



**1 X 660 MW SAGARDIGHI TPS UNIT NO. 5
PHASE III
VENTILATION SYSTEM
MASTER DRAWING LIST WITH SCHEDULE OF
SUBMISSION**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : I

SUB-SECTION : E

REV 00

DATE: MARCH 2022

SHEET 3 OF 5

Sr. No.	BHEL Drawing No	Drawing Title	SCH. WEEK (FROM DATE OF LOI)
20.	PE-V0-445-554-A020	GA OF PROPELLER FAN FOR VENTILLATION SYSTEM	9
21.	PE-V0-445-554-A021**	PID FOR AIRWASHER AND UAF UNIT FOR VENTILLATION SYSTEM	8
22.	PE-V0-445-554-A022**	AIR WASHER LAYOUT OUTSIDE "A ROW" SIDEALONGWITH FOUNDATION DETAILS - TG BUILDING	12
23.	PE-V0-445-554-A023**	AIR WASHER LAYOUT FOR"B-C BAY" SIDEALONGWITH FOUNDATION DETAILS - TG BUILDING	12
24.	PE-V0-445-554-A024**	UAF LAYOUT ALONGWITH FOUNDATION DETAILS - ESP CUM FGD BUILDING.	12
25.	PE-V0-445-554-A025	VENTILATION DUCT LAYOUT FOR TG BUILDING - 'A' ROW SIDE	12
26.	PE-V0-445-554-A026	VENTILATION DUCT LAYOUT FOR TG BUILDING - 'BC BAY' SIDE	12
27.	PE-V0-445-554-A027	VENTILATION DUCT LAYOUT FOR ESP CUM FGD BUILDINGS	12
28.	PE-V0-445-554-A028**	LOCATION OF ROOF EXTRACTOR UNIT IN TG BUILDING ALONGWITH FIXING DETAILSFOR VENTILLATION SYSTEM	12
29.	PE-V0-445-554-A029	VENT. ARRANGEMENT FOR BATTERY ROOM.	12
30.	PE-V0-445-554-A030	VENT. ARRANGEMENT FOR VARIOUS AUXILIARY BUILDING.	18
31.	PE-V0-445-554-A031	ELECTRICAL FEEDER LIST FOR VENTILLATION SYSTEM	18
32.	PE-V0-445-554-A032	VENTILATION CABLE SCHEDULE	16
33.	PE-V0-445-554-A033	P.G/ DEMONSTRATION TEST PROCEDUREFOR VENTILLATION SYSTEM	12
34.	PE-V0-445-554-A034	O & M MANUAL FOR VENTILLATION SYSTEM	25
35.	PE-V0-445-554-A035**	VENTILATION AIR CALCULATION FOR TG AND ESP CUM FGD BUILDING	5
36.	PE-V0-445-554-A036**	SCHEME FOR AIR DISTRIBUTION IN TG BUILDING ESP CUM FGD BUILDING.	6
37.	PE-V0-445-554-A037	DATA SHEET & GA FOR UAF WITH FOUNDATION DETAILS FOR VENTILLATION SYSTEM	6



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38.	PE-V0-445-554-A038	DATA SHEET & GA FOR AIR WASHER FAN WITH FOUNDATION DETAILS FOR VENTILLATION SYSTEM	10
39.	PE-V0-445-554-A039	DATA SHEET & GA FOR UAF FAN WITH FOUNDATION DETAILS FOR VENTILLATION SYSTEM	10
40.	PE-V0-445-554-A040	DATA SHEET & GA FOR AIR WASHER PUMP WITH FOUNDATION DETAILS FOR VENTILLATION SYSTEM	10
41.	PE-V0-445-554-A041	DATA SHEET & GA FOR UAF PUMP WITH FOUNDATION DETAILS FOR VENTILLATION SYSTEM	10
42.	PE-V0-445-554-A042	DATA SHEET & GA FOR STRAINER FOR VENTILLATION SYSTEM	8
43.	PE-V0-445-554-A043	DATA SHEET FOR MOTORS (RE unit, Supply and Exhaust axial fan) FOR VENTILLATION SYSTEM	14
44.	PE-V0-445-554-A044	TDS AND GA OF GRILL/ NRD / VCD / GRAVITY DAMPER / INTAKE LOUVER ETC FOR VENTILLATION SYSTEM	12
45.	PE-V0-445-554-A045	GA FOR MANUAL TROLLEY (MANUALLY OPERATED, PLATFORM TROLLEY OF 1.5 TON CAPACITY WITH BASE AREA 2M X 1.5M)	10
46.	PE-V0-445-554-A046	AIR WASHER / UAF LAYOUT ALONGWITH FOUNDATION DETAILS -FGD BUILDING.	12
47.	PE-V0-445-554-A047	VENTILATION DUCT LAYOUT FOR FGD BUILDINGS	12
48.	PE-V0-445-554-A048	SCHEDULE OF INSTRUMENTS FOR VENTILLATION SYSTEM	16
49.	PE-V0-445-554-A049	I/O List FOR VENTILATION SYSTEM	16
50.	PE-V0-445-554-A050	PLANT SCHEMATIC / MIMIC FOR VENTILATION SYSTEM	8
51.	PE-V0-445-554-A051	UAF LAYOUT FOR AUXILIARY BUILDINGS	12
52.	PE-V0-445-554-A052	QAP FOR VALVES FOR VENTILATION SYSTEM - MANUAL VALVES	10
53.	PE-V0-445-554-A053	QAP FOR VALVES FOR VENTILATION SYSTEM - MOTORIZED VALVES	10

BHEL Drawing / Document indicated with ** are basis engineering documents.

Notes:

1. The above drawing list is tentative and shall be finalized with the successful bidder after placement of order. While some of the drawings indicated above may not be applicable, some additional drawings may also be required based on scope of work.



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2. Drawings shall be prepared in auto-cad latest edition. Required no. of hard and soft copies (editable) of the drawings shall be furnished as per requirement specified elsewhere in the specification.
3. Only manual calculation with authentic supporting literature (e.g. extracts of hand book/ standard/codes) shall be acceptable. All design calculations and drawings shall be in SI system only.
4. All the drawings and documents including general arrangement drawing, data sheet, calculation etc. to be furnished to the customer during detailed engineering stage shall include / indicate the following details for clarity w.r.t. inspection, construction, erection and maintenance etc.:-
 - a) All drawings and documents shall indicate the list of all reference drawings including general arrangement.
 - b) All drawings shall include / show plan, elevation, side view, cross - section, skin section, blow - up view; all major self-manufactured and bought out items shall be labelled and included in BOQ / BOM in tabular form.
 - c) Painting schedule shall also be made as a part of general arrangement drawing of each equipment / items indicating at least 3 trade names.
 - d) All the drawings required to be furnished to customer during detailed engineering stage shall include technical parameters, details of paints and lubrication, hardness and BOQ / BOM in tabular form indicating all major components including bought out items and their quantity, material of construction indicating its applicable code / standard, weight, make etc.
 - e) Drawings/ documents to be submitted for purchasers review/ approval shall be under revision a, b, c... etc. while drawings /documents to be submitted thereafter for customer's approval after purchaser's approval shall be under r-0, 1, 2, 3etc.
 - f) Drawings and documents not covered above but required to check safety of machines/ system, shall be submitted during detailed engineering stage without any commercial implication.
 - g) All drawings shall include "B.O.M" and indicate quantity, material of construction, make along with IS/BS no., technical parameters, dimensions, hardness, machining symbol and tolerance, requirement of radiography and hydraulic tests, painting details, elevation, side view, plan, skin section and blow-up view for clarity.
 - h) All drawings shall be prepared as per BHEL'S title block and shall bear BHEL'S drawing no.
 - i) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL'S/ customer's/ consultant's office for across the table resolution of issues and to get documents approved in the stipulated time.
 - j) Bidder to follow the following the drawing submission schedule:
 - k) 1st submission of drawings from date of LOI as per the submission schedule (week).
 - l) Every revised submission incorporating comments – within 7 days.
 - m) Bidder to submit revised drawings complete in all respects incorporating all comments. Any incomplete drawing submitted shall be treated as non-submission with delays attributable to bidder's account. For any clarification/ discussion required to complete the drawings, the bidder shall himself depute his personal to BHEL for across the table discussions/ finalizations/ submissions of drawings.



**1 X 660 MW SAGARDIGHI TPS UNIT NO. 5
PHASE III
VENTILATION SYSTEM
FORMAT FOR OPERATION AND
MAINTENANCE MANUAL**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : I

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**SECTION-I
SUB SECTION-E
ANNEXURE-VI
FORMAT FOR OPERATION AND MAINTENANCE MANUAL**



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Project name :
Project number :
Package Name :
PO reference :
Document number :
Revision number :

Sl.no. & Sections	Description	Tick (√)if included in Manual			Remarks
		Yes	No	Not Applicable	
1.	COVER PAGE				
1.1	Project Name				
1.2	Customer/consultant Name				
1.3	Name of Package				
1.4	Supplier details with phone, FAX ,email address , Emergency Contact number				
1.5	Name and sign of prepared by , checked by & approved by				
1.6	Revision history with approval Details				
2.0	INDEX				
2.1	showing the sections & related page nos All the pages should be numbered section wise				
3.0	DESCRIPTION OF PLANT/SYSTEM				
3.1	Description /write up of operating principle of system equipment/ associated sub-systems & accessories/controls system , operating conditions, performance parameters under normal , start up and special cases				
3.2	Equipment list and basic parameter with Tag numbers				
3.3	Data sheets approved by Customer/for information and catalogues provided by original manufacturer				
3.4	Associated other packages and Interface /terminal points				
3.5	P&ID & Process Diagrams				
3.6	GA Layout drawings, As-built drawings , Actual photograph of items/system (Drawings of A2 & bigger sizes are to be attached in the last)				
3.7	Single line/wiring diagrams				
3.8	Control philosophy /control write-ups				



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Sl.no. & Sections	Description	Tick (√)if included in Manual			Remarks
		Yes	No	Not Applicable	
4.0	COMMISSIONING ACTIVITIES (IF NOT COVERED IN SEPARATE DOCUMENT I.E. ERECTION MANUAL, COMMISSIONING MANUAL)				
4.1	Pre-Commissioning Checks				
4.2	handling of items at site				
4.3	Storage at site				
4.4	Unpacking & Installation procedure				
5.0	OPERATION GUIDELINES FOR PLANT PERSONAL/USER/OPERATOR				
5.1	Interlock & Protection logic along with the limiting values of protection settings for the equipment along with brief philosophy behind the logic, drawings etc. to be provided.				
5.2	Start up, normal operation and shut down procedure for equipments along with the associated systems in step by step mode. Valve sequence chart, step list, interlocks etc. with Equipment isolating procedures to be mentioned.				
5.3	Do's & Don't of the equipments.				
5.4	Safety precautions to be taken during normal operation. Safety symbols, Emergency instructions on total power failure condition/lubrication failure/any other condition				
5.5	Parameters to be monitored with normal values and limiting values				
5.6	Trouble shooting with causes and remedial measures				
5.7	Routine operational checks, recommended logs & records				
5.8	Changeover schedule if more than one auxiliary for the same purpose is given				
5.9	Painting requirement and schedule				
5.10	Inspection, repair , Testing and calibration procedures				
6.0	MAINTENANCE GUIDELINES FOR PLANT PERSONAL				



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Sl.no. & Sections	Description	Tick (√)if included in Manual			Remarks
		Yes	No	Not Applicable	
6.1	List of Special Tools and Tackles required for Overhaul/Trouble shooting including special testing equipment required for calibration etc.				
6.2	Stepwise dismantling and re-assembly procedure clearly specifying the tools to be used, checks to be made, records to be maintained, clearances etc. to be mentioned. Tolerances for fitment of various components to be given.				
6.3	Preventive Maintenance & Overhauling schedules linked with running hours/calendar period along with checks to be given				
6.4	Long term maintenance schedules especially for structural, foundations etc.				
6.5	Consumable list along with the estimated quantity required during commissioning, normal running and during maintenance like Preventive Maintenances and Overhaul. Storage/handling requirement of consumables/self-life.				
6.6	List of lubricants with their Indian equivalent, Lubrication Schedule, Quantity required for each equipment for complete replacement is to be given				
6.7	List of vendors & Sub-vendors with their latest addresses, service centres ,Telephone Nos., Fax Nos., Mobile Nos., e-mail IDs etc.				
6.8	List of mandatory and recommended spare parts list				
6.9	Tentative Lead time required for ordering of spares from the equipment supplier				
6.10	Guarantee and warranty clauses				
7.0	Statutory and other specific requirements considerations.				
8.0	List of reference documents				
9.0	Binding as per requirement				



**1 X 660 MW SAGARDIGHI TPS UNIT NO. 5
PHASE III
VENTILATION SYSTEM
SITE STORAGE AND PRESERVATION**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : I

SUB SECTION-E

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SECTION-I

SUB-SECTION-E

ANNEXURE-VII

SITE STORAGE AND PRESERVATION

SITE STORAGE AND PRESERVATION GUIDELINES FOR MECHANICAL BOPs

(Doc No: PE-DC-SSG-A001 REV.00)



PROJECT ENGINEERING MANAGEMENT, POWER SECTOR
BHARAT HEAVY ELECTRICALS LIMITED-NOIDA

CONTENT

- 1 SCOPE OF THE DOCUMENT
- 2 PURPOSE OF STORAGE & PRESERVATION
- 3 MEASURES TO BE TAKEN FOR STORAGE AND PRESERVATION
 - a) GENERAL STORAGE REQUIREMENTS
 - b) GENERAL PRESERVATION REQUIREMENTS
 - c) GENERAL INSPECTION REQUIREMENTS
- 4 TYPE OF STORAGE FOR VARIOUS EQUIPMENT
5. CONCLUSION
6. STACKING ARRANGEMENT FOR PLATES AND STRUCTURAL STEEL

1. SCOPE OF THE DOCUMENT

This guideline is prepared in intent to provide proper site storage and preservation of the Mechanical, Electrical and C & I items / equipment supplied under various bought out packages/items. This storage procedure shall be followed at different power plant sites by concerned agency for storage and preservation from the date of equipment received at site until the same are erected and handed over to the customer.

2. PURPOSE OF STORAGE & PRESERVATION

Many of the items may be required to be kept in stores for long period. It shall therefore be essential that proper methods of storage and preservation be applied so that items do not deteriorate, loose some of their properties and become unusable due to atmospheric conditions and biological elements.

