

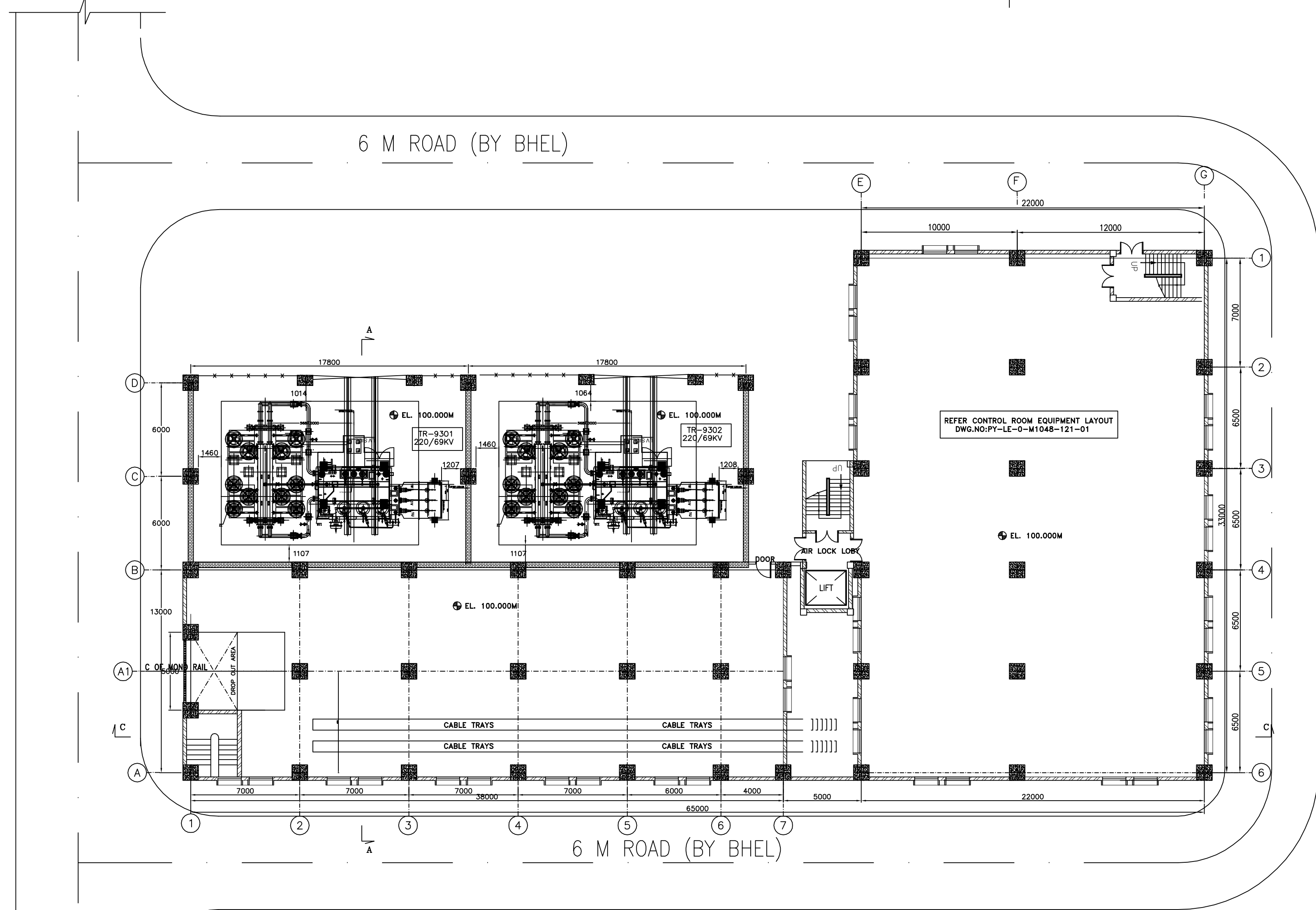
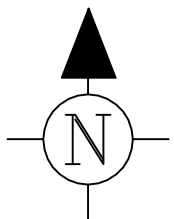
DRG. NO. PY-LE-1-M104-2019-01

