












MECHANICAL SERVICES DESIGN DRAWINGS

LEGEND

SYMBOL	DESCRIPTION
	Cold water supply line
	Fulbora Cover for Roof Drain
	25Kg Chemical Powder Fire Extinguisher
	9Kg ABC Fire Extinguisher
	5Kg CO Fire Extinguisher
	19mm Ø stand tap
	Expelair extractor fan
	Industrial Expelair extractor fan
	Non return valve (NRV)
	Gate / Sluice valve
	Water meter

CLIENT:

UNICEF
MAIDUGURI

CONSULTANTS/ PROJECT MANAGERS:

VIVID RBD PARTNERSHIP LTD

ABUJA OFFICE:
NO. 5, ASA STREET, OFF USUMA STREET, MAITAMA, FCT, ABUJA
KADUNA OFFICE:
NO. 4, HAFSAT PLAZA, CONSTITUTION ROAD, KADUNA.
Email: vividrbd@gmail.com; Phone No: 08036508505

PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

GENERAL MECHANICAL
SERVICES LEGEND

REVISIONS:

N°	DATE	DESCRIPTION

Designed: P.U

Checked: M. O.E

Date: APRIL, 2022

Drawn: N°

VRBD/UNICEF2022/PO5/MEC00

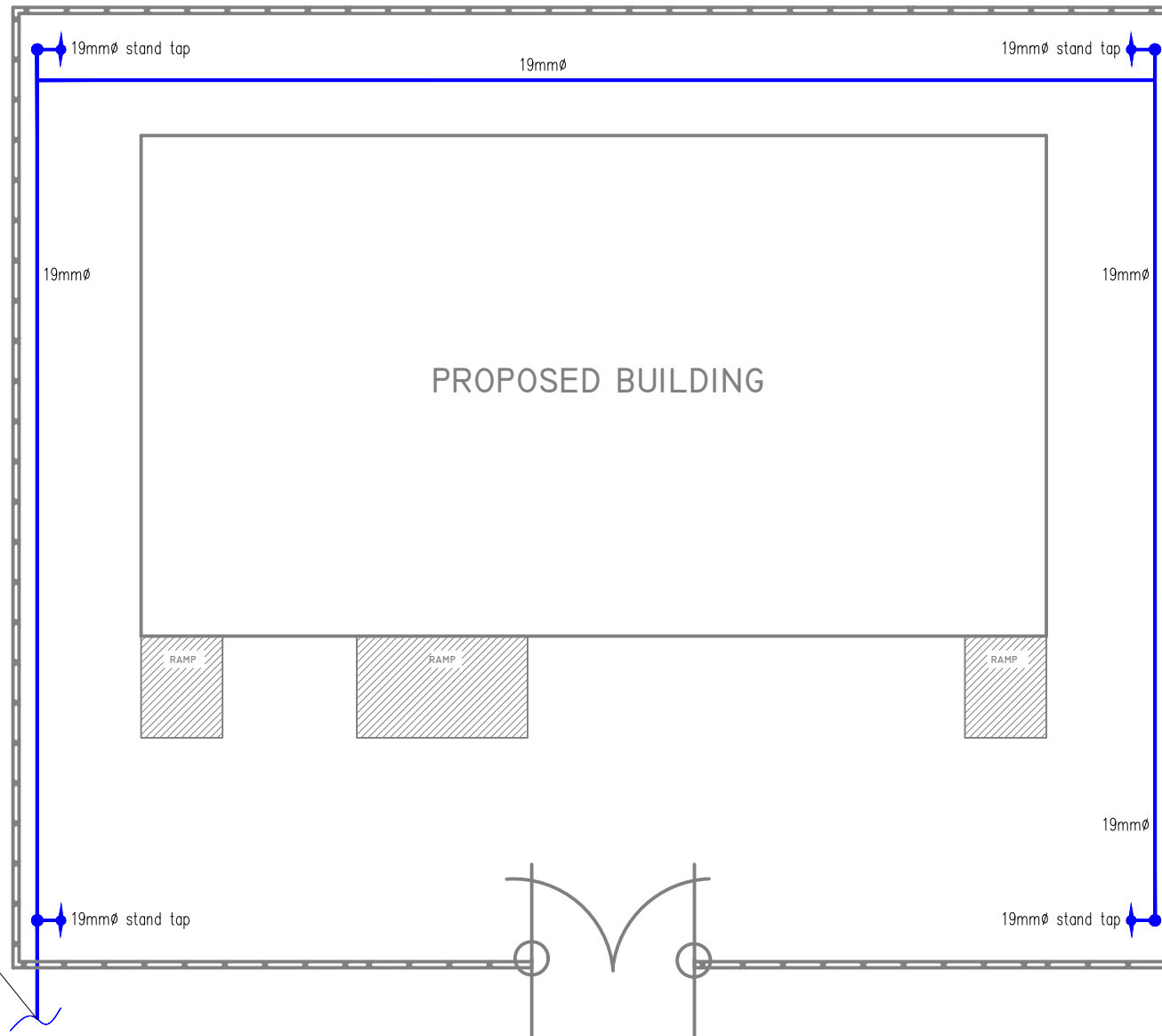
Drawn: A.U

Approved: I.P

SCALE: N.T.S

SHEET N°

M/01



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PROJECT:

**PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA**

DRAWING TITLE:

**SITE PLAN:
WATER SUPPLY LAYOUT**

REVISIONS:		
NO	DATE	DESCRIPTION

Designed: PU	Drawn: AU
Checked: M. OE	Approved: LP
Date: APRIL, 2022	SCALE: 1:250
Drawing No: VRBD/UNICEF2022/P05/MEC01	

SHEET N°

M/02

PROPOSED BUILDING

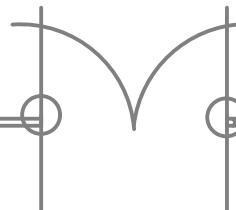
SIZE OF S.A.P

LENGTH = 2.6m

WIDTH = 1.4m

DEPT = 2.6m

Note: The concrete work for the construction of the soak away system is subject to the Structural Engineer's design details



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PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

**SITE PLAN:
DRAINAGE LAYOUT**

REVISIONS:

N°	DATE	DESCRIPTION

Designed: B.U

Drawn: A.U

Checked: M. O.E

Approved: I.P

Date: APRIL, 2022

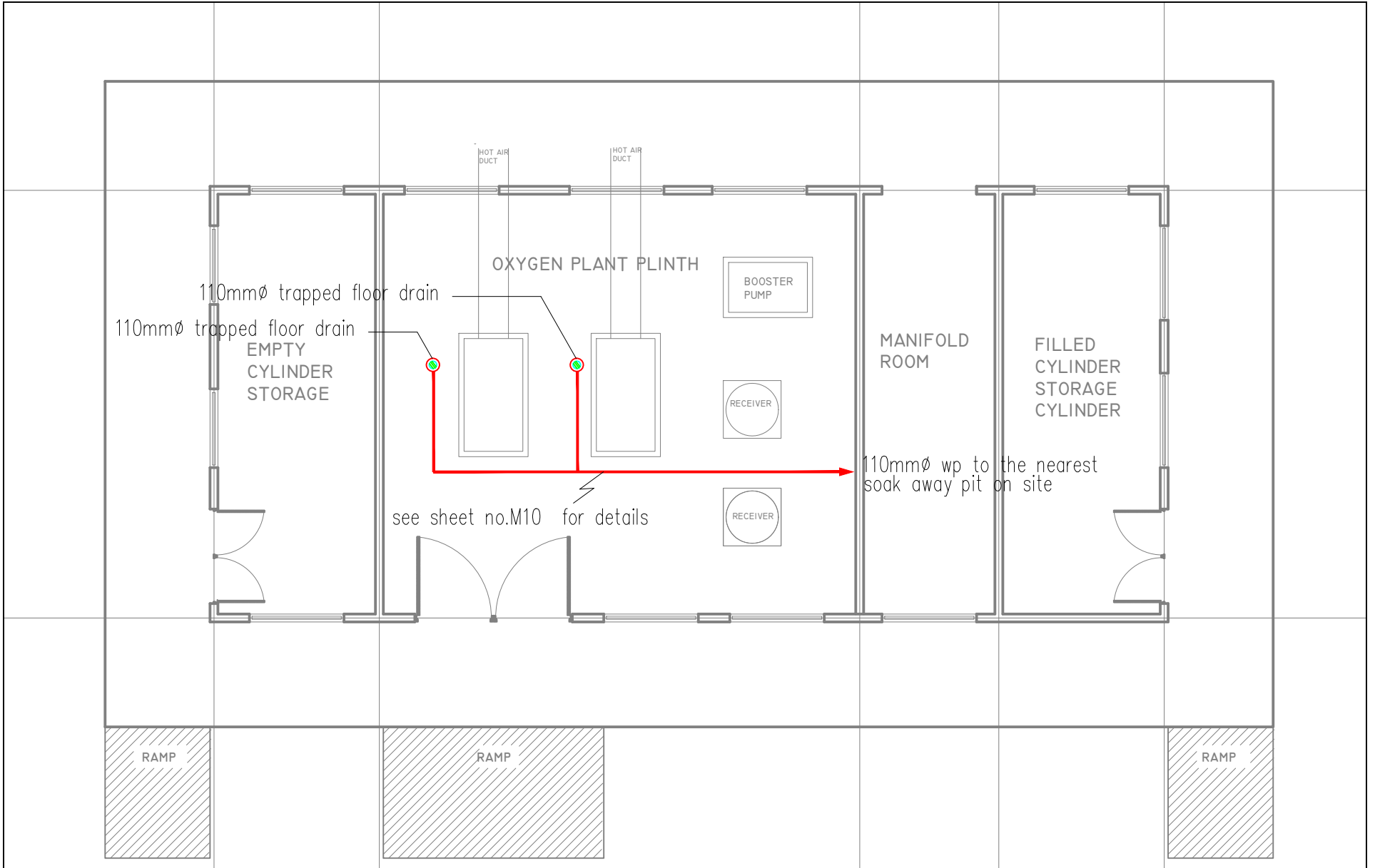
SCALE: 1:250

Drawn: N°

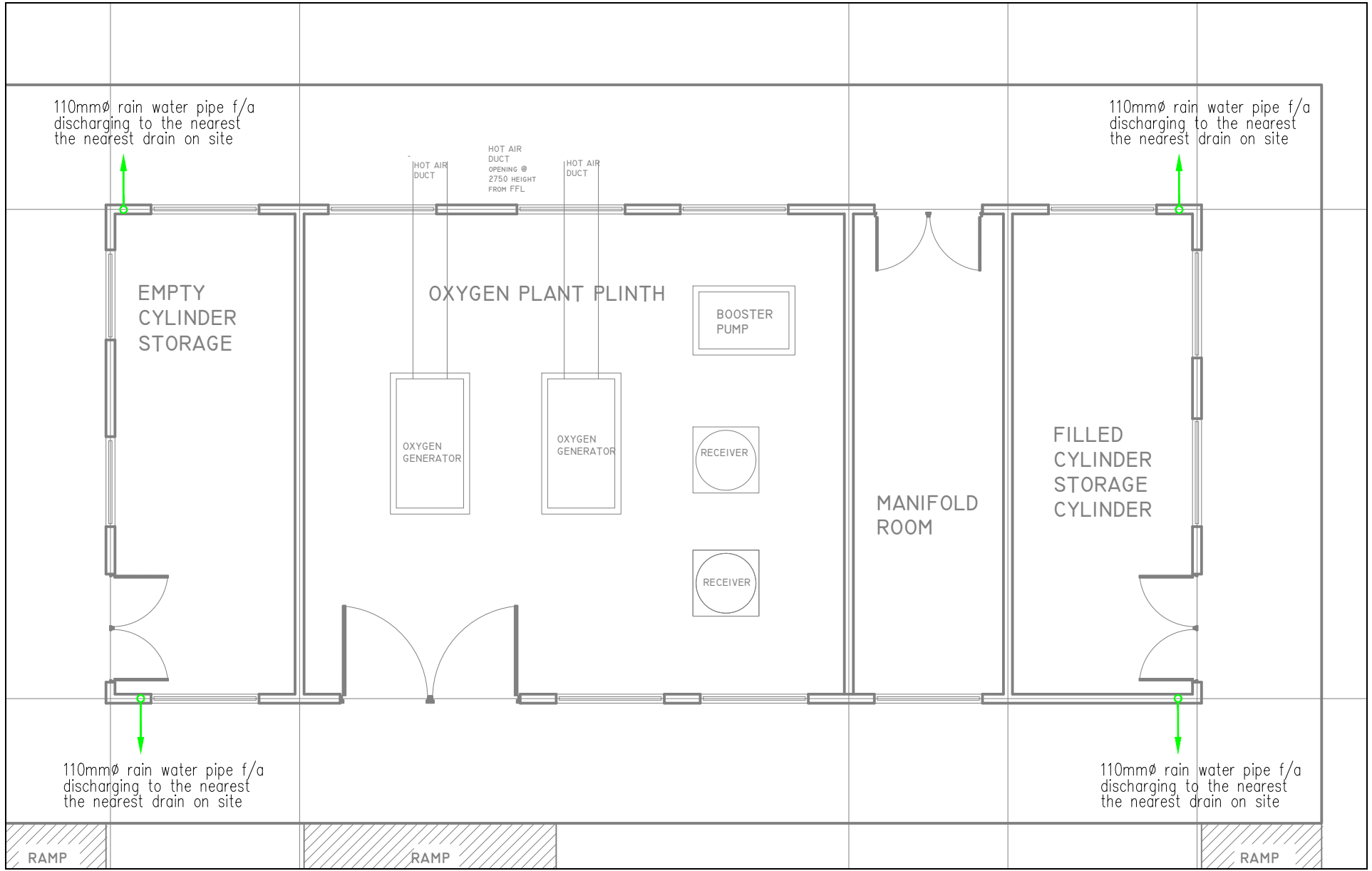
VRBD/UNICEF2022/P05MEC02

SHEET N°

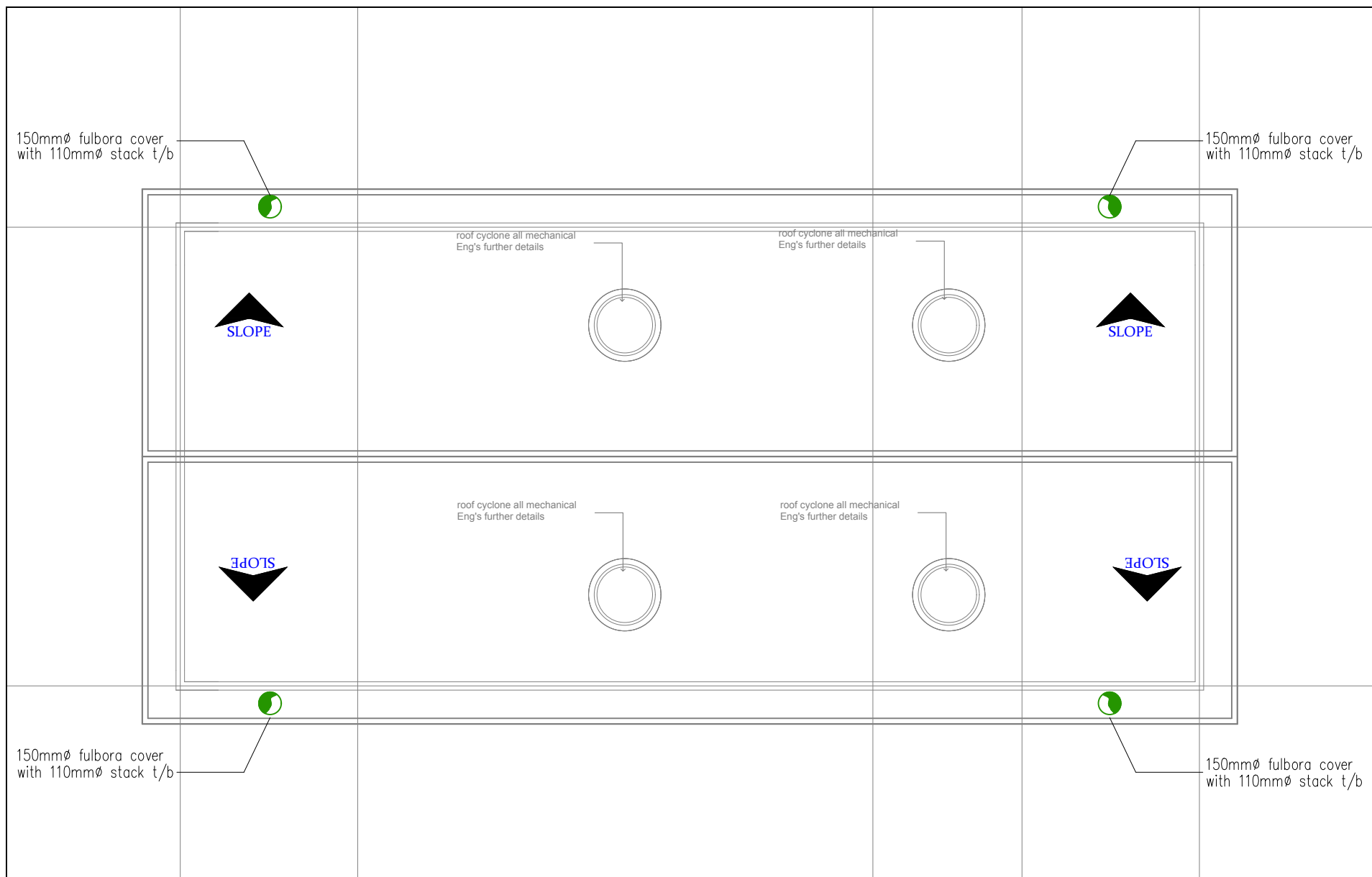
M/03



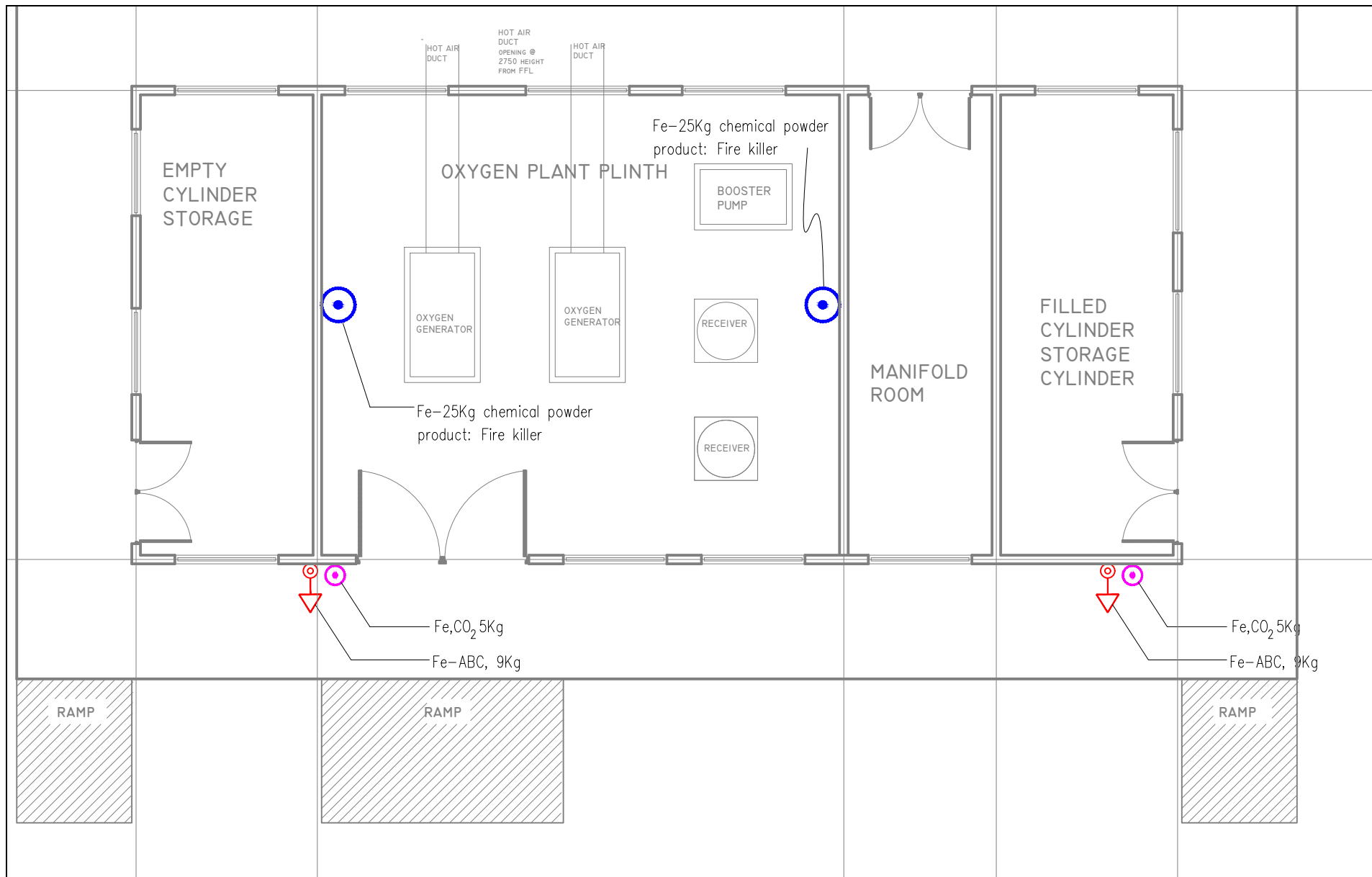
CLIENT: UNICEF MAIDUGURI	CONSULTANTS/ PROJECT MANAGERS: VIVID RBD PARTNERSHIP LTD ABUJA OFFICE: NO. 5, ASA STREET, OFF USUMA STREET, MAITAMA, FCT, ABUJA KADUNA OFFICE: NO. 4, HAFSAT PLAZA , CONSTITUTION ROAD, KADUNA. Email: vividrbd@gmail.com; Phone No: 08036508505	PROJECT: PROPOSED CONSTRUCTION OF OXYGEN GAS PLANT FACILITY IN SIX (6) STATES IN NIGERIA	DRAWING TITLE: FLOOR PLAN: DRAINAGE LAYOUT	REVISIONS:			Designed: PU	Drawn: AU	SHEET N° M/04
				N°	DATE	DESCRIPTION	Checked: M. O'E	Approved: LB	
							Date: APRIL, 2022	SCALE: 1:250	
				Drawing N° VRBD/UNICEF2022/PO5/MEC03					



