

TD-201 Rev No. 00 Form No.	 BHEL HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING HYDERABAD		PY 51384	
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COPYRIGHT 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.		TECHNICAL PURCHASE SPECIFICATION FOR GOODS CUM PASSENGER ELEVATOR			
		PROJECT		CAPTIVE POWER PLANT(CPP) PACKAGE, VISAKH REFINERY MODERNIZATION PROJECT (VRMP), JOB No. B016	
		CUSTOMER		HINDUSTAN PETROLEUM CORPORATION LIMITED,VIZAG	
		CONSULTANT		ENGINEERS INDIA LIMITED (EIL), NEW DELHI	
Ref. Doc	Revision :00 Refer to record of revisions :	Prepared:  RAJEEV JAIN	Checked:  GIRISH PRASAD PALO	Approved :  SIVA PRASAD BABU	Date : 22.04.19

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COPYRIGHT 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. DOCUMENTS TO BE SUBMITTED WITH THE BID: The bidder must submit the following documents along with their bid so as to enable BHEL to evaluate their offer. a) Technical Offer b) Duly filled in Elevator datasheet as per Annexure-2 c) Tentative GA drawing for BHEL' reference only. d) Un-priced copy of price bid format indicating quoted/ not quoted against each row & column as per Annexure-4 e) Checklist (Annexure-5) f) Deviation list [if any] g) Preparatory works to be taken care by owner. <u>In case the above-mentioned documents are not submitted with the offer, the offer of the bidder may be liable for technical rejection.</u>			
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COPYRIGHT 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.		<u>PURCHASE SPECIFICATION FOR GOOD CUM PASSANGER ELEVATOR</u>	
		1.0 <u>INTENT OF SPECIFICATION</u> This specification specifies the requirement of Design, Engineering, Manufacturing, Assembling, Inspection, Shop Testing at manufacturer's works, Delivery properly packed and painted for transport, Erection, Commissioning and testing at site of <u>Passenger Elevator</u> and final handing over to customer, complete with all accessories as specified in the scope of work and as required for the safe and trouble-free operation of equipment to be installed at site. 2.0 <u>SPECIAL NOTES TO BIDDERS:</u> 2.0.1 This specification shall be read in conjunction with its enclosures. In case of any discrepancy arising between this specification & its enclosures, the most stringent of all shall be followed and shall over-ride others. Further, if a requirement in this specification or its enclosures, calls for decision of owner/BHEL, it shall be bidder's sole responsibility to clearly bring out the same distinctively in his technical tender offer, so as to enable owner/BHEL to furnish their decision. If such a requirement is not duly addressed by bidder during tender stage and same comes out during order execution stage, it shall be binding on the bidder to comply with the decision furnished by owner/BHEL then, without any cost, delivery, or any other commercial implications. 2.0.2 Any additional equipment, material, etc., which are not specifically mentioned here, but are required to make the supplied equipment complete in all respect, in accordance with the intent of this technical specification, contractual agreement, statutory requirements, relevant/applicable codes/standards, good engineering practices, and for safe and trouble-free operation, shall be deemed to be covered under the scope of this specification. 2.0.3 The Bidder shall accept full responsibility for the completeness and for the faultless working of all the equipment. These shall be executed on the basis of proven design principle and in accordance with the latest state of the art in such a manner that the purpose to be served by the crane unit is fulfilled in every respect and a maximum of operational dependability and efficiency are assured. Standardization of equipment, materials etc. shall be employed in the design. Care shall be taken to ensure safe operation as well as simplicity of assembling and dismantling of all parts of the plant. 