SH. OF 2

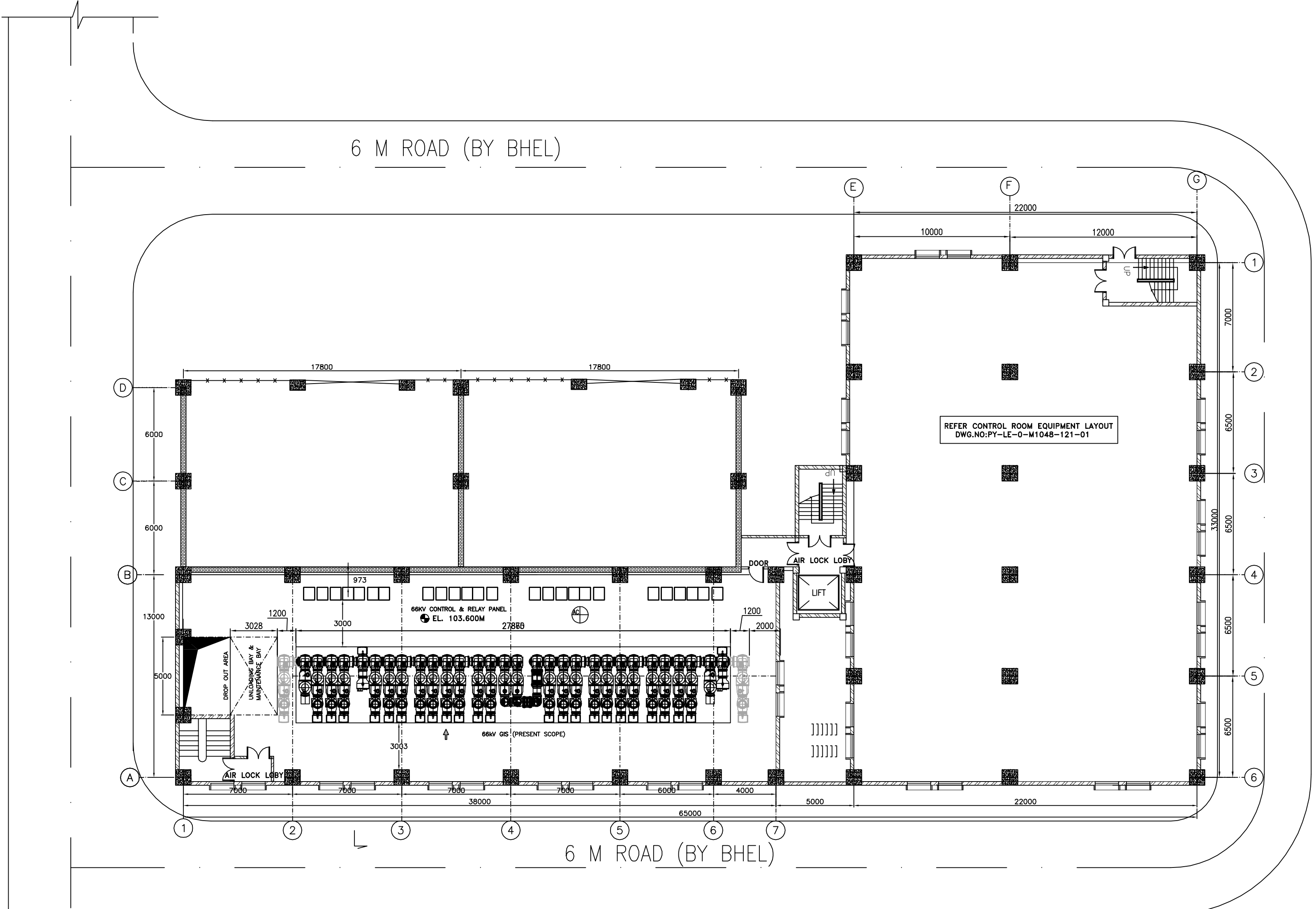
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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

