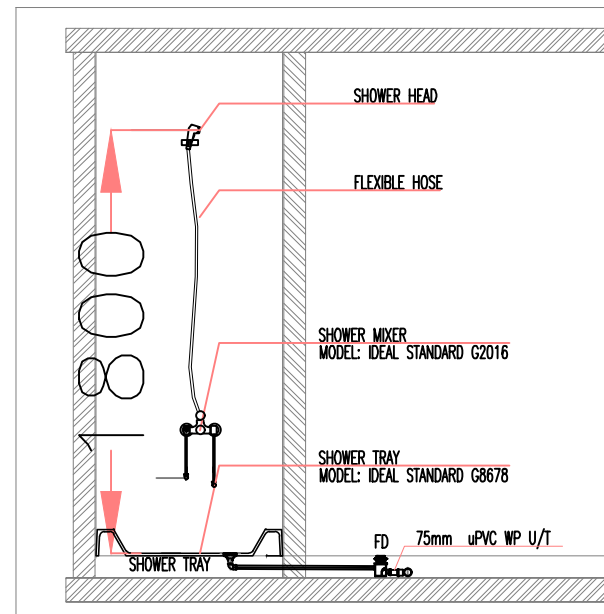
SEAL	PROJECT TITLE 4 UNIT OF 2 BEDROOM BLOCK OF FLAT	DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE: WATER DEMAND SCHEDULE	
		DESIGNED BY	IWEIBO S.E		
	CLIENT ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE: N.T.S.	DRAWINNG NO: M16
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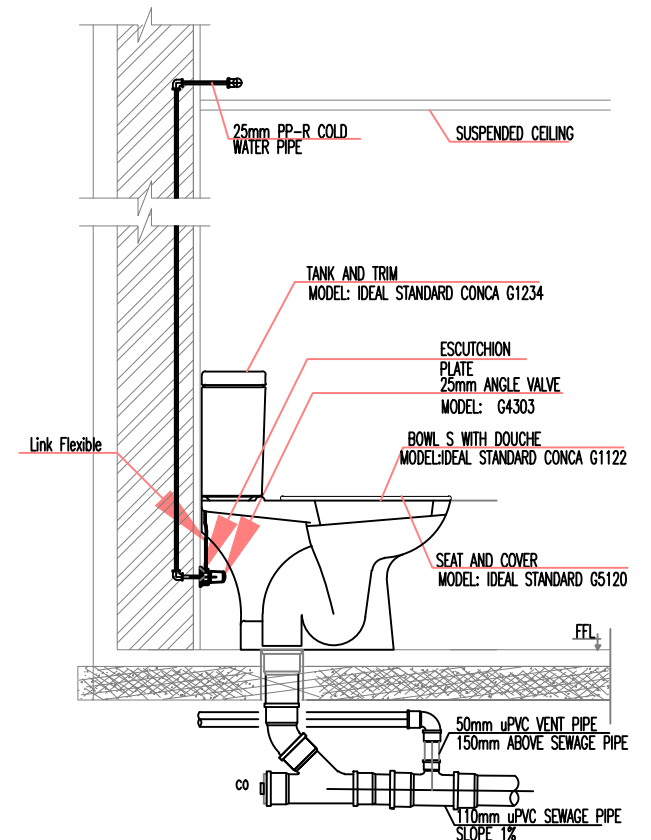
CLEAN OUT (CO) DETAIL



