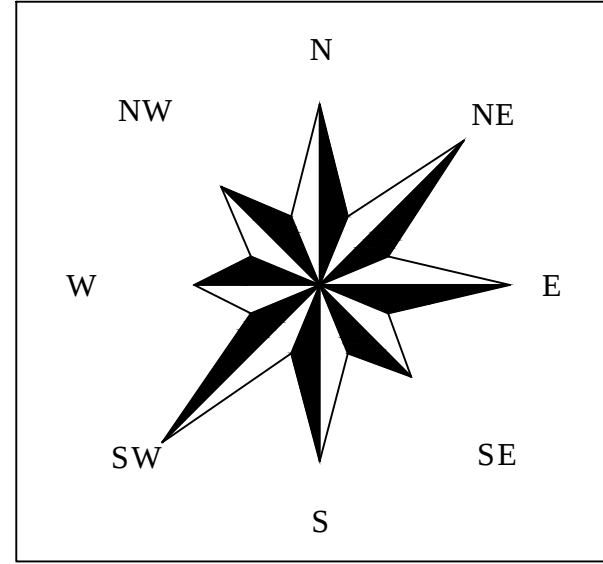
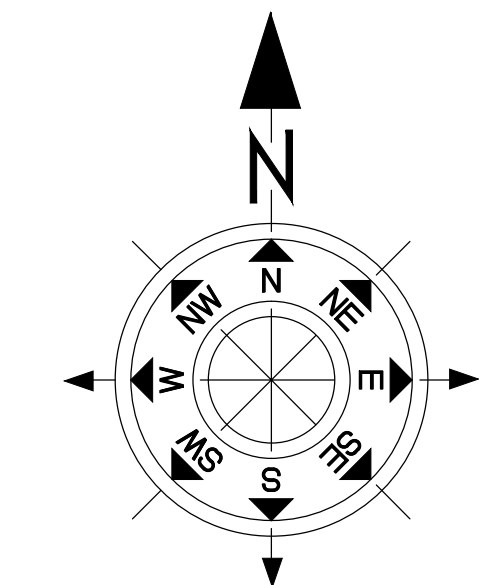
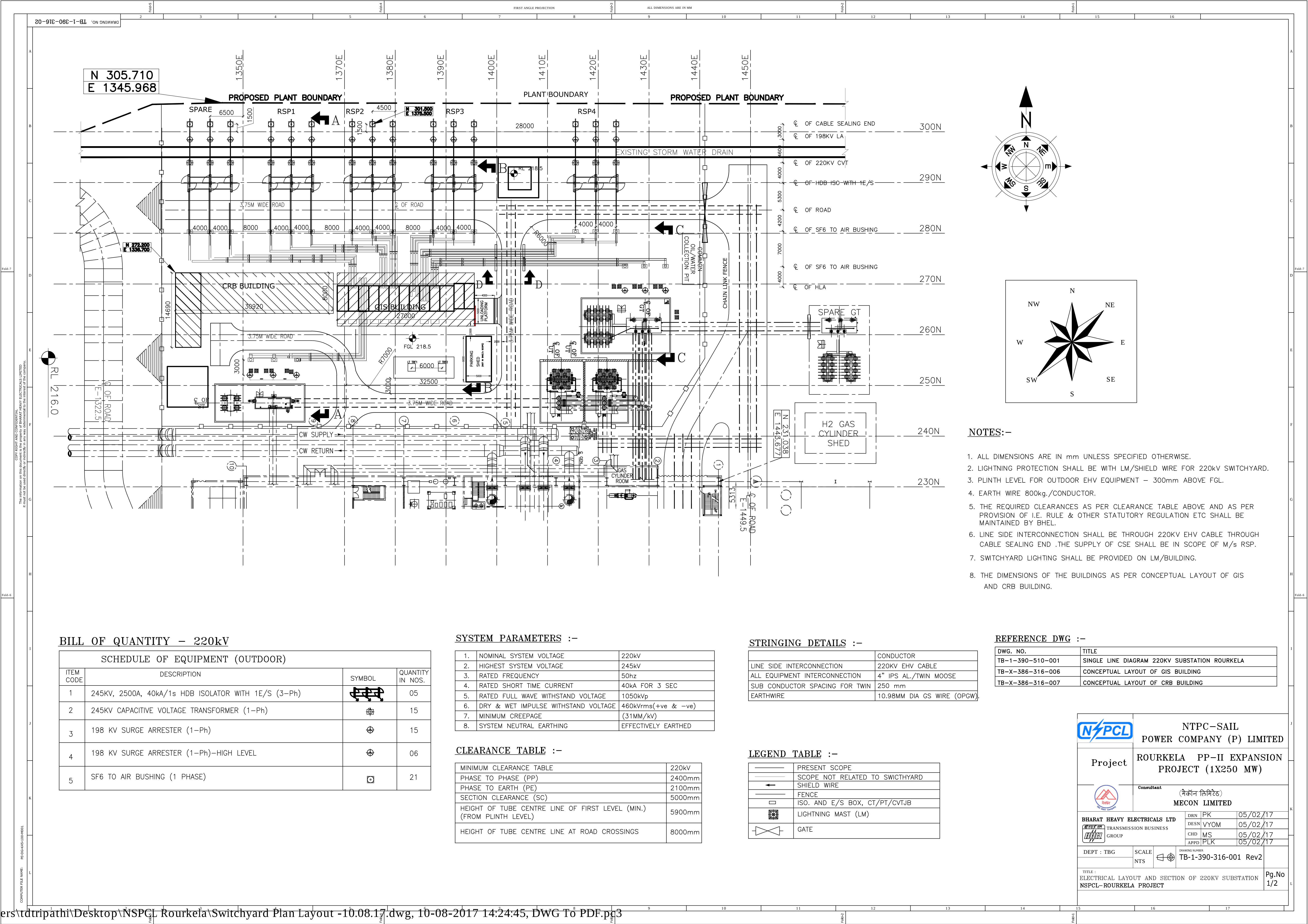