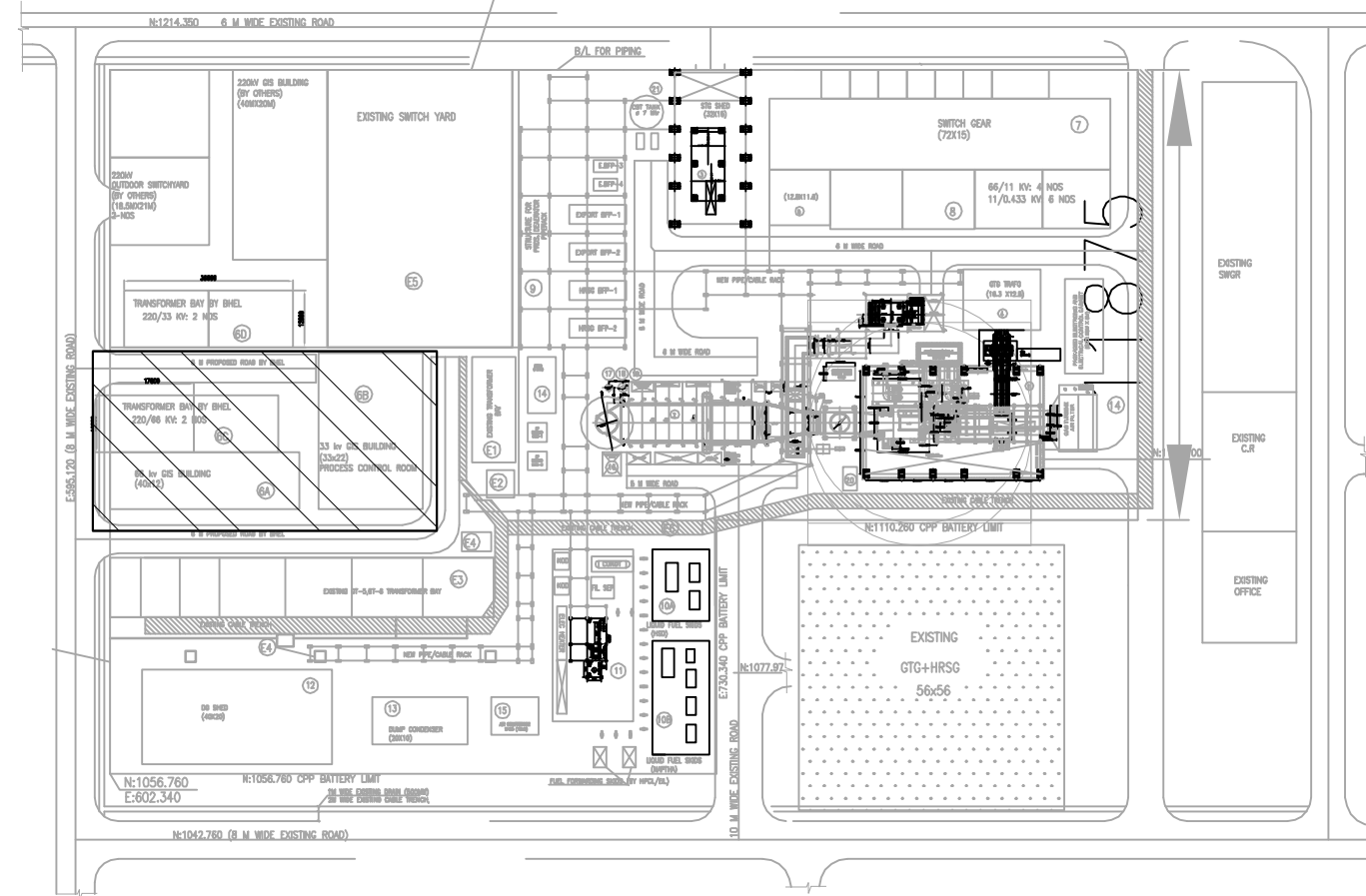
INVENTORY NO SIGN AND DATE REF. DRG. NO. COMPUTER FILE NAME



PLAN AT EL.100.000 M LEVEL FOR 66Kv & 33 Kv GIS BUILDING



PLAN AT EL.103.600 M LEVEL FOR 66Kv & 33 Kv GIS BUILDING



- NOTES:-
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES.
 2. THIS DRAWING SHOWS EQUIPMENT LAYOUT IN SWITCHGEAR ROOM FOR OTHER DETAILS REFER CIVIL ARCHITECTURAL AND MECHANICAL LAYOUT DRAWINGS.
 3. ALL MCCs/PMCC ARE SINGLE FRONT & DRAWOUT TYPE . ALL DBs ARE SINGLE FRONT & DRAW OUT TYPE DESIGN.
 4. ALL THE GRID DIMENSIONS SHOWN IN THE DRAWING ARE FROM CENTER LINE OF THE COLUMNS & SIDE AND REAR CLEARANCES OF PANELS ARE FROM CENTER LINE OF COLUMNS.
