

INDEX

VOLUME I – Tender Invitation

Part I: Invitation for Tender

Part II: Instructions to Bidders

VOLUME II – Conditions of Contract

Part I - General Conditions of Contract

(GCC) Part II – Particular Conditions of
Contract (PCC)

VOLUME III - Technical Specification

Section A

1. Schedule of Requirements (SOR)
2. Qualification Requirement (QR)
3. Salient Features and Project Schedule
4. General Technical Requirements (GTR)

Section B

1. Technical Specification- Turbine & Auxiliaries
2. Technical Specification – Main Inlet Valve
3. Technical Specification- Fire Protection System
4. Technical Specification- HVAC
5. Technical Specification- EOT Crane
6. Technical Specification- Workshop Equipments

Section C

1. Technical Specification - Generator & Excitation System
2. Technical Specification - Generator Transformer & other
Auxiliary Transformers
3. Technical Specification - Medium Voltage switchgear
4. Technical Specification - 415V Low Voltage Switchgear
5. Technical Specification - Control & Protection System
6. Technical Specification - Control and Monitoring System
(Automation, SCADA)
7. Technical Specification - DC System
8. Technical Specification - Power and Control Cables and Cable Trays

9. Technical Specification - Illumination System
10. Technical Specification - Earthing System
11. Technical Specification - Emergency Diesel Generator Set
12. Technical Specification - Communication System (CCTV, EPBAX, and PAsystem)
13. Technical Specification - 33 kV Switchyard
14. Technical Specification - Electrical Workshop

VOLUME IV- Technical and Financial Proposal

Envelope No.1- Technical Proposal

1. Guaranteed Technical Particulars (GTP) / Technical Datasheets (TDS)
 - I. Mechanical
 - II. Electrical
2. Bid Forms and Schedule of Supplementary Information (Including Bid Security and un-priced Bid Forms for Supply & Services)
3. Cash Flow Requirements

Envelope No 2. - Financial Proposal

1. Price Schedule (Including priced Bid Forms for Supply & Works)

VOLUME V – Drawings

Electro-Mechanical Drawings.



**ASSAM POWER GENERATION
CORPORATION LIMITED**

BIDDING DOCUMENTS

(NATIONAL COMPETITIVE BIDDING)

FOR

**ELECTROMECHANICAL WORKS
CONTRACT PACKAGE FOR KARBI
LANGPI MIDDLE-II HYDRO POWER
PROJECT (24 MW)**

(ASSAM, INDIA)

Bid No: KLM-II-HPP/PKG-3

VOLUME-V

DRAWINGS

February 2025

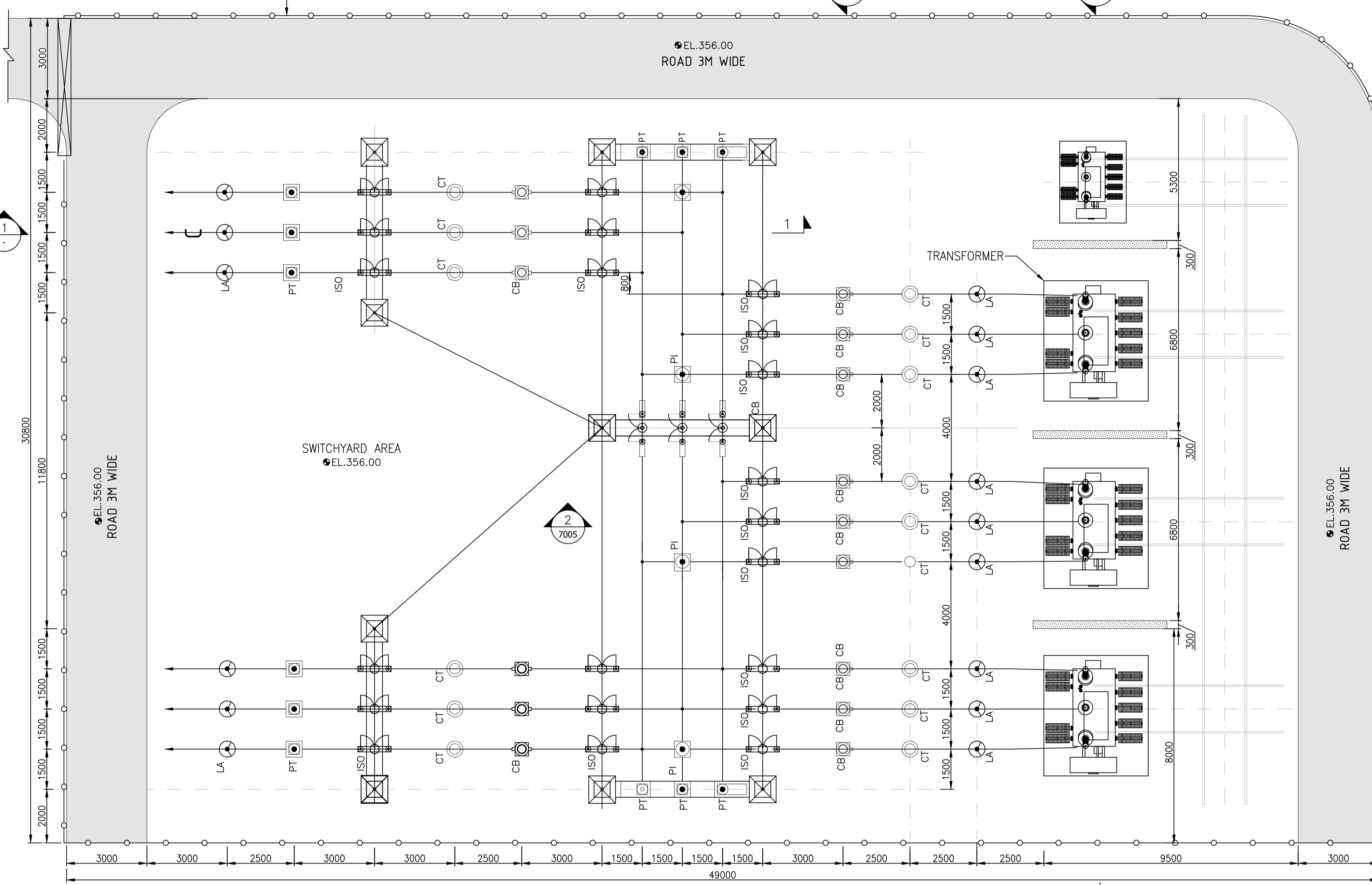
LIST OF DRAWINGS

Electromechanical Drawings

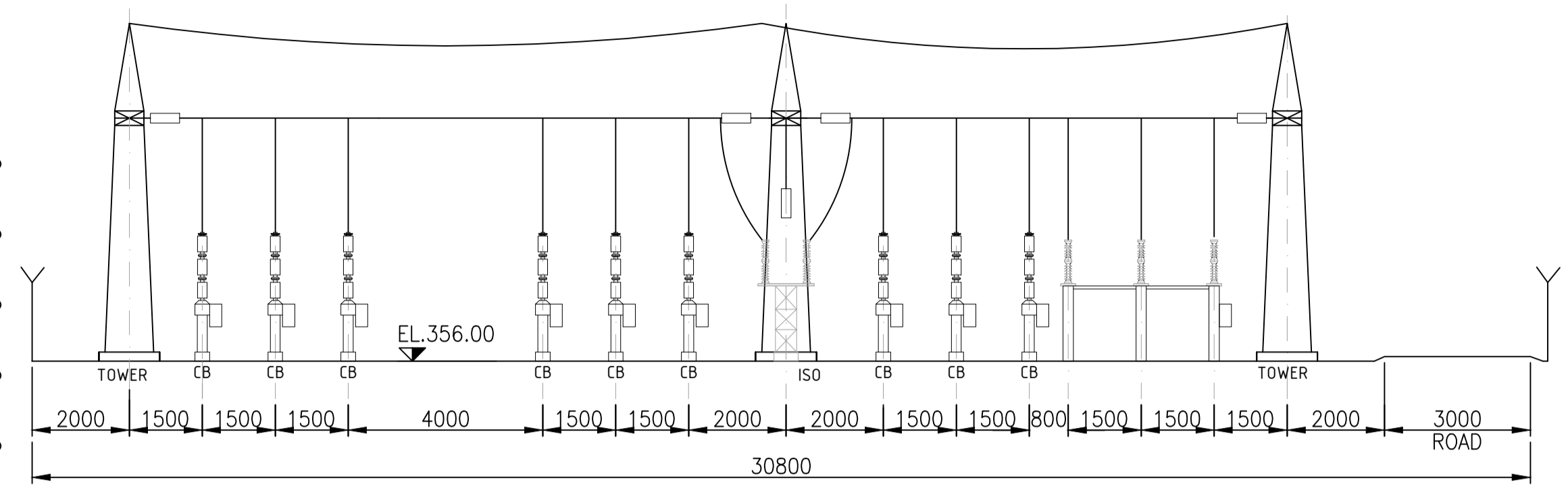
1	Power House General Arrangement Plan at EL 327.00/ P.020318-TE-E&M-GAD-9751 Sheet 1-4- R1
2	Power House General Arrangement Plan at EL 314.35/ P.020318-TE-E&M-GAD-9751 Sheet 2-4-R1
3	Power House General Arrangement Section 1-1/ P.020318-TE-E&M-GAD-9751- Sheet 3-4-R1
4	Power House General Arrangement Section 2-2/ P.020318-TE-E&M-GAD-9751- Sheet 4-4-R1
5	Main Single Line Diagram/ P.020318-TE-E&M-GAD-9754-sheet 1-1-R0
6	Single Line Diagram LTAC/MV System/ P.020318-TE-E&M-GAD-9756/ P.020318-TE-E&M-GAD-9756-sheet 1-1/R0
7	Cooling Water System Flow Diagram/ P.020318-TE-E&M-GAD-9752-sheet 1-1-R0
8	Drainage and Dewatering System Flow Diagram/ P.020318-TE-E&M-GAD-9753-sheet 1-1-R0
9	Main Single Line Diagram Relaying and Metering/ P.020318-TE-E&M-GAD-9755-sheet 1-1-R0
10	Single Line Diagram 220V DC/ P.020318-TE-E&M-GAD-9757-sheet 1-1-R0
11	33kV Switchyard Plan & Section/ P.020318-TE-E&M-GAD-9758-sheet 1-1-R1
12	Power House SCADA System Architecture General/ P.020318-TE-E&M-GAD-9759 -Sheet 1 of 3-R0
13	Power House SCADA System Architecture Remote Sites Communication/ P.020318-TE-E&M-GAD-9759 Sheet 2 of 3-R0

14	Power House SCADA System Architecture Electrical Protection/ P.020318-TE-E&M-GAD-9759- Sheet 3 of 3-R0
15	PROJECT LAYOUT
16	WATER CONDUCTOR SYSTEM

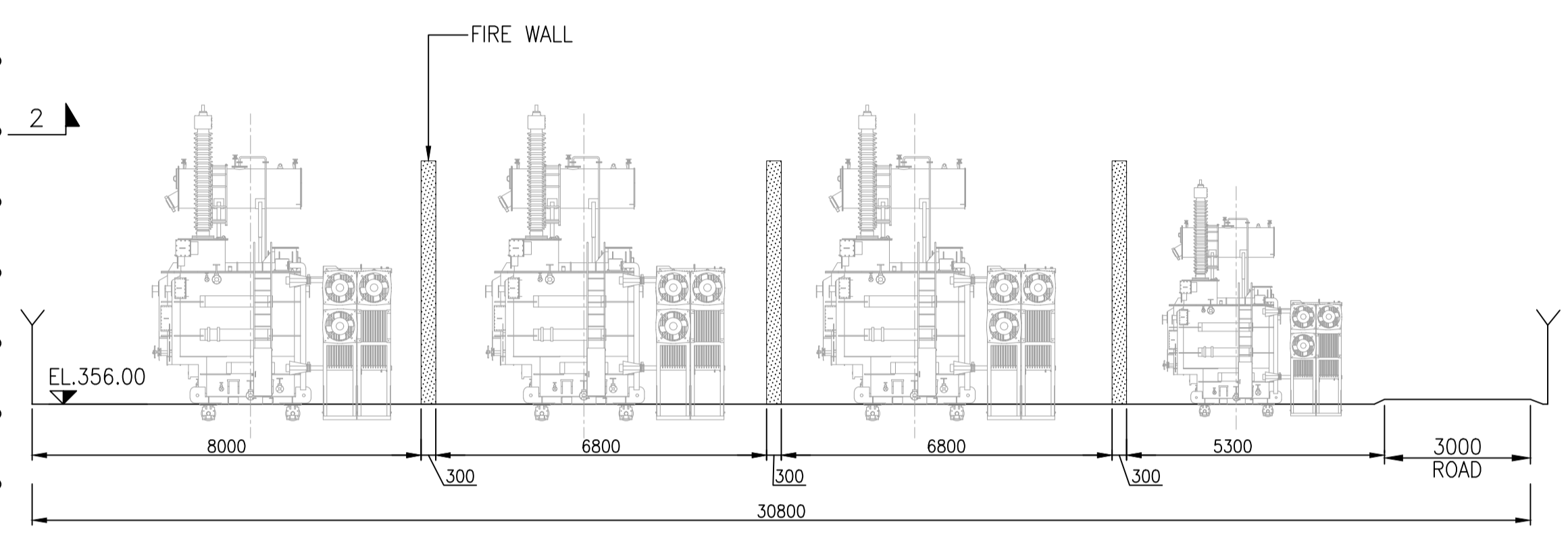
ANNEXURE 14



33KV SWITCHYARD PLAN
(SCALE 1:100)



SECTION 3-3



SECTION 4-4

NOTES:-

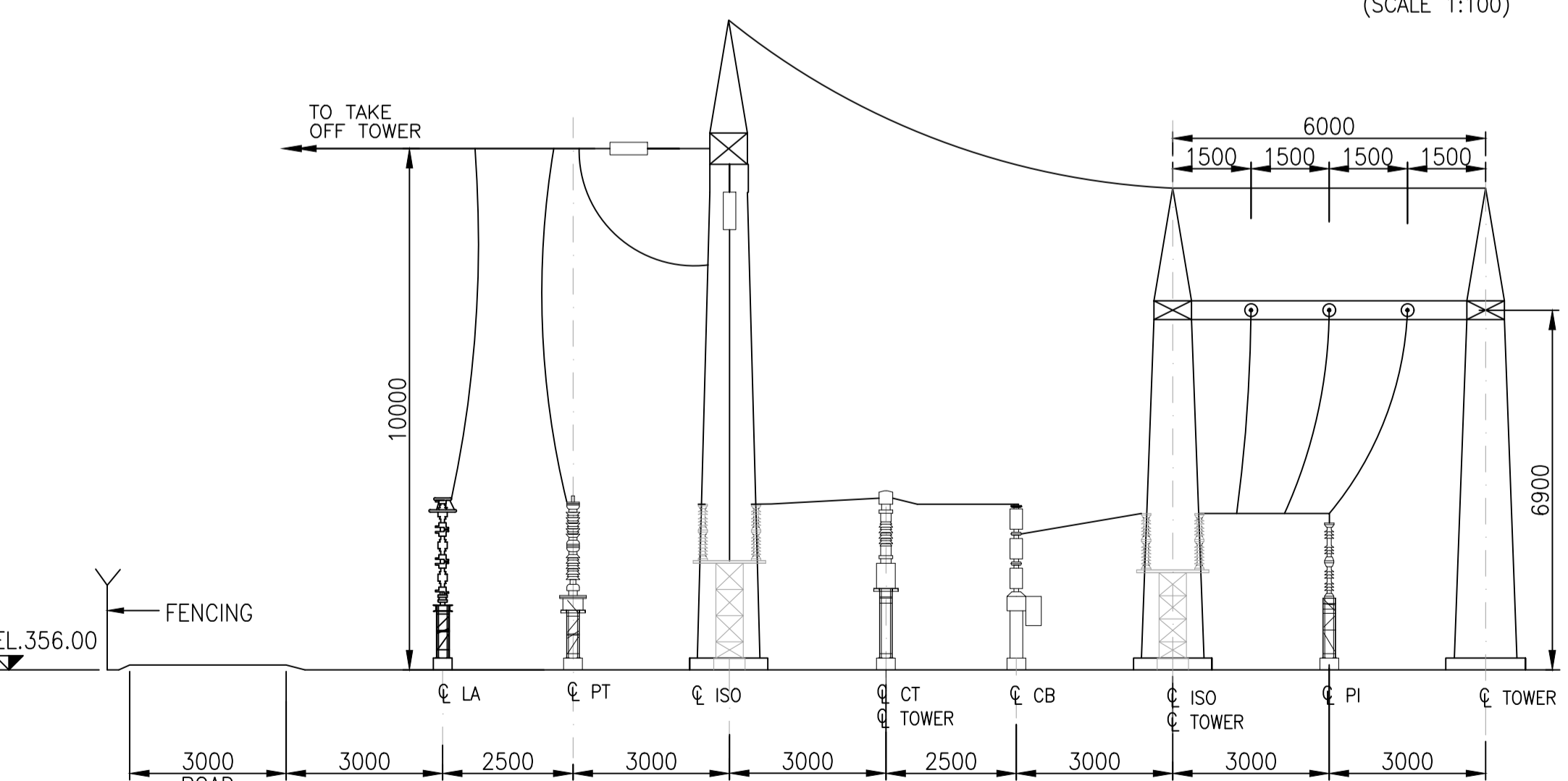
1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS.
2. NO DIMENSION SHALL BE SCALED FROM THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