NOTES:-

- 1. ALL DIMENSIONS ARE IN mm UNLESS SPECIFIED OTHERWISE.
- 2. LIGHTNING PROTECTION SHALL BE WITH LM/SHIELD WIRE FOR 220kv SWITCHYARD.
- 3. PLINTH LEVEL FOR OUTDOOR EHV EQUIPMENT – 300mm ABOVE FGL.
- 4. EARTH WIRE 800kg./CONDUCTOR.
- 5. THE REQUIRED CLEARANCES AS PER CLEARANCE TABLE ABOVE AND AS PER PROVISION OF I.E. RULE & OTHER STATUTORY REGULATION ETC SHALL BE MAINTAINED BY BHEL.
- 6. LINE SIDE INTERCONNECTION SHALL BE THROUGH 220KV EHV CABLE THROUGH CABLE SEALING END .THE SUPPLY OF CSE SHALL BE IN SCOPE OF M/s RSP.
- 7. SWITCHYARD LIGHTING SHALL BE PROVIDED ON LM/BUILDING.
- 8. THE DIMENSIONS OF THE BUILDINGS AS PER CONCEPTUAL LAYOUT OF GIS AND CRB BUILDING.

BILL OF QUANTITY - 220kV

SCHEDULE OF EQUIPMENT (OUTDOOR)			
ITEM CODE	DESCRIPTION	SYMBOL	QUANTITY IN NOS.
1	245KV, 2500A, 40kA/1s HDB ISOLATOR WITH 1E/S (3-Ph)		05
2	245KV CAPACITIVE VOLTAGE TRANSFORMER (1-Ph)		15
3	198 KV SURGE ARRESTER (1-Ph)		15
4	198 KV SURGE ARRESTER (1-Ph)-HIGH LEVEL		06
5	SF6 TO AIR BUSHING (1 PHASE)		21

SYSTEM PARAMETERS :-

1. NOMINAL SYSTEM VOLTAGE	220kv
2. HIGHEST SYSTEM VOLTAGE	245kv
3. RATED FREQUENCY	50hz
4. RATED SHORT TIME CURRENT	40kA FOR 3 SEC
5. RATED FULL WAVE WITHSTAND VOLTAGE	1050kVp
6. DRY & WET IMPULSE WITHSTAND VOLTAGE	460kVrms(+ve & -ve)
7. MINIMUM CREEPAGE	(31MM/kV)
8. SYSTEM NEUTRAL EARTHING	EFFECTIVELY EARTHED

CLEARANCE TABLE :-

MINIMUM CLEARANCE TABLE	220kv
PHASE TO PHASE (PP)	2400mm
PHASE TO EARTH (PE)	2100mm
SECTION CLEARANCE (SC)	5000mm
HEIGHT OF TUBE CENTRE LINE OF FIRST LEVEL (MIN.) (FROM PLINTH LEVEL)	5900mm
HEIGHT OF TUBE CENTRE LINE AT ROAD CROSSINGS	8000mm

STRINGING DETAILS :-

LINE SIDE INTERCONNECTION	CONDUCTOR
ALL EQUIPMENT INTERCONNECTION	220KV EHV CABLE
SUB CONDUCTOR SPACING FOR TWIN	4" IPS AL./TWIN MOOSE
EARTHWIRE	250 mm
	10.98MM DIA GS WIRE (OPGW)

LEGEND TABLE :-

	PRESENT SCOPE
	SCOPE NOT RELATED TO SWITCHYARD
	SHIELD WIRE
	FENCE
	ISO. AND E/S BOX, CT/PT/CVT/JB
	LIGHTNING MAST (LM)
	GATE

REFERENCE DWG :-

DWG. NO.	TITLE
TB-1-390-510-001	SINGLE LINE DIAGRAM 220KV SUBSTATION ROURKELA
TB-X-386-316-006	CONCEPTUAL LAYOUT OF GIS BUILDING
TB-X-386-316-007	CONCEPTUAL LAYOUT OF CRB BUILDING

**NTPC-SAIL
POWER COMPANY (P) LIMITED**

Project
ROURKELA PP-II EXPANSION
PROJECT (1X250 MW)