 5. FLOOR CUT OUT DETAILS FOR ELECTRICAL PANEL ARRANGEMENT ,CABLE TRAYS ARRANGEMENT IN CELLAR,AND DUCT OPENINGS SHALL BE SHOWN IN THEIR RESPECTIVE DWGS.
 6. DETAILS OF PACKAGES LIKE FIRE FIGHTING PROTECTION, AC AND VENTILATION ETC.APPLICABLE FOR THE SUBSTATION ARE BEING TAKEN CARE BY CONCERNED ENGG. GROUPS & SHALL BE INDICATED IN THEIR RESPECTIVE DRAWINGS.
 7. ALL SWITCH BOARDS AND CONTROL PANELS SHALL HAVE BOTTOM ENTRY FOR CABLES
 8. EQUIPMENT DIMENSIONS INDICATED SHALL BE REVIEWED AFTER RECEIPT OF EQUIPMENT FINAL OUTLINE DRAWINGS FROM RESPECTIVE VENDOR.

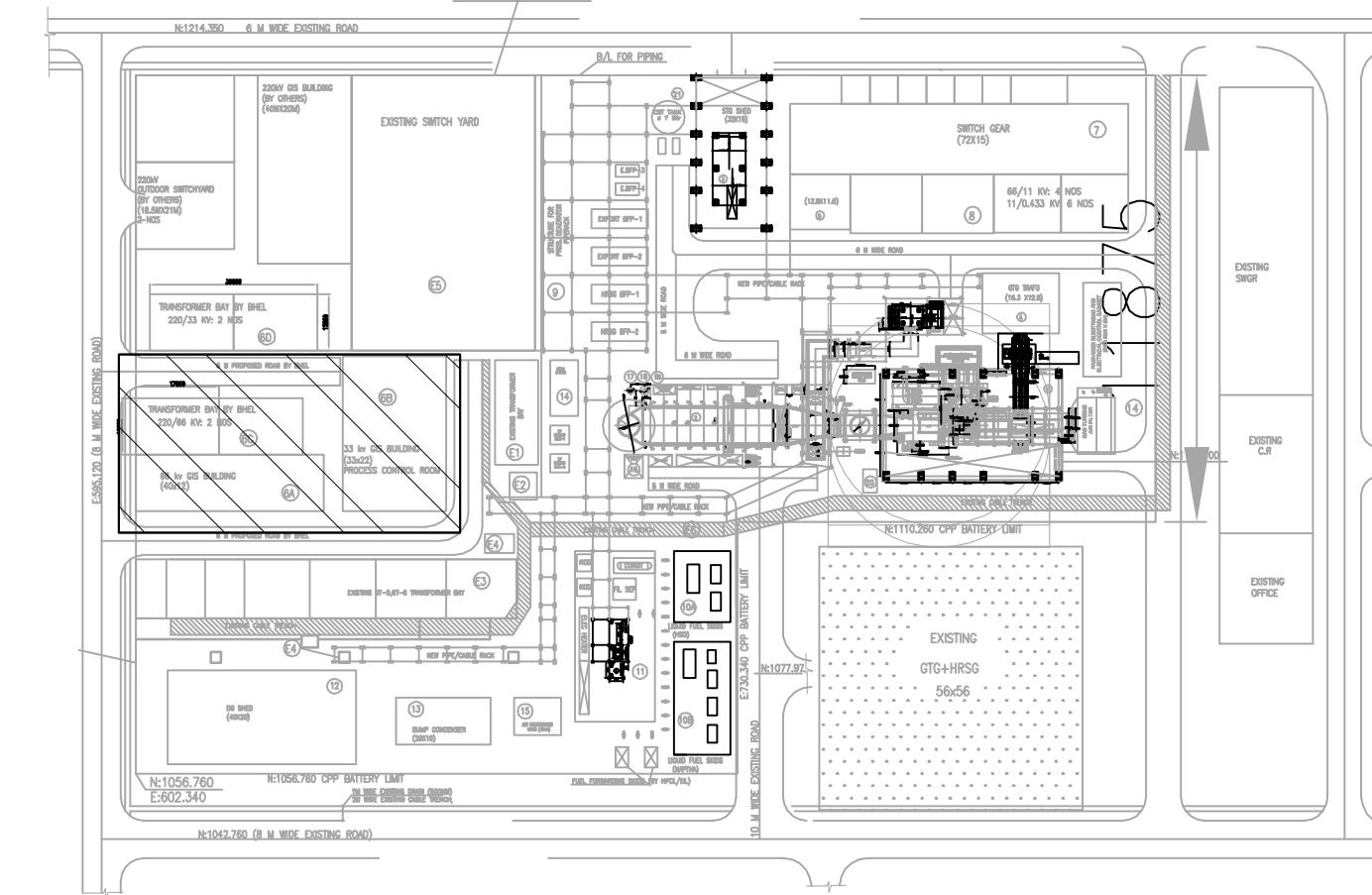
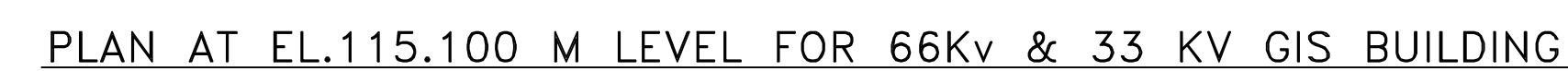
PROJECT: CAPTIVE POWER PLANT (CPP) PACKAGE
VISAKH REFINERY MODERNIZATION PROJECT (VRMP)
JOB NO. B016