3. MEASURES TO BE TAKEN FOR STORAGE, HANDLING & PRESERVATION

a) GENERAL STORAGE REQUIREMENTS

1. To the extent feasible, materials should be stored near the point of erection. The storage areas should have adequate unloading and handling facilities with adequate passage space for movement of material handling equipment such as cranes, fork lift trucks, etc. The storage of materials shall be properly planned to minimise time loss during retrieval of items required for erection.
2. The outdoor storage areas as well as semi-closed stores shall be provided with adequate drainage facilities to prevent water logging. Adequacy of these facilities shall be checked prior to monsoon.
3. The storage sheds shall be built in conformity with fire safety requirements. The stores shall be provided with adequate lights and fire extinguishers. 'No smoking' signs shall be placed at strategic locations. Safety precautions shall be strictly enforced.
4. Adequate lighting facility shall be provided in storage areas and storage sheds and security personnel positioned to ensure enforcement of security measures to prevent theft and loss of materials.
5. Adequate number of competent stores personnel and security staff shall be deployed to efficiently store and maintain the equipment / material.
7. The equipment shall be stored in an orderly manner, preserving their identification slips, tags and instruction booklets, etc., required during erection. The storage of materials shall be equipment-wise. Loose parts shall be stored in sheds on racks,

preserving the identification marks and tags in good condition. The group codes shall be displayed on the racks

6. At no time shall any materials be stored directly on ground. All materials shall be stored minimum 200 mm above the ground preferably on wooden sleepers

b) GENERAL PRESERVATION REQUIREMENTS

1. All special measures to prevent corrosion shall be taken like keeping material in dry condition, avoiding the equipment coming in contact with corrosive fluid like water, acid etc.
2. Materials which carry protective coating shall not be wrapped in paper, cloth, etc., as these are liable to absorb and retain moisture. The material shall be inspected and in case of signs of wear or damages to protective coating, that portion shall be cleaned with approved solution and coated with an approved protective paint. Complete record of all such observations and protective measures taken shall be maintained.
3. Generally equipment supplied at site are properly greased or rust protective oil is applied on machined/ fabricated components. However periodic inspection shall be carried out to ensure that protection offered is intact.
4. While handling the equipment, no dragging on the ground is permitted. Avoid using wire rope for lifting coated components. Use polyester slings (if possible) otherwise protective material (e.g. clothes, wood block etc.) should be used while handling the components with rope / slings
5. For Equipment supplied with finished paint, touch paint shall be done in case any surface paint gets peeled off during handling. Otherwise such surfaces shall necessarily be wrapped with polythene to avoid any corrosion. Further for equipment wherein finish coat is to be applied at site, site to ensure that equipment is received with primer coat applied.
6. It shall be ensured by periodic inspection that plastic inserts are intact in tapped holes, wherever applicable.
7. Pipes shall be blown with air periodically and it shall be ensured that there is no obstruction.
8. Silica gel or approved equivalent moisture absorbing material in small cotton bags shall be placed and tied at various points on the equipment, wherever necessary.
9. Heavy rotating parts in assembled conditions shall be periodically rotated to prevent corrosion/jamming due to prolonged storage.

10. All the electrical equipment such as motors, generators, etc. shall be tested for insulation resistance at least once in three months and a record of such measured insulation values shall be maintained.
11. Following preservatives/preservation methods can be used depending upon type of equipment
 - a. Rust preventive fluid (RPF)
 - b. Rust protective paints
 - c. Tarpaulin covers, in case of outdoor storage
 - d. De-oxy aluminate for weld-ments

c) GENERAL INSPECTION REQUIREMENTS

1. Period inspection of materials with specific reference to –
 - Ingress of moisture and corrosion damages.
 - Damage to protective coating.
 - Open ends in pipes, vessels and equipment -
 - In case any open ends are noticed, same shall be capped.
2. Any damages to equipment / materials.
 - In case of any damages, these shall be promptly notified and in all cases, the repairs / rectification shall be carried out.
 - Any items found damaged or not suitable as per project requirements shall be removed from site. If required to store temporarily, they shall be clearly marked and stored separately to prevent any inadvertent use.

4. TYPE OF STORAGE FOR VARIOUS EQUIPMENT

The types of storage are broadly classified under the following heads:

i **Closed storage with dry and dust free atmosphere. (C)**

The closed shed can be constructed by using cold-rolled / tubular components for structure and corrugated asbestos sheets / galvanised iron sheets for roofing. Brick walls / asbestos sheets can be used to cover all the sides. The floor of the shed can be finished with plain cement concrete suitably glazed. The shed shall be provided with proper ventilation and illumination.



ii **Semi-closed storage. (S)**

The semi closed shed can be constructed by using cold-rolled / tubular components for structure and corrugated / asbestos sheets for roofing. The floor shall be brick paved. If required a small portion of sides can be covered to protect components from rainwater splashing onto the components.





iii Open storage (O)

The open yard shall be levelled, well consolidated to achieve raised ground with the provision of feeder roads for crane approach along with access roads running all sides. One part of the open yard shall be stone pitched, levelled and consolidated with raised ground suitable for storing / stacking heavier and critical components with due space to handle them by cranes etc . Adequate number of sleepers, concrete block etc. to be provided to make raised platforms to stack critical materials.

A separate yard to be identified as “scrap yard” slightly away from main open yard to store wooden/steel scraps, which are to be disposed off. This is required to avoid mix up with regular components as well as to avoid fire hazard.

Some of the components, which are having both machined & un-machined surfaces and are bulky, shall be stored in open storage area on a raised ground and suitably covered with water proof / fire retardant tarpaulin.



The equipment listed below shall be stored and inspected as per requirement mentioned in the table below.

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
Raw material /mechanical items like pipes, plates, structure sections etc.)				
1.	Steel pipes (lined/unlined)	S	Damage , paint, corrosion, rubber lining peeling	Provide end cap
2.	MS Plates	S	Damage, paint, corrosion	
3.	SS Plates	S	Damage	
4.	Non-metallic pipes	S	Damage, cracks	Provide end cap
5.	Stainless steel pipes	S	Damage ,	Provide end cap
6.	MS sections, beams	S	Damage, paint, corrosion	
7.	Cable trays	S	Damage, condition of preservations	
8.	Insulation sheets	S	Damage	
9.	Insulation	C	Damage, packing	
10.	Hangers Rods	S	Damage, paint, packing	
11.	Tubes	S	Damage, paint , packing	Provide end cap
12.	Hume pipes	O	Damage	
13.	Castings	O	Damage, paint, corrosion	
Fabricated mechanical items (pressure vessels, tanks etc.)				
14.	Pressure vessels (unlined)	O	Damage, paint, corrosion,	Covered nozzles
15.	Atmospheric storage tanks (unlined)	O	Damage, paint, corrosion	Covered nozzles

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
16.	Pressure vessels (lined)	S	Damage, paint, corrosion, rubber lining	
17.	Atmospheric storage tanks(lined)	S	Damage, paint, corrosion, rubber lining	
18.	Support structures	O	Damage , paint, corrosion	
19.	Flanges	C	Damage , paint, corrosion	
20.	Fabricated pipes	S	Damage , paint, corrosion	Provide end cap
21.	Vessels internals	C	Damage , paint, corrosion ,packing	
22.	Grills	S	Damage , paint, corrosion	
23.	Angles	S	Damage , paint, corrosion	
24.	Bridge mechanism/clarifier mechanism	O	Damage , paint, corrosion	
25.	Cranes, rails	S	Damage , paint, corrosion	
26.	Stair cases	O	Damage , paint, corrosion	
27.	Ladders/handrails	O	Damage , paint, corrosion	
28.	Fabricated ducts	S	Damage , paint, corrosion	
29.	Isolation Gates	O	Damage , paint, corrosion	
30.	Fabricated boxes/panels	S	Damage , paint, corrosion	
Mechanical components like valves, fittings, cables glands, spares etc.)				
31.	Valves	S	Damage , packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
32.	Fittings	S	Damage , packing	Provide end cap
33.	Cable glands	C	Damage , packing	
34.	Tools & tackles	C	Damage , packing	
35.	Nut , bolts, washers,	C	Damage , packing	
36.	Gasket & Packings	C	Damage , packing	
37.	Copper tubes	C	Damage , packing, corrosion	Provide end cap
38.	SS tubing	C	Damage , packing	Provide end cap
Rotating assemblies (pumps, blowers, stirrers, fans, compressors etc.)				
39.	Pumps	S	Damage , packing, corrosion	Shaft rotation
40.	Blowers/Compressors	S	Damage , packing, corrosion	Shaft rotation
41.	Agitators/stirrers/radial launders	C	Damage , packing, corrosion	Shaft rotation
42.	Rollers for chlorine tonner mounting	C	Damage , packing, corrosion	
43.	Centrifuge	S	Damage , packing,	
44.	Gear box	C	Damage , packing, corrosion	
45.	Bearings	C	Damage , packing, corrosion	
46.	Fans	S	Damage , packing, corrosion	
47.	Dosing skids	S	Damage , packing, corrosion	
48.	Pump assemblies	S	Damage , packing, corrosion	
49.	Air washers(INTERNALS)	S	Damage , packing	
50.	Air conditioners (split)	C	Damage , packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
51.	Elevators(CONTAINERIZED)	O	Damage , packing, corrosion	
52.	Chillers/VA machines	S	Damage , packing	
53.	Air handling Unit/Package unit	S	Damage , packing	
54.	Chlorinators & Evaporators	C	Damage , packing	
55.	Ejectors	C	Damage , packing	
56.	Electrolyser	C	Damage , packing	
Miscellaneous items like chain pulley blocks, hoists etc.				
57.	Chain pulley blocks	S	Damage, Packing	
58.	Electric hoists	S	Damage, Packing	
59.	Fire extinguishers	C	Damage, expiry date	
60.	Fork Lift Truck	S	Damage, Packing	
61.	Hydraulic Mobile Crane	O	Damage, Packing	
62.	Mobile Pick Up & Carry Crane	O	Damage, Packing	
63.	Motor boats	O	Damage, Packing	
64.	Safety showers	S	Damage, Packing	
65.	Diffusers/dampers	S	Damage, Packing	
Chemicals and consumables (acid, alkali, paints, oils, reagents and special chemicals)				
66.	Hydro Chloric Acid (HCl)	Store in canes/ storage tank in dyke area	Date of production/ leakage/fumes	hazardous chemical
67.	Sulphuric acid (H ₂ SO ₄)	Store in canes/ storage tank in dyke area	Date of production/ leakage/fumes	hazardous chemical

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
68.	Sodium hydroxide (NaOH)	Store in canes/ storage tank in dyke area	Date of production/ leakage/ fumes/ breather	hazardous chemical ,breather to be checked for air ingress
69.	Sodium hypo chlorite	To be stored under shed	Date of production/ leakage/ fumes	hazardous chemical ,self-life normally 15-30 days after which strength of chemical decays
70.	Ammonia	S	Date of production/ leakage/ fumes	Store in closed storage tanks, hazardous chemical
71.	CW treatment chemicals	S	Date of production , Self-life	Store in closed canes
72.	RO/UF cleaning chemicals	S	Date of production , Self-life	Store in closed canes
73.	Lime	C	Damage to packing , seepage	Prevent moisture, rain
74.	Alum bricks	C	Damage to packing	Prevent moisture, rain
75.	Poly electrolyte	S		Store in closed storage tanks
76.	Laboratory chemicals(powder)	C	Damage, Packing self- life	
77.	Laboratory chemicals(liquid)	C	Damage, Packing self- life	
78.	Lubrication oils	C	Leakage	
79.	Paints	S	Leakage ,air tightness	
80.	Sand	O	Damage of packing	No hooks
81.	Salt (NaCl)	C	Damage of packing, water ingress	Prevent moisture, rain
82.	Anthracite	S	Damage of packing	
83.	Activated carbon	S	Damage of packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
84.	Thermal insulation	S	Damage of packing	
85.	Cement	C	Damage of packing	Prevent moisture, rain
86.	Gravels	O	Damage of packing	
87.	ION exchange resins	C	Damage , packing	Refer manufacturer guidelines
88.	RO membranes	C	Damage , packing	Refer manufacturer guidelines
89.	UF membranes	C	Damage , packing	Refer manufacturer guidelines
90.	Cleaning chemicals	C	Damage , packing	Refer manufacturer guidelines
91.	Chemicals for analysers/calibration	C	Damage , packing	Refer manufacturer guidelines
Electrical and C & I items (motors, cables etc.)				
92.	Motors	C	Damage , packing	
93.	Cable drums	O	Damage	
94.	Control Panel /control desk, UPS ,JB	S	Damage, Packing	
95.	Instruments(gauges/analysers)	C	Damage	
Special items		As per Manufacturer's item, like Hydrogen cylinders, Ozonator, Analyser, Chlorine dioxide generators etc.		

5. CONCLUSION

Concerned storage agency at site should make sure that loss in equipment performance and wear & tear are minimised through proper storage and preservation. The above are broad guidelines and cover major equipment / materials. However specific storage practices shall be followed as per manufacturer recommendation. All the necessary measures even in addition to the ones mentioned above, if found necessary, should be taken to achieve the objective.