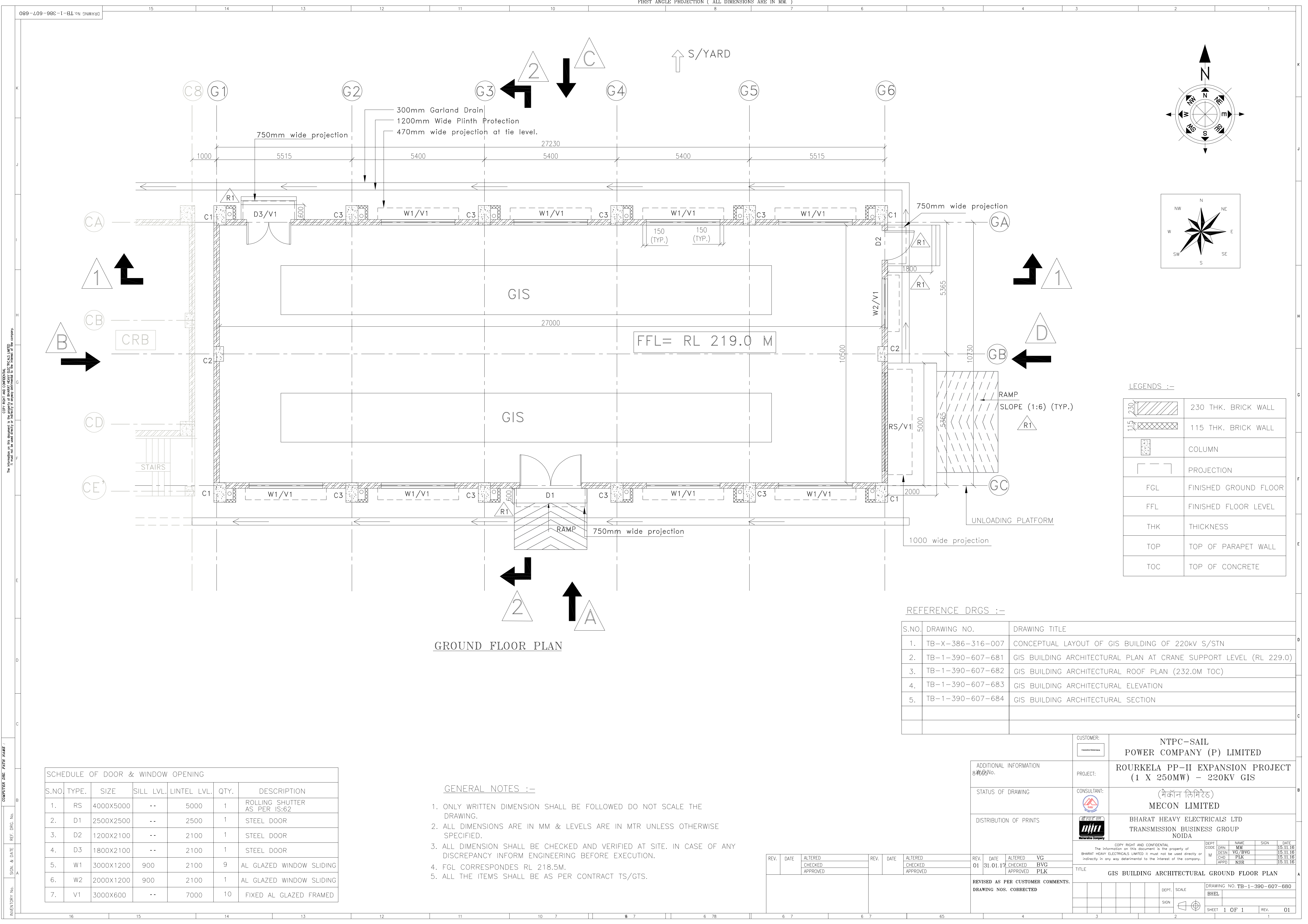
Consultant
(मैकॉन लिमिटेड)
MECON LIMITED

BHARAT HEAVY ELECTRICALS LTD
TRANSMISSION BUSINESS
GROUP

DRN	PK	05/02/17
DESN	VYOM	05/02/17
CHD	MS	05/02/17
APPD	PLK	05/02/17

DEPT : TBG	SCALE	NTS		CROWING NUMBER	TB-1-390-316-001 Rev2
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TITLE : ELECTRICAL LAYOUT AND SECTION OF 220KV SUBSTATION NSPCL-ROURKELA PROJECT	Pg.No 1/2
--	--------------



COMPUTER Dwg: PATH NAME :
SIGN. & DATE :
REF. DRG. No. :
INVENTORY No. :

SCHEDULE OF DOOR & WINDOW OPENING						
S.NO.	TYPE.	SIZE	SILL LVL.	LINTEL LVL.	QTY.	DESCRIPTION
1.	RS	4000X5000	--	5000	1	ROLLING SHUTTER AS PER IS:62
2.	D1	2500X2500	--	2500	1	STEEL DOOR
3.	D2	1200X2100	--	2100	1	STEEL DOOR
4.	D3	1800X2100	--	2100	1	STEEL DOOR
5.	W1	3000X1200	900	2100	9	AL GLAZED WINDOW SLIDING
6.	W2	2000X1200	900	2100	1	AL GLAZED WINDOW SLIDING
7.	V1	3000X600	--	7000	10	FIXED AL GLAZED FRAMED