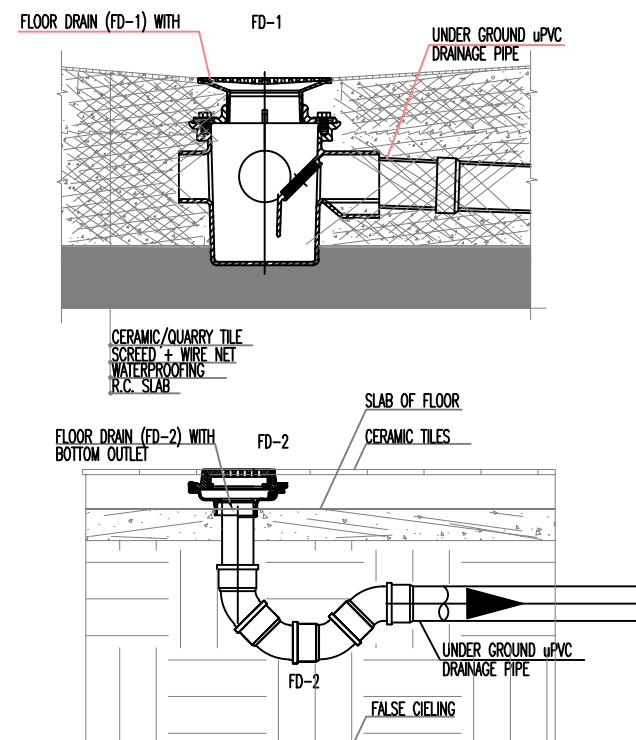
WASH HAND BASIN DETAIL



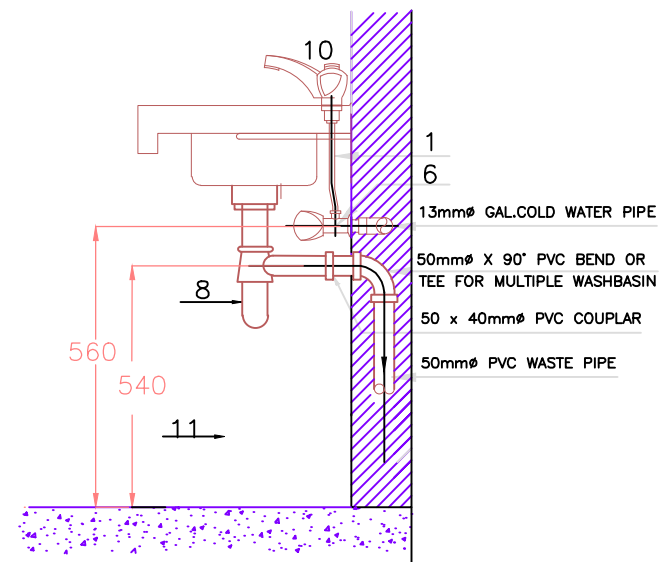
SHOWER TRAY DETAIL



WATER CLOSET DETAIL



FLOOR DRAIN DETAIL



KITCHEN SINK DETAIL

SEAL