BASED ON DRAWING / DOCUMENTS

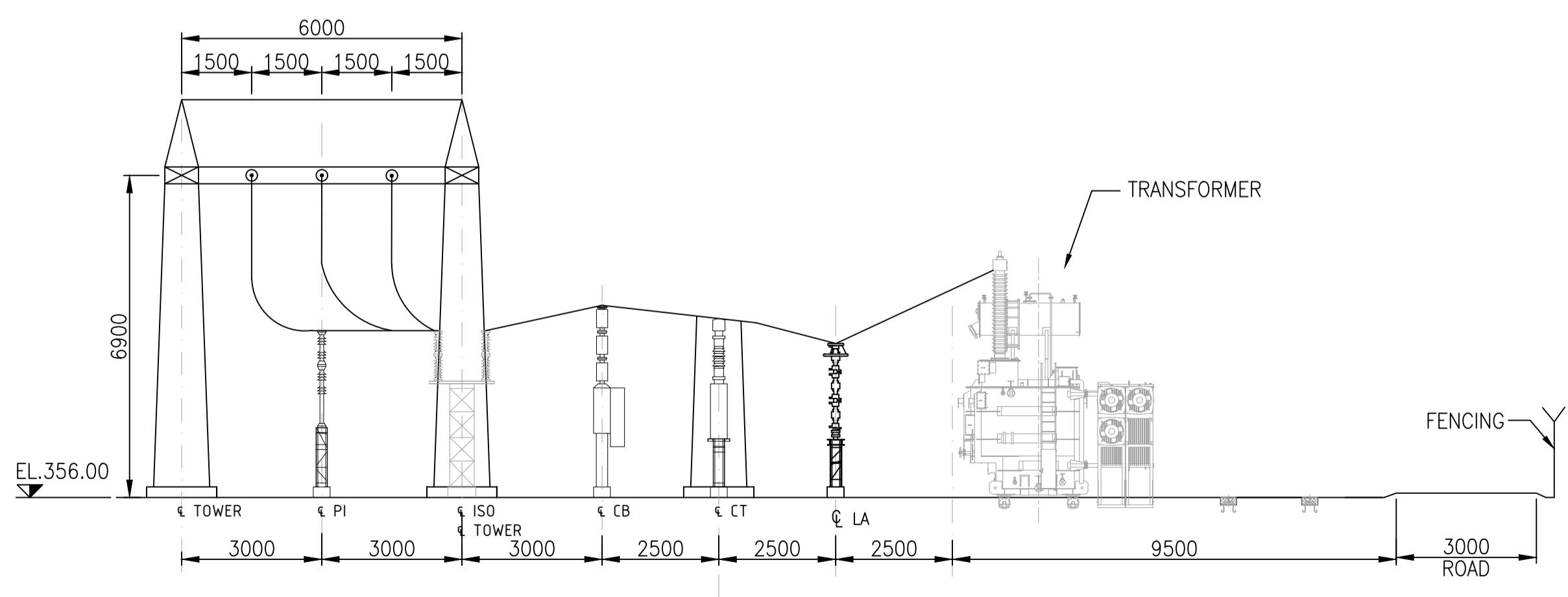
DRG / DOCUMENT NO.	SUBJECT
--------------------	---------

REFERENCE DRAWING

DRG. NO.	SUBJECT
----------	---------




SECTION 1-1
(OUTGOING FEEDER BAY)



SECTION 2-2
(GENERATOR BAY)

1	15.04.2024	HS	AK	HKD	BSS	GENERAL REVISION
0	12-07-2023	HS	AK	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

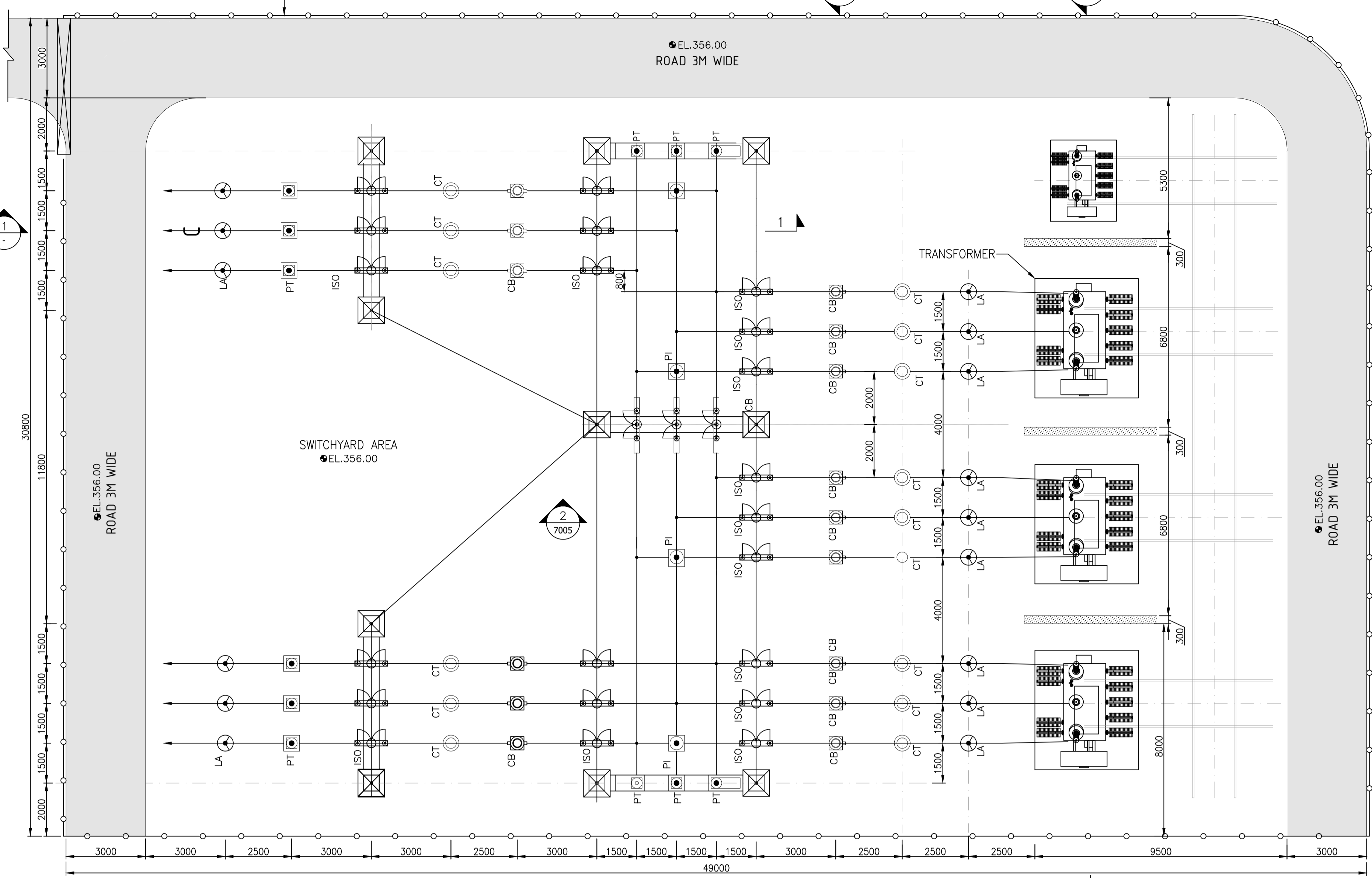
OWNER :

ASSAM POWER GENERATION CORPORATION LTD.

PROJECT :
KARBI-LANGPI MIDDLE-II (3X8 MW)
 ASSAM, INDIA

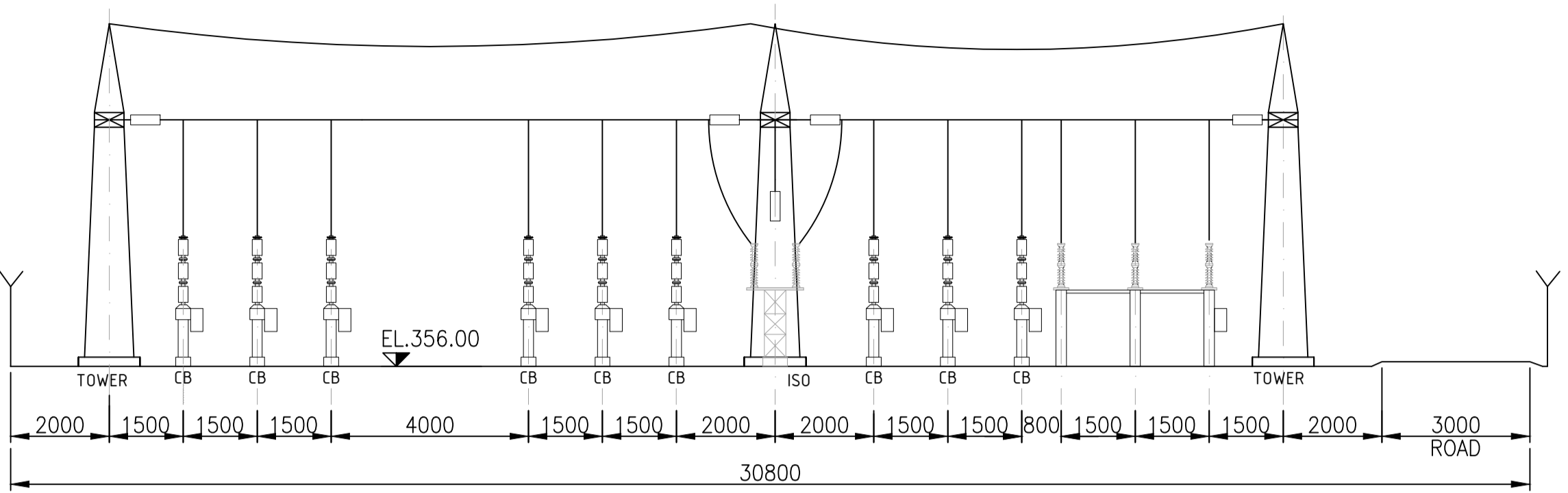
TITLE:
33KV SWITCHYARD PLAN & SECTION

TRACTEBEL TRACTEBEL Engineering pvt. Ltd.	Size	Scale	Sheet	Rev.
	A1	AS SHOWN	1 OF 1	1
	Project No.	Discipline Code	Serial No.	
	P.020318	TE-E&M-GAD	9758	

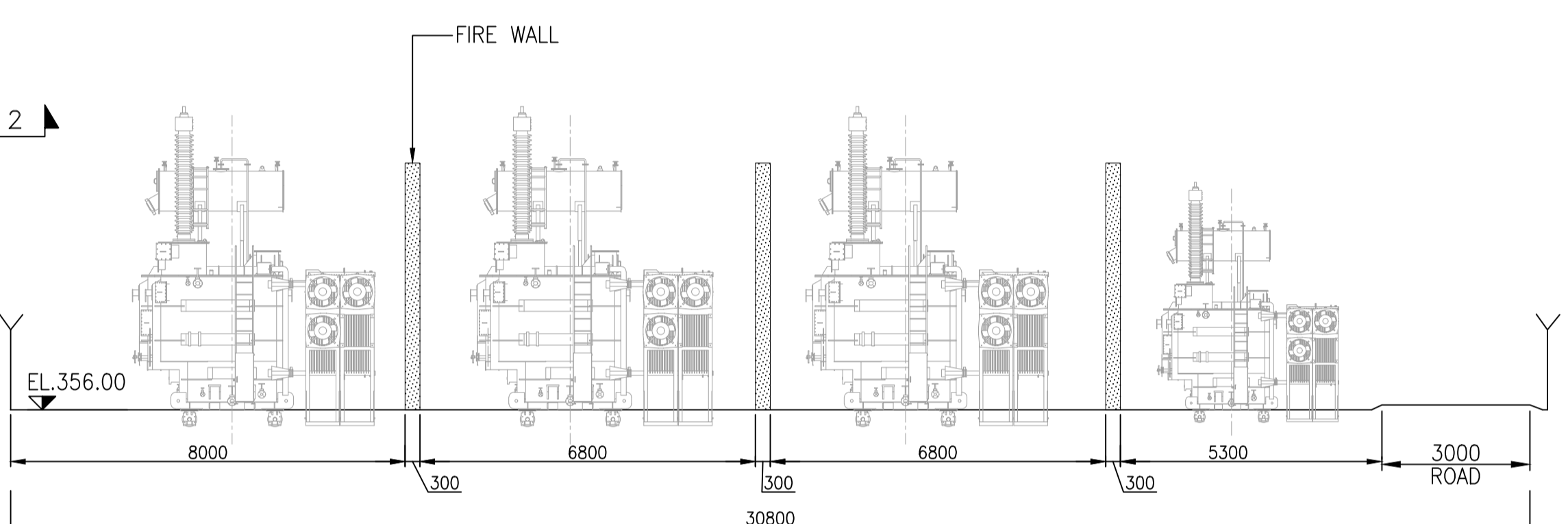
ANNEXURE 14



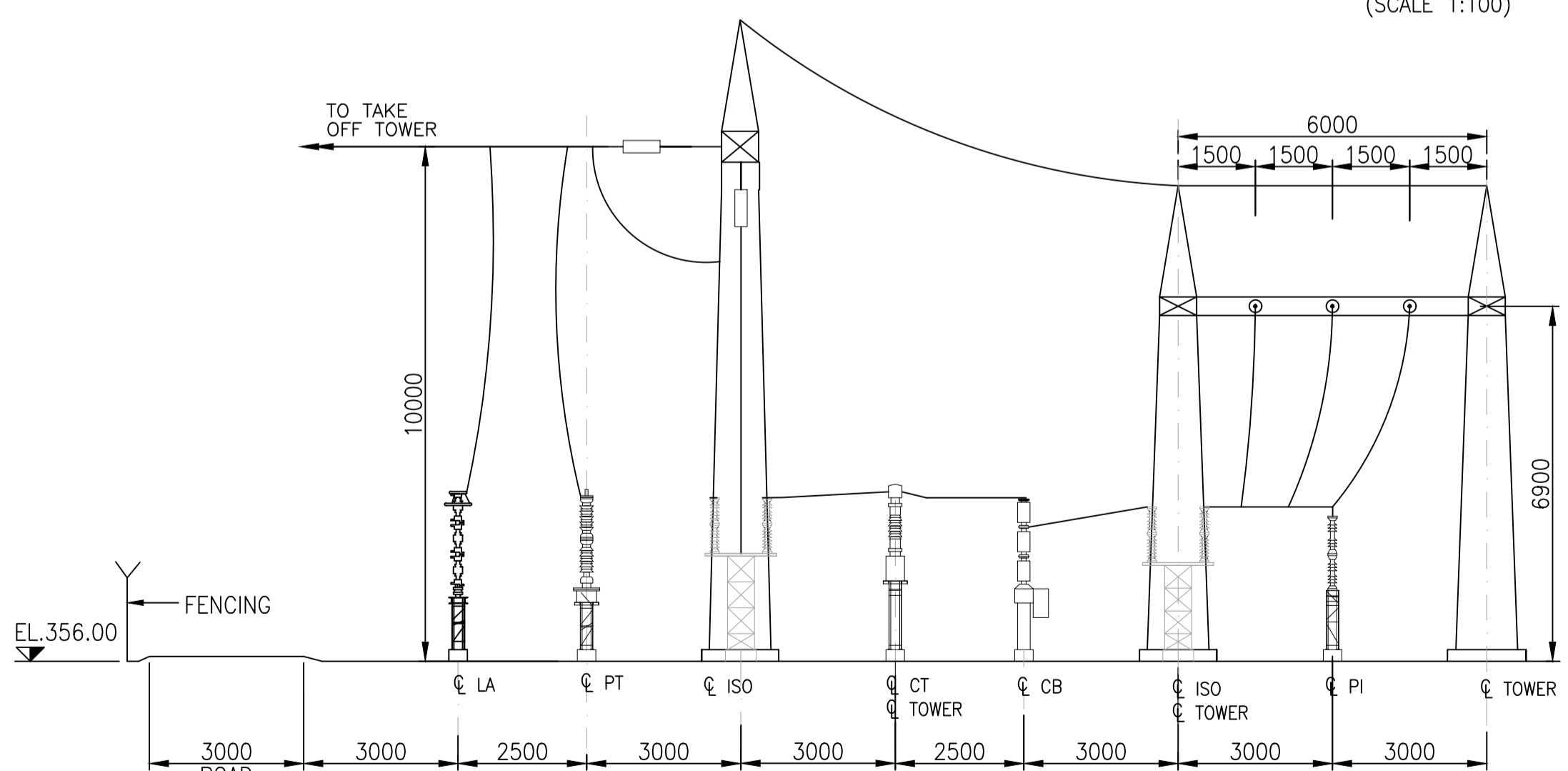
33KV SWITCHYARD PLAN
(SCALE 1:100)