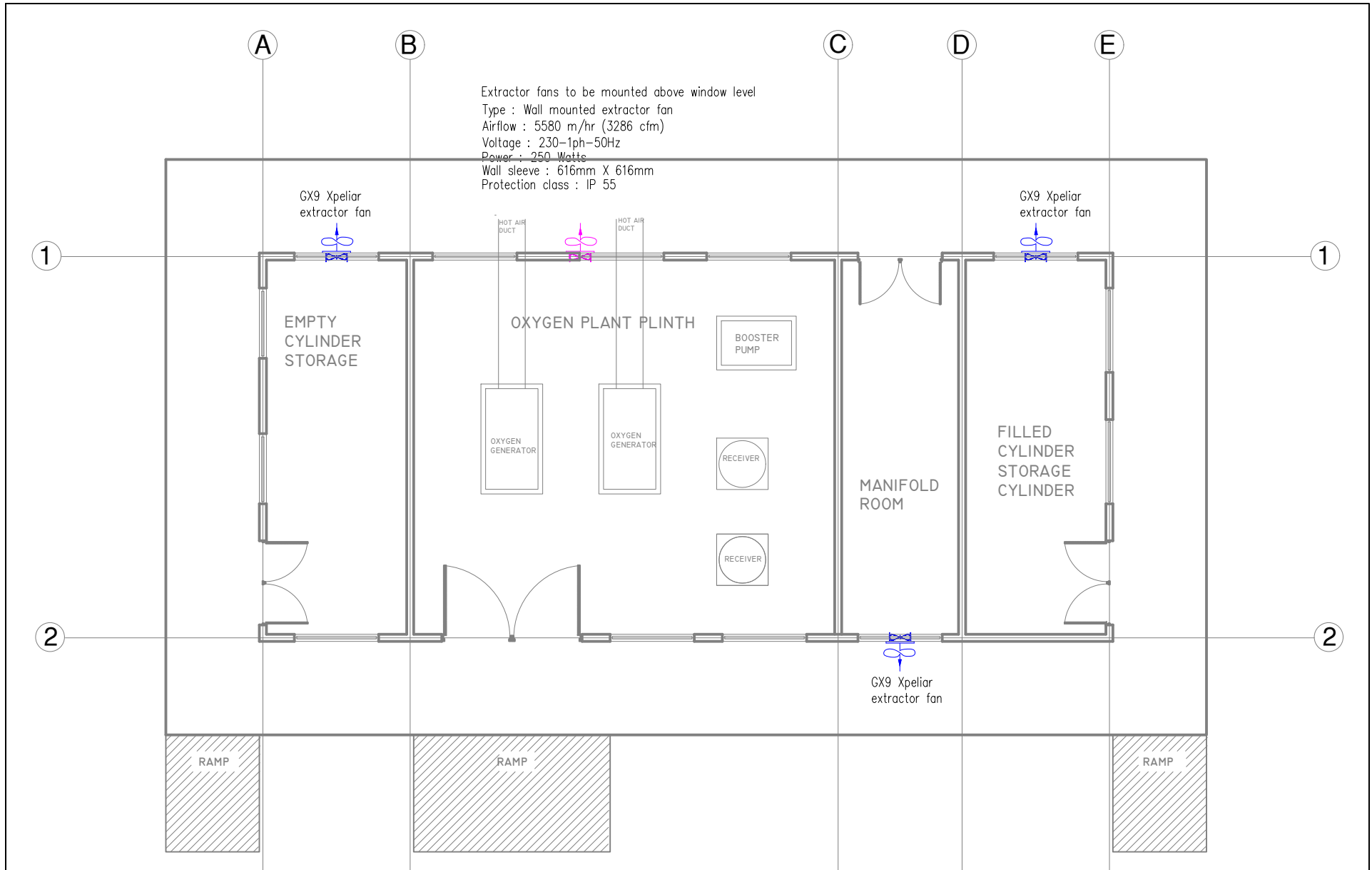
CLIENT: <div>UNICEF MAIDUGURI</div>	CONSULTANTS/ PROJECT MANAGERS: VIVID RBD PARTNERSHIP LTD ABUJA OFFICE: NO. 5, ASA STREET, OFF USUMA STREET, MAITAMA, FCT, ABUJA KADUNA OFFICE: NO. 4, HAFSAT PLAZA , CONSTITUTION ROAD, KADUNA. Email: vividrbd@gmail.com; Phone No: 08036508505	PROJECT: PROPOSED CONSTRUCTION OF OXYGEN GAS PLANT FACILITY IN SIX (6) STATES IN NIGERIA	DRAWING TITLE: FLOOR PLAN: DRAINAGE LAYOUT	REVISIONS:			Designed: P.U		Drawn: A.U		SHEET N° M/05
				N° DATE DESCRIPTION			Checked: M. O.E		Approved: I.P		
							Date: APRIL, 2022		SCALE: 1:100		
							Drawing N°		VRBD/UNICEF2022/P05/MEC04		



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				N°	DATE	DESCRIPTION	Checked: M. O. E	Approved: LP	
							Date: APRIL, 2022	SCALE: 1:100	
							Drawing N° VRBD\UNICEF2022\PO5\MEC05		



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				N°	DATE	DESCRIPTION	Checked: M.OE	Approved: IP	
							Date: APRIL, 2022	SCALE: 1:100	
				Drawing N°					
				VRBD/UNICEF2022/P05/MEC06					



CYCLONE ROOF VENTILATORS

These are series of vanes on top of it that causes the entire top to rotate from the force of the wind. On the inside of the device is a series of propeller blade that exhaust the air from a building when the wind rotates the head. Cyclone roof ventilators are designed to exhaust hot air & industrial pollutants such as dust, poisonous gases, fumes, heat, humidity, odor, stale air.



DIMENSIONS APPROX	CYCLONE 600MM
Dome Height H^D	400mm
Dome Width W^D	700mm
Throat Width W^T	600mm
Throat Height H^T	320mm
Overall Height H	720mm
Total Weight (Approx)	9kg

ACCESSORIES



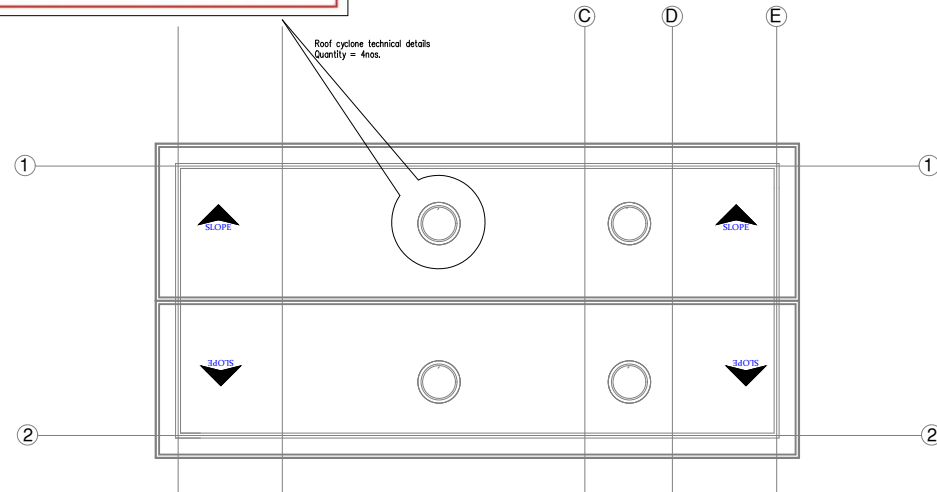
Bottom Plate

Applications

In commercial & industrial buildings E.g. warehouses, factories, workshop, garage, institutions, hospitals, churches etc

Benefits

- High efficiency ventilation
- High quality stainless steel parts
- No electricity costs
- Maintenance & operation free
- All weather resistance
- Running smooth, quiet, improve the indoor environment
- Corrosion resistant, acid and alkali resistance
- Easy and fast installation



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PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

DETAILS:

TECHNICAL SPECIFICATION
SHEET FOR ROOF CYCLONE

REVISIONS:

N°	DATE	DESCRIPTION

Prepared: P.U.

Checked: M. O.E.

Date: APRIL, 2022

Drawing N°

VRBD/UNICEF2022/P05/MEC08

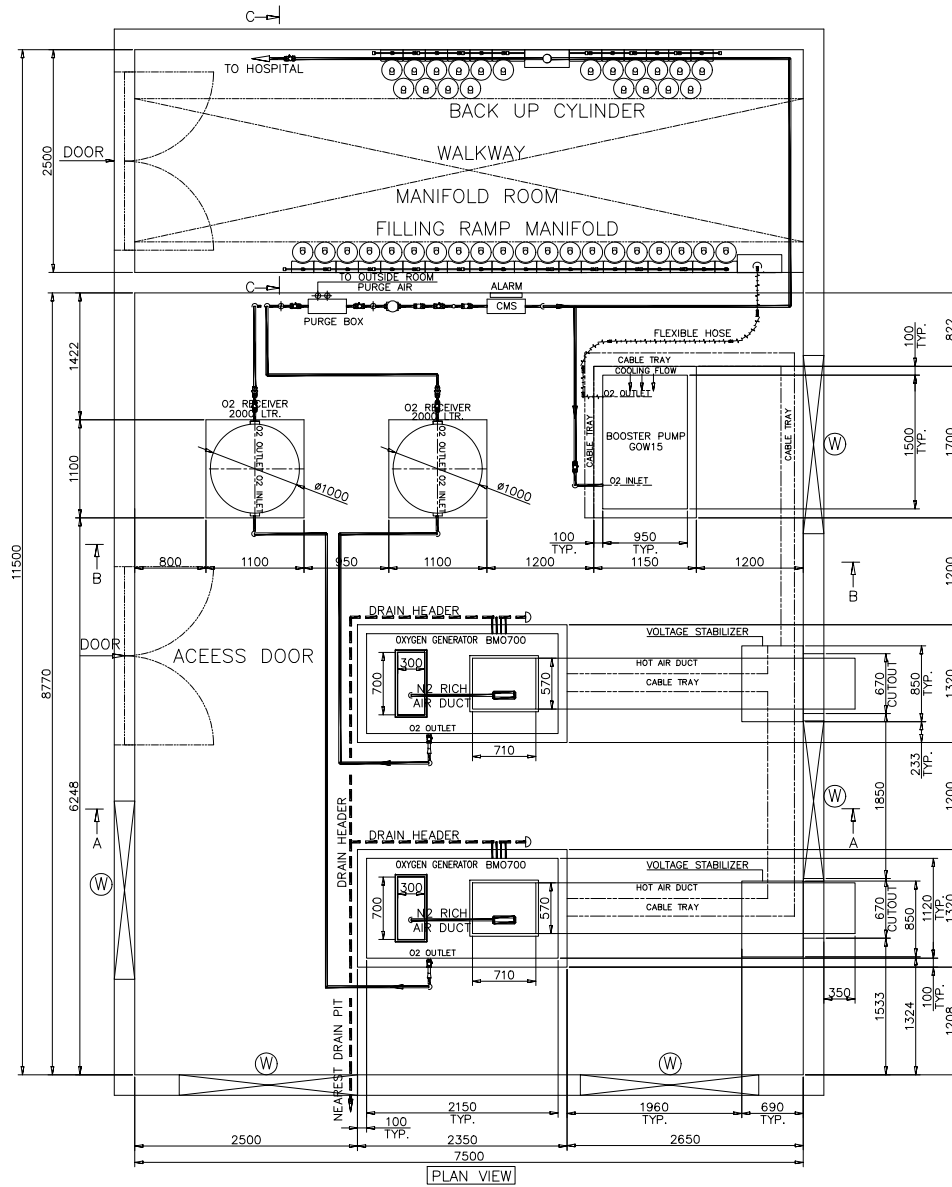
Drawn: A.U.