PROJECT TITLE  
4 UNIT OF 2 BEDROOM BLOCK OF FLAT

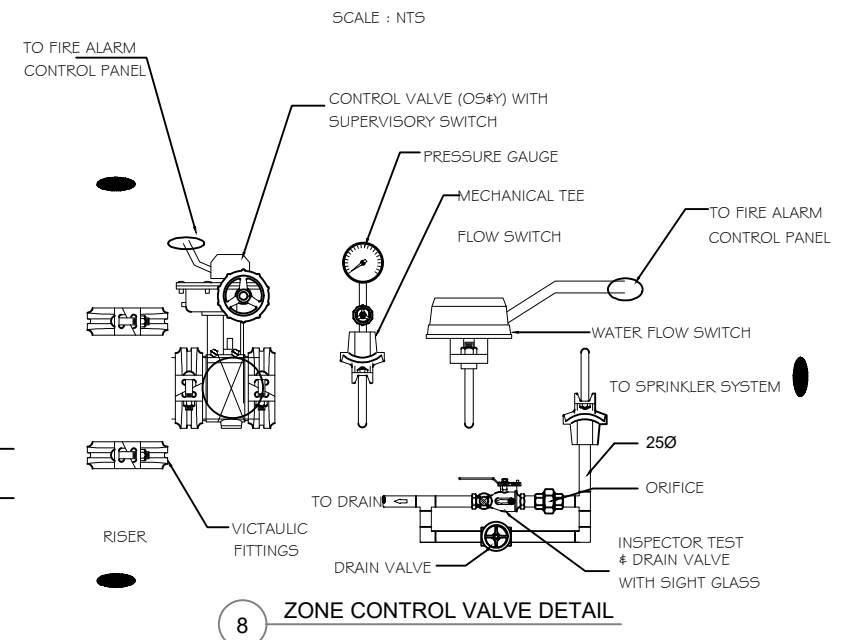
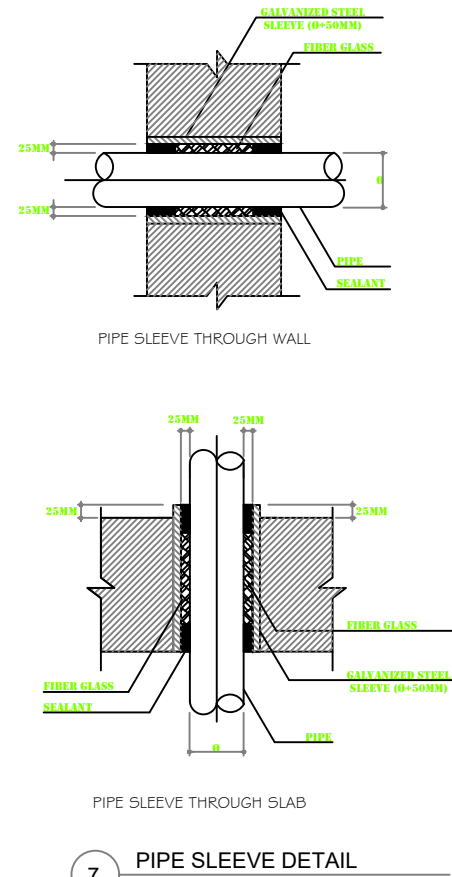
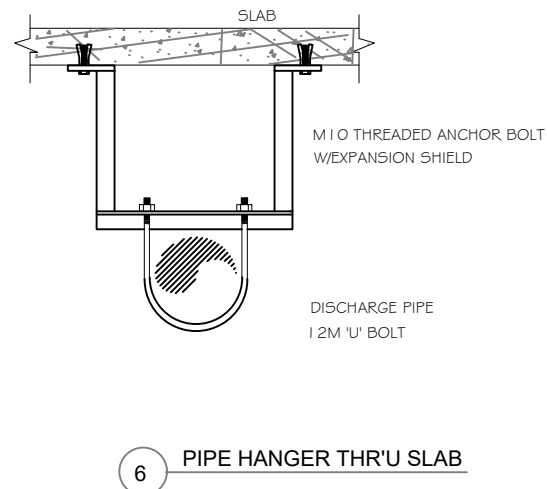
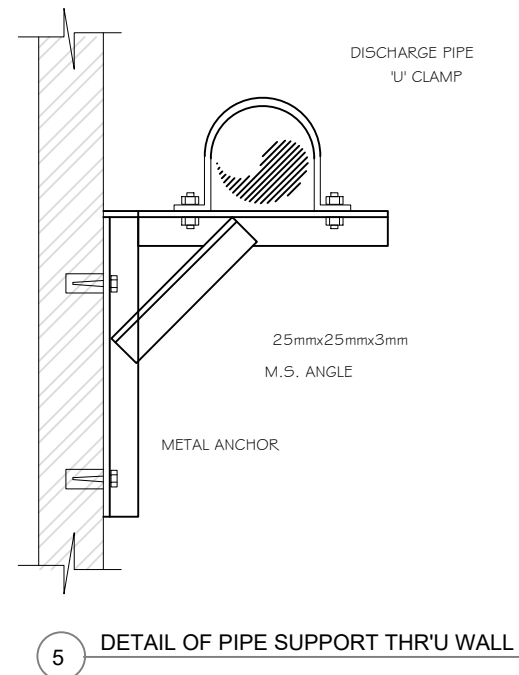