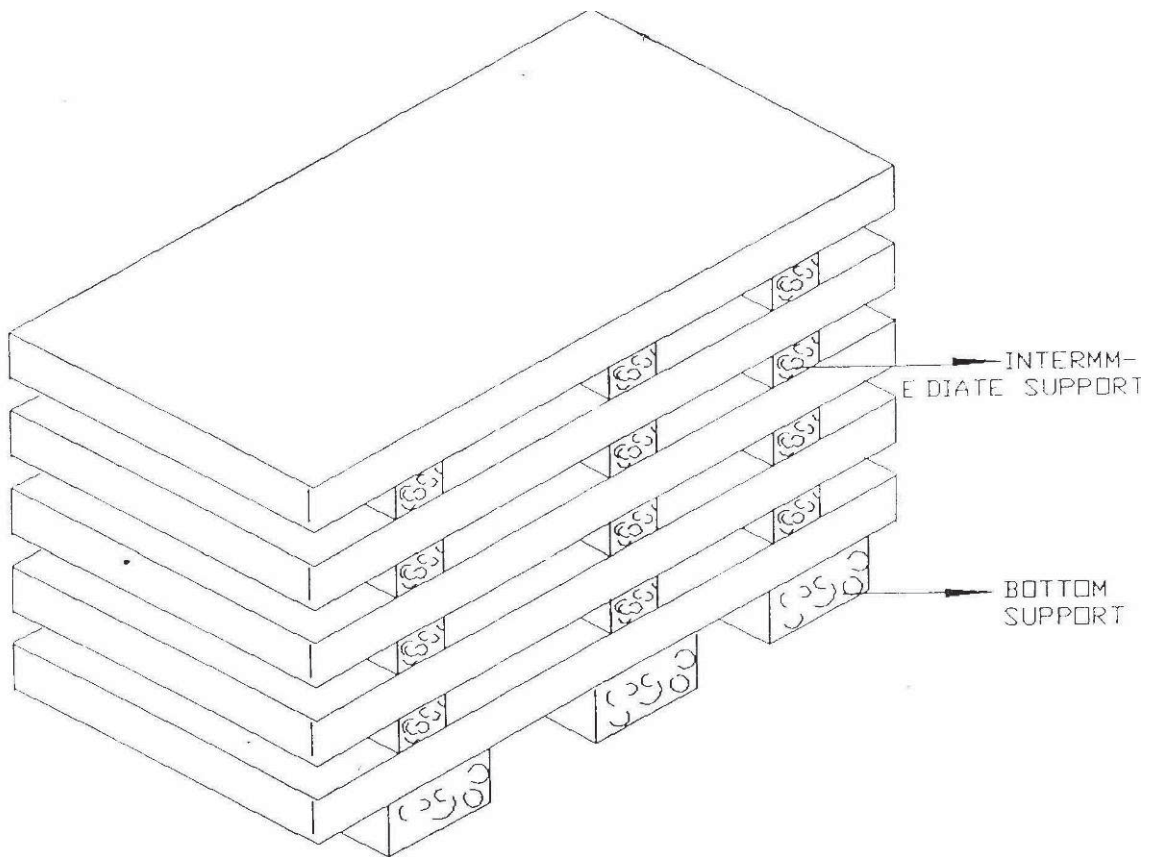


Figure - 1 - PLATE STACKING ARRANGEMENT

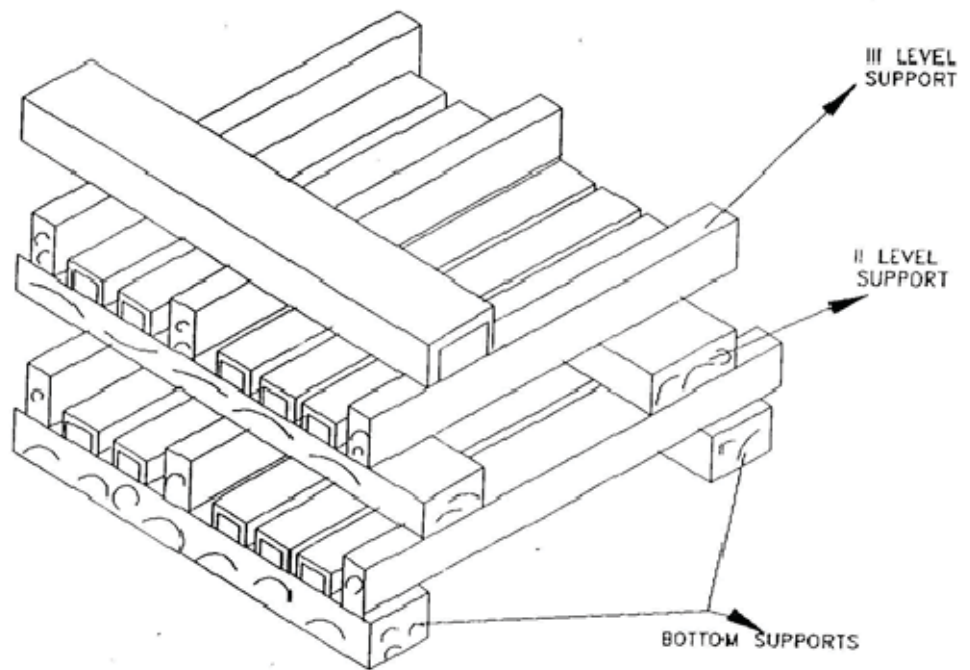


Figure - 2 - STRUCTURAL STEEL STACKING ARRANGEMENT



**1 X 660 MW SAGARDIGHI TPS UNIT NO. 5
PHASE III
VENTILATION SYSTEM
PAINTING & COLOUR SCHEME**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : I

SUB-SECTION : E

REV 00

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**SECTION-I
SUB SECTION E
ANNEXURE-VIII
PAINTING & COLOUR SCHEME
(AS PER SECTION C2-B)**



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
PACKING PROCEDURE**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : I

SUB-SECTION : E

REV 00

DATE: MARCH 2022

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**SECTION-I
SUB SECTION E
ANNEXURE-IX
PACKING PROCEDURE
(COVERED UNDER SECTION C2-B)**



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM**

SPECIFICATION No: PE-TS-445-554-A002

SECTION: II

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DATE: MARCH 2022

SECTION-II



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
INSPECTION AND TESTING**

SPECIFICATION No: PE-TS-445-554-A002

SECTION: II

SUB-SECTION: 1

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**SECTION-II
SUB-SECTION-1
INSPECTION AND TESTING**



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
INSPECTION AND TESTING**

SPECIFICATION No: PE-TS-445-554-A002

SECTION: II

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- 1.01.00 Inspection and Tests during Manufacture.
- 1.01.01 The method and techniques to be used by the Bidder for the control of quality during manufacture of all plant and equipment shall be agreed with the Owner.
- 1.01.02 The Owner's general requirements with respect to quality control and the required shop tests are set out elsewhere in this specification.
- 1.01.03 Before any item of plant or equipment leaves its place of manufacture the Owner shall be given the option of witnessing inspections and tests for compliance with the specification and related standards.
- 1.01.04 Advance notice shall be given to the Owner as agreed in the Contract, prior to the stage of manufacture being reached, and the piece of plant must be held at this stage until the Owner has inspected the piece, or has advised in writing that inspection is waived. If having consulted the Owner and given reasonable notice in writing of the date on which the piece of plant will be available for inspection, the Owner does not attend the Bidder may proceed with manufacture having forwarded to the Owner duly certified copies of his own inspection and test results.
- The owner's representative shall have at all reasonable times access to bidder's or his sub-vendor's premises and shall have power to inspect/ examine materials and workmanship or equipment under manufacture.
- The Bidder shall forthwith forward to the engineer duly certified copies of the Test Certificates in six copies (one to the Purchaser and five to the Consulting Engineer) for approval. Further nine (9) copies of Shop Test Certificates shall be bound with Instruction Manuals referred to elsewhere.
- For electrical equipment, routine tests as per relevant IS spec are to be carried out on all equipment. Type tests are also to be carried out on selected equipment as detailed in the specs of concerned electrical equipment.
- 1.01.05 Under no circumstances any repair or welding of castings be carried out without the consent of the Engineer. Proof of the effectiveness of each repair by radiographic and/or other non-destructive testing technique, shall be provided to the Engineer.
- 1.01.06 All the individual and assembled rotating parts shall be statically and dynamically balanced in the works.
Where accurate alignment is necessary for component parts of machinery normally assembled on site, the Bidder shall allow for trial assembly prior to despatch from place of manufacture.
- 1.01.07 All materials used for the manufacture of equipment covered under this specification shall be of tested quality. Relevant test certificates shall be made available to the Purchaser. The certificates shall include tests for mechanical properties and chemical analysis of representative material. Equipment or parts coming under any statutory



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
INSPECTION AND TESTING**

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Regulations shall be certified by a Competent Authority under the regulations in the specified format.

1.01.08 All pressure parts connected to pumping main shall be subjected to hydraulic testing at a pressure of 150% of shut-off head for a period not less than one hour. Other parts shall be tested for one and half times the maximum operating pressure, for a period not less than one hour.

1.01.09 All necessary non-destructive examinations shall be performed to meet the applicable code requirements.

1.01.10 All welding procedures adopted for performing welding work shall be qualified in accordance with the requirements of Section-IX of ASME code or IBR as applicable. All welded joints for pressure parts shall be tested by liquid penetrant examination according to the method outlined in ASME Boiler and Pressure Vessel code. Radiography, magnetic particle examination magnuflux and ultrasonic testing shall be employed wherever necessary/ recommended by the applicable code. At least 10% of all major but welding joints shall be radiographed unless otherwise stipulated.

Statutory payments in respect of IBR approvals including inspection shall be made by the bidder. Bidder's scope shall include to preparation of all necessary documents, co-ordination and follow-up for above approval. Owner shall only forward assistance/endorsement of documents /design /drawings /reports/records to be submitted for approval as stipulated/ required by Statutory Authorities till registration of the unit and clearance for commercial operation.

1.02.00 Performance Tests at Site

1.02.01 The full requirements for testing the system shall be agreed between the Owner and the Bidder prior to Award of Contract. The completely erected System shall be tested by the Bidder on site under normal operating conditions. The Bidder shall also ensure the correct performance of the System under abnormal conditions, i.e. the correct working of the various emergency and safety devices, interlocks, etc.

1.02.02 The Bidder shall provide complete details of his normal procedures for testing, for the quality of erection and for the performance of the erected plant. These tests shall include site pressure test on all erected pipe work to demonstrate the quality of the piping and the adequacy of joints made at site.

1.02.03 The Bidder shall furnish the quality procedures to be adopted for assuring quality from the receipt of material at site, during storage, erection, pre-commissioning to tests on completion and commissioning of the complete system/equipment.

1.03.00 For details of specific tests required on individual equipment refer to respective section of this specification.

All Statutory testing / clearance is in Bidder's scope including payment of all fees, etc. as required



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
LIST OF DOCUMENTS TO BE SUBMITTED
WITH BID**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

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LIST OF DOCUMENTS TO BE SUBMITTED WITH BID



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
LIST OF DOCUMENTS TO BE SUBMITTED
WITH BID**

SPECIFICATION No: PE-TS-445-554-A002

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BIDDER SHOULD SUBMIT THE SIGNED AND STAMPED COPY OF THE FOLLOWING DOCUMENTS:

1. Compliance cum confirmation certificate
2. Guaranteed power consumption
3. Un priced format for AC package
 - a. Unpriced format for Main package, mandatory spares, tools and tackles and commissioning spares on BHEL e-procurement portal.
4. Deviation schedule /No deviation certificate in attached format 'Deviation sheet (Cost of withdrawal)'.
5. Pre-bid clarification schedule and signed copy of technical corrigenda, if any.



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
COMPLIANCE CUM CONFIRMATION
CERTIFICATE**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

SUB-SECTION : 3

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COMPLIANCE CUM CONFIRMATION CERTIFICATE



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
COMPLIANCE CUM CONFIRMATION
CERTIFICATE**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

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COMPLIANCE CUM CONFIRMATION CERTIFICATE

The bidder shall confirm compliance with following by signing / stamping this compliance certificate (every sheet) and furnish same with the offer.

- a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions, other than those mentioned under "exclusion and those resolved as per 'Schedule of Deviations', with regard to same.
- b) There are no other deviations w.r.t. specifications other than those furnished in the 'Schedule of Deviations'. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the 'Schedule of Deviations'
- c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL / CUSTOMER approval & customer hold points for inspection / testing shall be marked in the QP at the contract stage. Inspection / testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc. This is within the contracted price without any extra implications to BHEL after award of the contract.
- d) All drawings/ data-sheets / calculations etc. submitted along with the offer shall not be taken cognizance off.
- e) The offered materials shall be either equivalent or superior to those specified in the specification & shall meet the specified / intended duty requirements. In case the material specified in the specifications is not compatible for intended duty requirements then same shall be resolved by the bidder with BHEL during the pre-bid discussions, otherwise BHEL / Customer's decision shall be binding on the bidder whenever the deficiency is pointed out.

For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.

- f) The commissioning spares shall be supplied on 'As Required Basis' & prices for same included in the base price itself.
- g) All sub vendors shall be subject to BHEL / CUSTOMER approval in the event of order.
- h) Guarantee for plant/equipment shall be as per relevant clause of GCC / SCC / Other Commercial Terms & Conditions
- i) In the event of order, all the material required for completing the job at site shall be supplied by the bidder within the ordered price even if the same are additional to approved billing break up, approved drawing or approved Bill of quantities within the scope of work as tender specification. This clause will apply in case during site



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
COMPLIANCE CUM CONFIRMATION
CERTIFICATE**

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commissioning, additional requirements emerges due to customer and / or consultant's comments. No extra claims shall be put on this account

- j) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL's / Customer's / Consultant's office for across the table resolution of issues and to get documents approved in the stipulated time.
- k) As built drawings shall be submitted as and when required during the project execution.
- l) The bidder has not tempered with this compliance cum confirmation certificate and if at any stage any tempering in the signed copy of this document is noticed then same shall be treated as breach of contract and suitable actions shall be taken against the bidder.
- m) Successful bidder shall furnish detailed erection manual for each of the equipment supplied under this contract at least 3 months before the scheduled erection of the concerned equipment / component or along with supply of concerned equipment / component whichever is earlier.
- n) Document approval by customer under Approval category or information category shall not absolve the vendor of their contractual obligations of completing the work as per specification requirement. Any deviation from specified requirement shall be reported by the vendor in writing and require written approval. Unless any change in specified requirement has been brought out by the vendor during detail engineering in writing while submitting the document to customer for approval, approved document (with implicit deviation) will not be cited as a reason for not following the specification requirement.
- o) In case vendor submits revised drawing after approval of the corresponding drawing, any delay in approval of revised drawing shall be to vendor's account and shall not be used as a reason for extension in contract completion.



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
PRE-BID CLARIFICATION SCHEDULE**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

SUB-SECTION : 4

REV. NO. 00

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PRE-BID CLARIFICATION SCHEDULE



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
PRE-BID CLARIFICATION SCHEDULE**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

SUB-SECTION : 4

REV. NO. 00

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PRE-BID CLARIFICATION SCHEDULE

S. NO.	SECTION/CLAUSE/PAGE NO.	STATEMENT OF THE REFERRED CLAUSE	CLARIFICATION REQUIRED

The bidder hereby clarifies that above mentioned are the only clarifications required on the technical specification for the subject package.