OWNER: HINDUSTAN PETROLEUM CORPORATION LIMITED

PMC: ENGINEERS INDIA LIMITED (EIL), NEW DELHI

NAME	SIGN.	DATE	NO.OF VAR.
DRN. A.V.SURESH	--sd--	27.03.18	
CHD. P.SURESH	--sd--	27.03.18	
APPD. J.K.PATTANIK	--sd--	27.03.18	

DEPT. PE&SD CODE.	UNTOQL DIMS. OR C/M/F	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS
450				--N.A.--	--N.A.--	--N.A.--
TITLE: SWITCHGEAR ROOM EQUIPMENT LAYOUT (SS-93)				CARD CODE: N.A.	BHEL DRG NO. PY-LE-1-M104-2019-01	REV. 01
				SHT. No 01	NO. OF SHT. 02	



REFER SHEET-1 OF 2 FOR NOTES

OWNER:  HINDUSTAN PETROLEUM CORPORATION LIMITED

PMC:  ENGINEERS INDIA LIMITED (EIL), NEW DELHI

	BHARAT HEAVY ELECTRICALS LTD.		NAME	SIGN.	DATE	NO V	
	HYDERABAD		DRN.	A.V.SURESH	-sd-		27.03.18
			CHD.	P.SURESH	-sd-		27.03.18
			APPD.	J.K.PATANIK	-sd-		27.03.18

DEPT. PE&SD	UNTO. DIMS. GR.		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEMS
CODE. 450	G/M/F				-N.A.-	-N.A.-	-

TITLE	CARD CODE	BHEL DRG NO.		C
		PY-LE-1-M104-2019-01		
		CUST DRG NO.		
SWITCHGEAR ROOM EQUIPMENT LAYOUT (SS-93)	N.A.	DRG NO.	REV. NO.	00

ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE
CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD		
	ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE	
1			2			3			4			5			6			7		