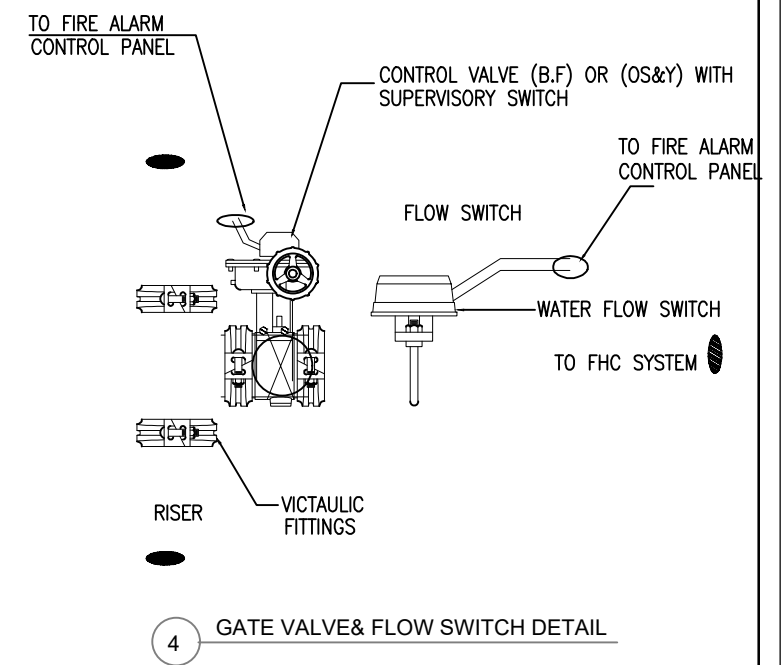
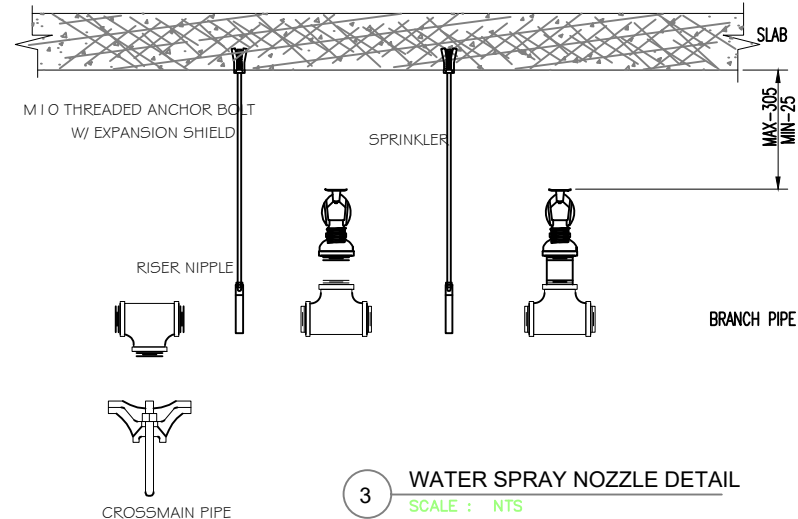
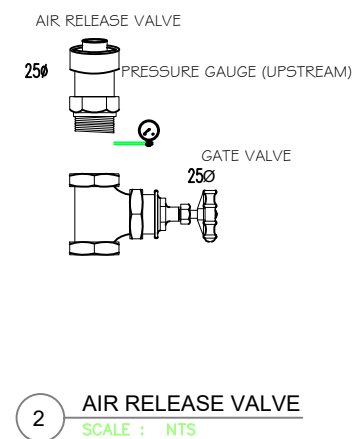
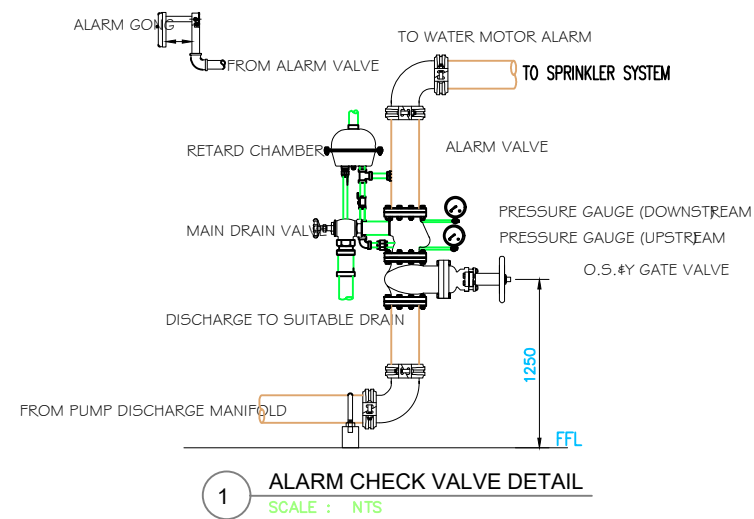
CLIENT  
ALHAJI ABUBAKAR