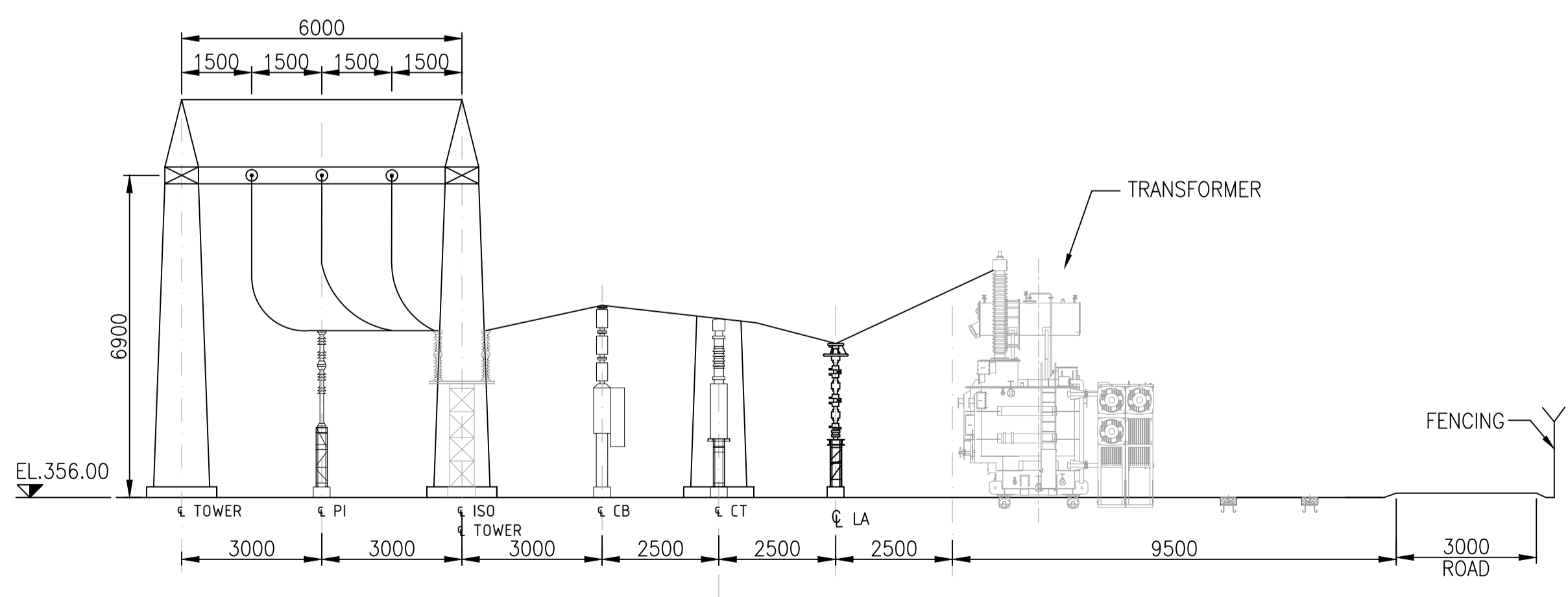
SECTION 3-3



SECTION 4-4



SECTION 1-1
(OUTGOING FEEDER BAY)



SECTION 2-2
(GENERATOR BAY)

NOTES:-

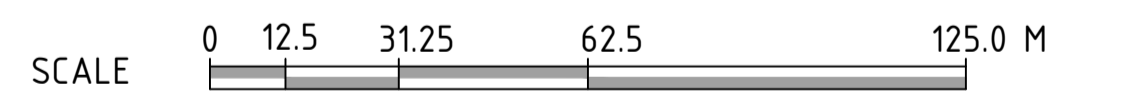
1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS.
2. NO DIMENSION SHALL BE SCALED FROM THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

BASED ON DRAWING / DOCUMENTS


DRG / DOCUMENT NO.	SUBJECT
--------------------	---------

REFERENCE DRAWING

DRG. NO.	SUBJECT
----------	---------



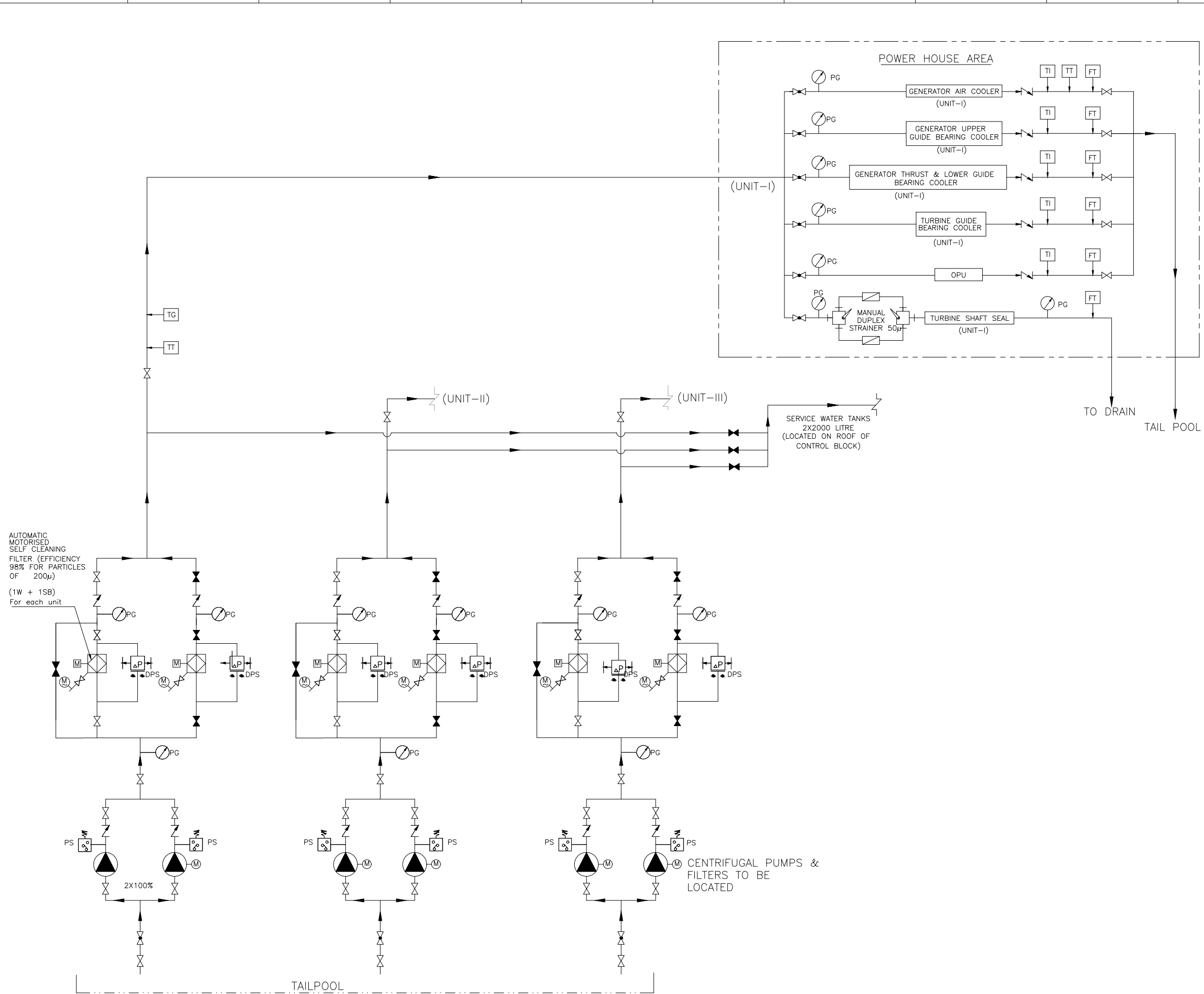
1	15.04.2024	HS	AK	HKD	BSS	GENERAL REVISION
0	12-07-2023	HS	AK	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

OWNER :

ASSAM POWER GENERATION CORPORATION LTD.

PROJECT :
KARBI-LANGPI MIDDLE-II (3X8 MW)
 ASSAM, INDIA

TITLE:
33KV SWITCHYARD PLAN & SECTION

TRACTEBEL TRACTEBEL Engineering pvt. Ltd.	Size	Scale	Sheet	Rev.
	A1	AS SHOWN	1 OF 1	1
	Project No.	Discipline Code	Serial No.	
	P.020318	TE-E&M-GAD	9758	



NOTES:
 1. THE DRAWING DEPICTS THE COOLING WATER SCHEME PROPOSED FOR PROJECT ONLY.
 2. NECESSARY PROVISION FOR OPERATION OF CW SYSTEM FROM PLANT SCADA SHALL BE KEPT.

LEGEND:-

VALVES & INSTRUMENTS

SYMBOL	DESCRIPTION
	PUMP
	GATE VALVE (N.O.)
	GATE VALVE (N.C.)
	GATE VALVE (N.O.) GENERAL ANGLE
	BUTTERFLY VALVE (N.O.)
	BUTTERFLY VALVE (N.C.)
	BALL VALVE (N.O.)
	BALL VALVE (N.C.)
	GLOBE VALVE (N.O.)
	GLOBE VALVE (N.C.)
	CHECK VALVE (NRV)
	DRAIN VALVE
	AIR RELEASE VALVE
	PRESSURE REDUCING VALVE
	MOTORIZED VALVE
	THREE WAY VALVE
	ECCENTRIC VALVE
	FLOAT VALVE
	SAFETY VALVE
	SOLENOID VALVE - WATER DRAIN
	SOLENOID VALVE - LINE AIR
	PRESSURE GAUGE
	TEMPERATURE INDICATOR
	DIFFERENTIAL PRESSURE GAUGE
	LEVEL INDICATOR
	LEVEL SWITCH
	TEMPERATURE SWITCH
	FLOW SWITCH
	PRESSURE SWITCH
	DIFFERENTIAL PR. SWITCH
	MOTOR
	PRESSURE TRANSMITTER
	FLOW TRANSMITTER & SWITCH
	TEMPERATURE TRANSMITTER

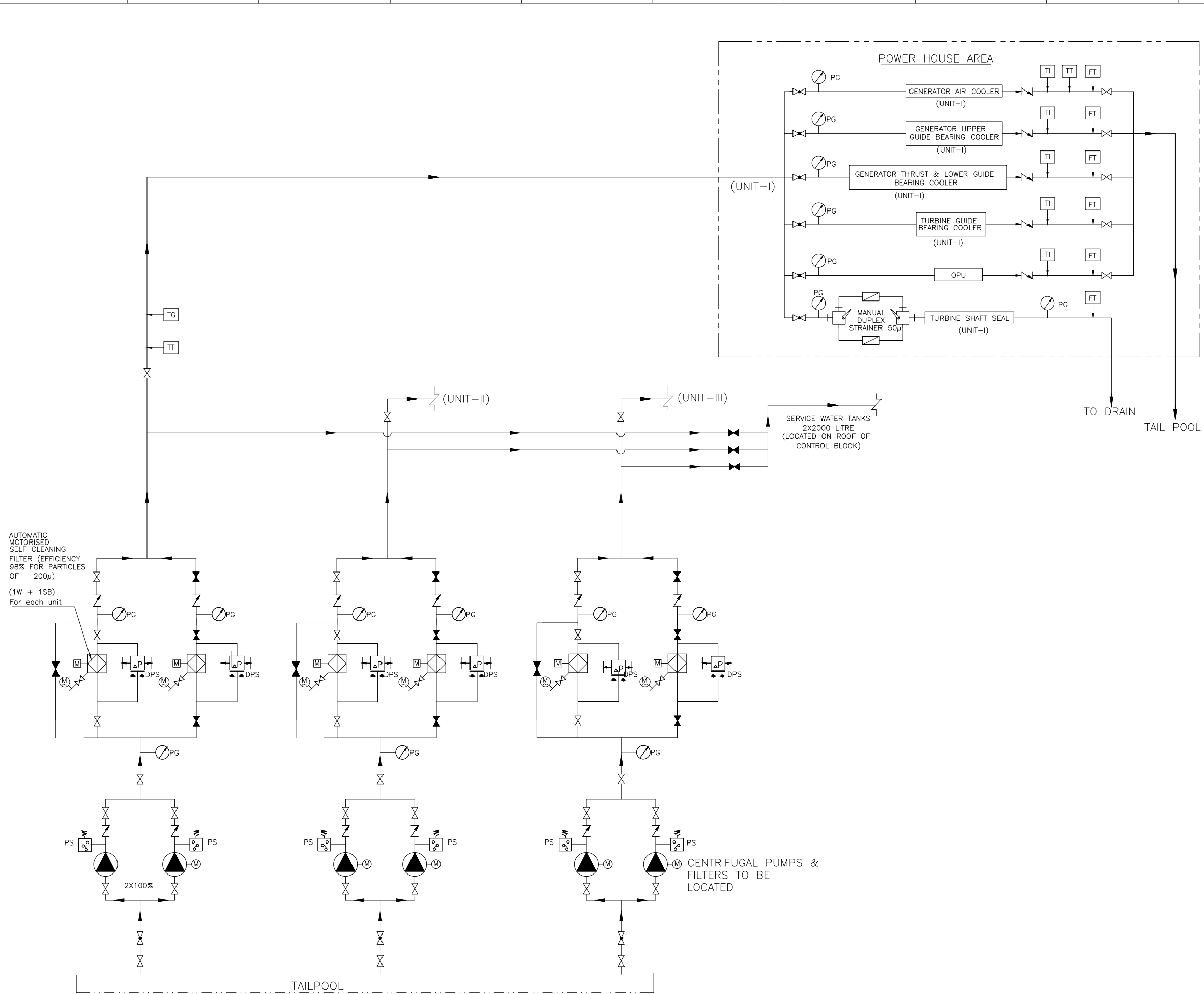
FOR TENDER PURPOSE ONLY

0	12-07-2023	HS	VRS	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

OWNER :
ASSAM POWER GENERATION CORPORATION LTD.

PROJECT :
 KARBI-LANGPI MIDDLE-II (3X8 MW)
 ASSAM, INDIA

TITLE:
 COOLING WATER SYSTEM
 FLOW DIAGRAM



NOTES:
 1. THE DRAWING DEPICTS THE COOLING WATER SCHEME PROPOSED FOR PROJECT ONLY.
 2. NECESSARY PROVISION FOR OPERATION OF CW SYSTEM FROM PLANT SCADA SHALL BE KEPT.

LEGEND:-

VALVES & INSTRUMENTS

SYMBOL	DESCRIPTION
	PUMP
	GATE VALVE (N.O.)
	GATE VALVE (N.C.)
	GATE VALVE (N.O.) GENERAL ANGLE
	BUTTERFLY VALVE (N.O.)
	BUTTERFLY VALVE (N.C.)
	BALL VALVE (N.O.)
	BALL VALVE (N.C.)
	GLOBE VALVE (N.O.)
	GLOBE VALVE (N.C.)
	CHECK VALVE (NRV)
	DRAIN VALVE
	AIR RELEASE VALVE
	PRESSURE REDUCING VALVE
	MOTORIZED VALVE
	THREE WAY VALVE
	ECCENTRIC VALVE
	FLOAT VALVE
	SAFETY VALVE
	SOLENOID VALVE - WATER DRAIN
	SOLENOID VALVE - LINE AIR
	PRESSURE GAUGE
	TEMPERATURE INDICATOR
	DIFFERENTIAL PRESSURE GAUGE
	LEVEL INDICATOR
	LEVEL SWITCH
	TEMPERATURE SWITCH
	FLOW SWITCH
	PRESSURE SWITCH
	DIFFERENTIAL PR. SWITCH
	MOTOR
	PRESSURE TRANSMITTER
	FLOW TRANSMITTER & SWITCH
	TEMPERATURE TRANSMITTER

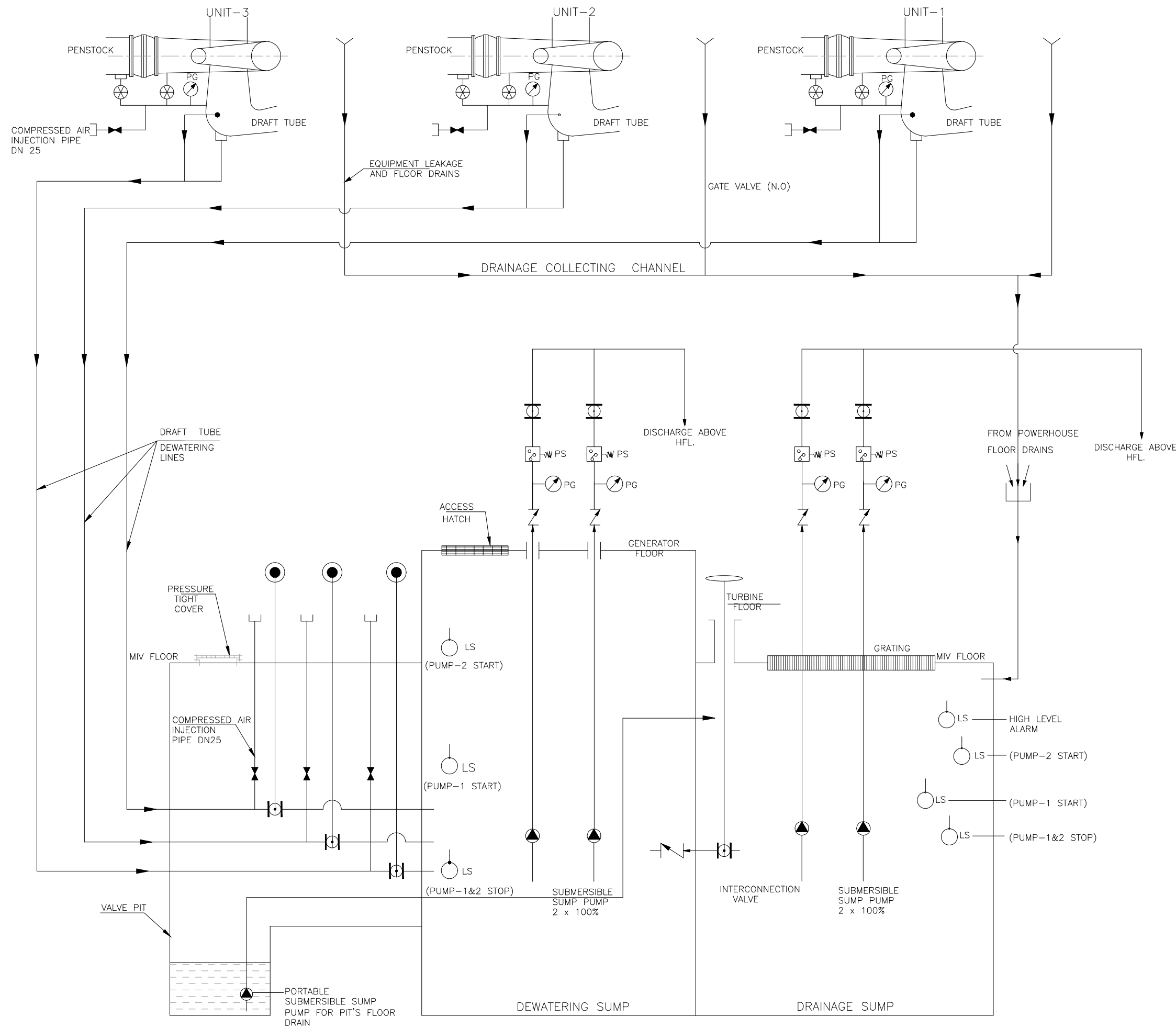
FOR TENDER PURPOSE ONLY

0	12-07-2023	HS	VRS	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

OWNER :
ASSAM POWER GENERATION CORPORATION LTD.