GENERAL NOTES :-

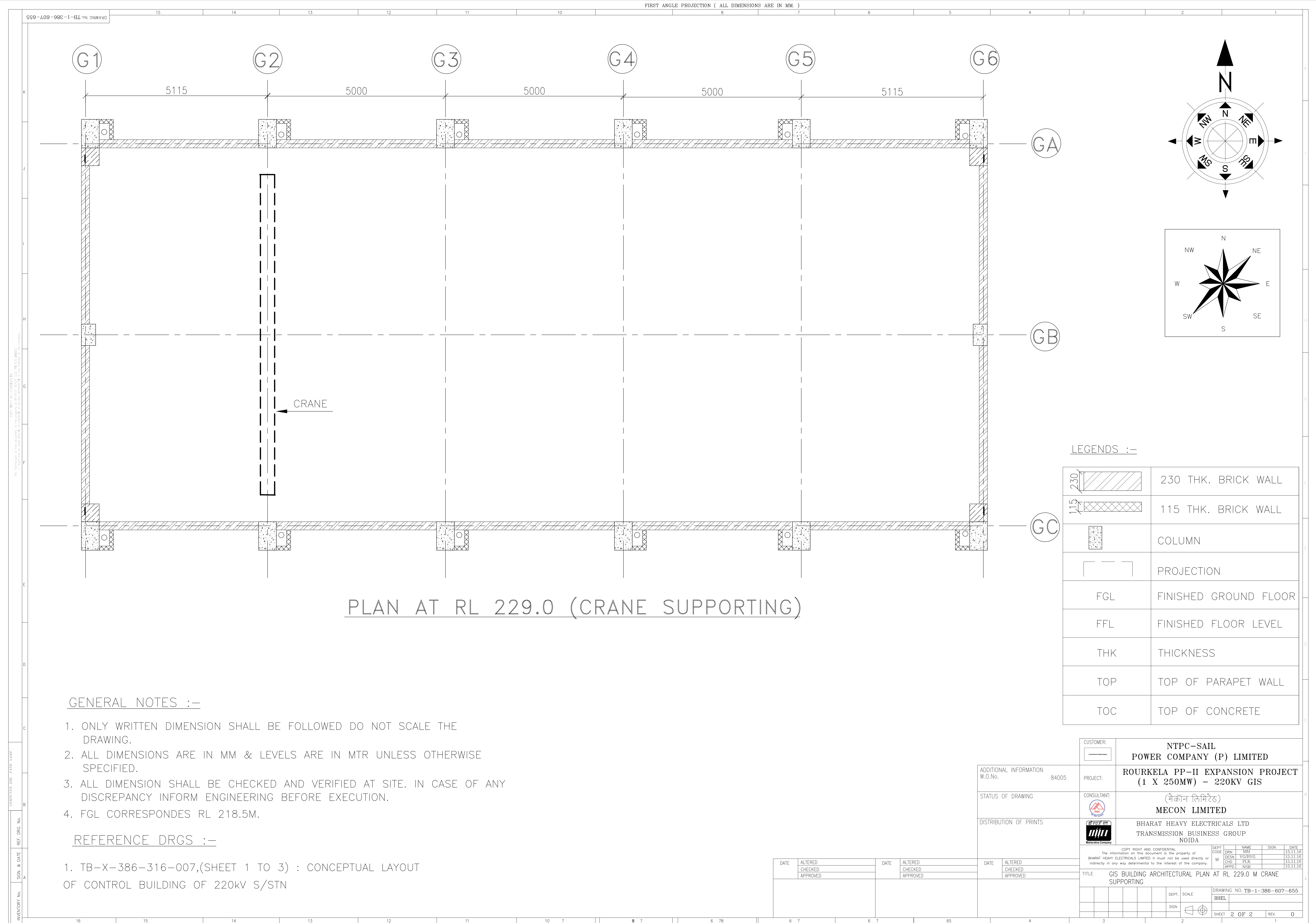
- ONLY WRITTEN DIMENSION SHALL BE FOLLOWED DO NOT SCALE THE DRAWING.
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- ALL DIMENSION SHALL BE CHECKED AND VERIFIED AT SITE. IN CASE OF ANY DISCREPANCY INFORM ENGINEERING BEFORE EXECUTION.
- FGL CORRESPONDES RL 218.5M.
- ALL THE ITEMS SHALL BE AS PER CONTRACT TS/GTS.