Signature: _____

Name: _____

Designation: _____

Company: _____

Date: _____

Company Seal



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
NO DEVIATION CERTIFICATE**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

SUB-SECTION : 5

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**NO DEVIATION CERTIFICATE
(REFER ANNEXURE-II OF GCC REV 07)**



1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
NO DEVIATION CERTIFICATE

SPECIFICATION No: PE-TS-445-554-A002

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SL NO	VOUL ME/ SECTI ON	PAG E NO.	CLAU SE NO.	TECHNIC AL SPECIFICA TION/ TENDER DOCUMEN T	COMPLETE DESCRIPTI ON OF DEVIATION	COST OF WITHDR AWAL OF DEVIATI ON	REFERENCE OF PRICE SCHEDULE ON WHICH COST OF WITHDRAW AL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRA WAL OF DEVIATION (POSITIVE/ NEGATIVE)	REASON FOR QUOTIN G DEVIATI ON
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TECHNICAL DEVIATIONS

COMMERCIAL DEVIATIONS

PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE

NAME	DESIGNATIONS	SIGN & DATE	
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NOTES:

1. Cost of withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
2. All the bidders have to list out all of their Technical & Commercial Deviations (if any) in detail in the above format.
3. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
4. Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable. In absence of same, such deviation (s) shall not be considered and offer shall be considered in total compliance to NIT.
5. Bidder shall furnish price copy of above format along with price bid.
6. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
7. Bidders to note that any deviation (technical / commercial) not listed in above and asked after Part I opening shall not be considered.
8. For deviations w.r.t. Credit period, Liquidated damages, Firm prices if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VII, will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy of this format submitted with Priced bid, the cost of withdrawal of deviation shall be taken as NIL.
9. Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
NO DEVIATION CERTIFICATE**

SPECIFICATION No: PE-TS-445-554-A002

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be considered.

10. All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.

11. Cost of withdrawal is to be given separately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL.

12. In case nature of cost of withdrawal (positive/negative) is not specified it shall be assumed as positive.

13. In case of discrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
GUARANTEED POWER
CONSUMPTION (GPC)**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

SUB-SECTION : 6

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SECTION: II

SUB SECTION: 6

GUARANTEED POWER CONSUMPTION (GPC)

1 X 660 MW SAGARDIGHI TPS UNIT NO. 5 PHASE III

VENTILATION SYSTEM

GUARANTEED POWER CONSUMPTION FIGURES

S.NO.	DESCRIPTION OF EQUIPMENT	NO OF EQUIPMENT		TOTAL GUARANTEED POWER CONSUMPTION FOR EACH EQUIPMENT AT MOTOR INPUT TERMINAL AND CONTROL PANEL (IN KW)	DUTY FACTOR	TOTAL KW
		WORKING	STANDBY			
		3A	3B	4	5	6=3Ax4x5
A	VENTILATION SYSTEM FOR TG BUILDING					
i	Centrifugal Fan of cap. 1,40,000 CMH at 85 mmwc static pr for air washers.	8	0		1	
B	VENTILATION SYSTEM FOR ESP CUM FGD BUILDING					
i	Centrifugal Fan of cap. 1,50,000 CMH at 60 mmwc static pr for UAF.	2	0		1	
				TOTAL (KW)		
Note:	<p>Estimated power consumption (EPC) figure for the system (for working drives only) has been considered as 485 kW. So long bidder's quoted guaranteed power consumption (GPC) above remains within this EPC, there will be no technical loading of bid on power consumption for evaluation. However, if bidder's quoted GPC exceeds EPC, there shall be technical loading of bid for evaluation @ INR 462000 per kW of additional power over EPC.</p> <p>Bidder's guaranteed power consumption at motor input terminals (not shaft power) as furnished in relevant schedule shall be demonstrated by the successful bidder during performance testing at works/ site. In case power consumption is noted higher than EPC / bidder's quoted GPC whichever is higher, during inspection/ PG test, penalty @ INR 462000 per kW shall be levied on vendor.</p>					



**1 X 660 MW SAGARDIGHI TPS UNIT
NO. 5 PHASE III
VENTILATION SYSTEM
TENDER DRAWINGS**

SPECIFICATION No: PE-TS-445-554-A002

SECTION : II

Sub Section : 7

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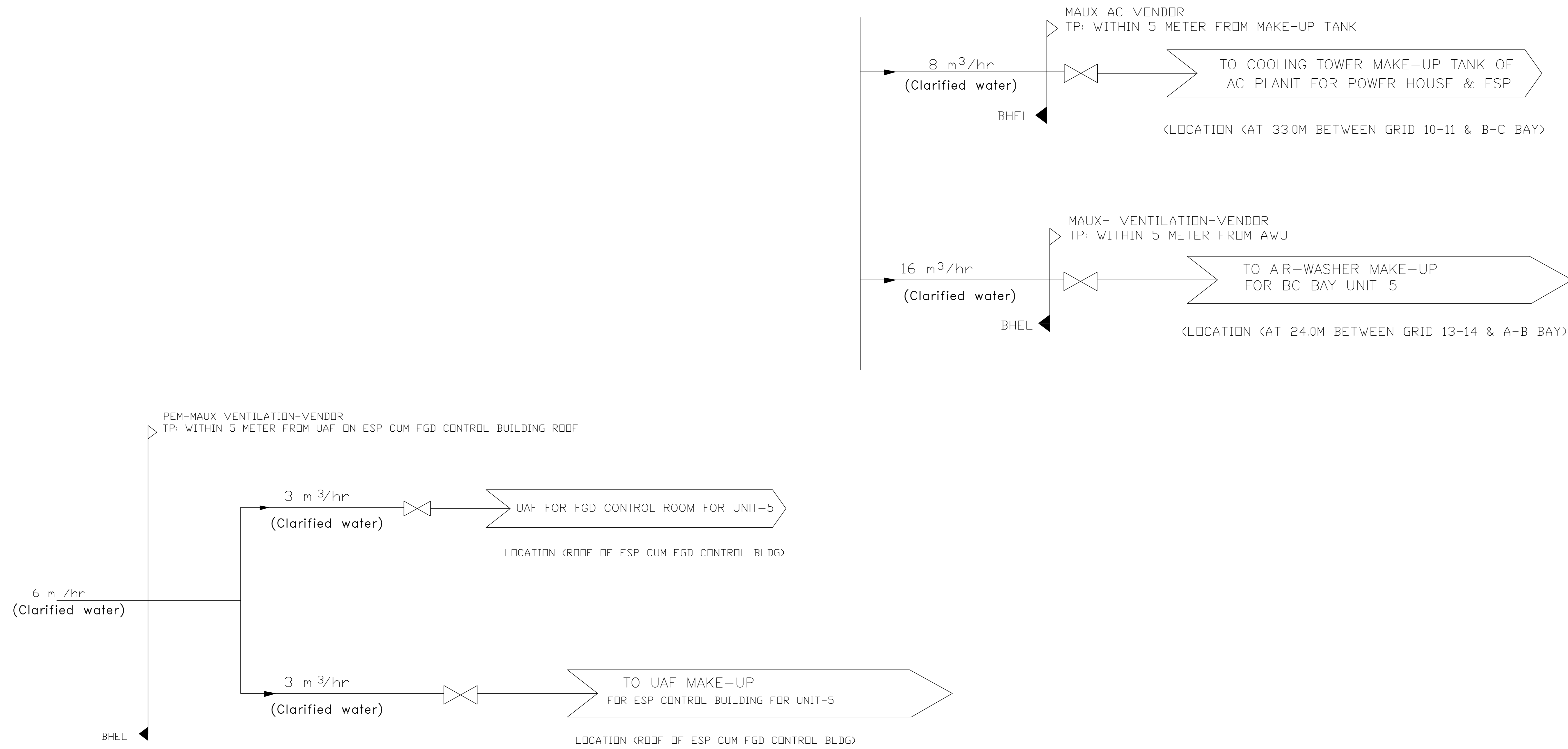
SECTION: II

SUB SECTION: 7

TENDER DRAWINGS

PROJECT NO- 445, 1X660 MW SAGARDIGHI TPS

HVAC System

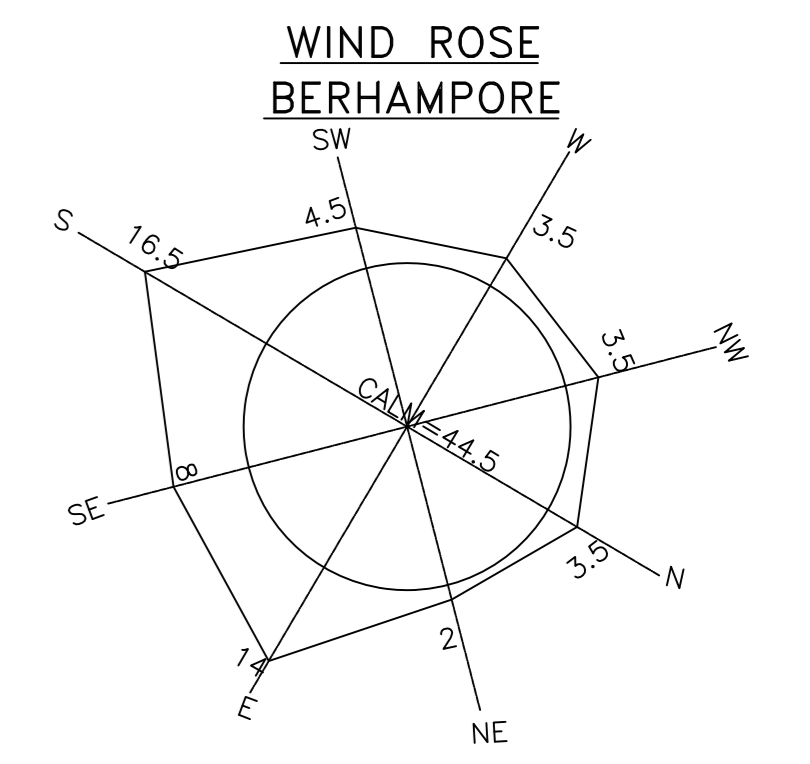
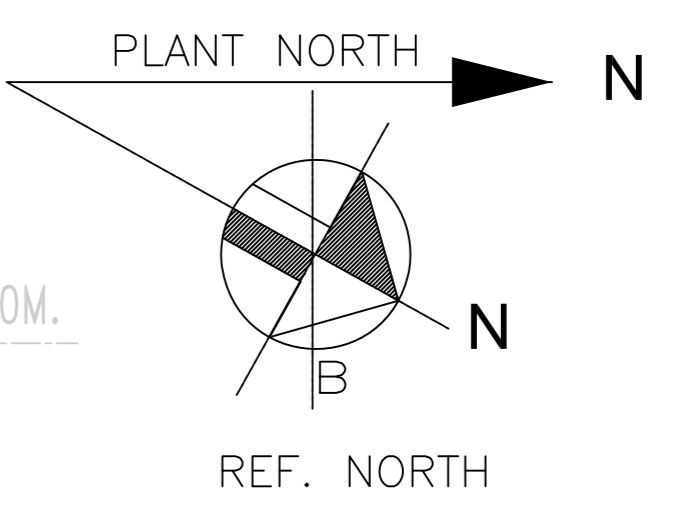
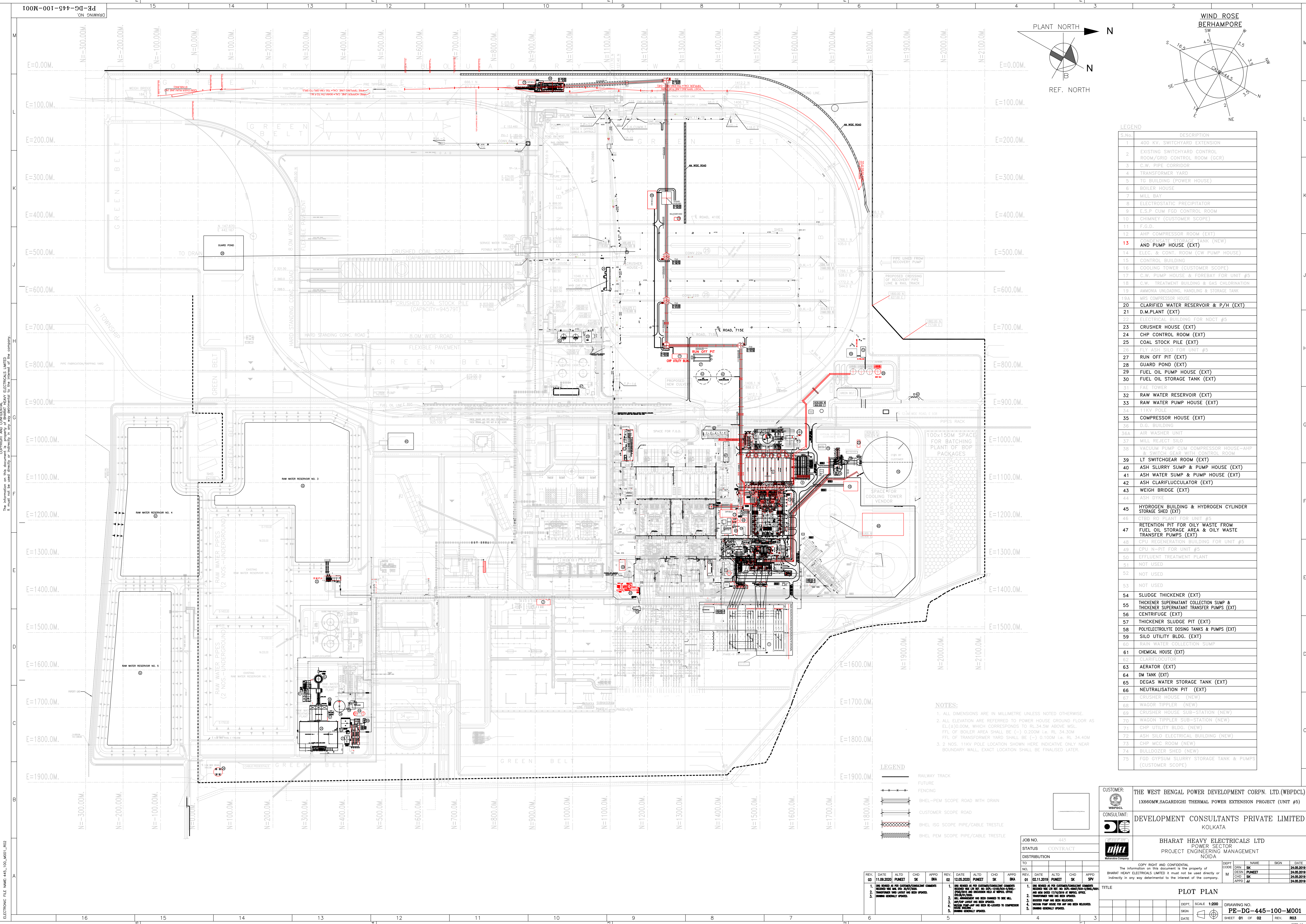