PROJECT :
 KARBI-LANGPI MIDDLE-II (3X8 MW)
 ASSAM, INDIA

TITLE:
 COOLING WATER SYSTEM
 FLOW DIAGRAM



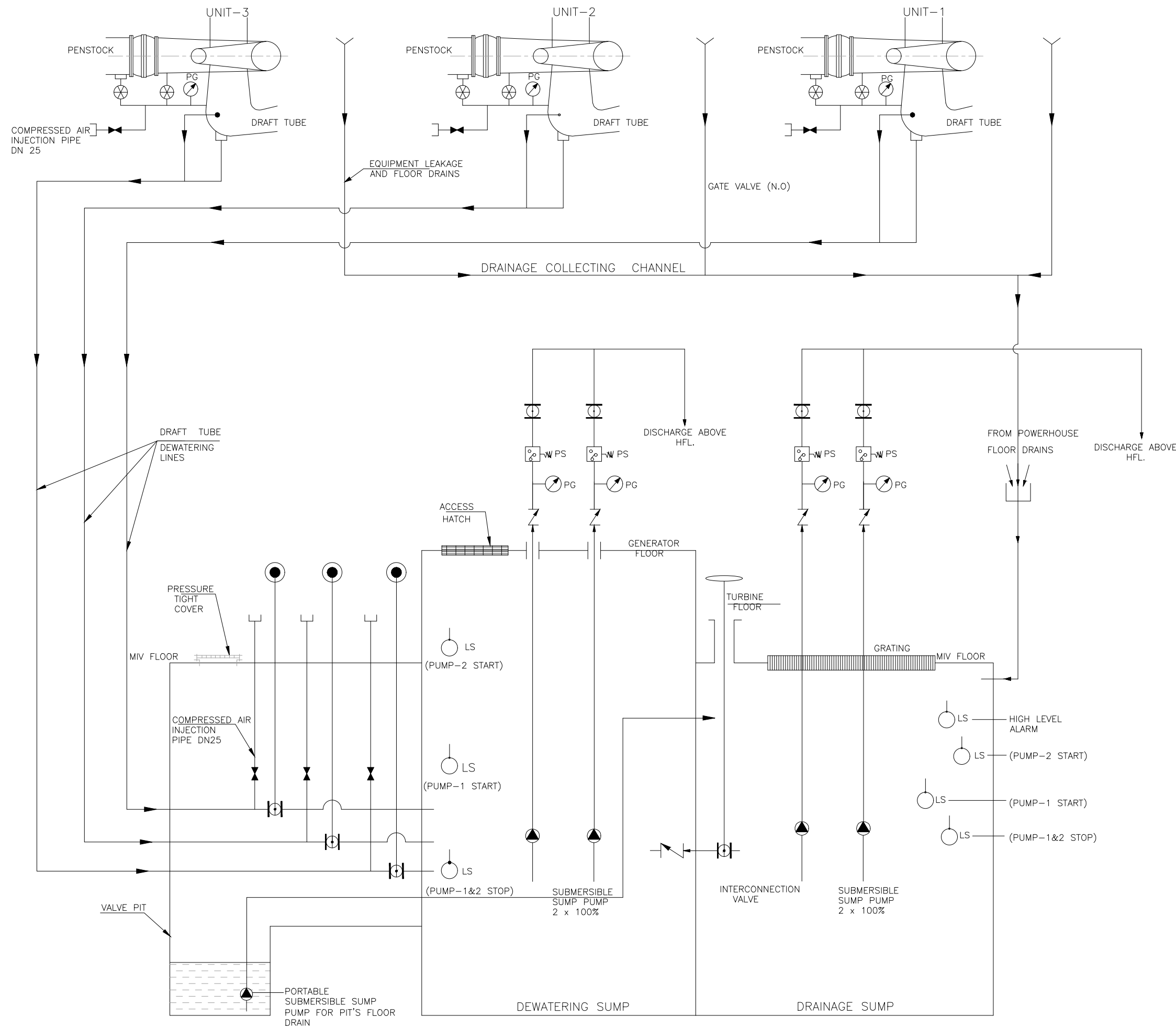
NOTES:
 THE SCHEMATIC DIAGRAM AND VARIOUS EQUIPMENTS & DEVICES SHOWN IN THE DRAWING ARE INDICATIVE ONLY FOR GUIDANCE AND DOES NOT SHOW ALL DEVICES, INSTRUMENTATION & VALVES ETC REQUIRED AS PER TECH. SPECIFICATIONS AND COMPLETENESS OF THE SYSTEM. ACTUAL SCHEME SHALL BE FINALIZED BY THE CONTRACTOR DURING DETAILED ENGINEERING.

LEGEND:-

VALVES & INSTRUMENTS	
SYMBOL	DESCRIPTION
	PUMP
	GATE VALVE (N.O)
	GATE VALVE (N.C)
	GATE VALVE (N.O) GENERAL ANGLE
	BUTTERFLY VALVE (N.O.)
	BUTTERFLY VALVE (N.C.)
	BALL VALVE (N.O.)
	BALL VALVE (N.C.)
	GLOBE VALVE (N.O.)
	GLOBE VALVE (N.C.)
	CHECK VALVE (NRV)
	DRAIN VALVE
	AIR RELEASE VALVE
	PRESSURE REDUCING VALVE
	MOTORIZED VALVE
	THREE WAY VALVE
	ECCENTRIC VALVE
	FLOAT VALVE
	SAFETY VALVE
	SOLENOID VALVE - WATER DRAIN
	SOLENOID VALVE - LINE AIR
	PRESSURE GAUGE
	TEMPERATURE INDICATOR
	DIFFERENTIAL PRESSURE GAUGE
	LEVEL INDICATOR
	LEVEL SWITCH
	TEMPERATURE SWITCH
	FLOW SWITCH
	PRESSURE SWITCH
	DIFFERENTIAL PR. SWITCH
	MOTOR
	PRESSURE TRANSMITTER
	FLOW TRANSMITTER & SWITCH
	TEMPERATURE TRANSMITTER

FOR TENDER PURPOSE ONLY

REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	FOR APPROVAL
<p>OWNER :</p> <p style="text-align: center;">ASSAM POWER GENERATION CORPORATION LTD.</p>						
<p>PROJECT :</p> <p style="text-align: center;">KARBI-LANGPI MIDDLE-II (3X8 MW) ASSAM, INDIA</p>						
<p>TITLE:</p> <p style="text-align: center;">DRAINAGE & DEWATERING SYSTEM FLOW DIAGRAM</p>						
<p>TRACTEBEL</p> <p>TRACTEBEL Engineering pvt. Ltd.</p>		<p>Project No. P.020318</p>		<p>Discipline Code TE-E&M-GAD</p>		<p>Sheet 1 OF 1</p> <p>Rev. 0</p>



NOTES:
 THE SCHEMATIC DIAGRAM AND VARIOUS EQUIPMENTS & DEVICES SHOWN IN THE DRAWING ARE INDICATIVE ONLY FOR GUIDANCE AND DOES NOT SHOW ALL DEVICES, INSTRUMENTATION & VALVES ETC REQUIRED AS PER TECH. SPECIFICATIONS AND COMPLETENESS OF THE SYSTEM. ACTUAL SCHEME SHALL BE FINALIZED BY THE CONTRACTOR DURING DETAILED ENGINEERING.

LEGEND:-

VALVES & INSTRUMENTS	
SYMBOL	DESCRIPTION
	PUMP
	GATE VALVE (N.O)
	GATE VALVE (N.C)
	GATE VALVE (N.O.) GENERAL ANGLE
	BUTTERFLY VALVE (N.O.)
	BUTTERFLY VALVE (N.C.)
	BALL VALVE (N.O.)
	BALL VALVE (N.C.)
	GLOBE VALVE (N.O.)
	GLOBE VALVE (N.C.)
	CHECK VALVE (NRV)
	DRAIN VALVE
	AIR RELEASE VALVE
	PRESSURE REDUCING VALVE
	MOTORIZED VALVE
	THREE WAY VALVE
	ECCENTRIC VALVE
	FLOAT VALVE
	SAFETY VALVE
	SOLENOID VALVE - WATER DRAIN
	SOLENOID VALVE - LINE AIR
	PRESSURE GAUGE
	TEMPERATURE INDICATOR
	DIFFERENTIAL PRESSURE GAUGE
	LEVEL INDICATOR
	LEVEL SWITCH
	TEMPERATURE SWITCH
	FLOW SWITCH
	PRESSURE SWITCH
	DIFFERENTIAL PR. SWITCH
	MOTOR
	PRESSURE TRANSMITTER
	FLOW TRANSMITTER & SWITCH
	TEMPERATURE TRANSMITTER

FOR TENDER PURPOSE ONLY

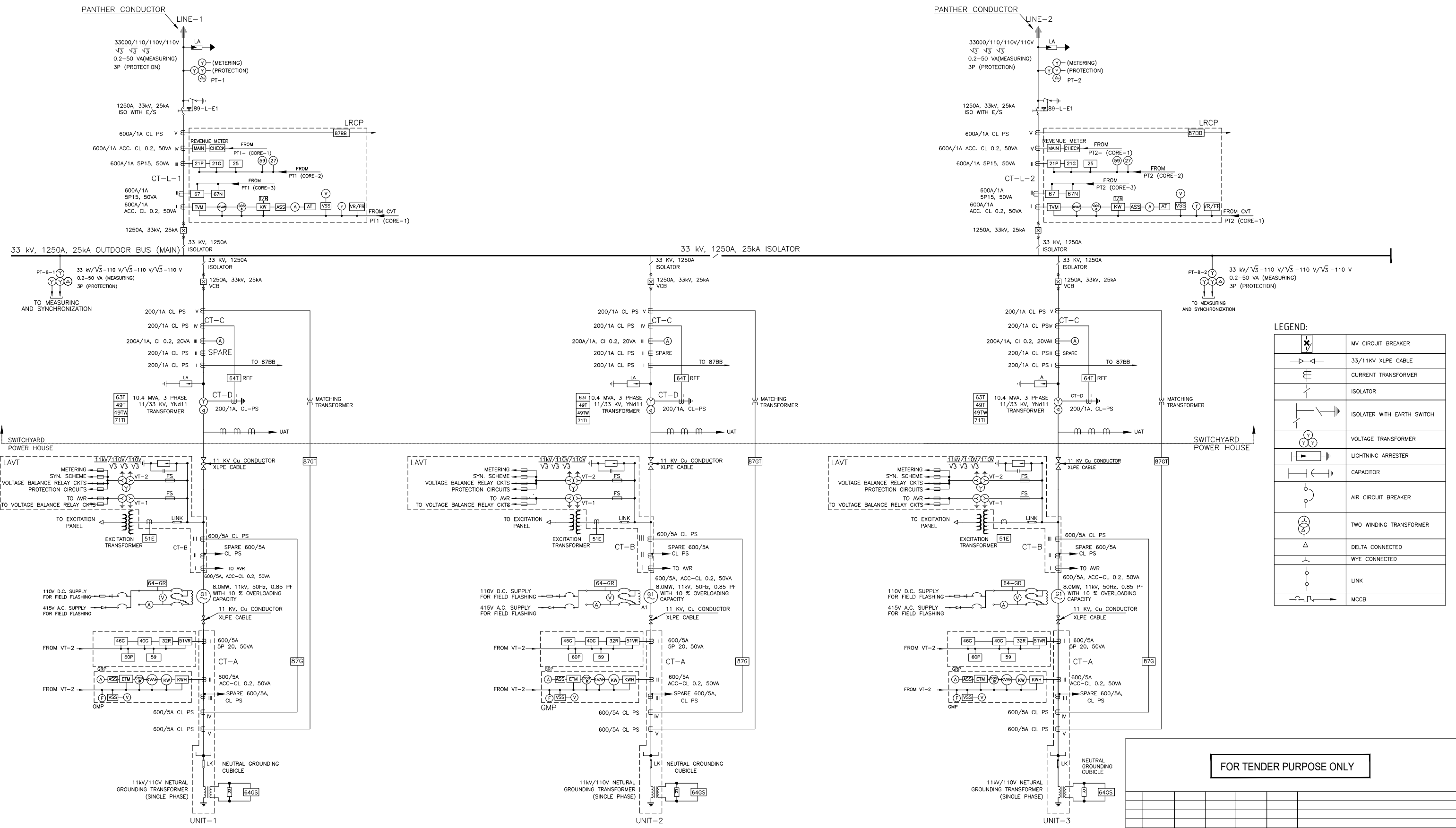
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	FOR APPROVAL
						SUBJECT OF REVISION

OWNER :
ASSAM POWER GENERATION CORPORATION LTD.

PROJECT : KARBI-LANGPI MIDDLE-II (3X8 MW)
 ASSAM, INDIA

TITLE: DRAINAGE & DEWATERING SYSTEM
 FLOW DIAGRAM

TRACTEBEL <small>engie</small>	Size Scale Sheet Rev.	NTS 1 OF 1 0	Project No. Discipline Code Serial No.
TRACTEBEL Engineering pvt. Ltd.	P.020318	TE-E&M-GAD	9753



LEGEND:

	MV CIRCUIT BREAKER
	33/11KV XLPE CABLE
	CURRENT TRANSFORMER
	ISOLATOR
	ISOLATOR WITH EARTH SWITCH
	VOLTAGE TRANSFORMER
	LIGHTNING ARRESTER
	CAPACITOR
	AIR CIRCUIT BREAKER
	TWO WINDING TRANSFORMER
	DELTA CONNECTED
	WYE CONNECTED
	LINK
	MCCB

GENERAL NOTES:

- ALL THREE GENERATING UNITS ARE IDENTICAL IN ALL RESPECT.
- METERING & PROTECTIONS PROVIDED SHALL BE SAME FOR ALL GENERATORS.
- SYNCHRONISING TROLLEY SHALL BE USED FOR SYNCHRONISING EACH GENERATOR WITH THE BUS.
- ALL CABLES SHALL BE FRLS (FIRE RETARD LOW SMOKE TYPE)
- ALL CT CORES SHALL BE SHORTED WHILE NOT IN USE.
- ALL CT CABLE SHALL BE 6 MM. Sq. STRANDED SCREEN COPPER PVC INSULATED AND FRLS.
- ALL PT CABLE SHALL BE 4 MM. Sq. STRANDED SCREEN COPPER PVC INSULATED AND FRLS.
- ALL OTHER CABLE SHALL BE 2.5 MM. Sq. STRANDED COPPER PVC INSULATED AND FRLS.
- ALL GLANDS TO BE USED SHALL BE COMPRESSIBLE AND SHALL BE COPPER.
- ALL THIMBLES TO BE USED SHALL BE OF COPPER.
- ALL CT, PT AND ALL OTHER EQUIPMENT INDICATED IN THE SINGLE LINE DIAGRAM SHALL CONFORM TO THE LATEST IS STANDARD AND CODES.
- ALL METERS SHALL BE PROVIDED WITH TRANSDUCERS FOR REMOTE INDICATION.
- ENERGY METER FOR BILLING PURPOSE WILL BE PROVIDED AT LINE-1 AND LINE-2.
- GENERATOR PROTECTION:-
 - 32R REVERSE POWER
 - 40G LOSS OF EXCITATION
 - 46G NEGATIVE PHASE SEQUENCE
 - 51VR OVERCURRENT TIME RELAY, VOLTAGE CONTROLLED
 - 60P VOLTAGE OR CURRENT BALANCE RELAY