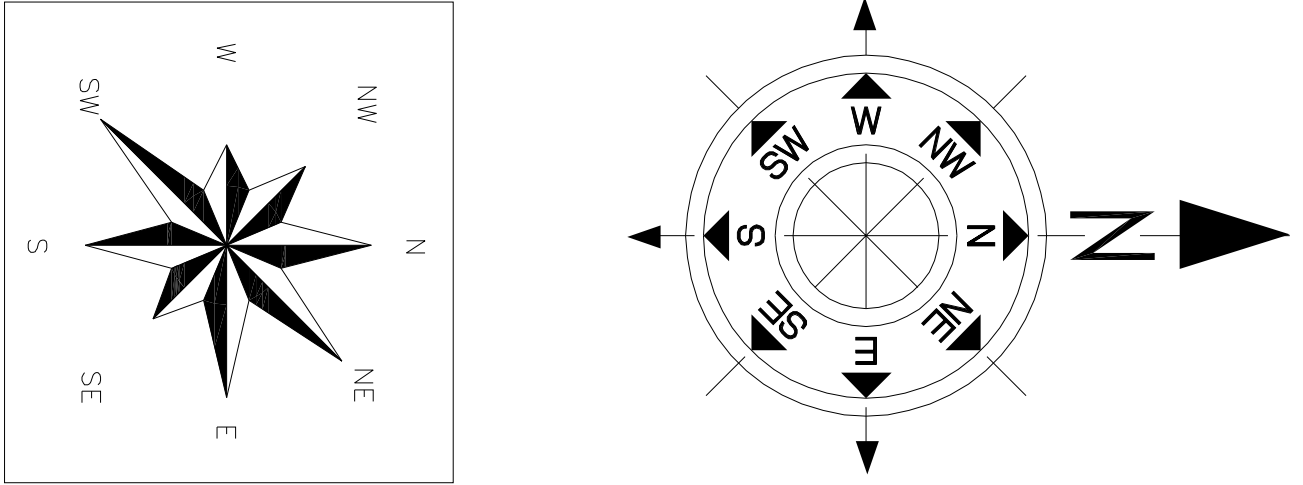
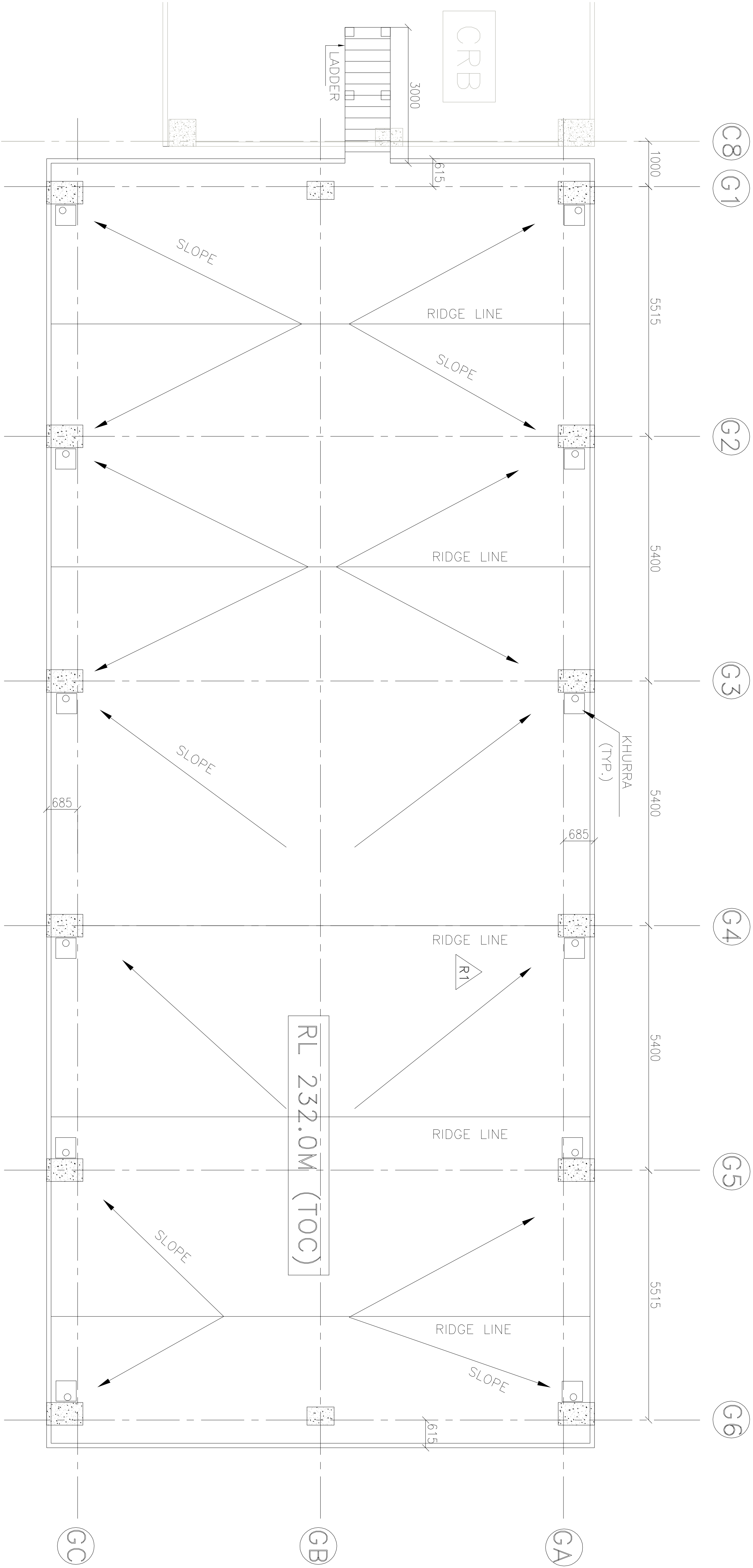
REFERENCE DRGS :-

S.NO.	DRAWING NO.	DRAWING TITLE
1.	TB-X-386-316-007	CONCEPTUAL LAYOUT OF GIS BUILDING OF 220kV S/STN
2.	TB-1-390-607-681	GIS BUILDING ARCHITECTURAL PLAN AT CRANE SUPPORT LEVEL (RL 229.0)
3.	TB-1-390-607-682	GIS BUILDING ARCHITECTURAL ROOF PLAN (232.0M TOC)
4.	TB-1-390-607-683	GIS BUILDING ARCHITECTURAL ELEVATION
5.	TB-1-390-607-684	GIS BUILDING ARCHITECTURAL SECTION

REV.	DATE	ALTERED	CHECKED	APPROVED	REV.	DATE	ALTERED	CHECKED	APPROVED	REV.	DATE	ALTERED	CHECKED	APPROVED	VG
01	31.01.17														BVG
REVISED AS PER CUSTOMER COMMENTS. DRAWING NOS. CORRECTED															PLK

CUSTOMER:		NTPC-SAIL POWER COMPANY (P) LIMITED			
PROJECT:		ROURKELA PP-II EXPANSION PROJECT (1 X 250MW) - 220KV GIS			
CONSULTANT:		(मैकॉन लिमिटेड) MECON LIMITED			
DISTRIBUTION OF PRINTS		BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP NOIDA			
TITLE		GIS BUILDING ARCHITECTURAL GROUND FLOOR PLAN			
DEPT.		SCALE		DRAWING NO. TB-1-390-607-680	
SIGN		SIGN		BHBL	
SHEET		1 OF 1		REV. 01	