2.0.4 Bidder shall quote strictly as per the scope of supply and requirements of this specification. 2.0.5 Bidder offer shall be strictly as per these specification requirements. Unsolicited or Alternate offers from the bidders will not be entertained. 2.0.6 In case bidder feels that it is necessary to exclude some components of scope of supply or some of the features of specification requirements due to any technical constraints, bidder shall bring the same to the notice of purchaser during pre-bid stage and take their prior approval before submission of their bid. 2.0.7 Incase Bidder is unable to offer due to any specific requirement of specification, Bidder shall bring out the same in their regret letter. Otherwise, it will be considered that non-participation by the bidder is attributable to reasons other than any specification requirements. 3.0 <u>Application of Goods Cum Passenger Elevator:</u> 1 No. Goods cum Passenger Elevator for Switchgear Building & 1 No. Goods cum Passenger Elevator for GIS Building is required for transportation of Goods and passenger between various floors of respective building.	
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COPYRIGHT 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.	4.0 <u>APPLICABLE CODES AND STANDARDS</u> Latest revision of all standards listed below shall be followed for design, manufacture, testing erection and commissioning duly taking care of EIL Specification for Electric Traction Lift (Annexure-2). IS: 4666 Specification for Electric Passenger and Goods Elevator IS: 14665 Specification for Electric Traction Lifts IS: 11706 General requirements for car frame for electric passenger and goods lift. IS: 11615 Car & counter weight guide shoes for electric passenger and goods lift. IS: 10191 Car and counter weight, guide rail supports and fastening for lifts IS: 1860 Code of practice for installation, operation and maintenance of Electric Passenger and Goods Elevator. IS: 116333 Lift doors IS 8151 Single speed three stage induction motors for driving lift IS: 3534 Outline dimension of Electric Elevator IS: 7759 Specification for Elevator door locking devices and contacts. IS: 325 Specification for 3 phase Induction motors. IS: 3043 Code of practice for Earthing IS: 10913 Breaks for electric passenger and goods lift IS: 9803 Buffers for electric passenger and goods lift IS: 8216 Guide for inspection of lift wire rope IS: 6383 Electric service lift IS:9878 Safety gears and governors for electric passenger and goods lift. IS:10448 Retiring cam for electric passenger and goods lift IS:4289 Flexible cables for lift and other flexible connections National Electrical Code National Building Code Any other code /standards/safety procedures not listed above, but required to be followed, for supplying the unit as defined in the specification, shall be complied with by the vendor. 5.0 SCOPE OF SUPPLY AND SERVICES Designs, supply of material, fabrication, erection, inspection and testing, commissioning and handing over of Passenger Elevator are covered under this specification. This shall be read in conjunction with scope matrix between bidder and owner included as Annexure-2 5.1 SCOPE OF SUPPLY a) Scope of supply as per Annexure-2 [Interface scope matrix] & as per technical specification [Main Item].			
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Ref. Doc	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.	b) Commissioning Spares as required [Main Item]. c) Special tools & tackles as required [Main Item]. d) 2 Years Recommended Spares [Optional Item].																																									