NOTE:-

1. MSE/MPL TO PROVIDE HVAC MAKE-UP WATER PIPING/FITTINGS UP TO THE TERMINAL POINT AS SHOWN IN DRG.
2. HVAC MAKE-UP WATER PIPING INCLUDING FITTINGS SHALL BE TERMINATED WITHIN THE RANGE OF 5 METER DISTANCE FROM MAKE-UP WATER TANK / AIR-WASHER BY BHEL FURTHER PIPING SHALL BE DONE BY RESPECTIVE MAUX VENDOR AS MARKED IN THIS DRG.
3. THE HVAC MAKE-UP WATER ISOLATING VALVES SHALL BE ARRANGED BY VENDOR AS PER THE SCHEME AS MARKED IN THE DRG.
4. HVAC MAKE-UP WATER PR. at EACH TERMINAL POINT SHALL BE MAINTAINED 0.5 kg/cm².
5. AC - SYSTEM MAKE-UP WATER PIPING FROM TERMINAL POINT TO MAKE-UP WATER TANK, EXPANSION TANK & PAN HUMIDIFIER SHALL BE IN SCOPE OF MAUX HVAC SYSTEM VENDOR

FOR CONTRACT

TITLE		MAKE UP WATER SCHEME FOR HVAC SYSTEM (445) 1X660 MW SAGARDIGHI TPS	
SCALE	DATE	CHECKED	
NTS	DRAWN	APPROVED	

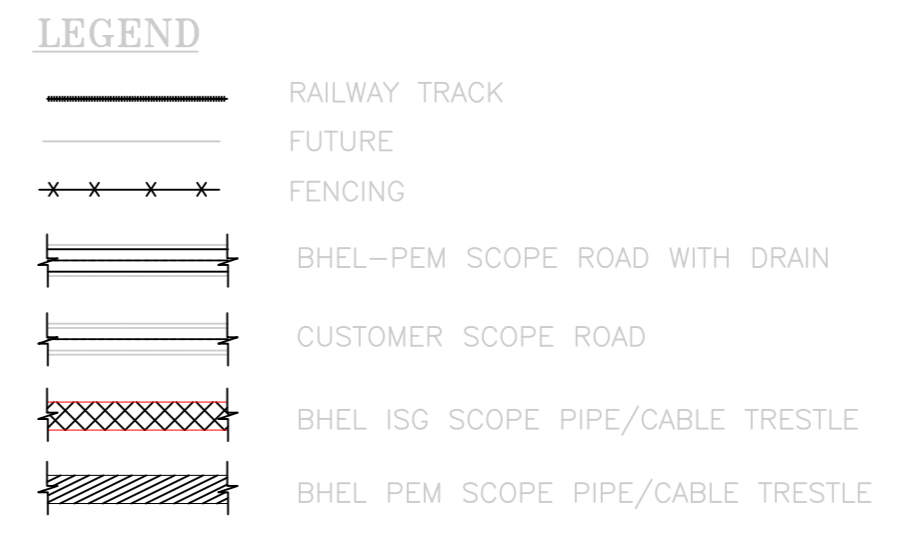


LEGEND

S.No.	DESCRIPTION
1	400 KV. SWITCHYARD EXTENSION
2	EXISTING SWITCHYARD CONTROL ROOM/GRID CONTROL ROOM (GCR)
3	C.W. PIPE CORRIDOR
4	TRANSFORMER YARD
5	TG BUILDING (POWER HOUSE)
6	BOILER HOUSE
7	MILL BAY
8	ELECTROSTATIC PRECIPITATOR
9	E.S.P CUM FGD CONTROL ROOM
10	CHIMNEY (CUSTOMER SCOPE)
11	F.G.D.
12	AHP COMPRESSOR ROOM (EXT)
13	AND PUMP HOUSE (EXT) (NEW)
14	ELEC. & CONT. ROOM (CW PUMP HOUSE)
15	CONTROL BUILDING
16	COOLING TOWER (CUSTOMER SCOPE)
17	C.W. PUMP HOUSE & FOREBAY FOR UNIT #5
18	C.W. TREATMENT BUILDING & GAS CHLORINATION
19	AMMONIA UNLOADING, HANDLING & STORAGE TANK
19A	MRS COMPRESSOR HOUSE
20	CLARIFIED WATER RESERVOIR & P/H (EXT)
21	D.M.PLANT (EXT)
22	ELECTRICAL BUILDING FOR NDCT #5
23	CRUSHER HOUSE (EXT)
24	CHP CONTROL ROOM (EXT)
25	COAL STOCK PILE (EXT)
26	FLY ASH SILO FOR UNIT #5
27	RUN OFF PIT (EXT)
28	GUARD POND (EXT)
29	FUEL OIL PUMP HOUSE (EXT)
30	FUEL OIL STORAGE TANK (EXT)
31	FAE TOWER
32	RAW WATER RESERVOIR (EXT)
33	RAW WATER PUMP HOUSE (EXT)
34	11KV POLE
35	COMPRESSOR HOUSE (EXT)
36	D.S. BUILDING
36A	AIR WASHER UNIT
37	MILL REJECT SILO
38	VACUUM PUMP CUM COMPRESSOR HOUSE-AHP & SWITCH GEAR WITH CONTROL ROOM
39	LT SWITCHGEAR ROOM (EXT)
40	ASH SLURRY SUMP & PUMP HOUSE (EXT)
41	ASH WATER SUMP & PUMP HOUSE (EXT)
42	ASH CLARIFLUCCULATOR (EXT)
43	WEIGH BRIDGE (EXT)
44	ASH DYKE
45	HYDROGEN BUILDING & HYDROGEN CYLINDER STORAGE SHED (EXT)
46	CTSD RO PLANT FOR UNIT #5
47	RETENTION PIT FOR OILY WASTE FROM FUEL OIL STORAGE AREA & OILY WASTE TRANSFER PUMPS (EXT)
48	CO2 REGENERATION BUILDING FOR UNIT #5
49	CPU N-PIT FOR UNIT #5
50	EFFLUENT TREATMENT PLANT
51	NOT USED
52	NOT USED
53	NOT USED
54	SLUDGE THICKENER (EXT)
55	THICKENER SUPERNATANT COLLECTION SUMP & THICKENER SUPERNATANT TRANSFER PUMPS (EXT)
56	CENTRIFUGE (EXT)
57	THICKENER SLUDGE PIT (EXT)
58	POLYELECTROLYTE DOSING TANKS & PUMPS (EXT)
59	SILO UTILITY BLDG. (EXT)
60	RAIN WATER COLLECTION SUMP
61	CHEMICAL HOUSE (EXT)
62	CLARIFLUCCULATOR
63	AERATOR (EXT)
64	DM TANK (EXT)
65	DEGAS WATER STORAGE TANK (EXT)
66	NEUTRALISATION PIT (EXT)
67	CRUSHER HOUSE (NEW)
68	WAGOR TIPPLER (NEW)
69	CRUSHER HOUSE SUB-STATION (NEW)
70	WAGON TIPPLER SUB-STATION (NEW)
71	CHP UTILITY BLDG. (NEW)
72	ASH SILO ELECTRICAL BUILDING (NEW)
73	CHP MCC ROOM (NEW)
74	BULLDOZER SHED (NEW)
75	FGD GYPSUM SLURRY STORAGE TANK & PUMPS (CUSTOMER SCOPE)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRE UNLESS NOTED OTHERWISE.
2. ALL ELEVATION ARE REFERRED TO POWER HOUSE GROUND FLOOR AS EL(+0.00)M, WHICH CORRESPONDS TO RL.34.5M ABOVE MSL. FTL OF BOILER AREA SHALL BE (-) 0.200M I.E. RL. 34.30M. FTL OF TRANSFORMER YARD SHALL BE (-) 0.100M I.E. RL. 34.40M.
3. 2 NOS. 11KV POLE LOCATION SHOWN HERE INDICATIVE ONLY NEAR BOUNDARY WALL, EXACT LOCATION SHALL BE FINALISED LATER.



REVISIONS

NO.	DATE	BY	CHKD	APPROV	REASON
1	11.09.2020	PUNJET	SK	BRK	ISSUED AS PER CUSTOMER/COMMITTEE COMMENTS
2	12.05.2020	PUNJET	SK	BRK	ISSUED AS PER CUSTOMER/COMMITTEE COMMENTS
3	02.11.2019	PUNJET	SK	SPV	ISSUED AS PER CUSTOMER/COMMITTEE COMMENTS

JOB NO. 445

STATUS CONTRACT

DISTRIBUTION

TO	NO.	DATE	BY	CHKD	APPROV
DRN	SK	24.05.2019			
PUNJET	SK	24.05.2019			
CHD	SK	24.05.2019			
APPROV	SK	24.05.2019			

CUSTOMER: THE WEST BENGAL POWER DEVELOPMENT CORPN. LTD.(WBPDCL)
1X660MW.SAGARDIGHI THERMAL POWER EXTENSION PROJECT (UNIT #5)

CONSULTANT: DEVELOPMENT CONSULTANTS PRIVATE LIMITED
KOLKATA

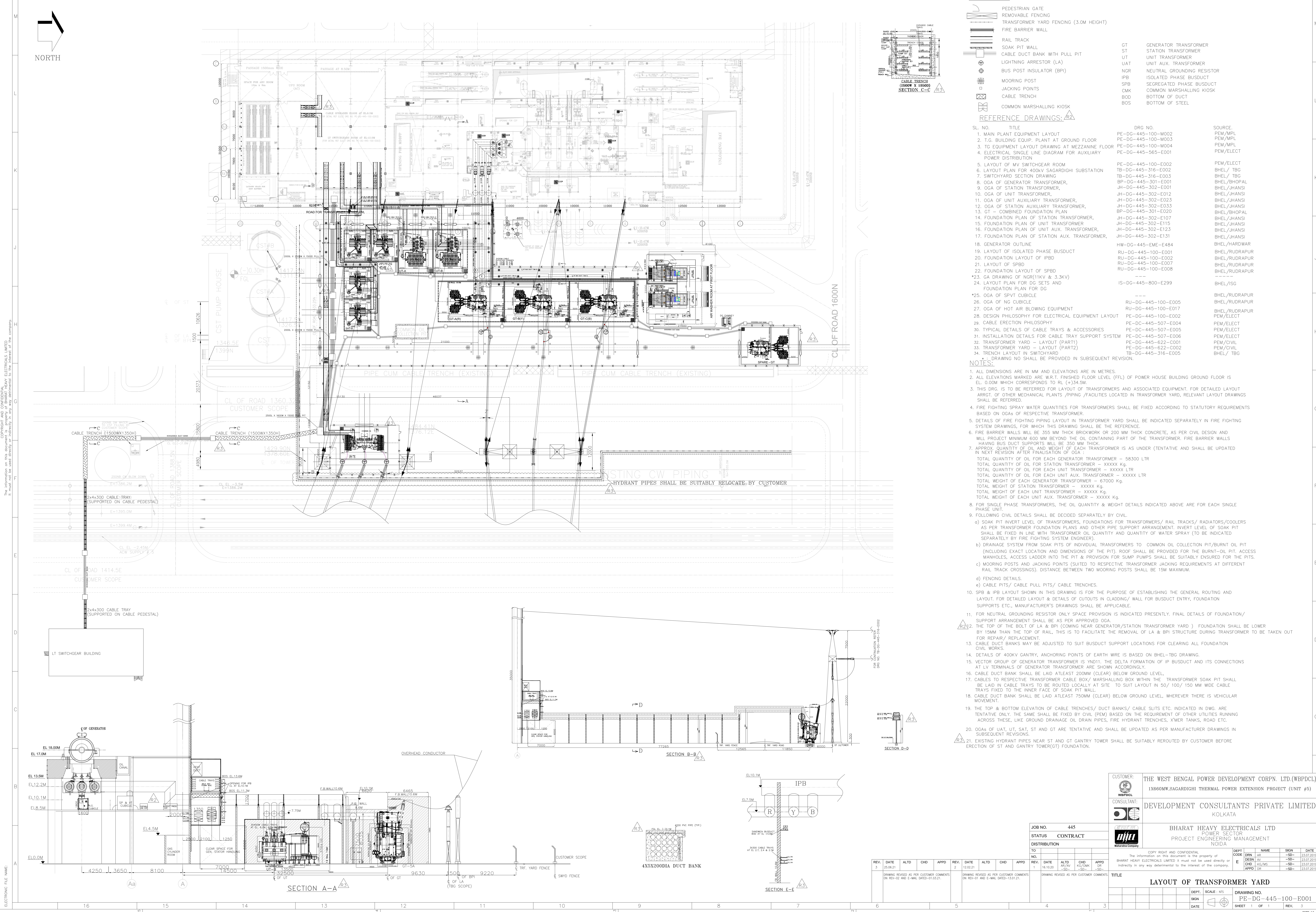
BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA

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TITLE: PLOT PLAN

DEPT. SCALE: 1:200
DRAWING NO. PE-DG-445-100-M001
SHEET 01 OF 02
REV. 003

ELECTRONIC FILE NAME: 445_100_M001_R02



LEGENDS: -

	PEDESTRIAN GATE	GT	GENERATOR TRANSFORMER
	REMOVABLE FENCING	ST	STATION TRANSFORMER
	TRANSFORMER YARD FENCING (3.0M HEIGHT)	UT	UNIT TRANSFORMER
	FIRE BARRIER WALL	UAT	UNIT AUX. TRANSFORMER
	RAIL TRACK	NGR	NEUTRAL GROUNDING RESISTOR
	SOAK PIT WALL	IPB	ISOLATED PHASE BUSDUCT
	CABLE DUCT BANK WITH PULL PIT	CMK	COMMON MARSHALLING KIOSK
	LIGHTNING ARRESTOR (LA)	BOD	BOTTOM OF DUCT
	BUS POST INSULATOR (BPI)	BOS	BOTTOM OF STEEL
	MOORING POST		
	JACKING POINTS		
	CABLE TRENCH		
	COMMON MARSHALLING KIOSK		