LOCATION

DRAWN BY  
ABDULLAHI SHEHU  
DESIGNED BY  
IWEIBO S.E  
CHECKED BY  
APPROVED BY  
DATE  
2002.

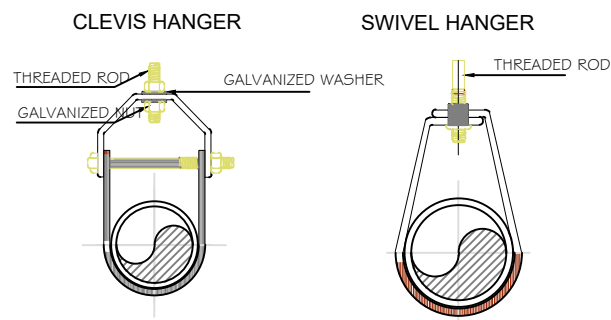
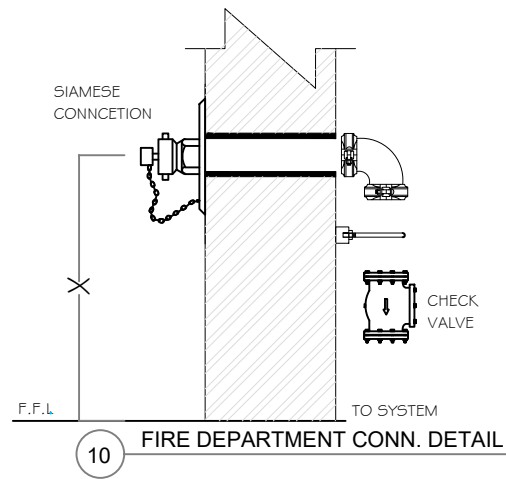
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FITTINGS SECTIONS AND INSTALLATION DETAILS

DRAWING SCALE:  
N.T.S.  
DRAWING NO:  
M17



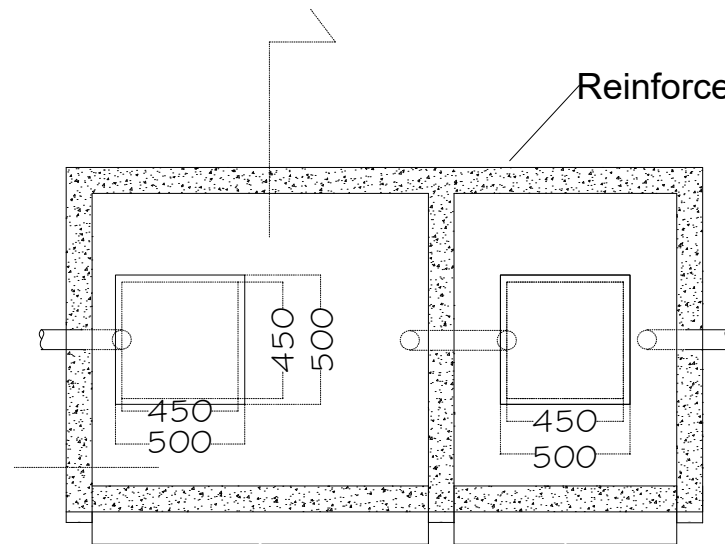
SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  FIRE SUPPRESSION INSTALLATION DETAILS	
		DESIGNED BY	IWEIBO S.E		
CLIENT	ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWING NO:  M18
LOCATION		APPROVED BY			
		DATE	2002.		



DISTANCE BETWEEN ALL HANGERS		
NOMINAL PIPE SIZE (mm)	MAX SPAN (M)	HANGER ROD SIZE (mm)
25 – 32 mm	1.8 – 2.0	10
40 mm	2.0	10
50 mm	2.5	10
65 mm	3.3	12