		5.2 SCOPE OF SERVICES: The scope of services shall include: i) Design, engineering, preparation of detailed fabrication drawings, bill of material, tag and piece numbers, welding procedures, erection and commissioning procedures, preventive and overhauling recommendations etc. Stiffeners and other structural framing for supporting the Elevator shall be designed and properly shown in the fabrication drawings. ii) Bidder to furnish fabrication, erection & commissioning, testing and inspection procedure along with drawing / documents to facilitate fabrication, Erection & Commissioning, testing and inspection of Elevator iii) Unloading of materials at site, storage, shifting of materials from storage spare to work place is excluded from Bidder's Scope of services. iv) Erection and commissioning of the complete unit and checking of the various safety aspects. Performance Test of the complete unit as per applicable codes & standards, finish painting & hand over the unit to the customer. v) Inspection & Initial Certification of Lift Installation at site by concerned statutory(As applicable). vi) For More Clarity, Refer Interface Scope Matrix [Annexure-1].																																									
6.0 TECHNICAL DATA: The following are the basic technical data for the Goods Cum Passenger Elevator:		<table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Description</th> <th>For Switchgear Building</th> <th>For GIS Building</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Design Ambient Temp.</td> <td>45 Deg. C</td> <td>45 Deg. C</td> </tr> <tr> <td>2</td> <td>Location</td> <td>HPCL, Vizag</td> <td>HPCL, Vizag</td> </tr> <tr> <td>3</td> <td>Design Standard</td> <td>As per code mentioned in Cl. No. 3.0.0 duly taking care of EIL Specification(6-61-0202Rev.1)</td> <td>As per code mentioned in Cl. No. 3.0.0 duly taking care of EIL Specification(6-61-0202Rev.1)</td> </tr> <tr> <td>4</td> <td>Area Classification</td> <td>Safe Area</td> <td>Safe Area</td> </tr> <tr> <td>5</td> <td>Type of Elevator</td> <td>Machine Room traction type, Geared Motor or Motor with Gearbox Type Passenger elevator</td> <td>Machine Room traction type, Geared Motor or Motor with Gearbox Type Passenger elevator</td> </tr> <tr> <td>6</td> <td>Minimum Load Carrying Capacity</td> <td>1.5 MT</td> <td>1.5 MT</td> </tr> <tr> <td>7</td> <td>Quantity</td> <td>1 No.</td> <td>1 No.</td> </tr> <tr> <td>8</td> <td>Car Enclosure material</td> <td>Stainless Steel with Hair line/ Chequered Finish</td> <td>Stainless Steel with Hair line/ Chequered Finish</td> </tr> <tr> <td>9</td> <td>Car & Landing Doors</td> <td>Stainless Steel with Hair line/</td> <td>Stainless Steel with Hair line/</td> </tr> </tbody> </table>		Sl. No.	Description	For Switchgear Building	For GIS Building	1	Design Ambient Temp.	45 Deg. C	45 Deg. C	2	Location	HPCL, Vizag	HPCL, Vizag	3	Design Standard	As per code mentioned in Cl. No. 3.0.0 duly taking care of EIL Specification(6-61-0202Rev.1)	As per code mentioned in Cl. No. 3.0.0 duly taking care of EIL Specification(6-61-0202Rev.1)	4	Area Classification	Safe Area	Safe Area	5	Type of Elevator	Machine Room traction type, Geared Motor or Motor with Gearbox Type Passenger elevator	Machine Room traction type, Geared Motor or Motor with Gearbox Type Passenger elevator	6	Minimum Load Carrying Capacity	1.5 MT	1.5 MT	7	Quantity	1 No.	1 No.	8	Car Enclosure material	Stainless Steel with Hair line/ Chequered Finish	Stainless Steel with Hair line/ Chequered Finish	9	Car & Landing Doors	Stainless Steel with Hair line/	Stainless Steel with Hair line/
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COPYRIGHT 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.			Chequered Finish	Chequered Finish	