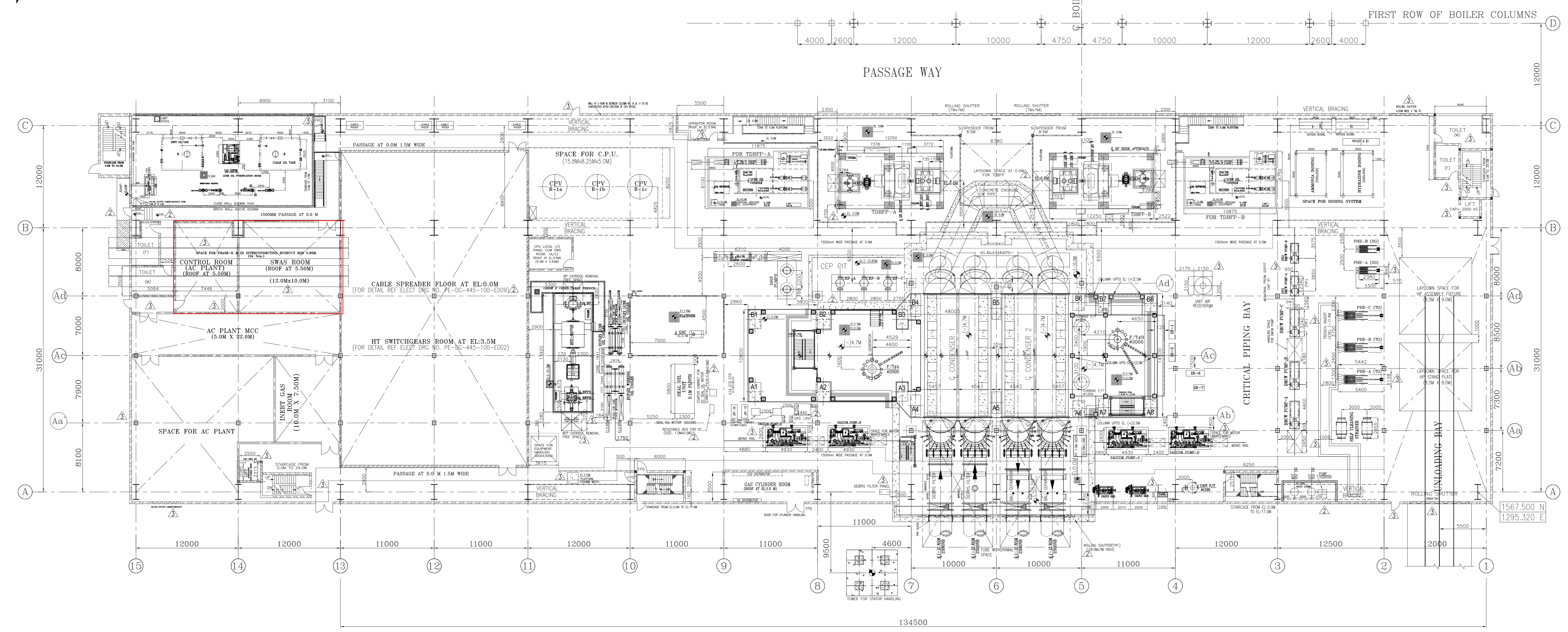
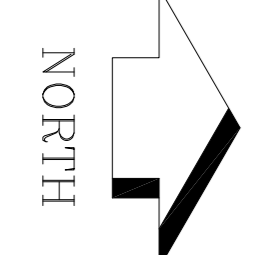
REFERENCE DRAWINGS: -

SL. NO.	TITLE	DRG NO.	SOURCE
1.	MAIN PLANT EQUIPMENT LAYOUT	PE-DG-445-100-M002	PEM/MPL
2.	T.G. BUILDING EQUIP. PLANT AT GROUND FLOOR	PE-DG-445-100-M003	PEM/MPL
3.	TG EQUIPMENT LAYOUT DRAWING AT MEZZANINE FLOOR	PE-DG-445-100-M004	PEM/MPL
4.	ELECTRICAL SINGLE LINE DIAGRAM FOR AUXILIARY POWER DISTRIBUTION	PE-DG-445-565-E001	PEM/ELECT
5.	LAYOUT OF MV SWITCHGEAR ROOM	PE-DG-445-100-E002	PEM/ELECT
6.	LAYOUT PLAN FOR 400KV SAGARDIGHI SUBSTATION	TE-DG-445-316-E002	BHEL/TBG
7.	SWITCHYARD SECTION DRAWING	TB-DG-445-316-E003	BHEL/TBG
8.	OGA OF GENERATOR TRANSFORMER	BP-DG-445-301-E001	BHEL/BHOPAL
9.	OGA OF STATION TRANSFORMER	JH-DG-445-302-E001	BHEL/JHANSI
10.	OGA OF UNIT TRANSFORMER	JH-DG-445-302-E012	BHEL/JHANSI
11.	OGA OF UNIT AUXILIARY TRANSFORMER	JH-DG-445-302-E023	BHEL/JHANSI
12.	OGA OF STATION AUXILIARY TRANSFORMER	JH-DG-445-302-E033	BHEL/JHANSI
13.	GT - COMBINED FOUNDATION PLAN	BP-DG-445-301-E020	BHEL/BHOPAL
14.	FOUNDATION PLAN OF STATION TRANSFORMER	JH-DG-445-302-E107	BHEL/JHANSI
15.	FOUNDATION PLAN OF UNIT TRANSFORMER	JH-DG-445-302-E115	BHEL/JHANSI
16.	FOUNDATION PLAN OF UNIT AUX. TRANSFORMER	JH-DG-445-302-E123	BHEL/JHANSI
17.	FOUNDATION PLAN OF STATION AUX. TRANSFORMER	JH-DG-445-302-E131	BHEL/JHANSI
18.	GENERATOR OUTLINE	HW-DG-445-EME-E484	BHEL/HARDWAR
19.	LAYOUT OF ISOLATED PHASE BUSDUCT	RU-DG-445-100-E001	BHEL/RUDRAPUR
20.	FOUNDATION LAYOUT OF IPBD	RU-DG-445-100-E002	BHEL/RUDRAPUR
21.	LAYOUT OF SPBD	RU-DG-445-100-E007	BHEL/RUDRAPUR
22.	FOUNDATION LAYOUT OF SPBD	RU-DG-445-100-E008	BHEL/RUDRAPUR
23.	GA DRAWING OF NGR(11kV & 3.3kV)	---	---
24.	LAYOUT PLAN FOR DG SETS AND FOUNDATION PLAN FOR DG	IS-DG-445-800-E299	BHEL/ISG
25.	OGA OF SPVT CUBICLE	---	---
26.	OGA OF NO CUBICLE	RU-DG-445-100-E005	BHEL/RUDRAPUR
27.	OGA OF HOT AIR BLOWING EQUIPMENT	RU-DG-445-100-E017	BHEL/RUDRAPUR
28.	DESIGN PHILOSOPHY FOR ELECTRICAL EQUIPMENT LAYOUT	PE-DG-445-100-E002	PEM/ELECT
29.	CABLE ERECTION PHILOSOPHY	PE-DC-445-507-E004	PEM/ELECT
30.	TYPICAL DETAILS OF CABLE TRAYS & ACCESSORIES	PE-DC-445-507-E005	PEM/ELECT
31.	INSTALLATION DETAILS FOR CABLE TRAY SUPPORT SYSTEM	PE-DC-445-507-E006	PEM/ELECT
32.	TRANSFORMER YARD - LAYOUT (PART 1)	PE-DG-445-622-C001	PEM/CIVIL
33.	TRANSFORMER YARD - LAYOUT (PART 2)	PE-DG-445-622-C002	PEM/CIVIL
34.	TRENCH LAYOUT IN SWITCHYARD	TB-DG-445-316-E005	BHEL/TBG

- NOTES:**
- ALL DIMENSIONS ARE IN MM AND ELEVATIONS ARE IN METRES.
 - ALL ELEVATIONS MARKED ARE W.R.T. FINISHED FLOOR LEVEL (FLL) OF POWER HOUSE BUILDING GROUND FLOOR IS EL. 0.00M WHICH CORRESPONDS TO RL (+)34.5M.
 - THIS DRG. IS TO BE REFERRED FOR LAYOUT OF TRANSFORMERS AND ASSOCIATED EQUIPMENT. FOR DETAILED LAYOUT ARRGT. OF OTHER MECHANICAL PLANTS /PIPPING /FACILITIES LOCATED IN TRANSFORMER YARD, RELEVANT LAYOUT DRAWINGS SHALL BE REFERRED.
 - FIRE FIGHTING SPRAY WATER QUANTITIES FOR TRANSFORMERS SHALL BE FIXED ACCORDING TO STATUTORY REQUIREMENTS BASED ON OGAs OF RESPECTIVE TRANSFORMER.
 - DETAILS OF FIRE FIGHTING PIPING LAYOUT IN TRANSFORMER YARD SHALL BE INDICATED SEPARATELY IN FIRE FIGHTING SYSTEM DRAWINGS, FOR WHICH THIS DRAWING SHALL BE THE REFERENCE.
 - FIRE BARRIER WALLS WILL BE 355 MM THICK BRICKWORK OR 200 MM THICK CONCRETE, AS PER CIVIL DESIGN AND WILL PROJECT MINIMUM 800 MM BEYOND THE OIL CONTAINING PART OF THE TRANSFORMER. FIRE BARRIER WALLS HAVING BUS DUCT SUPPORTS WILL BE 350 MM THICK.
 - APPROX. QUANTITY OF OIL AND WEIGHT OF EACH TRANSFORMER IS AS UNDER (TENTATIVE AND SHALL BE UPDATED IN NEXT REVISION AFTER FINALISATION OF OGA).
 TOTAL QUANTITY OF OIL FOR EACH GENERATOR TRANSFORMER - 58300 LTR
 TOTAL QUANTITY OF OIL FOR STATION TRANSFORMER - XXXXXX Kg.
 TOTAL QUANTITY OF OIL FOR EACH UNIT TRANSFORMER - XXXXXX LTR
 TOTAL QUANTITY OF OIL FOR EACH UNIT AUX. TRANSFORMER - XXXXXX LTR
 TOTAL WEIGHT OF EACH GENERATOR TRANSFORMER - 67000 Kg.
 TOTAL WEIGHT OF STATION TRANSFORMER - XXXXXX Kg.
 TOTAL WEIGHT OF EACH UNIT TRANSFORMER - XXXXXX Kg.
 TOTAL WEIGHT OF EACH UNIT AUX. TRANSFORMER - XXXXXX Kg.
 - FOR SINGLE PHASE TRANSFORMERS, THE OIL QUANTITY & WEIGHT DETAILS INDICATED ABOVE ARE FOR EACH SINGLE PHASE UNIT.
 - FOLLOWING CIVIL DETAILS SHALL BE DECIDED SEPARATELY BY CIVIL.
 a) SOAK PIT INVERT LEVEL OF TRANSFORMERS, FOUNDATIONS FOR TRANSFORMERS/ RAIL TRACKS/ RADIATORS/COOLERS AS PER TRANSFORMER FOUNDATION PLANS AND OTHER PIPE SUPPORT ARRANGEMENT. INVERT LEVEL OF SOAK PIT SHALL BE FIXED IN LINE WITH TRANSFORMER OIL QUANTITY AND QUANTITY OF WATER SPRAY (TO BE INDICATED SEPARATELY BY FIRE FIGHTING SYSTEM ENGINEER).
 b) DRAINAGE SYSTEM FROM SOAK PITS OF INDIVIDUAL TRANSFORMERS TO COMMON OIL COLLECTION PIT/BURNIT OIL PIT (INCLUDING EXACT LOCATION AND DIMENSIONS OF THE PIT). ROOF SHALL BE PROVIDED FOR THE BURNIT-OIL PIT. ACCESS MANHOLES, ACCESS LADDER INTO THE PIT & PROVISION FOR SUMP PUMPS SHALL BE SUITABLY ENSURED FOR THE PITS.
 c) MOORING POSTS AND JACKING POINTS (SUITED TO RESPECTIVE TRANSFORMER JACKING REQUIREMENTS AT DIFFERENT RAIL TRACK CROSSINGS). DISTANCE BETWEEN TWO MOORING POSTS SHALL BE 15M MAXIMUM.
 d) FENCING DETAILS.
 e) CABLE PITS/ CABLE PULL PITS/ CABLE TRENCHES.
 - SPB & IPB LAYOUT SHOWN IN THIS DRAWING IS FOR THE PURPOSE OF ESTABLISHING THE GENERAL ROUTING AND LAYOUT. FOR DETAILED LAYOUT & DETAILS OF CUTOUPS IN CLADDING/ WALL FOR BUSDUCT ENTRY, FOUNDATION SUPPORTS ETC., MANUFACTURER'S DRAWINGS SHALL BE APPLICABLE.
 - FOR NEUTRAL GROUNDING RESISTOR ONLY SPACE PROVISION IS INDICATED PRESENTLY, FINAL DETAILS OF FOUNDATION/ SUPPORT ARRANGEMENT SHALL BE AS PER APPROVED OGA.
 - THE TOP OF THE BOLT OF LA & BPI (COMING NEAR GENERATOR/STATION TRANSFORMER) FOUNDATION SHALL BE LOWER BY 15MM THAN THE TOP OF RAIL, THIS IS TO FACILITATE THE REMOVAL OF LA & BPI STRUCTURE DURING TRANSFORMER TO BE TAKEN OUT FOR REPAIR/ REPLACEMENT.
 - CABLE DUCT BANKS MAY BE ADJUSTED TO SUIT BUSDUCT SUPPORT LOCATIONS FOR CLEARING ALL FOUNDATION CIVIL WORKS.
 - DETAILS OF 400KV GANTRY, ANCHORING POINTS OF EARTH WIRE IS BASED ON BHEL-TBG DRAWING.
 - VECTOR GROUP OF GENERATOR TRANSFORMER IS YND11. THE DELTA FORMATION OF IP BUSDUCT AND ITS CONNECTIONS AT LV TERMINALS OF GENERATOR TRANSFORMER ARE SHOWN ACCORDINGLY.
 - CABLE DUCT BANK SHALL BE LAID ATLEAST 200MM (CLEAR) BELOW GROUND LEVEL.
 - CABLES TO RESPECTIVE TRANSFORMER CABLE BOX/ MARSHALLING BOX WITHIN THE TRANSFORMER SOAK PIT SHALL BE LAID IN CABLE TRAYS TO BE ROUTED LOCALLY AT SITE TO SUIT LAYOUT IN 50/ 100/ 150 MM WIDE CABLE TRAYS FIXED TO THE INNER FACE OF SOAK PIT WALL.
 - CABLE DUCT BANK SHALL BE LAID ATLEAST 750MM (CLEAR) BELOW GROUND LEVEL, WHEREVER THERE IS VEHICULAR MOVEMENT.
 - THE TOP & BOTTOM ELEVATION OF CABLE TRENCHES/ DUCT SLITS ETC. INDICATED IN DWG. ARE TENTATIVE ONLY. THE SAME SHALL BE FIXED BY CIVIL (PEM) BASED ON THE REQUIREMENT OF OTHER UTILITIES RUNNING ACROSS THESE, LIKE GROUND DRAINAGE OIL DRAIN PIPES, FIRE HYDRANT TRENCHES, X'MER TANKS, ROAD ETC.
 - OGAs OF UAT, UT, SAT, ST AND GT ARE TENTATIVE AND SHALL BE UPDATED AS PER MANUFACTURER DRAWINGS IN SUBSEQUENT REVISIONS.
 - EXISTING HYDRANT PIPES NEAR ST AND GT GANTRY TOWER SHALL BE SUITABLY REROUTED BY CUSTOMER BEFORE ERECTION OF ST AND GANTRY TOWER(GT) FOUNDATION.