Approved: I.P.

SCALE: N.T.S.

SHEET N°

M/09



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PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

FLOOR PLAN:

ENTIRE PLANT ROOM LAYOUT
SHOWING PIPING NETWORK &
EQUIPMENT LAYOUT

REVISIONS:

N°	DATE	DESCRIPTION

Prepared: B.A.

Checked: M. O.E

Date: APRIL, 2022

Drawn: N°

VRBD/UNICEF2022/P05/MEC09

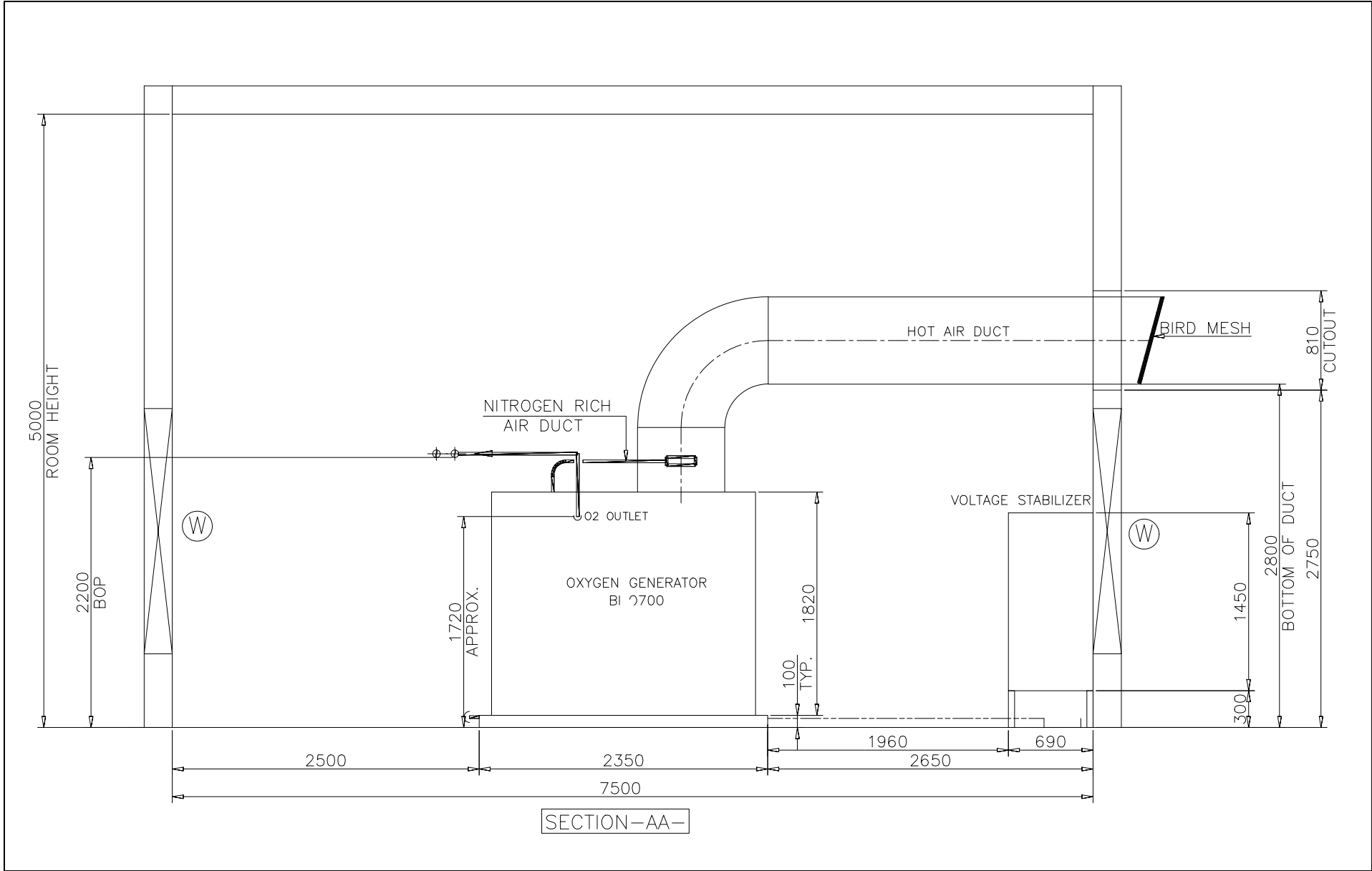
Drawn: A.U.

Approved: I.D

SCALE: N.T.S

SHEET N°

M/10



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PROJECT:

PROPOSED CONSTRUCTION OF
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DRAWING TITLE:

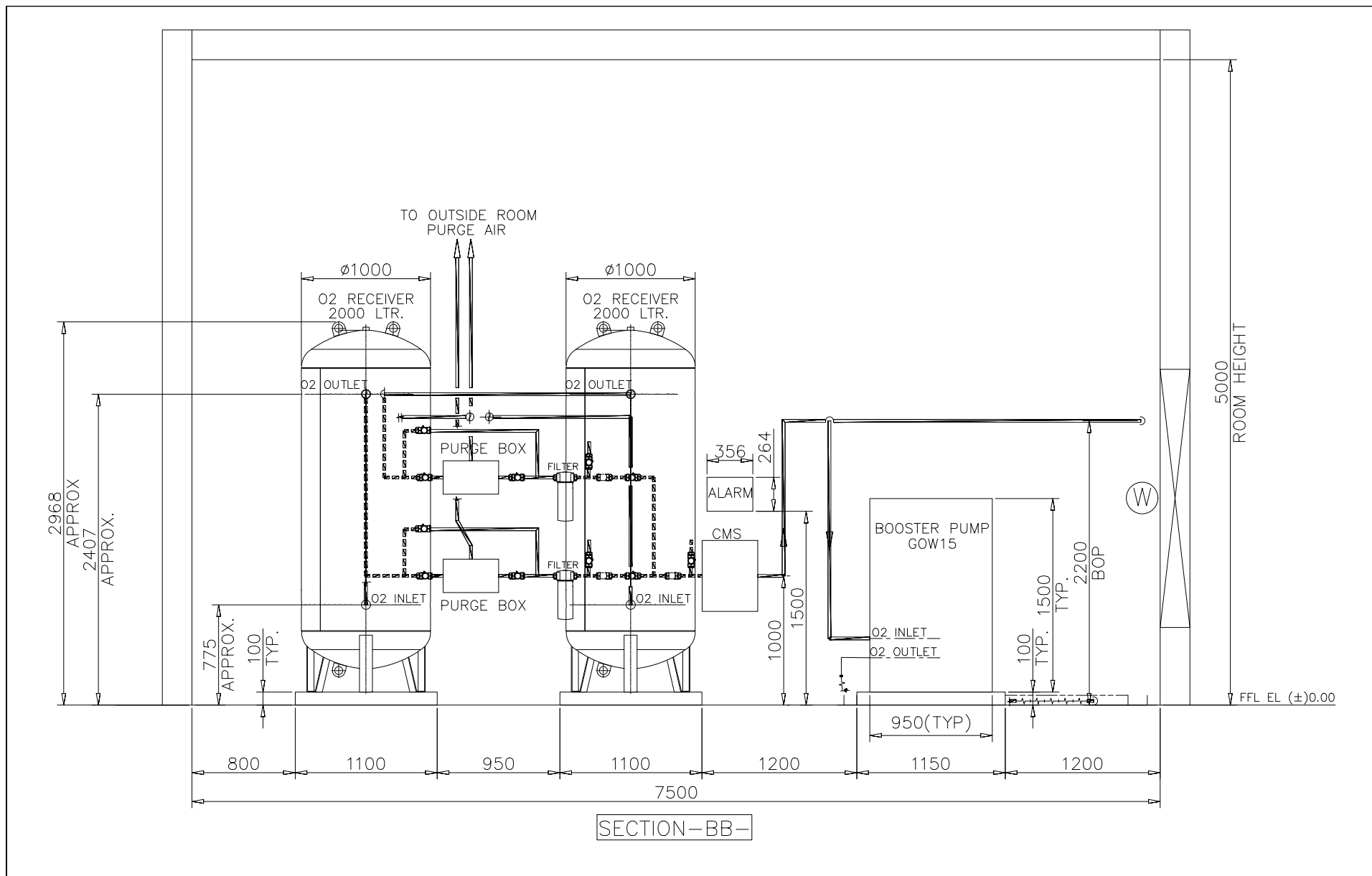
SECTION AA:
SECTION SHOWING OXYGEN
GENERATOR, NITROGEN RICH AIR
DUCT AND HOT AIR DUCT