ROOF PLAN

REFERENCE DRGS :-

S.NO.	DRAWING NO.	DRAWING TITLE
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5.	TB-1-390-607-684	GIS BUILDING ARCHITECTURAL SECTION

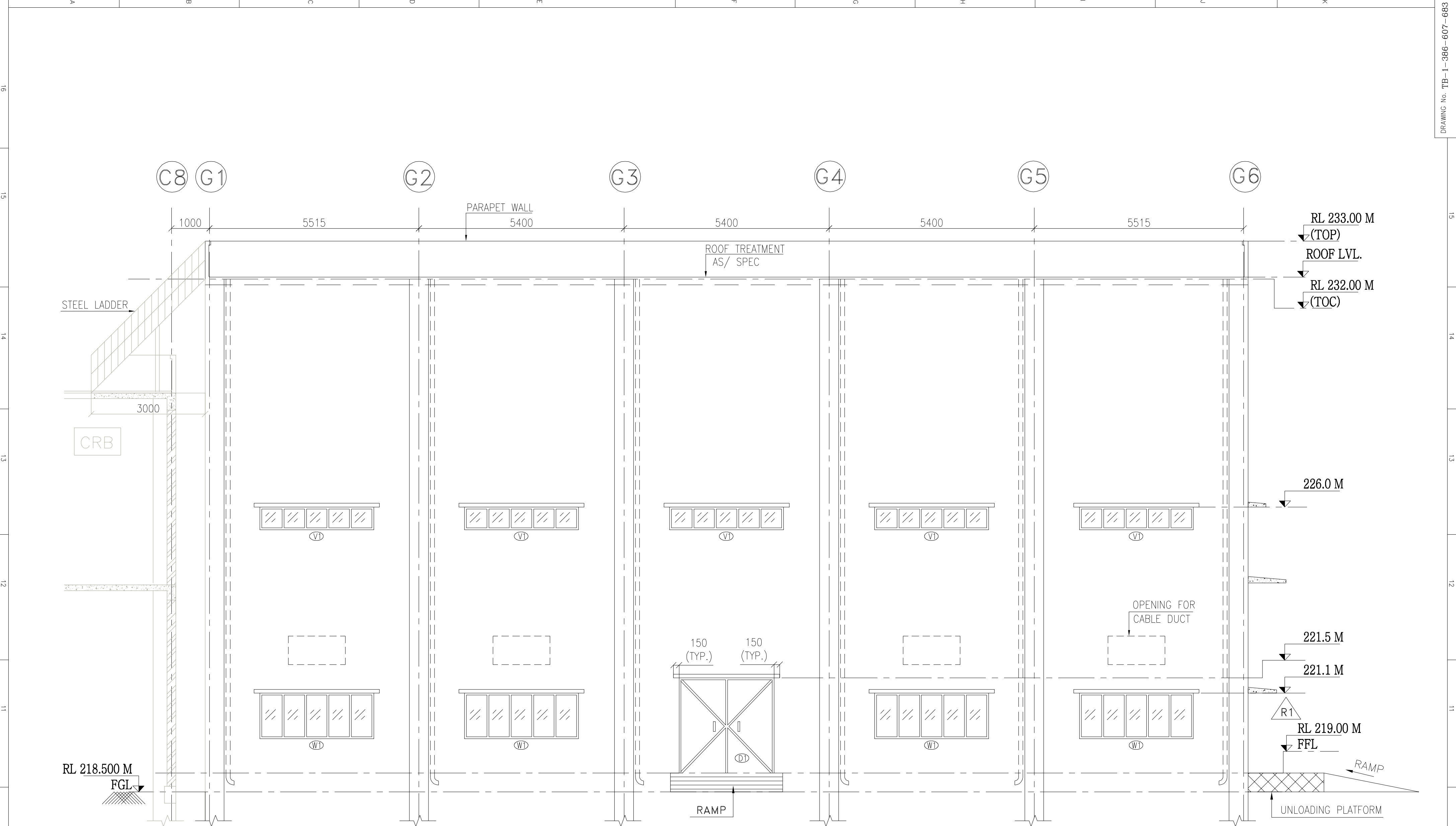
LEGENDS :-

	230 THK. BRICK WALL
	115 THK. BRICK WALL
	COLUMN
	PROJECTION
	FINISHED GROUND FLOOR
	FINISHED FLOOR LEVEL
	THICKNESS
	TOP OF PARAPET WALL
	TOP OF CONCRETE