BHEL's reply to EIL/HPCL comments

DOC. NO.	B016		--
	JOB NO.	TR. NO.	S.NO

PROJECT: VRMP PROJECT, VIZAG
NAME OF PACKAGE: CPP package

CLIENT: M/s HPCL-Vizag
CONTRACTOR: M/s BHEL

SL. NO.	COMMENT/ OBSERVATION	BHE's reply to EIL/HPCL comments
1	DRAWING / DOCUMENT TITLE : SWITCHGEAR ROOM EQUIPMENT LAYOUT (SS-93) DOCUMENT NUMBER: PY-LE-1-M104-2019-01 R 00 CATEGORY/CODE:	
	This is preliminary drawing to finalize the tentative dimensions of the building. Broad comments are as follows	
	<u>At elevation EL. 100.000 M level</u>	
1.1	Indicate the 220/66kV power transformer dimensions and all around clearances available. Indicate the NIFPS system of the 220/66kV power transformers.	Noted and incorporated in the revised layout drawing
1.2	Lift may be relocated to the northside.	Lift position is fixed by taking care entry into 66kV GIS building and 33kV GIS building.
1.3	Cable cellar can be extended upto the control room to utilize the unused space between lift and the cable trays.	Noted.
	<u>At elevation EL. 103.600 M level</u>	
1.4	Indicate the loading / unloading area.	Noted and incorporated in revised equipment layout
1.5	Clarify the extent of coverage of EOT crane above 66kV GIS.	Noted and same will be indicated in the architectural drawings.
1.6	Mono rail shall be provided in the loading / unloading area.	Noted and incorporated in the revised equipment layout
1.7	Airlock lobby shall be provided for entry into the GIS hall.	Noted and incorporated in the revised equipment layout
1.8	Indicate the equipment entry door.	Noted and indicated revised layout
1.9	Show wall on west side of the GIS air conditioned hall.	
1.10	66kV GIS switchgear hall shall be sized considering 2 future GIS bays on each side with minimum 2M clearances from future bays to wall. Minimum size of 66kV GIS switchgear room shall be 42M.	1 future bay each side of the 66kV GIS is considered as per standard philosophy.
1.11	Please check whether CRP panels require rear maintenance. If required, minimum 1M rear access shall be provided.	Noted.
1.12	GIS switchgear hall shall be extended upto control room building to utilize the unused space between lift and the cable trays.	Noted
	<u>At elevation EL. 105.500 M level</u>	
1.13	66kV cables shall not pass through 33kV cellar. Separate route for 66kV cables shall be provided.	66kV cables will be routed through 33kV GIS building with sufficient clearances
	<u>At elevation EL. 109.100 M level</u>	
1.14	Indicate giant screen for ECS behind the consoles.	Noted and incorporated in the revised equipment layout
1.15	Indicate the battery charger and batteries for 110V DC system.	Noted and incorporated in the revised equipment layout
1.16	Clearly indicate the panels / consoles supplied by BHEL and supplied by Owner. Dimensions of the panels and consoles to be indicated.	Noted and incorporated in the revised layout
1.17	Indicate the panel dimensions, minimum clearances available. Ensure that minimum clearances as per the tender document are considered.	Noted and incorporated in the revised layout

BHEL's reply to EIL/HPCL comments

DOC. NO.	B016 JOB NO.	TR. NO.	-- S.NO
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PROJECT: VRMP PROJECT, VIZAG
NAME OF PACKAGE: CPP package

CLIENT: M/s HPCL-Vizag
CONTRACTOR: M/s BHEL

SL. NO.	COMMENT/ OBSERVATION	BHE's reply to EIL/HPCL comments
1.18	ECS interface panels (transducer panels, dummy panels and interposing relay panels) supplied by BHEL shall be in the same lineup of ECS RTU panels. BHEL to clearly indicate the number of ECS interface panels considered.	Noted and incorporated in the revised layout
1.19	Space for 2 future panels on each side shall be considered for 33kV GIS.	1 future bay each side of the 33kV GIS is considered as per standard philosophy.
1.20	Indicate the loading and unloading area of the 33kV GIS.	Noted and incorporated in the revised layout
1.21	Indicate air lock lobby for entrance into the electrical control room.	Noted and incorporated in the revised layout
	<u>SECTION "A-A"</u>	
1.22	Minimum 3 Meters clear height shall be provided from bottom of beam in cable cellar below 66kV GIS.	As per specifications 2.5M clear height in cellar is considered.
	<u>SECTION "C-C"</u>	
1.23	Minimum 3 Meters clear height shall be provided from bottom of beam in cable cellar below 33kV GIS.	As per specifications 2.5M clear height in cellar and 4M clear height in switchgear room is considered.
1.24	Minimum 4 meter clear height shall be provided below false ceiling in 33kV GIS room.	
1.25	Indicate false ceiling in electrical control room and 33kV GIS room.	Noted and incorporated in the revised layout
	<u>GENERAL</u>	
1.26	Solar panels shall be provided on the roof top of the substation and the transformer bays.	Noted and indicated in the revised layout

BHEL'S REPLY TO THE EIL/HPCL COMMENTS

CLIENT : M/s HPCL , VIZAG
 PROJECT : VRMP
 PLANT : Captive Power Plant (CPP) Package
 CONTRACTOR : M/s.BHEL, Hyderabad

EIL Job No	B016
EIL Transmission Document No	
Document No	PY-LE-1-M104-2019-01 (2 Sheets) Equipment Layout SS 93
Review Code	2