	10	Car Ceiling	Stainless Steel with Hair line Finish	Stainless Steel with Hair line Finish	
	11	Car Floor	CS with Polished Granite floor/ SS chequered plate	CS with Polished Granite floor/ SS chequered plate	
	12	Speed	1.0 m/sec	1.0 m/sec	
	13	Travel Height Elevator well dimension	As per Building Height [Refer Drawing,Annexure-3] Lift well size ~ Refer Civil Drawing.	As per Building Height [Refer Drawing,Annexure-3] Lift well size ~ Refer Civil Drawing.	
	14	No. of Stops	4 (G+3) Landing Elevations Ground : EL+ 100.0 1st floor : EL+ 103.6 2nd floor: EL+ 109.6 3 rd Floor : EL+ 113.2 Top Floor Elevation: EL+ 119.2	4 (G+3) Landing Elevations Ground : EL+ 100.0 1st floor : EL+ 103.6 2nd floor: EL+ 106.0 3 rd Floor : EL+ 109.6 Top Floor Elevation: EL+ 115.1	
	15	No. of Openings	4 (Same Side)	4 (Same Side)	
	16	Elevator entrance door size	Minimum 1500 mm (W) and 2000 mm (H)	Minimum 1500 mm (W) and 2000 mm (H)	
	17	Car Size	1700 mm Wide x 2000 mm Deep, as per IS 14665.	1700 mm Wide x 2000 mm Deep, as per IS 14665.	
	18	Drive	Electrical Variable Speed Drive	Electrical Variable Speed Drive	
	19	Controls	Fully Automatic Microprocessor based full collative logic.	Fully Automatic Microprocessor based full collative logic.	
	20	Control Panel	As per Sub Vendor List(Ann-10)	As per Sub Vendor List(Ann-10)	
	21	Power Supply to Elevator	BHEL will terminate one 3-phase supply and one single-phase supply at top floor landing for each elevator. Terminal box, circuit breaker, and other electrical protections are to be included in Bidders Scope.	BHEL will terminate one 3-phase supply and one single-phase supply at top floor landing for each elevator. Terminal box, circuit breaker, and other electrical protections are to be included in Bidders Scope.	
	22	Special Features/ Accessories	1. Roof mounted ventilation fan/Blower inside car. 2. Car Call push buttons at landing floors. 3. Voice Communication System Inside the car/Intercom 4. Car door & Landing door open indicator(Audio/Visual) 5. Emergency fire man service (Fireman Switch with hammer at main lobby ground floor) 6. LED Car lighting and LED Emergency light with battery	1. Roof mounted ventilation fan/Blower inside car. 2. Car Call push buttons at landing floors. 3. Voice Communication System Inside the car/Intercom 4. Car door & Landing door open indicator(Audio/Visual) 5. Emergency fire man service (Fireman Switch with hammer at main lobby ground floor) 6. LED Car lighting and LED Emergency light with battery	
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23	Structural steel	and battery charger 7. Automatic Rescue Device 8. Alarm bell at Ground Floor 9. Emergency car light unit 10. Infrared curtain door time protection 11. Emergency alarm button 12. Door open close button 13. Auto fan cut off 14. Car arrival chime on car top 15. Display in car operating panel : Red LED dot matrix 16. Overload Signal 17. Any other feature mentioned in EIL specification(Doc. No. 6-61-0202Rev.1)	and battery charger 7. Automatic Rescue Device 8. Alarm bell at Ground Floor 9. Emergency car light unit 10. Infrared curtain door time protection 11. Emergency alarm button 12. Door open close button 13. Auto fan cut off 14. Car arrival chime on car top 15. Display in car operating panel : Red LED dot matrix 16. Overload Signal 17. Any other feature mentioned in EIL specification(Doc. No. 6-61-0202Rev.1)
		Structural steel shall be Grade E350 Quality BR/B0 conforming to IS 2062. Anchor Bolts shall be of Grade E250 Quality BR/B0 conforming to IS 2062.	Structural steel shall be Grade E350 Quality BR/B0 conforming to IS 2062. Anchor Bolts shall be of Grade E250 Quality BR/B0 conforming to IS 2062.