FOR TENDER PURPOSE ONLY

0	12-07-2023	HS	VRS	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

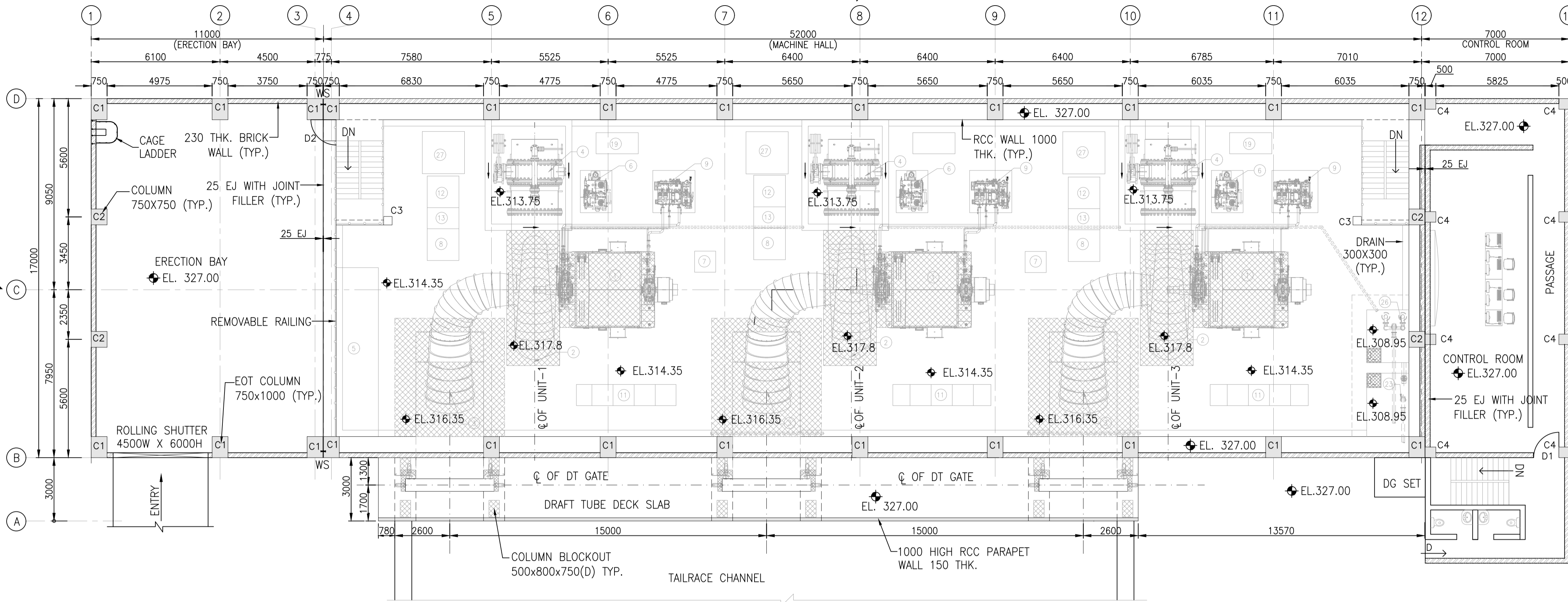
OWNER :
ASSAM POWER PROJECT DEVELOPMENT COMPANY LTD.

PROJECT :
KARBI LANGPI MIDDLE II HEP (3x8.0 MW)

TITLE:
MAIN SINGLE LINE DIAGRAM
RELAYING & METERING

TRACTEBEL 	Size	Scale	Sheet	Rev.
	A1	AS SHOWN	1 OF 1	0
TRACTEBEL Engineering pvt. ltd.		Project No. P.020318	Discipline Code TE-E&M-GAD	Serial No. 9755

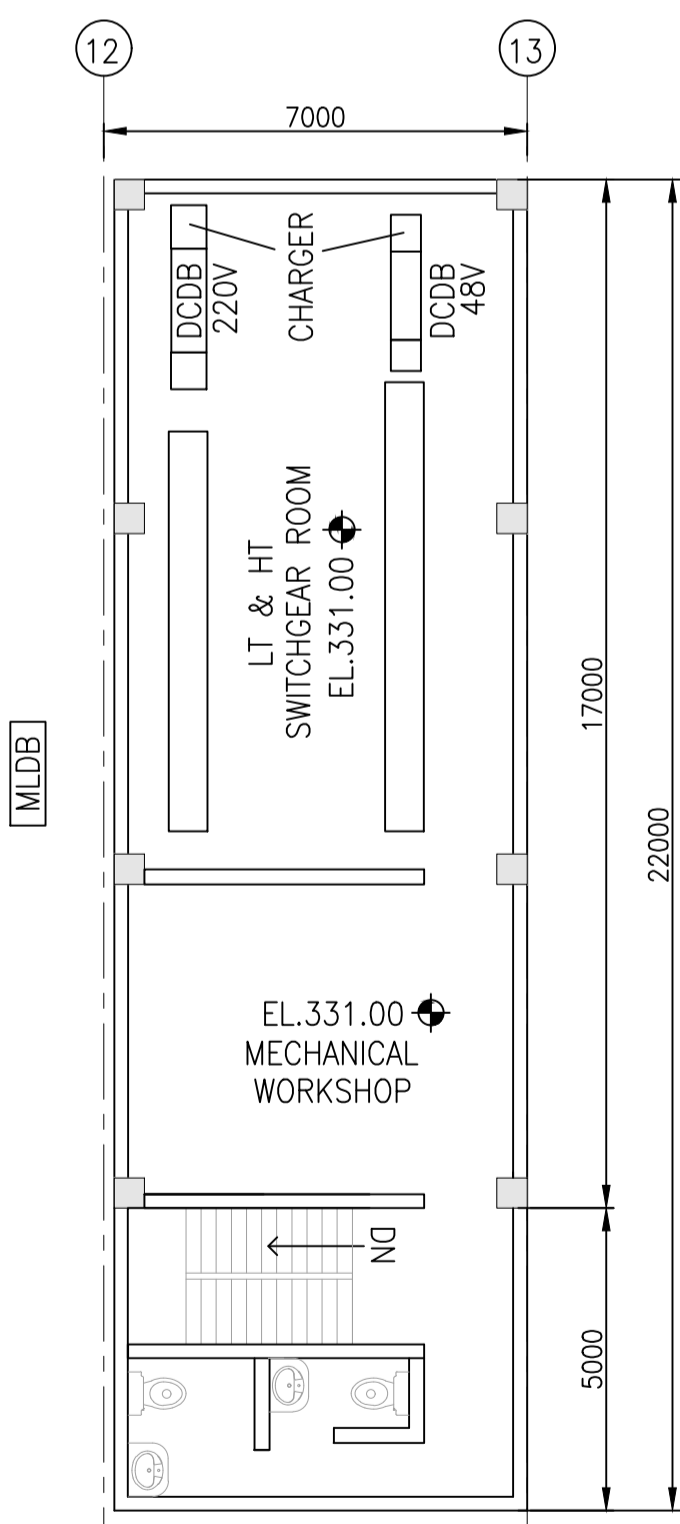
ANNEXURE 10



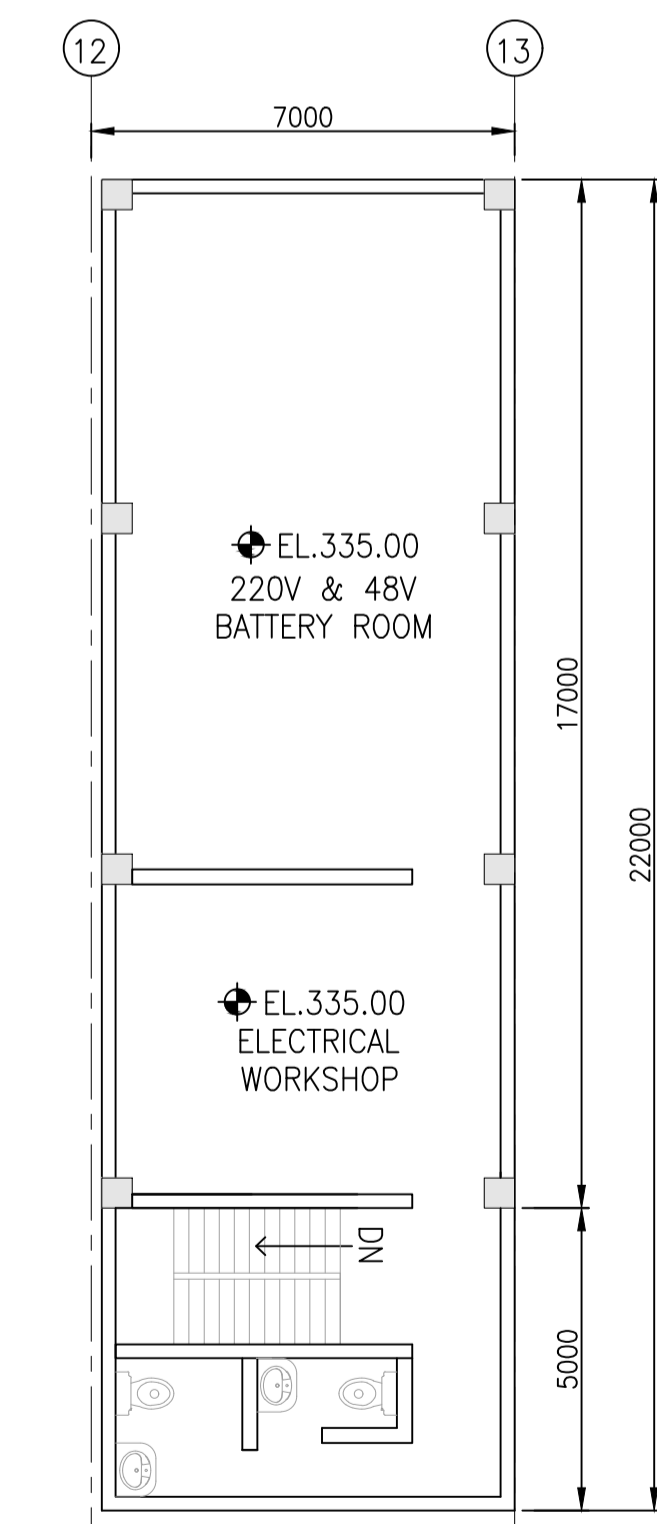
PLAN AT 327.00
(SCALE 1:125)

LEGENDS:-

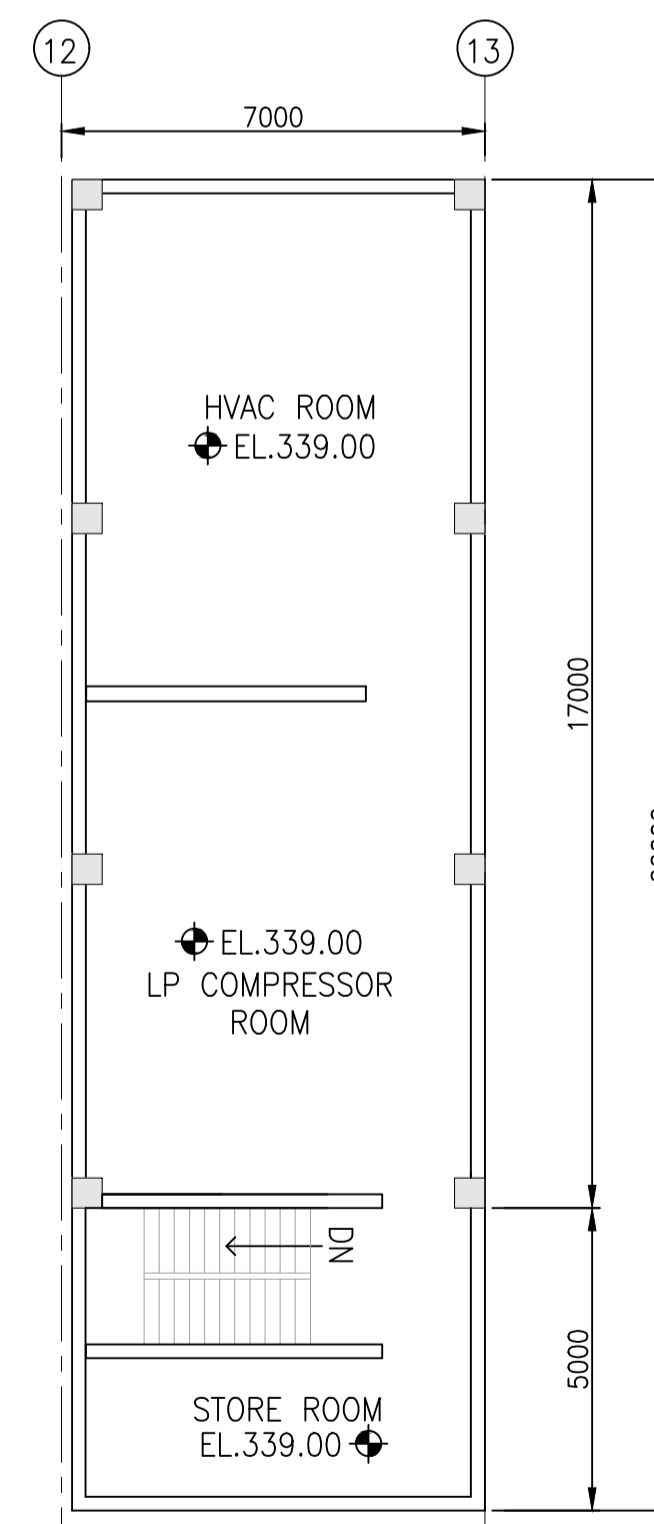
- FIRST STAGE CONCRETE M25
- SECOND STAGE CONCRETE M30
- RCC
- BRICK WALL
- EJ EXPANSION JOINT
- WS WATERSTOP



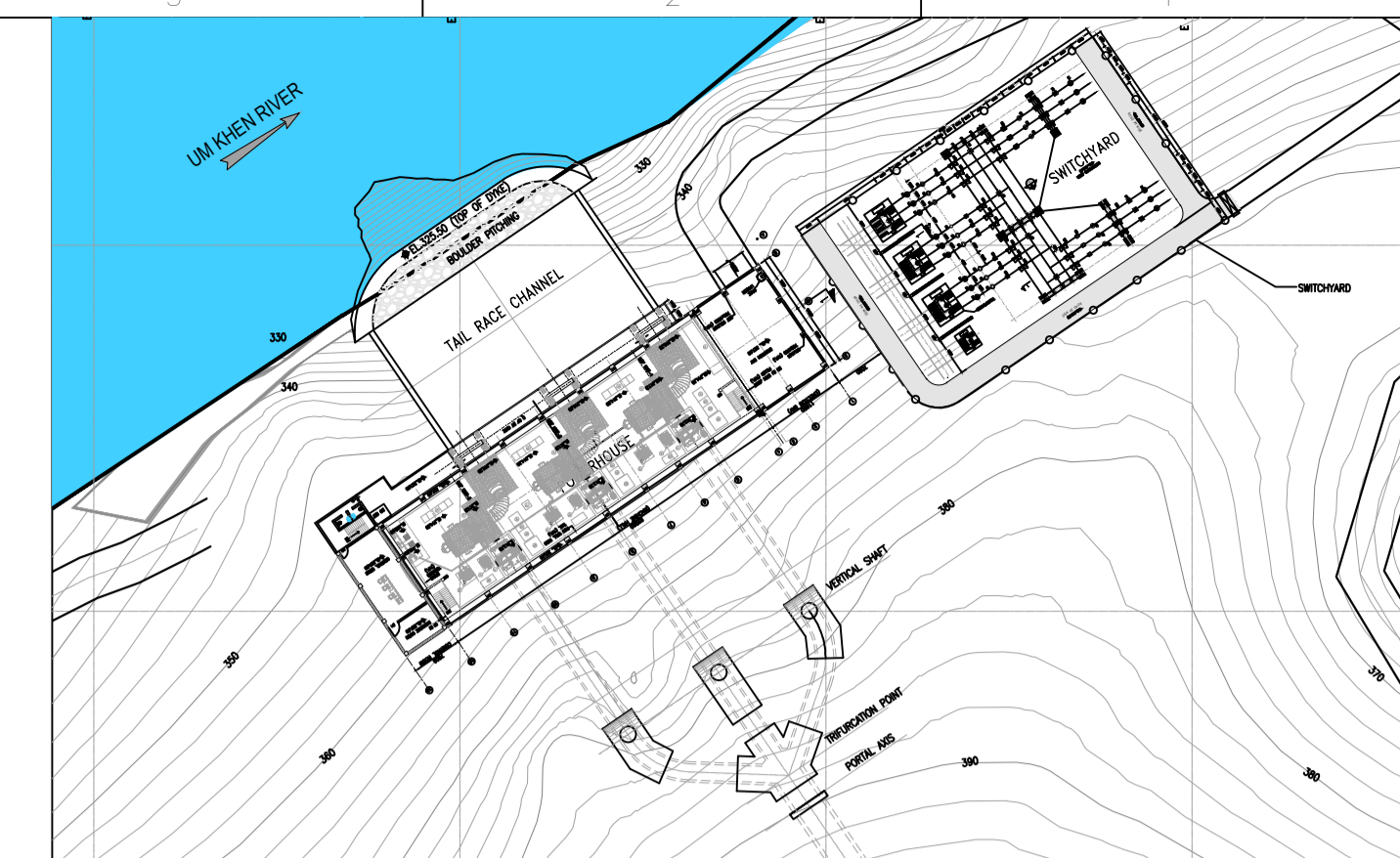
PLAN AT 331.00



PLAN AT 335.00



PLAN AT 339.00



KEY PLAN:-

NOTES:

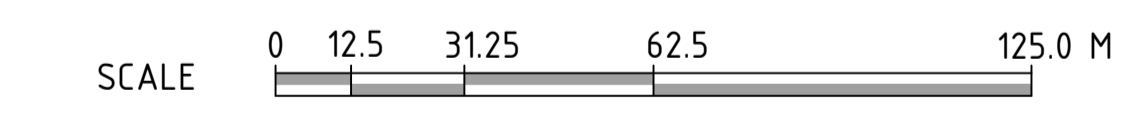
1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS.
2. NO DIMENSION SHALL BE SCALED FROM THE DRAWING, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. FOR E&M & HM DRAWINGS, REFER SEPARATE DRAWINGS TO ITS RESPECTIVE RELEVANT DRAWINGS.
4. E&M AND H&M EMBEDMENT PARTS SHOWN IN DRAWING ARE INDICATED ONLY & E&M AND H&M EMBEDMENT PARTS SHALL BE PLACED AS PER VENDOR DRAWINGS.
5. THIS DRAWING IS PREPARED BASED ON LATEST E&M DRAWING.
6. ALL STRUCTURAL MEMBER OF COLUMNS, BEAMS, DRAINAGE SUMP, RAFT AND WALLS SHALL BE GRADE M25 CONFORMING TO IS:456 2000.
7. THE BACKFILL CONCRETE SHALL BE GRADE M15 CONFORMING TO IS:456 2000.
8. THE SIZE OF TIE BEAMS & COLUMN SHALL BE RE-VERIFIED DURING DESIGN & DETAILING.
9. OVER EXCAVATION SHALL BE FILLED WITH M15 CONCRETE.
10. RAFT, STRUCTURAL ELEMENT OF TIE BEAM, WALL & COLUMNS ARE INDICATIVE ONLY. THE SAME SHALL BE MODIFIED IN CONCRETE OUTLINE DRAWINGS, AFTER FINALIZATION OF STRUCTURAL COMPONENT.
11. LOCAL EXCAVATION SHALL BE DONE FOR LIFT PIT NEAR GRID 3.
12. THE ELEVATION OF E&M EQUIPMENT AT GENERATOR TURBINE FLOOR SHALL BE VERIFIED WITH E&M EQUIPMENT DETAILS DRAWINGS.
13. CABLE TRENCHES DETAIL IN CONTROL ROOM, TRANSFORMER YARD CONNECTIONS TO POWERHOUSE UNITS SHALL BE INCORPORATED IN THE DRAWINGS AFTER FINALIZATION OF E&M SUPPLIER.

BASED ON DRAWING / DOCUMENTS

DRG / DOCUMENT NO.	SUBJECT

REFERENCE DRAWING

DRG. NO.	SUBJECT



REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION
1	15.04.2024	HS	AK	HKD	BSS	GENERAL REVISION
0	12-07-2023	HS	AK	HKD	BSS	FOR APPROVAL

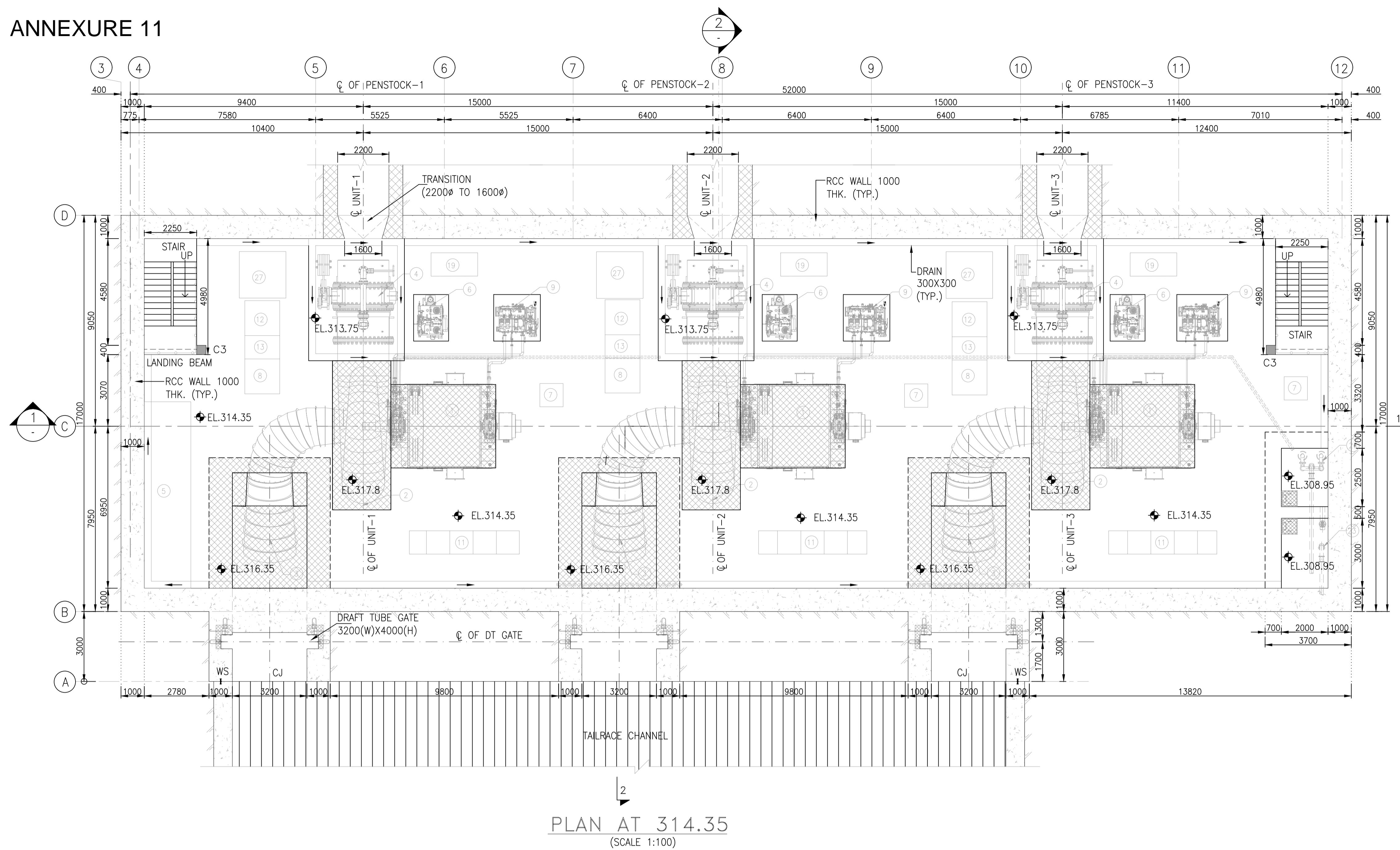
OWNER : **ASSAM POWER GENERATION CORPORATION LTD.**

PROJECT : **KARBI-LANGPI MIDDLE-II (3X8 MW) ASSAM, INDIA**

TITLE: **POWER HOUSE GENERAL ARRANGEMENT PLAN AT EL.327.00**

TRACTEBEL	Size	Scale	Sheet	Rev.
	A1	AS SHOWN	1 OF 4	1
TRACTEBEL Engineering pvt. Ltd.	Project No.	Discipline Code	Serial No.	
	P.020318	TE-E&M-GAD	9751	

ANNEXURE 11



- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS IN METERS, UNLESS OTHERWISE SPECIFIED.
 - DO NOT MEASURE DIMENSIONS ON THE DRAWING, ONLY WRITTEN DIMENSION SHOULD BE FOLLOWED.
 - FOR OTHER NOTES REFER DRAWING NO:-P.020318-TE-E&M-GAD-9751_ SHEET 1 OF 4

- LEGENDS:-**
- FIRST STAGE CONCRETE M25
 - SECOND STAGE CONCRETE M30
 - PLUM CONCRETE M15
 - BRICK WALL
 - EJ EXPANSION JOINT
 - CJ CONTRACTION JOINT
 - WS WATERSTOP
 - ROCK SURFACE

BASED ON DRAWING / DOCUMENTS	
DRG / DOCUMENT NO.	SUBJECT
REFERENCE DRAWING	
DRG. NO.	SUBJECT



1	15.04.2024	HS	AK	HKD	BSS	GENERAL REVISION
0	12-07-2023	HS	AK	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

OWNER :

ASSAM POWER GENERATION CORPORATION LTD.

PROJECT : KARBI-LANGPI MIDDLE-II (3X8 MW)
ASSAM, INDIA

TITLE: POWER HOUSE
GENERAL ARRANGEMENT
PLAN AT EL.314.35

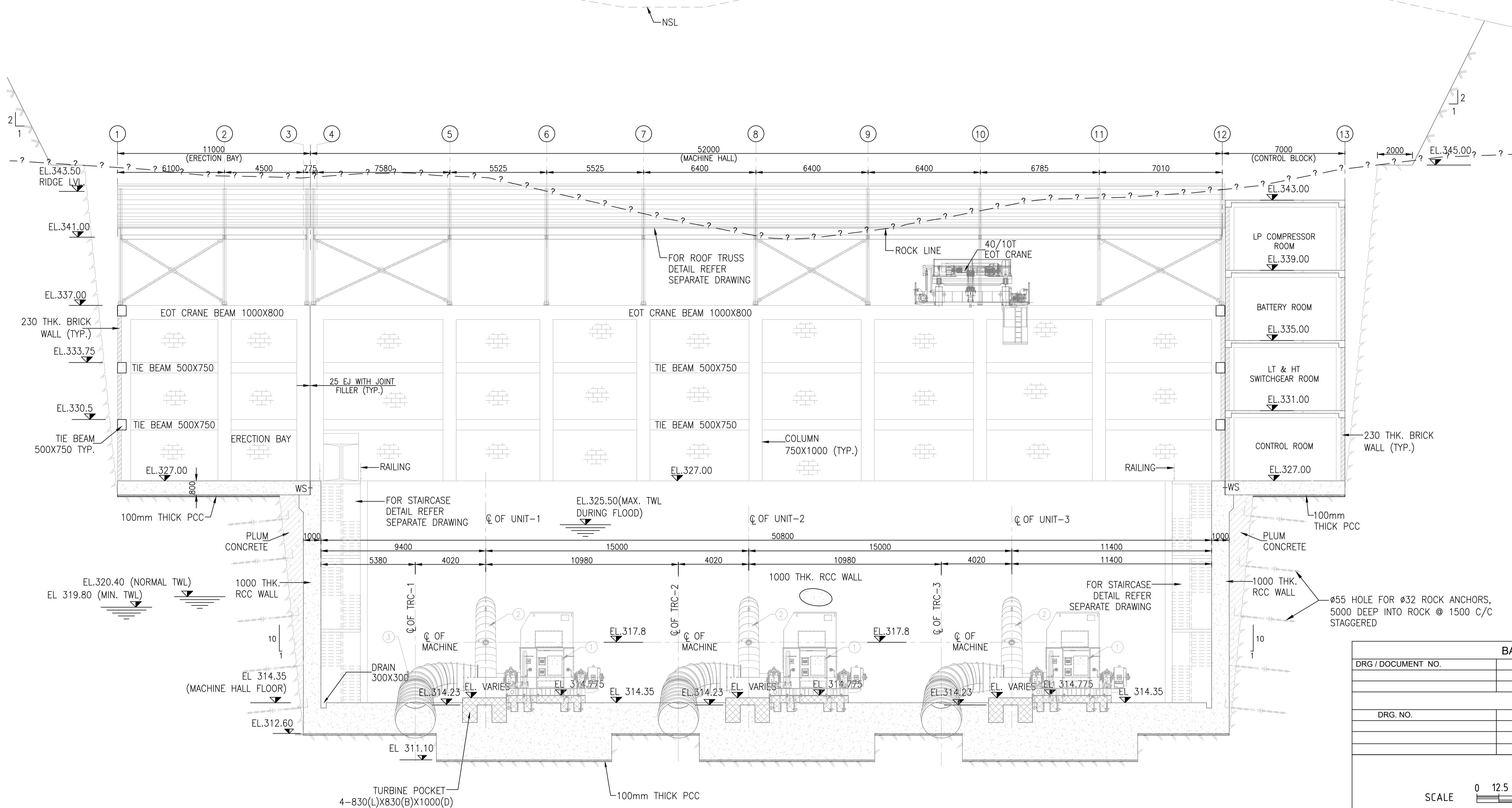
TRACTEBEL	Size	Scale	Sheet	Rev.
	A1	AS SHOWN	2 OF 4	1
TRACTEBEL Engineering pvt. Ltd.	Project No.	Discipline Code	Serial No.	
	P.020318	TE-E&M-GAD	9751	

ANNEXURE 12

- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS IN METERS, UNLESS OTHERWISE SPECIFIED.
 2. DO NOT MEASURE DIMENSIONS ON THE DRAWING, ONLY WRITTEN DIMENSION SHOULD BE FOLLOWED.
 3. FOR OTHER NOTES REFER DRAWING NO:-P.020318-TE-E&M-GAD-9751_ SHEET 1 OF 4

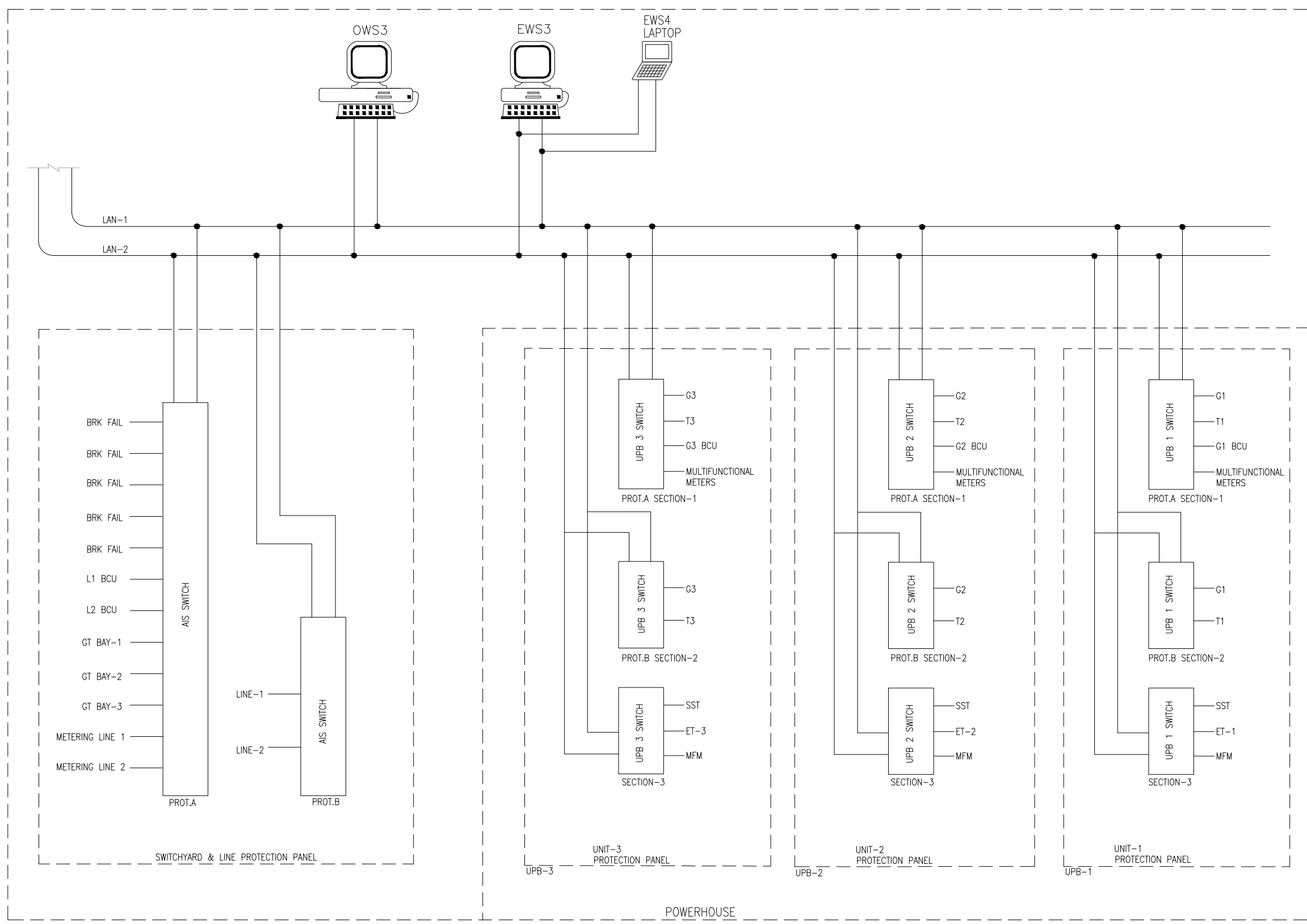
LEGENDS:-

- FIRST STAGE CONCRETE M25
- SECOND STAGE CONCRETE M30
- PLUM CONCRETE M15
- BRICK WALL
- EJ EXPANSION JOINT
- CJ CONTRACTION JOINT
- WS WATERSTOP
- ROCK SURFACE