REVISIONS:		
N°	DATE	DESCRIPTION

Designed: BJ	Drawn: AU
Checked: M. OE	Approved: LP
Date: APRIL, 2022	SCALE: N.T.S
Drawing N° VRBDIUNICEF2022P05IMEC10	

SHEET N°

M/11



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PROPOSED CONSTRUCTION OF
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IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

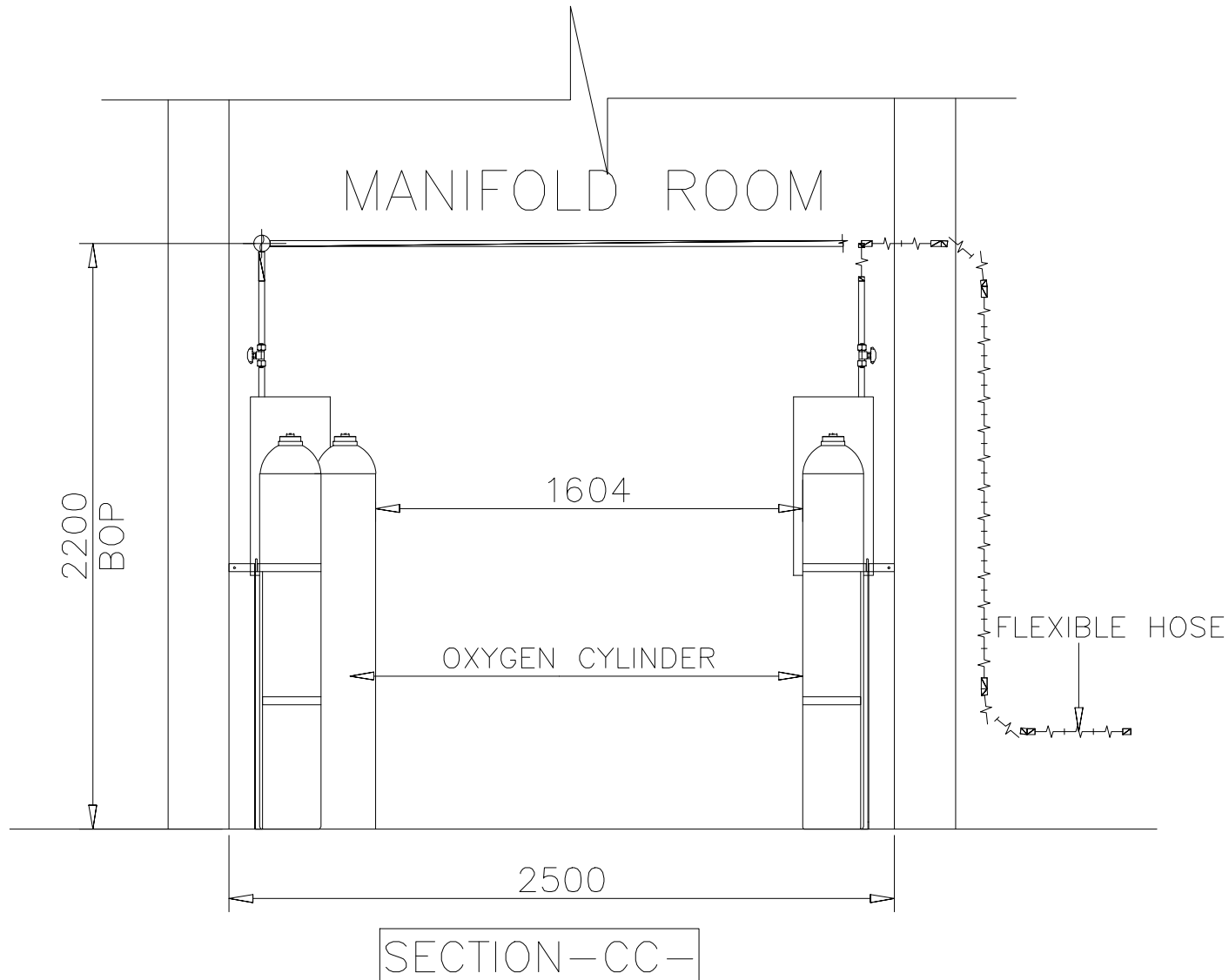
**SECTION BB:
RECEIVERS, BOOSTER PUMP,
ACCESSORIES AND PIPING
LAYOUTS**

REVISIONS:		
N°	DATE	DESCRIPTION

Designed: B.U	Drawn: A.U
Checked: M.O.E	Approved: I.P
Date: APRIL, 2022	SCALE: N.T.S
Drawing N° VRBD/UNICEF2022/P05MEC11	

SHEET N°

M/12



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PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

FLOOR PLAN:
MANIFOLD ROOM SHOWING
THE CYLINDERS

REVISIONS:

N°	DATE	DESCRIPTION

Designed: P.W

Checked: M. O'E

Date: APRIL, 2022

Drawn: N°

VRBD/UNICEF2022/P05MEC12

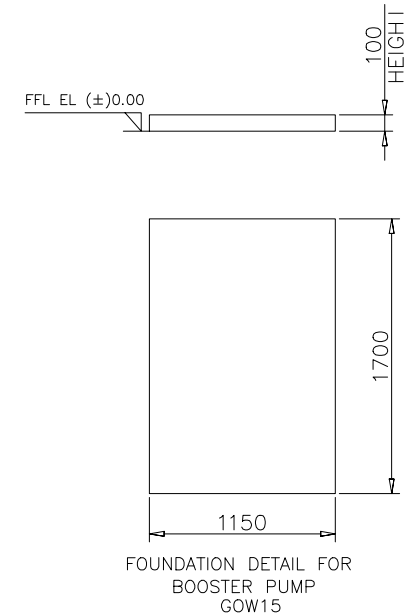
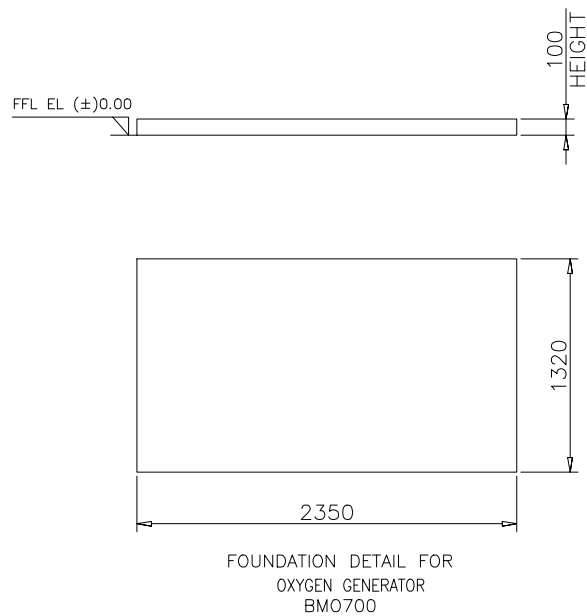
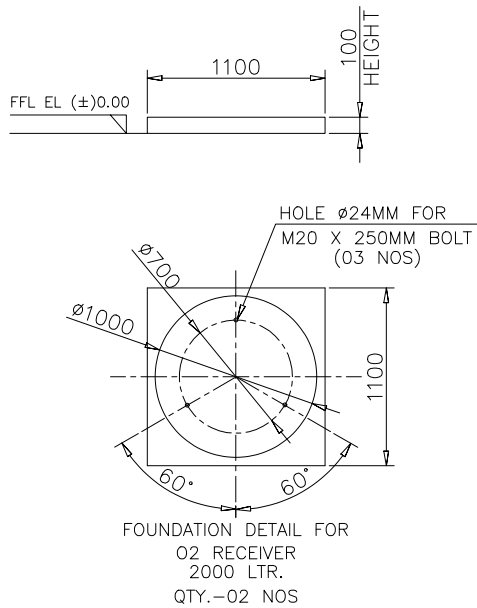
Drawn: A.U