Electronic file name: PE-DG-445-100-E001

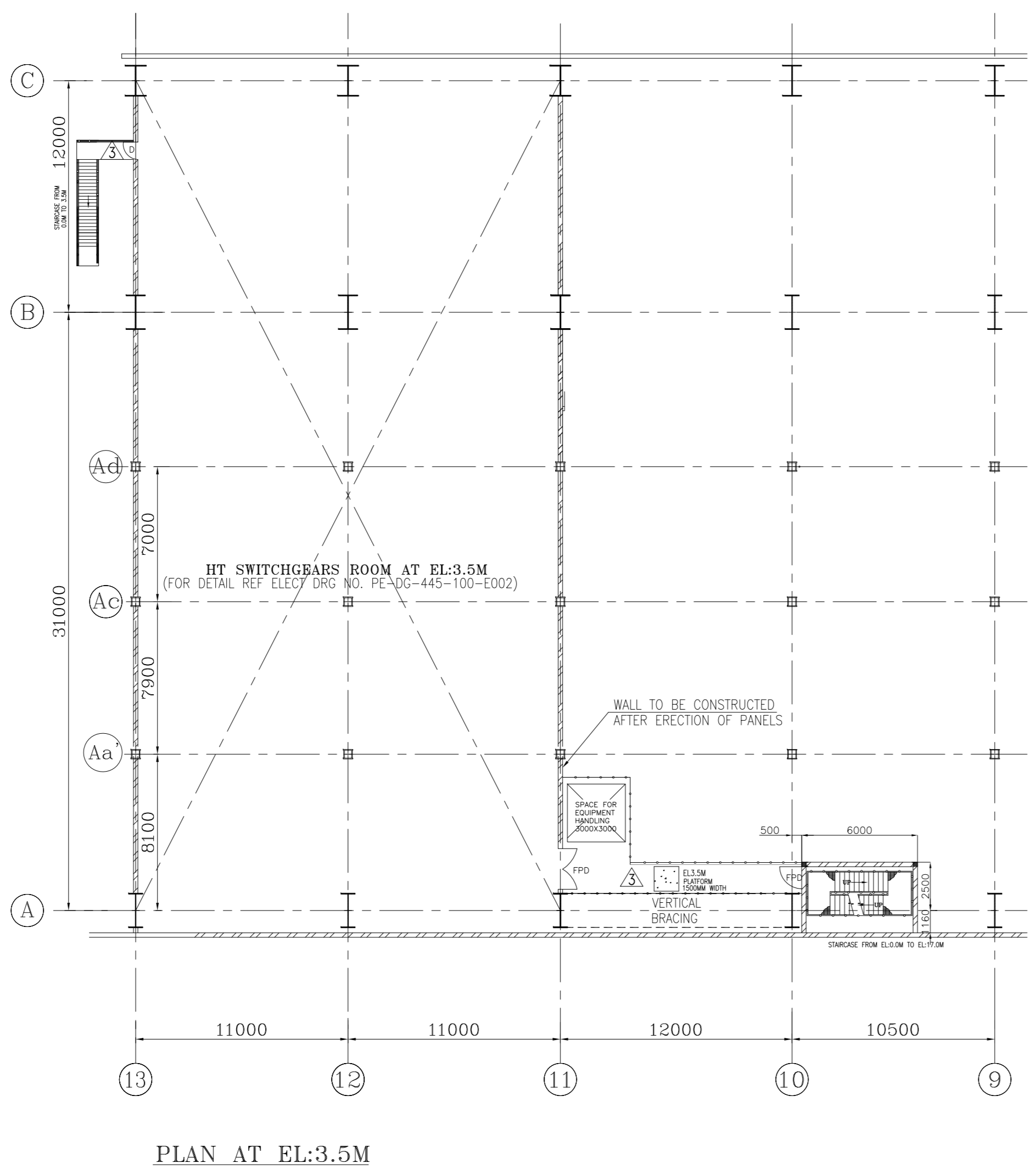
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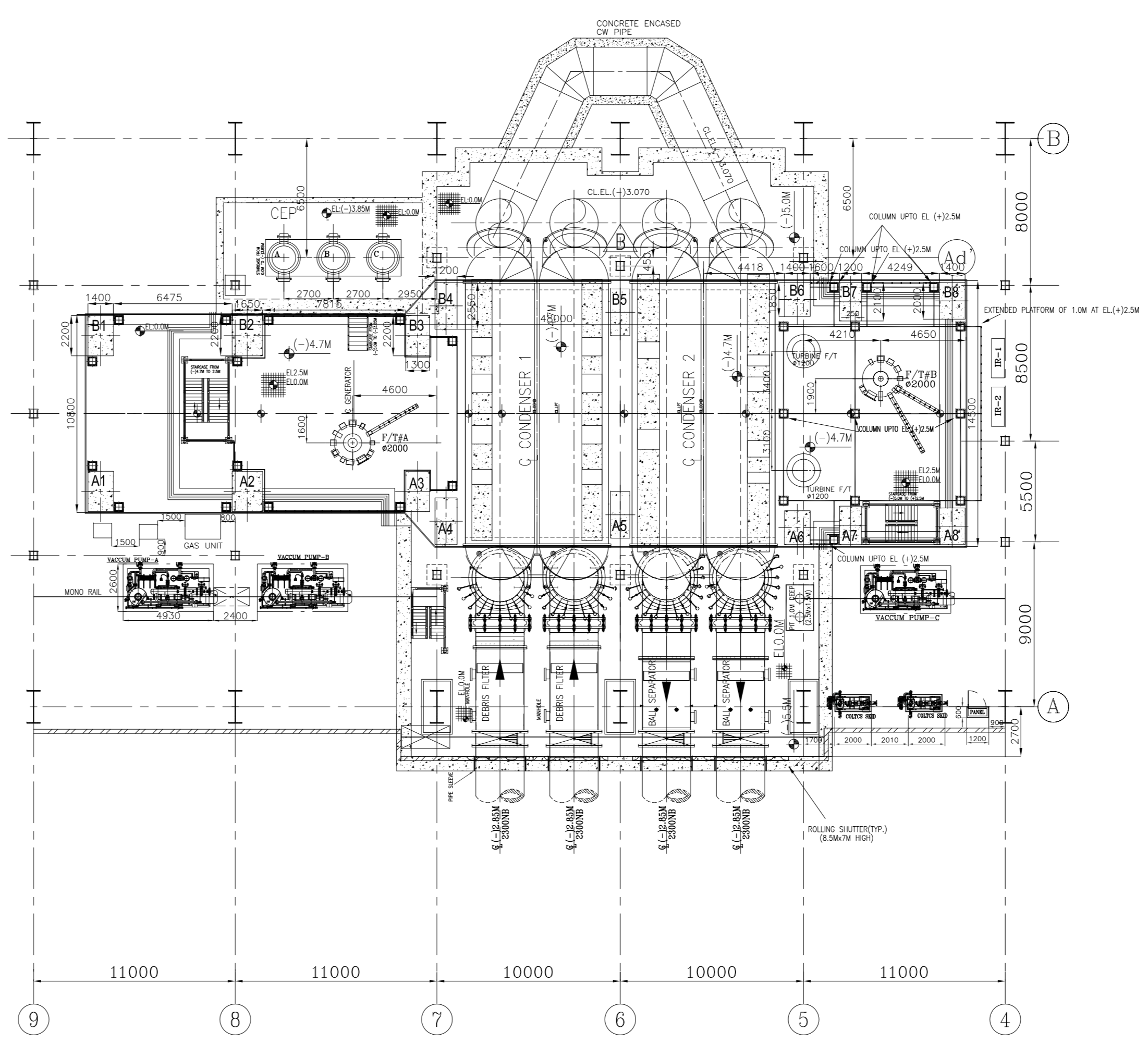
- REFERENCE DRAWINGS:**
- EQUIPMENT PLAN AT 8.5M & 12.0M PE-00-445-100-M004
 - EQUIPMENT PLAN AT 17.0M PE-00-445-100-M005
 - EQUIPMENT PLAN AT 24.0M PE-00-445-100-M006
 - CROSS SECTION OF MAIN PLANT PE-00-445-100-M007
 - CONDENSER ASSEMBLY HW-DG-445-HKE-001
 - TG FOUNDATION ARRANGEMENT
 - GLAND STEAM CONDENSER
 - FOUNDATION DETAILS OF GEN. AUXILIARY EQUIPMENTS
 - FOUNDATION ARRANGEMENT OF CEP
 - GENERAL ARRANGEMENT OF DRAIN COOLER
 - FOUNDATION DETAILS OF HPSU (HPB VALVE)
 - VACUUM PUMP
 - GA OF DOT & PUMP
 - GA OF WOT
 - PLOT PLAN OF TDRFP
 - GA OF HP DRAIN F/T
 - GA OF LP DRAIN F/T
 - GA OF STEAM DRAIN F/T
 - GA OF UNIT F/T
 - GA OF CLEAN OIL TANK
 - GA OF DIRTY OIL TANK
 - ARRANG. & ASSY. OF OIL UNLOADING VESSEL
 - GPU SKID
 - GA OF DOSING SKID
 - SWITCHGEAR LAYOUT PE-00-445-100-E001
 - CABLE SPREADER FLOOR AT EL.0.0M PE-00-445-100-E009
 - SWAS ROOM LAYOUT PE-00-445-145-403
 - GA LAYOUT & WIRING DRGS. FOR LOCAL INSTRUMENT ENCLOSURES & RACKS (L / LR) EW-00-445-1535-027
 - INTERCONNECTION BUS DUCT BETWEEN # 3&4 AND #5 PE-00-445-100-E011

- NOTES**
- ALL DIMENSIONS ARE IN MM'S AND LEVELS ARE IN METRES.
 - ALL ELEVATIONS INDICATED IN THE DRG. ARE W.R.T. POWER HOUSE GROUND FLOOR ELEVATION AS 0.0M WHICH CORRESPONDS TO RL34.5M.
 - CABLE DUCT/TROUGH/SPLIT LAYOUT IS SHOWN FOR REPRESENTATIVE PURPOSE ONLY. FOR DETAILS REFER ELECTRICAL DRAWING.
 - MIN. HEADROOM CLEARANCE OF 2.2M MAY BE CONSIDERED FOR ANY SITE ROUTED ACTIVITY.
 - MIN. CLEARANCE OF 1.2M AROUND EQUIPMENT MAY BE CONSIDERED FOR ANY SITE ROUTED ACTIVITY.