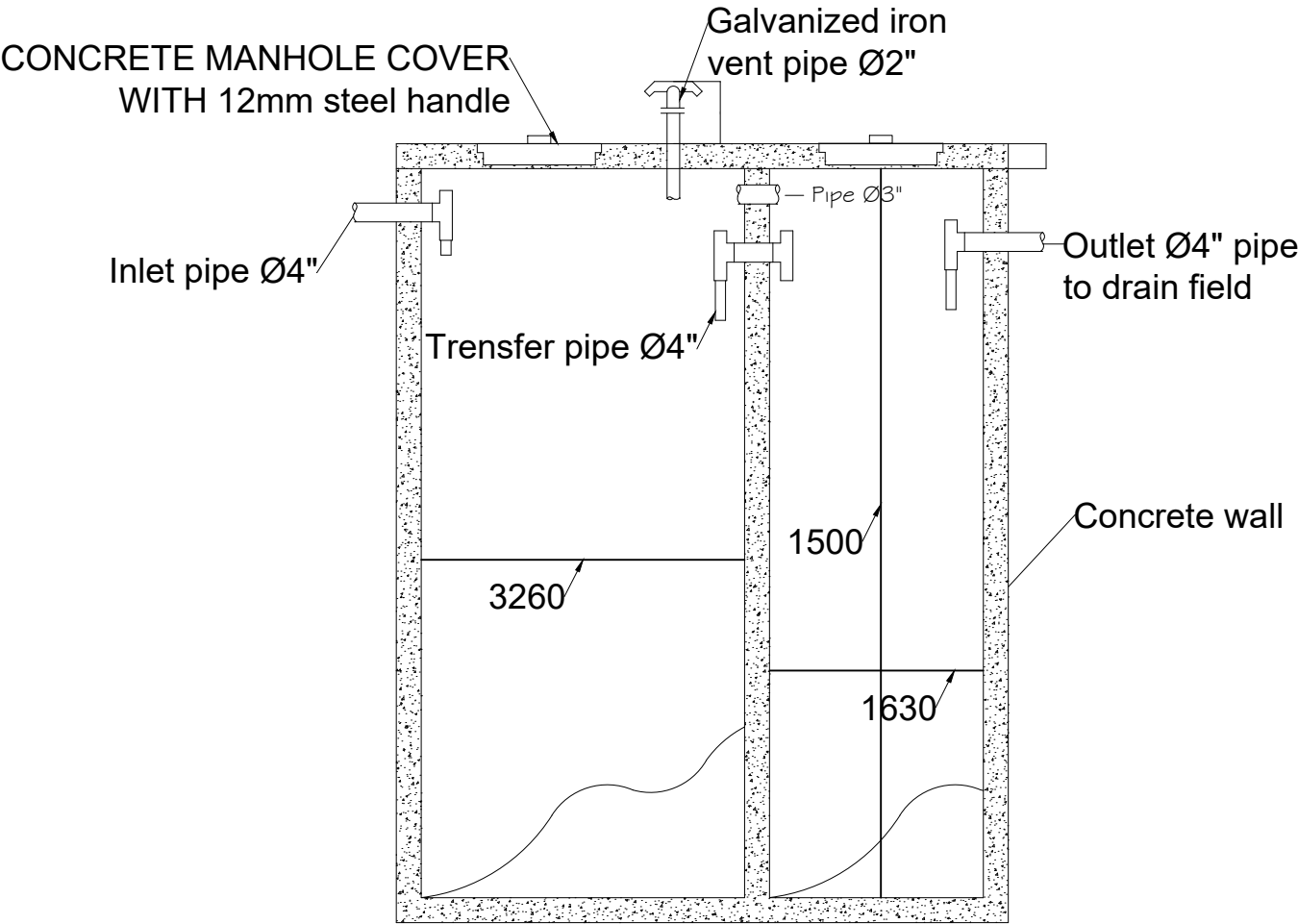
SEAL	PROJECT TITLE 4 UNIT OF 2 BEDROOM BLOCK OF FLAT	DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:	
				FIRE SUPPRESSION INSTALLATION DETAILS	
		DESIGNED BY	IWEIBO S.E		
	CLIENT ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE: N.T.S.	DRAWINGG NO: M19
	LOCATION	APPROVED BY			
		DATE	2002.		