Approved: LP

SCALE: N.T.S

SHEET N°

M/13



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KADUNA OFFICE:
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PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

DETAILS:

TYPICAL FOUNDATION DETAILS
FOR AIR RECEIVER, OXYGEN
GENERATOR BOOSTER PUMP

REVISIONS:

NO	DATE	DESCRIPTION

Designed: PU

Checked: M.O.E

Date: APRIL, 2022

Drawn by: N

VRBD/UNICEF2022/P05/MEC13

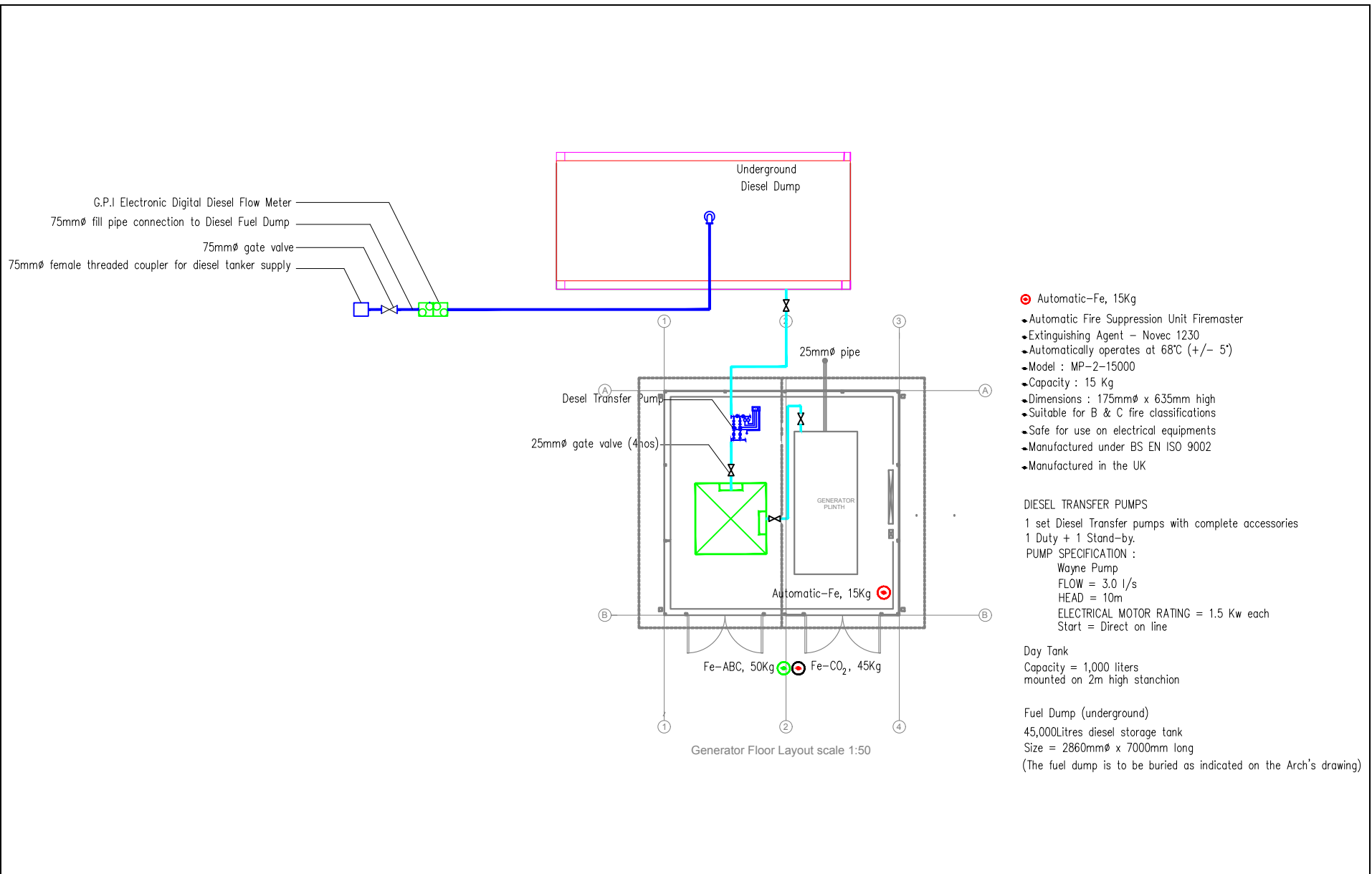
Drawn: AU

Approved: IB

SCALE: N.T.S

SHEET N°

M/14



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PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

GENERATOR HOUSE

FLOOR PLAN:

ENTIRE PIPING &
FIRE FIGHTING LAYOUT

REVISIONS:

N°	DATE	DESCRIPTION

Designed: PJJ

Checked: M. GE

Date: APRIL, 2022

Drawn: N°

VRBDUNICEF2022/P05/MEC14

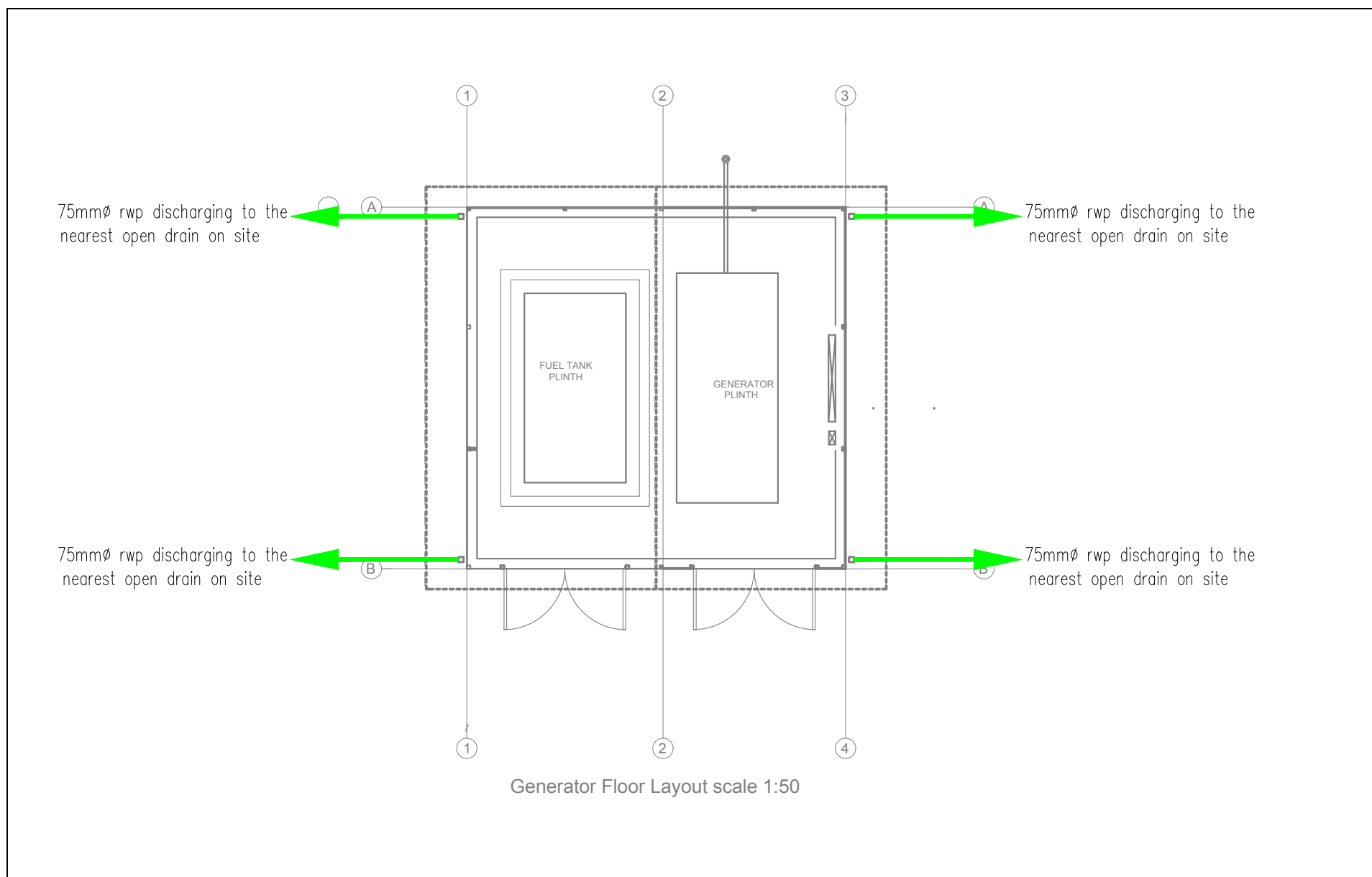
Drawn: AU

Approved: LP

SCALE: N.T.S

SHEET N°

M/15



COLD & HOT WATER PIPE SPECIFICATION DETAILS

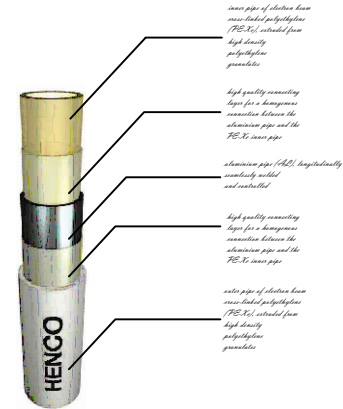
NAME: Hencc or Rifeng Multilayer Pipe

MANUFACTURER: Hencc in Belgium

KEY MATERIALS:

Continuous butt welded aluminium pipe provided with an inner & outer layer of electron beam cross-linked polyethylene. The different layers are bonded to each other by high quality connecting layers.

The 5 layers of the pipe is as described below:



A SUMMARY OF ALL ADVANTAGES

TEMPERATURE & PRESSURE RESISTANT:

The working temperature may rise to 95°C and the minimum permitted working pressure amounts to 10bar.

MINIMUM LINEAR EXPANSION:

The presence of aluminium layer means the coefficient of expansion of the Hencc pipe is comparable with that of copper and 8 times less than the coefficient of expansion of an ordinary plastic pipe. The coefficient of expansion amounts to 0.025mm/mk.

CORROSION RESISTANT:

The smooth surface of the pipe prevents build up of scale or other debris. This means sedimentation and corrosion are avoided.

SHAPE RETAINING:

After bending, the pipe retains the required shape. It has no thermal memory such as other synthetic pipes. This simplifies and accelerates the installation of the pipe and can reduce the amount of fittings required.

WEAR RESISTANT:

The outer and inner pipe are made of electron beam cross linked polyethylene. As a result, the pipe is not subject to wear, even at high temperatures and flow speeds.

FULLY OXYGEN & WATER VAPOUR PROOF:

The integrated aluminium layer prevents the penetration of oxygen in the pipe. This means corrosion problems with any metal components in the installation are avoided.

LOW WEIGHT:

Fast & simple installation saves time & money. The Hencc pipe is flexible & extremely light.

LONG LIFE:

If the pipe is used according to the specified working pressure, a working life of at least 50 years is guaranteed.

NO NOISE NUISANCE:

As distinct from metal pipes, no noise originates from the liquid flow if the pipe diameter is correctly selected.

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PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

GENERATOR HOUSE

DETAILS:

WATER SUPPLY PIPE
SPECIFICATIONS

REVISIONS:

N°	DATE	DESCRIPTION

Developed: P.U

Checked: M. O.E

Date: APRIL, 2022

Drawings N°

VRBD/UNICEF2022/P05/MEC17

Drawn: A.U

Approved: U.P

SCALE: N:1.5

SHEET N°

M/18

DRAINAGE PIPE SPECIFICATION DETAILS

NAME: Matenei Pipes & Fittings for Drainage
Sewers & General Conduiting
MANUFACTURER: Matenei Company (Nigeria) Limited
KEY FEATURES:

Materials: The pipes are made from a PVC (polyvinyl chloride) combining the advantages of lightweight with substance, yet retaining a degree of flexibility. It offers both excellent chemical stability & excellent flow characteristics with resistance to acids.

Flexibility: The pipe & fittings are regarded as flexible under the stresses set up by backfill & surcharge loads, properly installed in a suitable bed & surround, part of this load is transmitted to the side fill which is correspondingly consolidated.

Precision Manufacture: Matenei pipe joints are made with the same precision as pressure pipe joints. This means that correctly installed, infiltration is eliminated & there is no need to allow for it in design. Connection at a later date can be done with equal confidence. Precision joints together with longer pipe lengths reduce the risks of blockage & have a minimal effect on flow.

Lightweight: Handling costs reduced to a minimum. Easily stored, easily laid with fewer men & machinery.

Physical Properties:

Specific Gravity:	1.42
Inflammability:	Will not support combustion
Specific Heat:	1.00 kJ/kg °C
Thermal Conductivity:	160000 / m °C W / m °C / m) ²
Coefficient of Linear Expansion:	0.06 mm/m °C
Heat Softening Point (°C):	1.3
Tensile Strength:	In excess of 45000 / m °C 20 °C
Elongation at Break:	In excess of 80 °C

EXCAVATION:

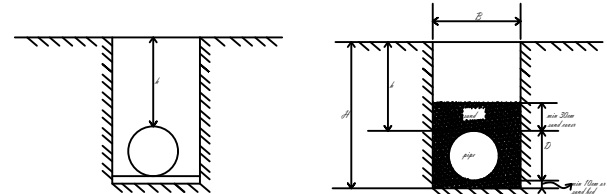
The installation of the pipe is very important for higher safety of the pipelines. The pipe is flexible & its resistance to load depends partly on the material which surrounds it in the trench. That is the reason why the pipe has to be bedded in stoneless trench.

DEPTH & WIDTH OF TRENCH:

Depth of trench is determined by taking into account of the depth of cover, pipe size & pipe fittings.

Standard Depth of Cover over PVC Pipe.

Place of Installation	Depth of cover (mm)	Remarks
Public roads	Below road	Determined by conferring with road engineers
	Below footways	Determined by conferring with road engineers
Below private roads	60mm	Just the private roads equivalent to public roads
Private land	30mm	



When installing adjoining structures or pipelines, provide atleast 30mm distance between them.

Trench must be made sufficiently wide to allow easy installation, inspection & backfill in respectation jobs. So, in the minimum 15cm space on each side of the pipe are needed.

With the following formula, the width of trench can be determined:

$$\text{Trench width} = \text{pipe diameter} + \text{sidfilling} \\ B = D(\text{mm}) + 30\text{mm}$$

Trench depth = cover depth + pipe diameter + sandbed

$$H = H(\text{mm}) + D(\text{mm}) + \text{min } 10\text{mm}$$

Note: If there is a ground with good quality soil without containing sand, asbestos or rock you do not need a sand bed if the soil is flat.

If there is a rocky or strong subsoil beneath the 30mm for the sandbed. Once a satisfactory bedding has been obtained, the pipe should be laid to the required levels.

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KADUNA OFFICE:
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Email: vividrbd@gmail.com; Phone No: 08056508505

PROJECT:

PROPOSED CONSTRUCTION OF
OXYGEN GAS PLANT FACILITY
IN
SIX (6) STATES IN NIGERIA

DRAWING TITLE:

DETAILS:

DRAINAGE PIPE SPECIFICATION

REVISIONS:

N°	DATE	DESCRIPTION

Designed: PJU

Checked: M. O.E

Date: APRIL, 2022

Drawn: N°

VRBD/UNICEF/2022/PO5/MEC/18

Drawn: AUJ

Approved: LP

SCALE: N.T.S

SHEET N°

M/19