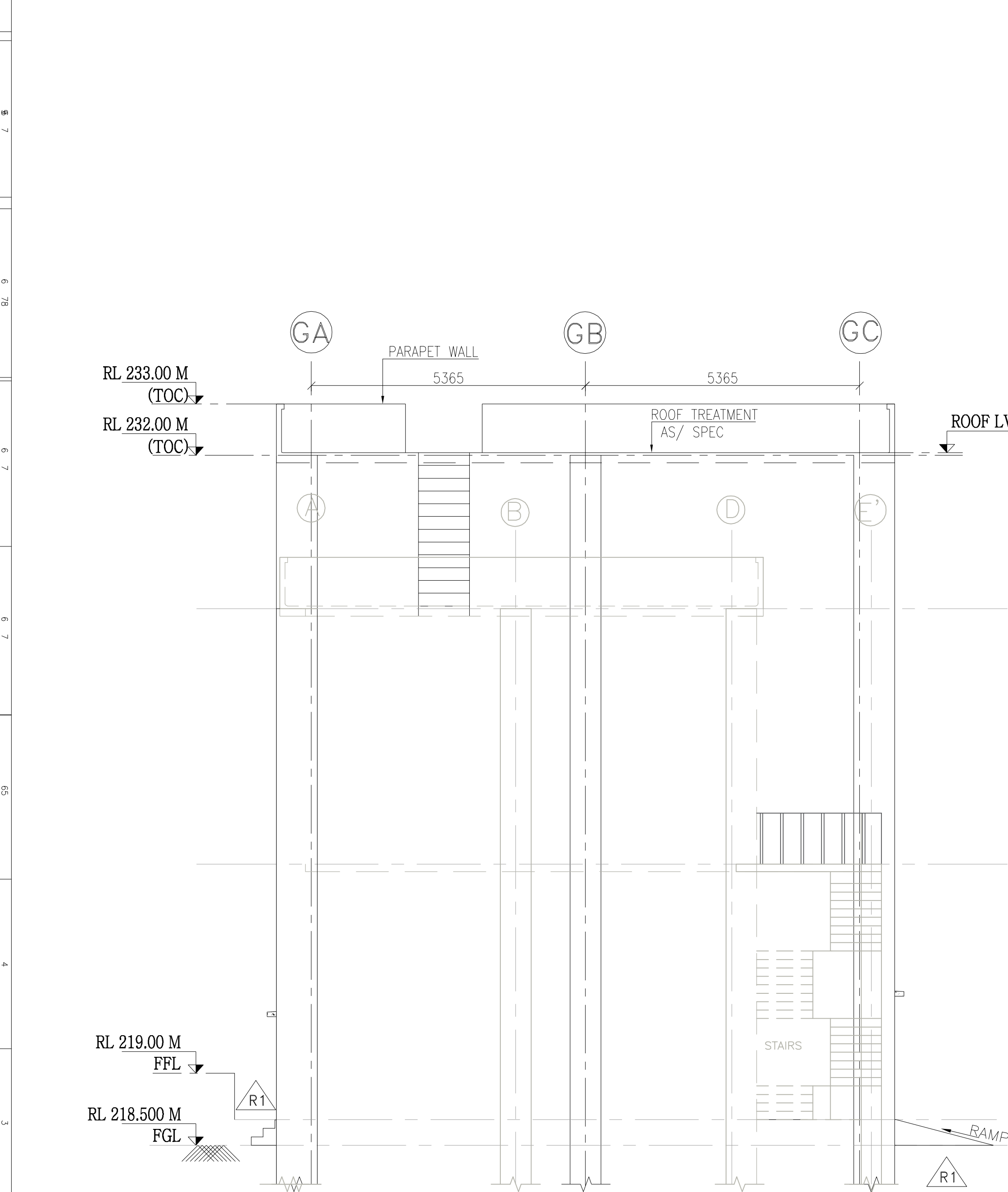
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- FGL CORRESPONDES RL 218.5M.
- ALL THE ITEMS SHALL BE AS PER CONTRACT TS/GTS.

CUSTOMER: NTPC-SAIL POWER COMPANY (P) LIMITED		PROJECT: ROURKELA PP-II EXPANSION PROJECT (1 X 250MW) - 220KV GIS		CONSULTANT: MECON LIMITED BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP NOIDA	
ADDITIONAL INFORMATION 8400910.		STATUS OF DRAWING		DISTRIBUTION OF PRINTS	
REV.	DATE	REV.	DATE	REV.	DATE
CHECKED	APPROVED	CHECKED	APPROVED	CHECKED	APPROVED
01	31.01.17	01	31.01.17	01	31.01.17
REVISED AS PER CUSTOMER COMMENTS.		DRAWING NOS. CORRECTED		DRAWING NO. TB-1-390-607-682	
COPY RIGHT AND CONFIDENTIAL		COPY RIGHT AND CONFIDENTIAL		COPY RIGHT AND CONFIDENTIAL	
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TITLE GIS BUILDING ARCHITECTURAL ROOF PLAN(232.0M TOC)		DRAFT SCALE		SHEET NO. 1 OF 1	
BHHEL		REV.		01	



ELEVATION-A



ELEVATION-B

LEGENDS :-

	230 THK. BRICK WALL
	115 THK. BRICK WALL
	COLUMN
	PROJECTION
FGL	FINISHED GROUND FLOOR
FFL	FINISHED FLOOR LEVEL
THK	THICKNESS
TOP	TOP OF PARAPET WALL
TOC	TOP OF CONCRETE