SECTION 1-1
(SCALE 1:125)


BASED ON DRAWING / DOCUMENTS						
DRG / DOCUMENT NO.	SUBJECT					
REFERENCE DRAWING						
DRG. NO.	SUBJECT					
SCALE						
1	15.04.2024	HS	AK	HKD	BSS	GENERAL REVISION
0	12-07-2023	HS	AK	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION
OWNER :						
ASSAM POWER GENERATION CORPORATION LTD.						
PROJECT :						
KARBI-LANGPI MIDDLE-II (3X8 MW) ASSAM, INDIA						
TITLE:						
POWER HOUSE GENERAL ARRANGEMENT SECTION 1-1						
TRACTEBEL		Size	Scale	Sheet	Rev.	
		A1	AS SHOWN	3 OF 4	1	
TRACTEBEL Engineering pvt. ltd.		Project No.	Discipline Code	Serial No.		
		P.020318	TE-E&M-GAD	9751		



DEFINITION :-
 OWS : OPERATOR WORKSTATION
 EWS : ENGINEER WORKSTATION
 UPB : UNIT PROTECTION BOARD
 LAN : LOCAL AREA NETWORK
 RTU : REMOTE TERMINAL UNIT
 FO : FIBER OPTIC
 AIS : AIR INSULATED SWITCHGEAR

FOR TENDER PURPOSE ONLY

0	06-06-2023	HS	VRS	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

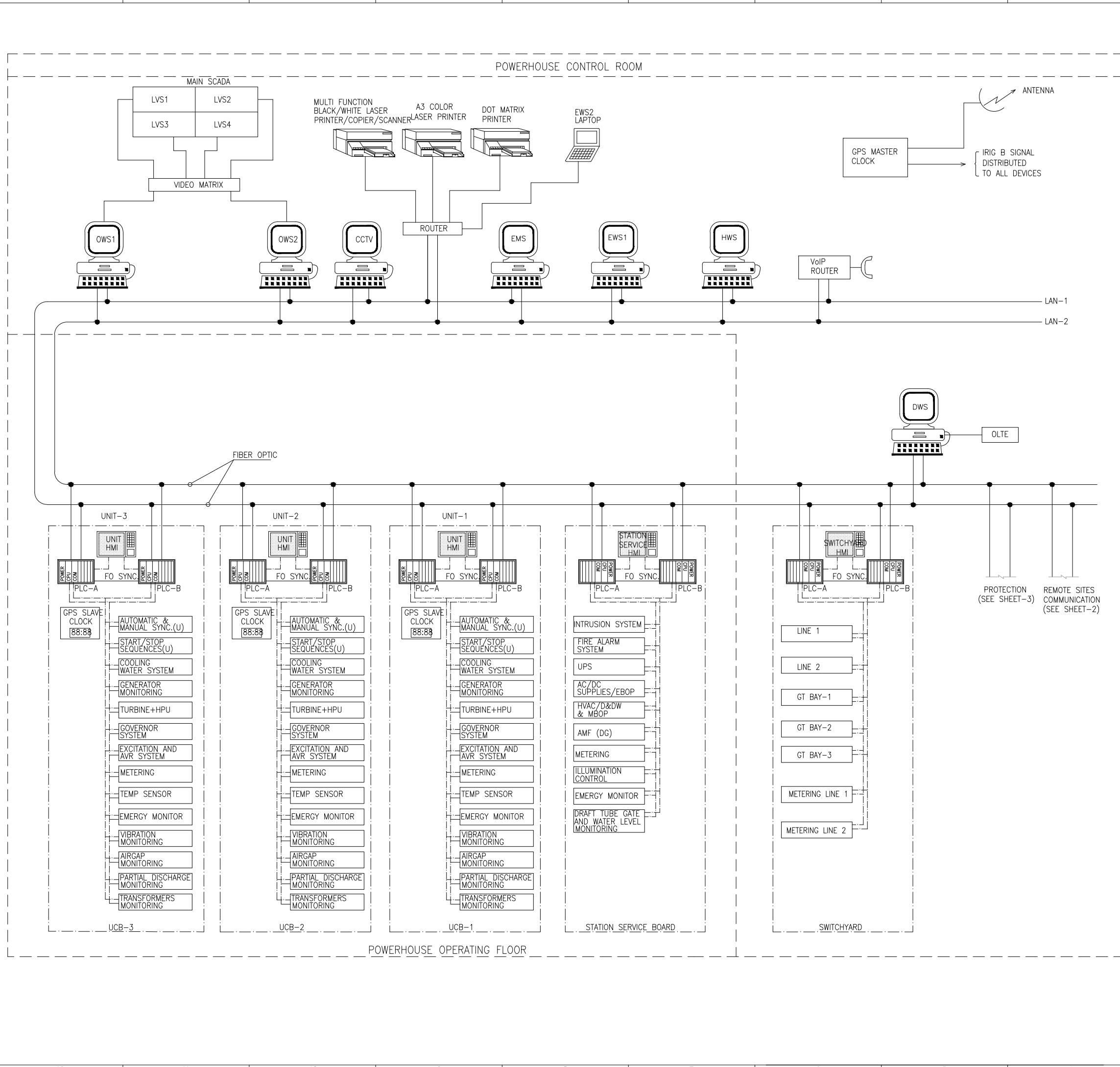
OWNER :
 **ASSAM POWER GENERATION CORPORATION LTD.**

PROJECT : KARBI-LANGPI MIDDLE-II (3X8 MW)
 ASSAM, INDIA

TITLE: POWER HOUSE
 SCADA SYSTEM ARCHITECTURE
 ELECTRICAL PROTECTION

TRACTEBEL
 Project No. P.020318 | Discipline Code TE-E&M-GAD | Serial No. 9759

Size: A1 | Scale: AS SHOWN | Sheet: 3 OF 3 | Rev. 0



NOTES

1. DEVICES INCLUDE: PLC, WORKSTATION PROTECTION RELAYS AND RTU.

RELAYS AND RTU.

ETHERNET SWITCH

DEFINITION :-

OWS : OPERATOR WORKSTATION
 EWS : ENGINEER WORKSTATION
 ZCS : ZOOM CONTROL STATION
 EMS : ENERGY MANAGEMENT STATION
 LVS : LARGE VIDEO SCREEN
 DWS : DISPATCH WORKSTATION
 HWS : HISTORIAN WORKSTATION
 CCTV : CLOSED-CIRCUIT TELEVISION
 VoIP : VOICE OVER INTERNET PROTOCOL
 FO : FIBER OPTIC
 PLCC : POWER LINE CARRIER COMMUNICATION
 LAN : LOCAL AREA NETWORK
 UCB : UNIT CONTROL BOARD
 CCB : COMMON CONTROL BOARD
 IRIG : INTER RANGE INSTRUMENTATION GROUP
 GPS : GLOBAL POSITIONING SYSTEM
 AIS : AIR INSULATED SWITCHGEAR
 OLTE : OPTICAL LINE TERMINAL EQUIPMENT



FOR TENDER PURPOSE ONLY

0	12-07-2023	HS	VRS	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

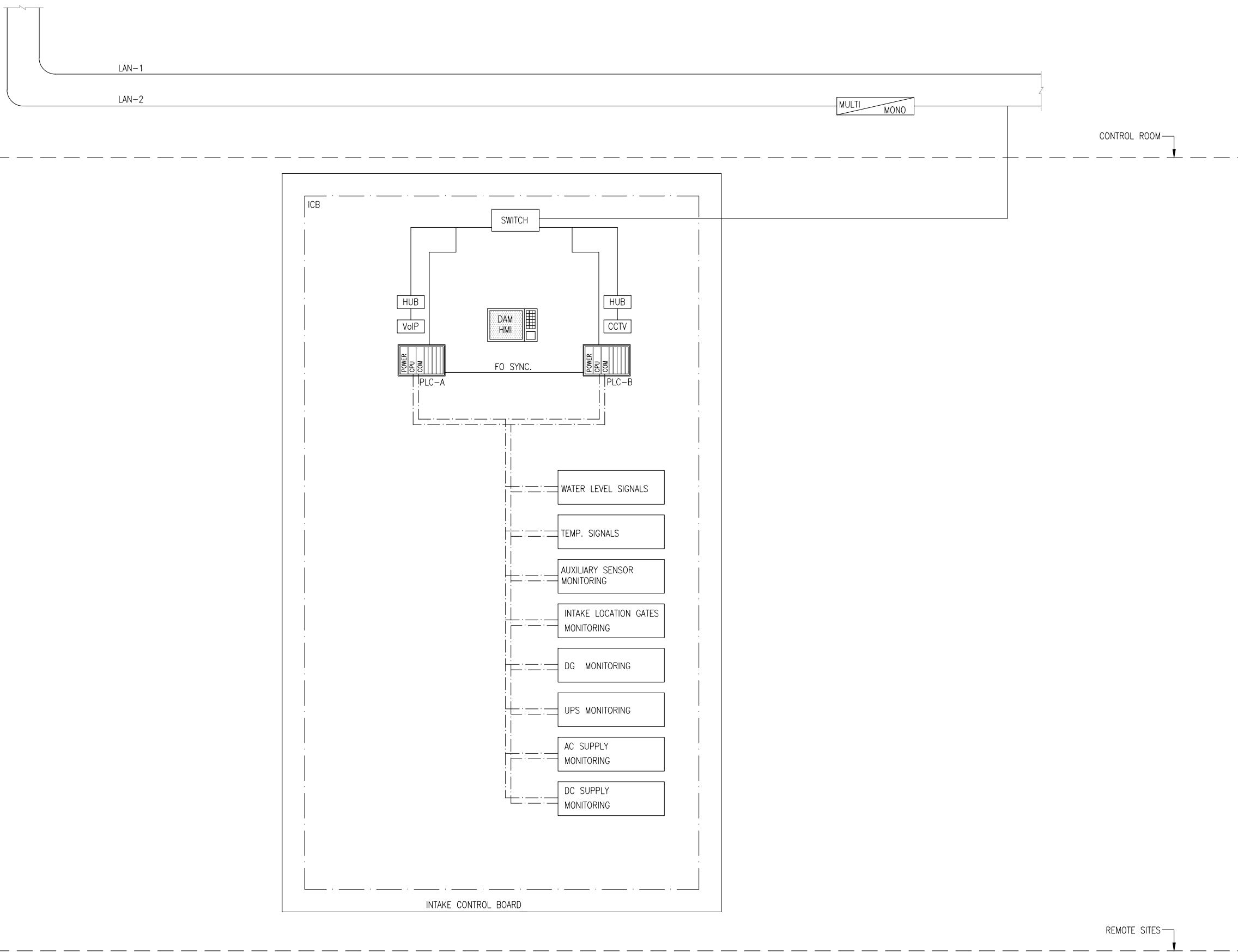
OWNER :

ASSAM POWER GENERATION CORPORATION LTD.

PROJECT : KARBI-LANGPI MIDDLE-II (3X8 MW) ASSAM, INDIA

TITLE: POWER HOUSE SCADA SYSTEM ARCHITECTURE GENERAL


(SEE SHEET-1)
REMOTE SITES
COMMUNICATION



DEFINITION :-
 OWS : OPERATOR WORKSTATION
 ICB : INTAKE CONTROL BOARD
 SCB : SPILLWAY CONTROL BOARD
 CCTV : CLOSED-CIRCUIT TELEVISION
 VoIP : VOICE OVER INTERNET PROTOCOL
 FO : FIBER OPTIC
 LAN : LOCAL AREA NETWORK
 HMI : HUMAN MACHINE INTERFACE
 CPU : CENTRAL PROCESSING UNIT
 PLC : PROGRAMMABLE LOGIC CONTROLLER VALVE
 PPBV : PENSTOCK PROTECTION BUTTERFLY
 OPU : OIL PRESSURE UNIT
 PRPFM: PENSTOCK RUPTURING PROTECTION FLOW METER


FOR TENDER PURPOSE ONLY

REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION
0	12-07-2023	HS	VRS	HKD	BSS	FOR APPROVAL

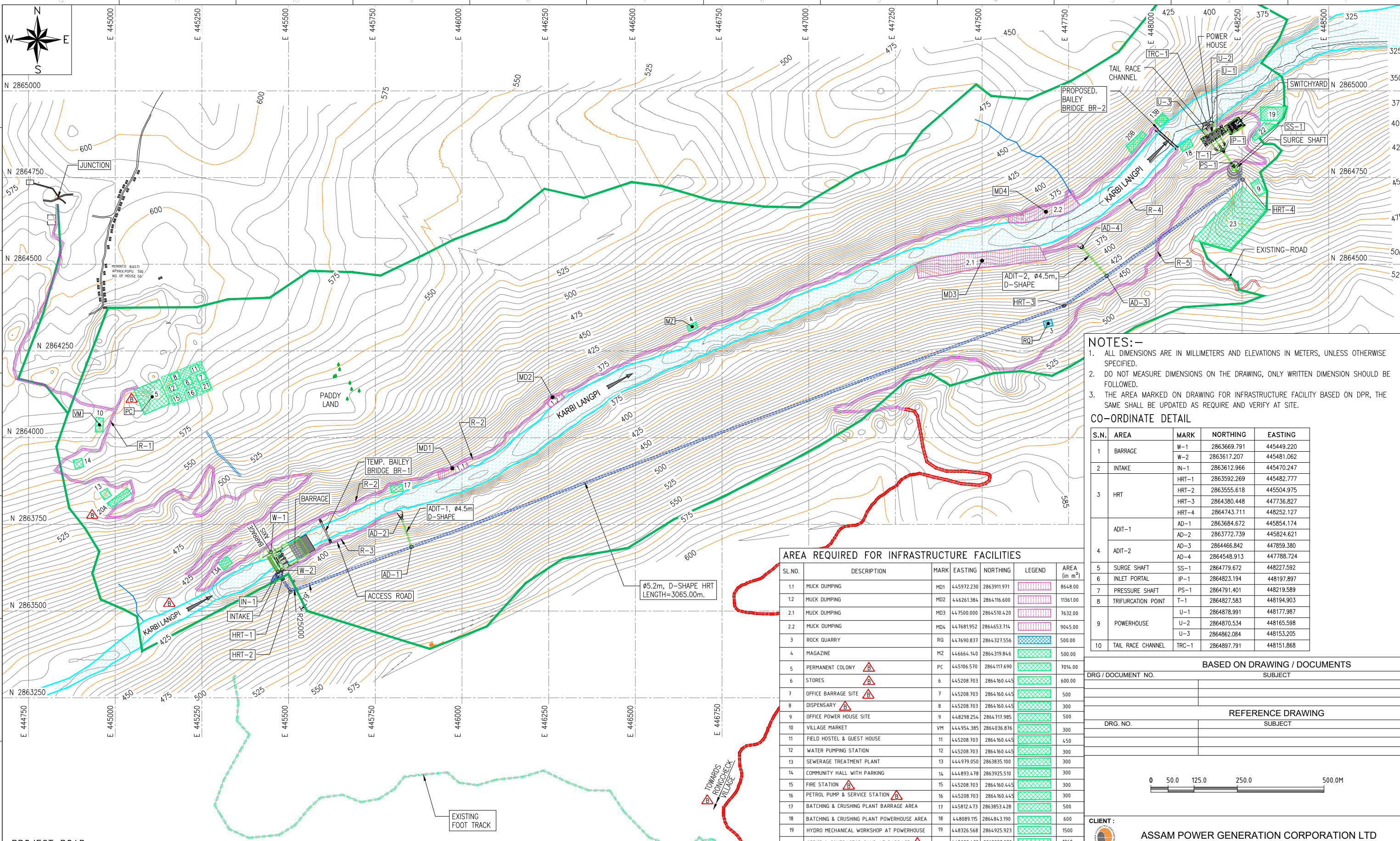
OWNER :
 **ASSAM POWER GENERATION CORPORATION LTD.**

PROJECT :
**KARBI-LANGPI MIDDLE-II (3X8 MW)
 ASSAM, INDIA**

TITLE:
**POWER HOUSE
 SCADA SYSTEM ARCHITECTURE
 REMOTE SITES COMMUNICATION**

TRACTEBEL 

Size	Scale	Sheet	Rev.
A1	AS SHOWN	2 OF 3	0
Project No.	Discipline Code	Serial No.	
TRACTEBEL Engineering pvt. ltd.	P.020318	TE-E&M-GAD	9759



- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS IN METERS, UNLESS OTHERWISE SPECIFIED.
 2. DO NOT MEASURE DIMENSIONS ON THE DRAWING, ONLY WRITTEN DIMENSION SHOULD BE FOLLOWED.
 3. THE AREA MARKED ON DRAWING FOR INFRASTRUCTURE FACILITY BASED ON DPR, THE SAME SHALL BE UPDATED AS REQUIRE AND VERIFY AT SITE.