PLAN OF SEPTIC TANK

SEPTIC TANK CALCULATIONS	
NO. OF LITRES PER HEAD PER 24 HR USAGE	360 LITRES
NO. OF OCCUPANTS	16 USERS
LIQUID DEPTH	2700mm <=> 2.7m
FLOOR AREA (COMPARTMENT 1)	5.31sqm
LENGTH (COMPARTMENT 1)	3.26m
BREATH (COMPARTMENT 1)	1.63m
FLOOR AREA (COMPARTMENT 2)	2.66sqm
LENGTH (COMPARTMENT 2)	1.63m
BREATH (COMPARTMENT 2)	1.63m

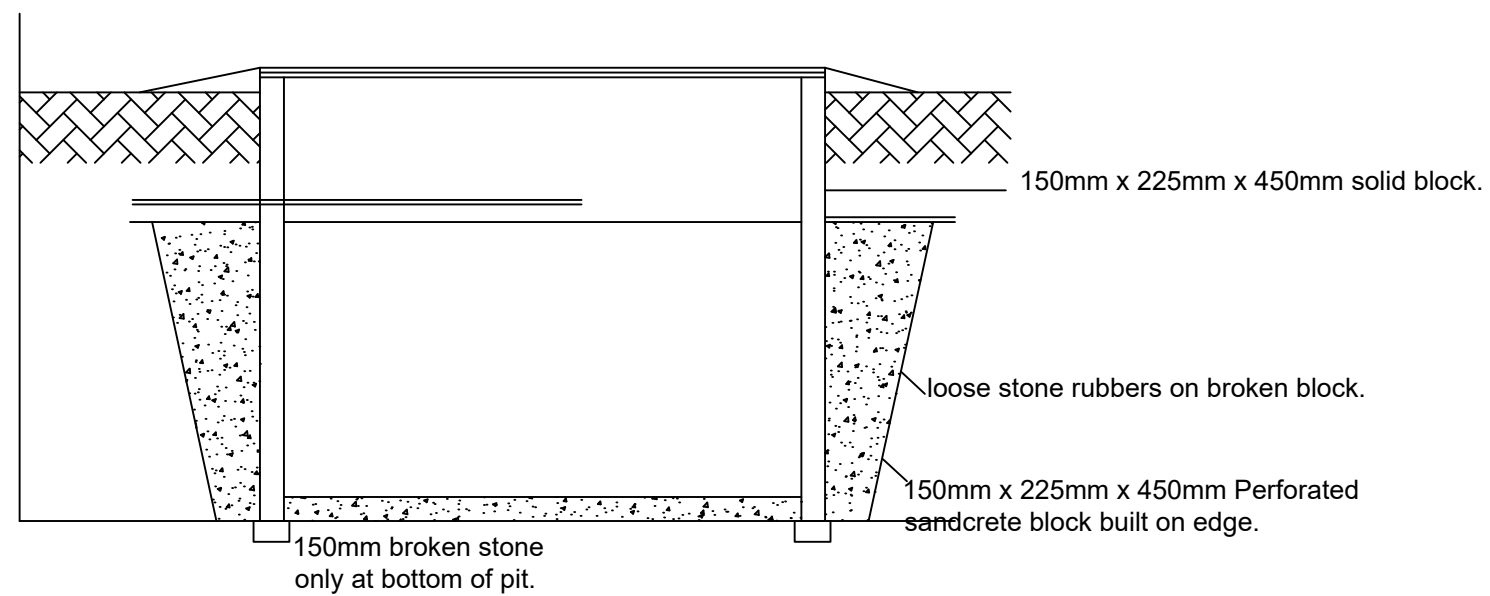
\*NO OF USERS ASSUMED TO BE 20. FIGURE IS SUSCEPTIBLE TO CHANGE.  
 \*CLEANIGN OF SEPTIC TANK SHOULD DONE EVERY 6 YEARS.



Section A-A

SEAL

PROJECT TITLE  4 UNIT OF 2 BEDROOM BLOCK OF FLAT	DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE:  SEPTIC TANK DETAILS	
	DESIGNED BY	IWEIBO S.E		
CLIENT  ALHAJI ABUBAKAR	CHECKED BY		DRAWING SCALE:  N.T.S.	DRAWINNG NO:  M20
LOCATION	APPROVED BY			
	DATE	2002.		



SECTION OF SOAKAWAY PIT

SEAL

PROJECT TITLE	4 UNIT OF 2 BEDROOM BLOCK OF FLAT		DRAWN BY	ABDULLAHI SHEHU	DRAWING TITLE: SOAK AWAY PIT	
			DESIGNED BY	IWEIBO S.E		
			CHECKED BY		DRAWING SCALE: N.T.S.	DRAWINNG NO: M21
CLIENT	ALHAJI ABUBAKAR		APPROVED BY			
LOCATION			DATE	2002.		