GENERAL NOTES :-

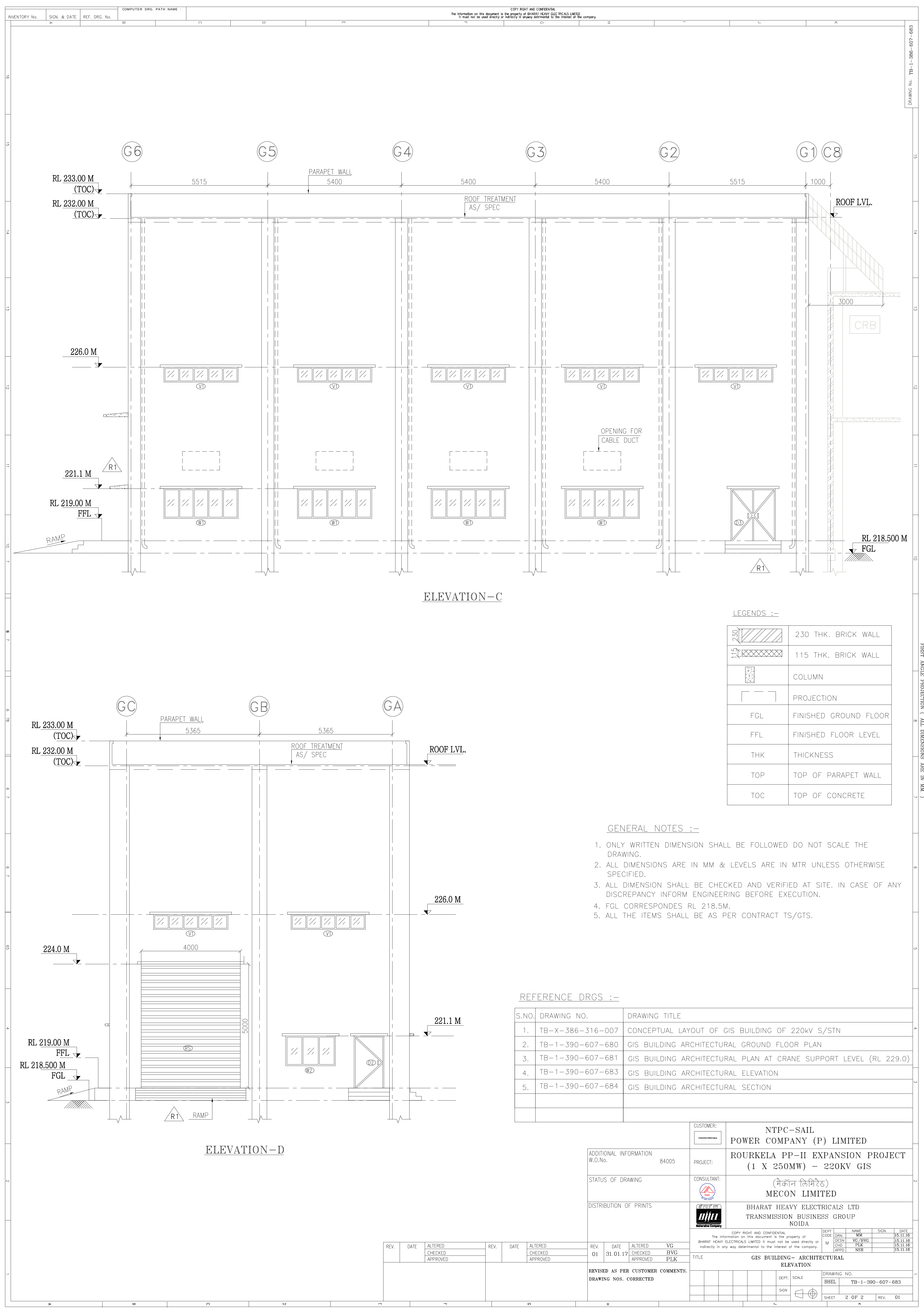
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- FGL CORRESPONDES RL 218.5M.
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4.	TB-1-390-607-682	GIS BUILDING ARCHITECTURAL ROOF PLAN (232.0M TOC)
5.	TB-1-390-607-684	GIS BUILDING ARCHITECTURAL SECTION

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	VG
		CHECKED			CHECKED	01	31.01.17	CHECKED	BVG
		APPROVED			APPROVED			APPROVED	PLK
REVISED AS PER CUSTOMER COMMENTS. DRAWING NOS. CORRECTED									

CUSTOMER:		NTPC-SAIL POWER COMPANY (P) LIMITED	
ADDITIONAL INFORMATION W.O.No. 84005		PROJECT: ROURKELA PP-II EXPANSION PROJECT (1 X 250MW) - 220KV GIS	
STATUS OF DRAWING		CONSULTANT: (मैकॉन लिमिटेड) MECON LIMITED	
DISTRIBUTION OF PRINTS		BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP NOIDA	
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		DEPT CODE DRN MM SIGN DATE M DESN VG/BVG 15.11.16 APPD PLK 15.11.16 NSR 15.11.16	
TITLE		GIS BUILDING- ARCHITECTURAL ELEVATION	
		DRAWING NO. BHRL TB-1-390-607-683	
SIGN		SHEET 1 OF 2 REV. 01	



ELEVATION-C

ELEVATION-D

LEGENDS :-

	230 THK. BRICK WALL
	115 THK. BRICK WALL
	COLUMN
	PROJECTION
FGL	FINISHED GROUND FLOOR
FFL	FINISHED FLOOR LEVEL
THK	THICKNESS
TOP	TOP OF PARAPET WALL
TOC	TOP OF CONCRETE

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ADDITIONAL INFORMATION W.O.No. 84005	CUSTOMER: 	NTPC-SAIL POWER COMPANY (P) LIMITED	
		ROURKELA PP-II EXPANSION PROJECT (1 X 250MW) - 220KV GIS	
STATUS OF DRAWING	PROJECT:	CONSULTANT: 	
DISTRIBUTION OF PRINTS		MECON LIMITED BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP NOIDA	
REV. DATE ALTERED 01 31.01.17 CHECKED APPROVED		COPY RIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED it must not be used directly or indirectly in any way detrimental to the interest of the company.	
		DEPT CODE DRN NAME SIGN DATE M DESN VG/BVG 15.11.16 APRD PLK 15.11.16 NSR 15.11.16	
REVISED AS PER CUSTOMER COMMENTS. DRAWING NOS. CORRECTED		TITLE GIS BUILDING-- ARCHITECTURAL ELEVATION	
		DRAWING NO. BHRL TB-1-390-607-683	
		SHEET 2 OF 2 REV. 01	