CO-ORDINATE DETAIL

S.N.	AREA	MARK	NORTHING	EASTING
1	BARRAGE	W-1	2863669.791	445449.220
		W-2	2863617.207	445481.062
2	INTAKE	IN-1	2863612.966	445470.247
		HRT-1	2863592.269	445482.777
3	HRT	HRT-2	2863555.618	445504.975
		HRT-3	2864380.448	447736.827
		HRT-4	2864743.711	448252.127
		ADIT-1	AD-1	2863684.672
4	ADIT-2	AD-2	2863772.739	445824.621
		AD-3	2864466.842	447859.380
		AD-4	2864548.913	447788.724
		SS-1	2864779.672	448227.592
6	INLET PORTAL	IP-1	2864823.194	448197.897
7	PRESSURE SHAFT	PS-1	2864791.401	448219.589
8	TRIFURCATION POINT	T-1	2864827.583	448194.903
		U-1	2864878.991	448177.987
		U-2	2864870.534	448165.598
9	POWERHOUSE	U-3	2864862.084	448153.205
		TRC-1	2864897.791	448151.868

AREA REQUIRED FOR INFRASTRUCTURE FACILITIES

SL.NO.	DESCRIPTION	MARK	EASTING	NORTHING	LEGEND	AREA (in m ²)
1.1	MUCK DUMPING	MD1	445972.230	2863911.971	[Pattern]	8648.00
1.2	MUCK DUMPING	MD2	446261.384	2864116.600	[Pattern]	11361.00
2.1	MUCK DUMPING	MD3	447500.000	2864510.420	[Pattern]	7632.00
2.2	MUCK DUMPING	MD4	447681.952	2864653.714	[Pattern]	9045.00
3	ROCK QUARRY	RO	447690.837	2864327.556	[Pattern]	500.00
4	MAGAZINE	MZ	446664.140	2864319.846	[Pattern]	500.00
5	PERMANENT COLONY	PC	445106.570	2864117.690	[Pattern]	7014.00
6	STORES	[Mark]	445208.703	2864160.445	[Pattern]	600.00
7	OFFICE BARRAGE SITE	[Mark]	445208.703	2864160.445	[Pattern]	500
8	DISPENSARY	[Mark]	445208.703	2864160.445	[Pattern]	300
9	OFFICE POWER HOUSE SITE	[Mark]	448298.254	2864717.985	[Pattern]	500
10	VILLAGE MARKET	VM	444954.385	2864036.876	[Pattern]	300
11	FIELD HOSTEL & GUEST HOUSE	[Mark]	445208.703	2864160.445	[Pattern]	450
12	WATER PUMPING STATION	[Mark]	445208.703	2864160.445	[Pattern]	300
13	SEWERAGE TREATMENT PLANT	[Mark]	444979.050	2863835.100	[Pattern]	300
14	COMMUNITY HALL WITH PARKING	[Mark]	444893.478	2863925.510	[Pattern]	300
15	FIRE STATION	[Mark]	445208.703	2864160.445	[Pattern]	300
16	PETROL PUMP & SERVICE STATION	[Mark]	445208.703	2864160.445	[Pattern]	300
17	BATCHING & CRUSHING PLANT BARRAGE AREA	[Mark]	445812.473	2863853.428	[Pattern]	500
18	BATCHING & CRUSHING PLANT POWERHOUSE AREA	[Mark]	448089.115	2864843.190	[Pattern]	600
19	HYDRO MECHANICAL WORKSHOP AT POWERHOUSE	[Mark]	448326.568	2864925.923	[Pattern]	1500
20A	OFFICE & CONTRACTOR CAMP AT BARRAGE	[Mark]	445038.482	2863837.272	[Pattern]	1860
13A	SEWERAGE TREATMENT PLANT	[Mark]	445317.778	2863638.271	[Pattern]	300
20B	OFFICE & CONTRACTOR CAMP AT POWER HOUSE	[Mark]	447943.461	2864852.827	[Pattern]	1350
13B	SEWERAGE TREATMENT PLANT	[Mark]	448017.541	2864916.017	[Pattern]	300
21	HYDRO MECHANICAL WORKSHOP AT BARRAGE	[Mark]	445208.703	2864160.445	[Pattern]	2100
22	ELECTRO MECHANICAL WORKSHOP	[Mark]	448308.793	2864885.460	[Pattern]	1500
23	33/220 KV SUBSTATION	[Mark]	448225.509	2864620.363	[Pattern]	20000

PROJECT ROAD

S.NO.	MARKING	BANK	SIZE	LENGTH	REMARK
1	R-1	LEFT BANK	6.0m WIDE	3500m	JUNCTION (MORINTO BASTI) TO BARRAGE AXIS
2	R-2	LEFT BANK	6.0m WIDE	2950m	BARRAGE AXIS TO BRIDGE-2
3	R-3	RIGHT BANK	6.0m WIDE	375m	INTAKE TO ADIT-1
4	R-4	RIGHT BANK	6.0m WIDE	600m	BRIDGE-2 TO ADIT-2
5	R-5	RIGHT BANK	6.0m WIDE	2100m	EXISTING ROAD TO POWER HOUSE

PROPOSED BRIDGE

S.NO.	MARKING	SPAN	DECK EL.	BANK	EASTING	NORTHING	REMARK
1	BR-1(40R)	-	EL.387.00	LEFT BANK	445593.272	2863757.606	165m DOWNSTREAM FROM BARRAGE AXIS (APPROX)
				RIGHT BANK	445619.237	2863702.739	
2	BR-2(40R)	-	EL.364.50	LEFT BANK	448008.947	2864882.847	100m UPSTREAM FROM POWERHOUSE SITE
				RIGHT BANK	448057.388	2864838.994	

- LEGENDS:-**
- EXISTING ROAD
 - FOOT TRACK
 - PROPOSED ROAD
 - LAND BOUNDARY
 - BRIDGE
 - RIVER
 - NALLA

PROJECT LAYOUT PLAN
SCALE 1:5000

DATE	REV.NO.	DESCRIPTION	DRAWN	CHECKED	DESIGN	APPD.	DATE
10-12-2024	B	REVISED AS PER CLIENT COMMENT	NVD	HKD	YCD	BSS	-
21-10-2024	A	ISSUED FOR APPROVAL PURPOSE	NVD	HKD	YCD	BSS	-

BASED ON DRAWING / DOCUMENTS

DRG / DOCUMENT NO.	SUBJECT

REFERENCE DRAWING

DRG. NO.	SUBJECT

0 50.0 125.0 250.0 500.0M

CLIENT:
ASSAM POWER GENERATION CORPORATION LTD

OE & PMC:
TRACTEBEL ENGINEERING PVT. LTD.
Intec House, 37
Institutional Area, Sector 44
122002, Gurugram-INDIA

PROJECT:
KARBI LANGPI MIDDLE-II HPP (3X8 MW)
ASSAM, INDIA

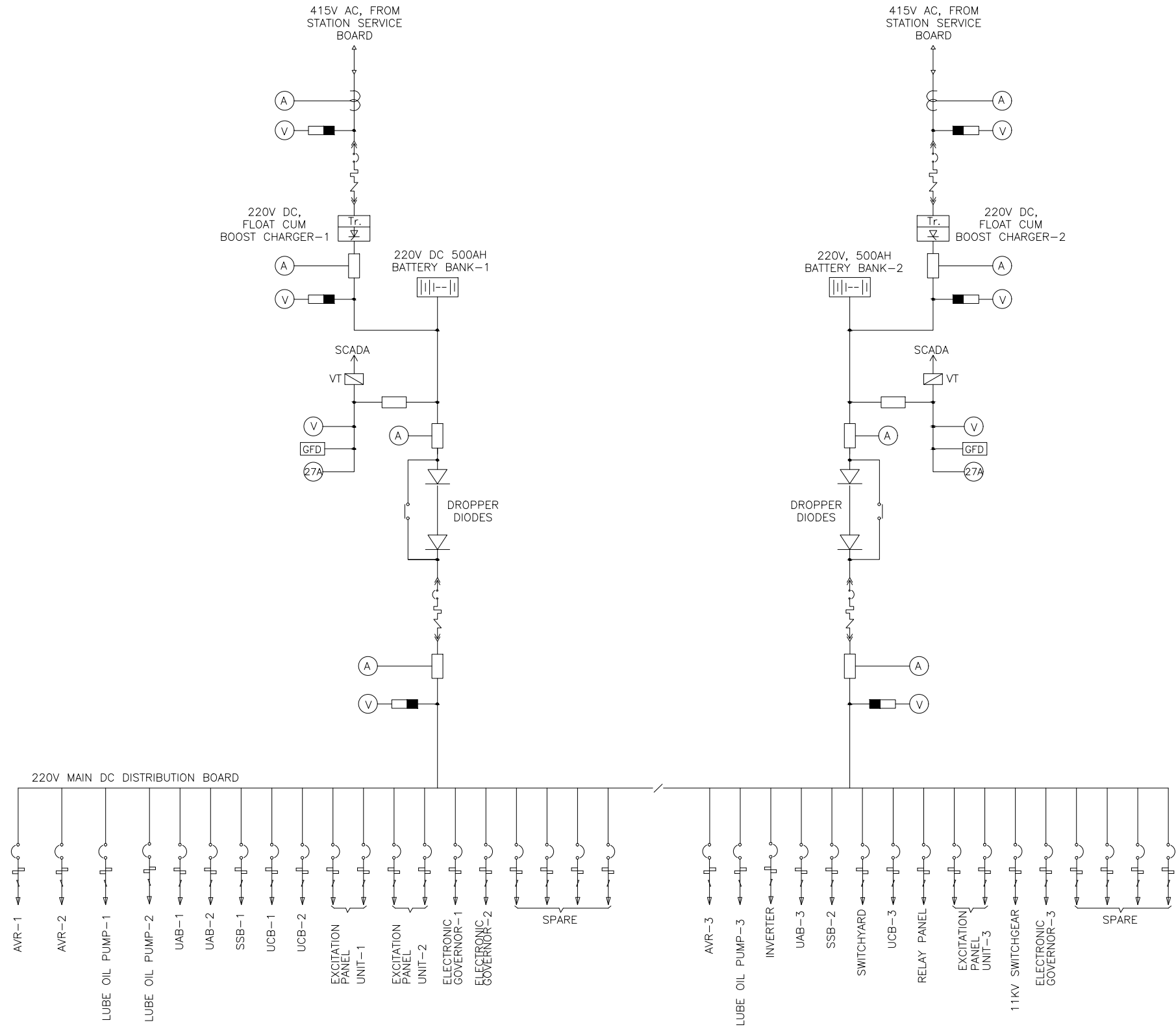
TITLE:
PROJECT AREA
INFRASTRUCTURE FACILITY
LAYOUT PLAN

SHEET
1 OF 1

DRG. No.
P.020318-CD-GEN-GAD-0005

SCALE	SIZE	REV.
1:5000	A1	B

DC SUPPLY FOR POWER HOUSE



NOTES:

1. THIS DRAWINGS DEPICTS THE 220V DC SCHEME ONLY.
2. DC FEEDER RATING & QUANTITIES AS INDICATED IS TENTATIVE ONLY. THE SAME SHALL BE FINALIZED DURING DETAILED ENGINEERING.
3. THE BATTERIES SHALL BE LEAD ACID PLANTE TYPE.
4. MINIMUM 20% SPARE DC FEEDERS SHALL BE KEPT AS SPARE & MINIMUM ONE.
5. DUPLICATE FEEDERS SHALL BE PROVIDED FOR ALL IMPORTANT PANELS.

LEGEND:-

MCCB	
DOUBLE POLE MCB	
AMMETER	
FUSE	
DIODE	
CONTACTOR	
VOLTMETER	

FOR TENDER PURPOSE ONLY

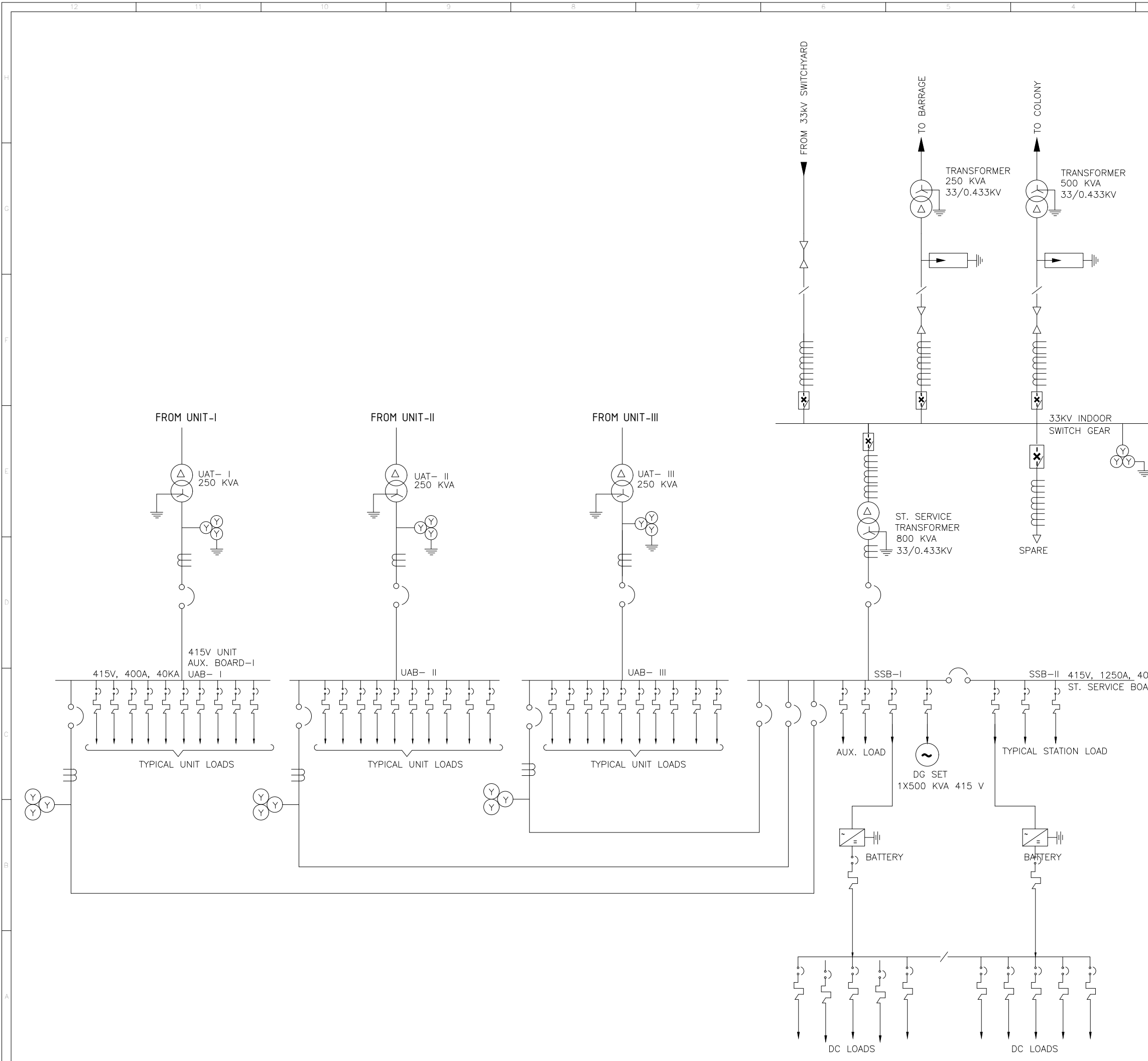
0	12-07-2023	HS	VRS	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

OWNER :
ASSAM POWER PROJECT DEVELOPMENT COMPANY LTD.

PROJECT :
 KARBI LANGPI MIDDLE II HEP (3x8.0 MW)

TITLE:
 SINGLE LINE DIAGRAM
 220 V DC SYSTEM

 TRACTEBEL Engineering pvt. ltd.	Size	Scale	Sheet	Rev.
	A1	AS SHOWN	1 OF 1	0
Project No.	Discipline Code	Serial No.		
P.020318	TE-E&M-GAD	9757		



- NOTES:**
1. THIS DRAWING SHOWS LT & MV SINGLE LINE DIAGRAM FOR THE PROJECT.
 2. THE NUMBER AND RATING OF EQUIPMENT AND PROTECTIVE INSTRUMENTS AS SHOWN IN THIS DRAWING ARE INDICATIVE ONLY AND MAY UNDER GO CHANGE DURING DETAIL ENGINEERING.
 3. NUMBER OF FEEDERS AS SHOWN IN THE DRAWING IS INDICATIVE ONLY. THE SAME SHALL BE FINALISED DURING DETAILED ENGINEERING STAGE.

LEGEND:-

SYMBOL	LEGEND	DESCRIPTION
		AIR CIRCUIT BREAKER
		MOULDED CASE CIRCUIT BREAKER
		TRANSFORMER
	CT	CURRENT TRANSFORMER
	DG	DIESEL GENERATOR SET
		MV CIRCUIT BREAKER
		11KV XLPE CABLE
		VOLTAGE TRANSFORMER
		LIGHTNING ARRESTER

FOR TENDER PURPOSE ONLY
DATE :- 08-02-2024

0	08.02.2024	SL	VRS	HKD	BSS	FOR APPROVAL
REV.	DATE	DRAWN	DESIGNED	CHECKED	APPROVED	SUBJECT OF REVISION

OWNER :
ASSAM POWER PROJECT DEVELOPMENT COMPANY LTD.

PROJECT :
KARBI LANGPI MIDDLE II HEP (3x8.0 MW)

TITLE:
SINGLE LINE DIAGRAM
LTAC/MV SYSTEM

TRACTEBEL **TRACTEBEL Engineering pvt. Ltd.**

Size	Scale	Sheet	Rev.
A1	AS SHOWN	1 OF 1	0
Project No.	Discipline Code	Serial No.	
P.020318	TE-E&M-GAD	9756	