Sl. No	COMMENTS / OBSERVATION	BHEL's reply to EIL/HPCL comments
	Contractor shall ensure incorporation of following comments during next submission. Contractor to reply his resolution /action taken against each comment in tabular form. Also Contractor to note that, if comments are not incorporated next time, drawings shall not be reviewed & returned.	
	Regardless of the PMC Comments given below, it is contractor's sole responsibility to design and construct the building as per functional and other requirements as given in bid package and conform to all statutory codal provision for the same.	
1	Contractor to note that Internal arrangement of Substation Building, sizes, provision of various rooms/ spaces, sizes of various equipments as indicated in the drawing are not reviewed. Adequacy of sizes, heights of building/ rooms is entirely Contractor's responsibility and it is understood that the above mentioned parameters have been finalized as per the concerned department(s) inputs and functional requirements. In case of any change in these during course of engineering, Contractor shall implement the same without any implication to Owner/ PMC irrespective of code given on Architectural drawings. Contractor to note and confirm.	Noted
2	Cutouts for cables and pipes in floors/ walls/ slabs of switchgear room, Cable Cellar, AC plant room, AHU room shall be as per the respective equipment layout and considering all functional requirements. Contractor to confirm.	Noted
3	Coordinates of the building is not marked in the drawing. It is entirely Contractor's responsibility that the building is located as per approved/ reviewed dwg by EIL. Contractor to note and confirm.	Noted
4	Key plan showing approaches, adjoining facilities, units etc. shall be included in the drawing. Location, orientation & co-ordinate of the building to be marked in	Key plan is indicated in the layout

BHEL'S REPLY TO THE EIL/HPCL COMMENTS

CLIENT : M/s HPCL , VIZAG
 PROJECT : VRMP
 PLANT : Captive Power Plant (CPP) Package
 CONTRACTOR : M/s.BHEL, Hyderabad

EIL Job No	B016
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Review Code	2

	accordance with approved/ reviewed dwg by EIL.	
5	Expansion joint at suitable location to be provided in the building	Noted.
6	Since no doors or openings are marked in the layout, contractor to ensure the provision of door sizes are adequate for entry/ exit of equipments (considering packing size) in all the rooms.	Noted
7	Requirement of fire door/ fire glazed partition in the building as per NBC – 2016 Part IV to be clarified and confirmed by the contractor.	Noted
8	Loading and unloading area shall be provided on both sides of the substation. Monorail shall be provided in the loading and unloading platform	3MX2M loading/unloading platform with mono rail beam is indicated in the revised layout
9	Staircases along with loading and unloading boys to be provided on both side (east as well as west side) of substation	noted
10	Air lock lobby shall be provided at the entrance of the switchgear hall/ GIS hall.	Noted and incorporated in the revised layout
11	Toilets shall be relocated to east/ west side of the switchgear hall. This shall be located along the loading / unloading platform.	Refer control room equipment layout
12	Indicate false ceiling in electrical control room and 33kV GIS room.	Noted and incorporated in the revised layout
13	Minimum 3 Meters clear height shall be provided from bottom of beam in both cable cellars.	As per specifications 2.5M clear height in cellar and 4M clear height in switchgear room is considered.
14	Minimum 4.5 meter clear height from false ceiling shall be provided at switchgear hall/ GIS hall.	
15	Adequate space to be made available above false ceiling and beam bottom for AC ducting layout. According building height shall be provided.	Noted
16	Solar panels shall be provided on the roof top of the substation and the transformer bays.	Noted and incorporated in the revised layout
17	All staircase to be provided upto terrace level	Noted

BHEL'S REPLY TO THE EIL/HPCL COMMENTS

CLIENT : M/s HPCL , VIZAG
 PROJECT : VRMP
 PLANT : Captive Power Plant (CPP) Package
 CONTRACTOR : M/s.BHEL, Hyderabad

EIL Job No	B016
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18	All walls to be flushed outside to have clear elevation (with no column protruding outwards)	Noted and incorporated in the revised layout
19	Location of fire hydrant (1200mm X 750mm – clear dimensions) near staircases to be provided in the drawing.	Same will be incorporated after receipt of vendor data
20	Complete architectural drawings along with detailed plans, elevations, section, doors/ windows details, schedule of internal and external finishes to be provided once the equipment layout is finalized.	Noted