- LEGEND:**
- CHEQUERED PLATE FLOORING
 - REMOVABLE CHEQUERED PLATE
 - GRATED FLOORING
 - REMOVABLE GRATING
 - CONCRETE BLOCK
 - HAND RAILING
 - PARAPET WALL
 - GLASS PARTITION
 - CUT OUTS
 - BRICK WALL
 - ROLLING SHUTTER



PLAN AT EL:3.5M



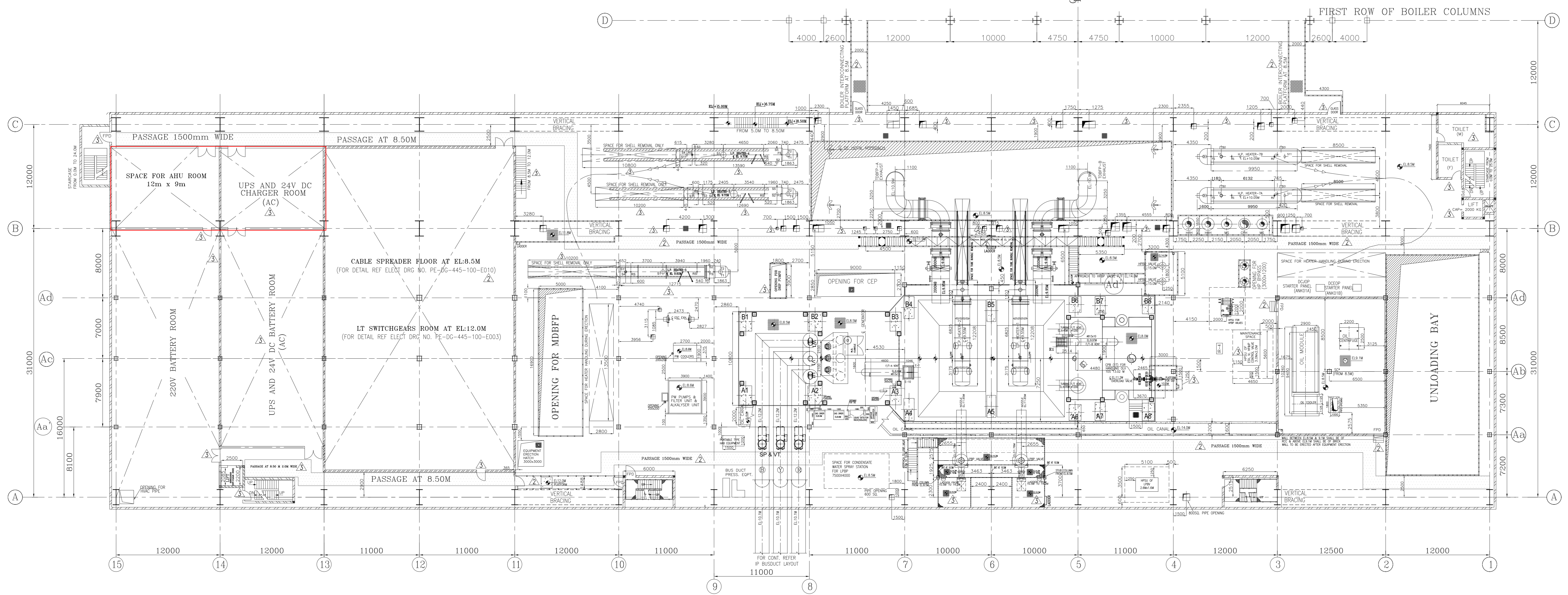
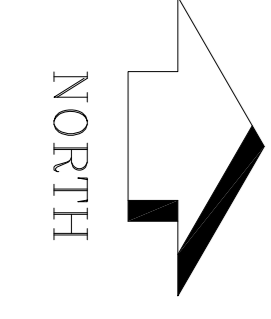
DETAILS OF PLATFORM AT EL. 0M/2.5M

JOB NO.	445
STATUS	CONTRACT
DISTRIBUTION	

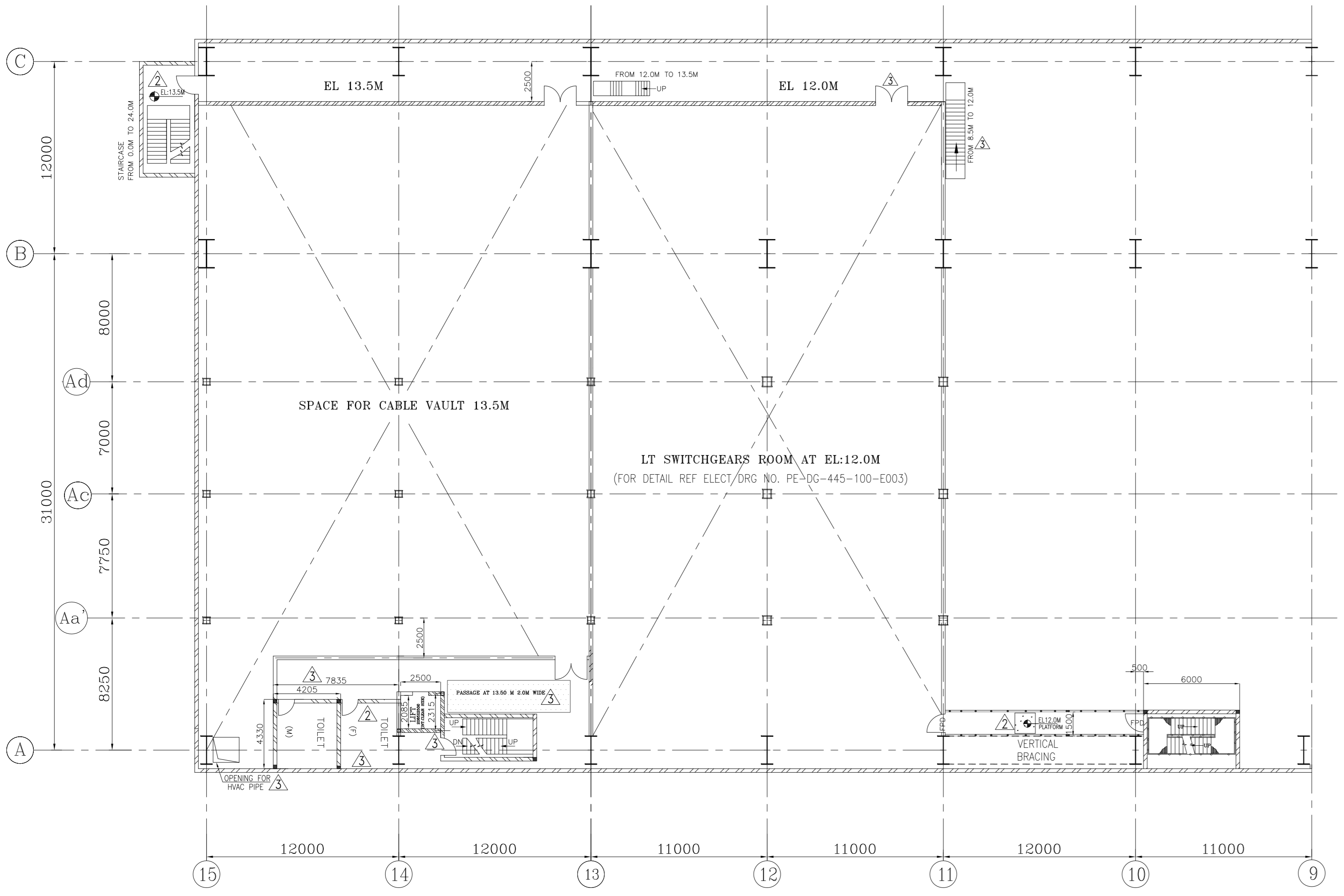
CUSTOMER:	THE WEST BENGAL POWER DEVELOPMENT CORPN. LTD.(WBPDCL) 1X660MW, SAGARDIGHI THERMAL POWER EXTENSION PROJECT (UNIT #5)
CONSULTANT:	DEVELOPMENT CONSULTANTS PRIVATE LTD. KOLKATA
CLIENT:	BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD
03	24/12/2019			PUNEET SR	02	17/11/2019			PUNEET SR	01	25/09/2019			PUNEET SR
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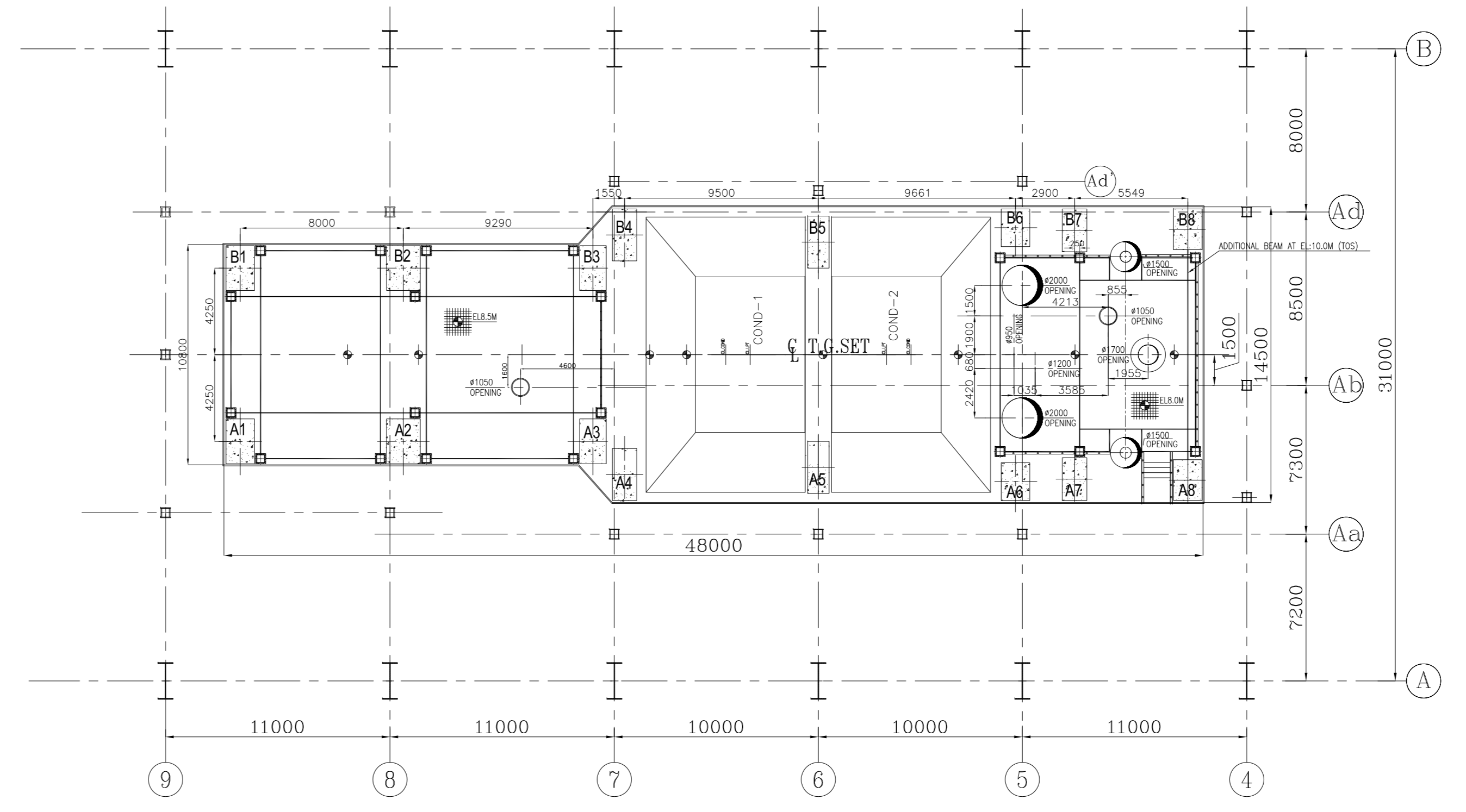
TITLE				T.G. EQUIPMENT LAYOUT PLAN AT EL. 0.0M			
DEPT.	SCALE	DRAWING NO.		DEPT.	SCALE	DRAWING NO.	
DRN	1:200	PE-DG-445-100-M003		DRN	1:200	PE-DG-445-100-M003	
CHK				CHK			
APPD				APPD			
SHEET	01	OF	01	SHEET	01	OF	01



PLAN AT EL:8.5M



PLAN AT EL:12.0M/13.5M



PLATFORM AT EL:8.0M/EL:8.5M LEVEL

- REFERENCE DRAWINGS:**
- EQUIPMENT PLAN AT 0.0M PE-DG-445-100-M003
 - EQUIPMENT PLAN AT 17.0M PE-DG-445-100-M005
 - EQUIPMENT PLAN AT 24.0M PE-DG-445-100-M006
 - CROSS SECTION OF MAIN PLANT PE-DG-445-100-M007
 - CONDENSER ASSEMBLY HW-DG-445-HXE-A001
 - TG FOUNDATION ARRANGEMENT HW-DG-445-000-A152
 - FOUNDATION DETAILS OF HPSU (HPPB VALVE) -
 - UPS & 24V DC BATTERY ROOM LAYOUT PE-DG-445-145-1405
 - OIL ROOM ARRANGEMENT AND LOADING DATA HW-DG-445-000-A010
 - CABLING LAYOUT BELOW LV SWITCHGEAR ROOM PE-DG-445-100-E010
 - LAYOUT OF LV SWITCHGEAR ROOM PE-DG-445-100-E003
 - GA, LAYOUT & WIRING DRGS. FOR LOCAL INSTRUMENT ENCLOSURES & RACKS (LIE / LIR) EN-DG-445-1535-027
 - INTERCONNECTION BUS DUCT BETWEEN # 3&4 AND #5 PE-DG-445-100-E011
 - LP HEATER 1 & 2 GA HW-DG-445-HXE-A005
 - LPBP VALVE ARRANGEMENT PLAN HW-DG-445-149-A002
 - GA OF LP HEATER-3 HY-DG-445-149-A002
 - GA OF LP HEATER-4 HY-DG-445-149-A003
 - GA OF LP HEATER-5 HY-DG-445-149-A004

- NOTES**
- ALL DIMENSIONS ARE IN MM'S AND LEVELS ARE IN METRES.
 - ALL ELEVATIONS INDICATED IN THE DRG. ARE W.R.T. POWER HOUSE GROUND FLOOR ELEVATION AS 0.00M WHICH CORRESPONDS TO RL34.5M.
 - CABLE DUCT/TRENCH/SLOT LAYOUT IS SHOWN FOR REPRESENTATIVE PURPOSE ONLY. FOR DETAILS REFER ELECTRICAL BRANING.
 - MIN. HEADROOM CLEARANCE OF 2.2M MAY BE CONSIDERED FOR ANY SITE ROUTED ACTIVITY.
 - MIN. CLEARANCE OF 1.2M AROUND EQUIPMENT MAY BE CONSIDERED FOR ANY SITE ROUTED ACTIVITY.

- LEGEND:**
- CHEQUERED PLATE FLOORING
 - REMOVABLE CHEQUERED PLATE
 - GRATED FLOORING
 - REMOVABLE GRATING
 - CONCRETE BLOCK
 - HAND RAILING
 - PARAPET WALL
 - GLASS PARTITION
 - CUT OUTS
 - BRICK WALL

CUSTOMER:		THE WEST BENGAL POWER DEVELOPMENT CORPN. LTD.(WBPDCL) 1X1660MW, SAGARDIGHI THERMAL POWER EXTENSION PROJECT (UNIT #5)	
CONSULTANT:		DEVELOPMENT CONSULTANTS PRIVATE LTD. KOLKATA	
PROJECT:		BHARAT HEAVY ELECTRICALS LTD POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA	
JOB NO.	445	DEPT.	ENR
STATUS	CONTRACT	DRN	PUNEET
DISTRIBUTION		CHD	SK
		APPD	SPV

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD
03	02/01/21		SK	BKA	02	10/11/20		SK	BKA	01	09/09/20		SK	BKA
01					01					01				
02					02					02				
03					03					03				

TITLE T.G. EQUIPMENT LAYOUT PLAN AT EL. 8.5M

DEPT. SCALE 1:200 DRAWING NO. PE-DG-445-100-M004
 SHEET 01 OF 01 REV. R3