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7.0 TECHNICAL DATA:

The technical details mentioned below to be read in conjugation with EIL specification for Electric Traction Lift (Doc. No. 6-61-0202Rev.1).For items, which are not mentioned below. EIL Spec to be followed.

7.1 Wire Rope

The car and counter weight shall be suspended by stainless steel/zinc wire ropes. The number of wire ropes and size of wire rope shall be so chosen that highest factor of safety is achieved as per standard. Not less than three independent suspension ropes shall be used. The minimum diameter of rope shall be 12mm and factor of safety 12.
Governor ropes shall be similar to hoisting ropes. Their ends shall be securely attached to the car and to the safety gear. The governor ropes shall be tensioned by a weight loaded device in the pit.

7.2 CAR

7.2.1 Car Frame and safety device

1. Every Lift car shall be carried in a complete frame of steel which shall be sufficiently rigid to withstand the operation of the safety gear without permanent deformation to the car frame. The car structure shall be SS finish with hairline finish.

2. At least four renewable guide shoes with renewable linings or set of roller guides shall be provided, two at the top and two at the bottom of the car frame.

3. The safety device mounted on the bottom members of the frame operated by a centrifugal speed governor shall be arranged to bring the car to a gradual stop on the guide rails in the event of excessive descending speed; and provision shall be made to shut off the power supply to the motor.

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Ref.	Doc	2. Car door shall have a clear opening as per standard.		

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Ref. Doc		7.6 TERMINAL BUFFERS		

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COPYRIGHT 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.		iii) Motors shall be suitable for direct online starting. Continuous motor rating shall be at least ten (10) percent above the kW requirement of driven equipment under entire operating range including voltage and frequency variation. Maximum torque shall not be less than 200% of full load torque. iv) Motor shall capable of starting and accelerating to full speed at full load (including loaded Equipment at Eighty- five (85) percent nominal voltage at motor terminals). v) Class of insulation shall be Class F. however temperature rise shall be restricted to limits corresponding to Class – B insulation. vi) Motors shall be designed for ambient of 50°C. vii) Degree of Protection shall be IP-55. Method of cooling shall be IC 01 41 (TEFC). viii) Two (2) grounding terminals one (1) on either side at the bottom suitable for connecting mild steel flat / GI wire grounding conductor of specified size shall be provided. 8.0 EQUIPMENT QUALIFICATION CRITERIA (EQC) a) The bidder shall have executed the job of “Supply, installation, testing and commissioning of Elevators” for any Central Government/State Government/Central Autonomous Body/State Government Autonomous body/Central Public sector undertaking/State public sector undertaking/Public Limited companies/industrial offices & complexes and any multi-storeyed buildings & complexes in last 7 year as on initial bid due date. b) The offered Goods cum Passenger Elevator shall be procured from OEMs as specified below: I) KONE ELEVATOR INDIA PVT LTD, II) MASPERO ELEVATORI SPA III) SCHINDLER INDIA PVT LTD IV) SHANGHAI DESHENG MICO ELEVATOR CO.LTD. V) SONGSAN SPECIAL ELEVATORS CO. LTD. VI) THYSSENKRUPP ELEVATOR (INDIA) PVT. LTD. c) The offered Goods cum Passenger Elevator shall meet the minimum service & manufacturing experience specified as below: Goods cum Passenger Elevator shall be identical or validly similar in terms of • Type of Goods cum Passenger Elevator • Capacity (In Loads) as compared to at least 1 Units of the proposed model designed, manufactured, tested and supplied in the last 10(Ten) years & have successfully operated in the field in last one year without any major problem as on initial bid due date. As a proof for the same, Date of Supply/ Commissioning report/Customer Satisfaction report will be considered and same to be provided by vendor. Accordingly, Bidder to furnish reference list for the Goods cum Passenger Elevator consisting of year of supply, application, Customer Name, Quantity etc. as a minimum. The vendor shall also furnish documentary evidence like copies of Purchase Order and Inspection Release Note (IRN), Test Certificate, Commissioning report, Customer Satisfaction report etc. as an evidence of meeting the technical criteria requirement, based on which the qualification is sought. The vendor may also furnish additional documentation to justify meeting the technical criteria.		
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COPYRIGHT 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.		9.0 Quality control 1. Vendor shall strictly follow the quality control procedures in all aspects of material selection, design, manufacturing, testing, erection & commissioning etc. A “shop quality assurance plan (QAP)” & a Field Quality Assurance Plan (FQAP) accordingly to be made. It shall enlist the inspections & tests to be carried out at each stage. These plans are subject to review and approval by BHEL/BHEL’s. 2. Inspection & Testing: All Inspection & testing requirements shall be listed in the quality Assurance Plans and all system testing procedure both at shop & field shall be detailed in “Test procedure documents” & submitted to BHEL. These documents shall also referred appropriately in the quality Assurance plans. 3. Bidder to furnish Field and shop quality assurance procedure in line with BHEL specification requirement for BHEL/EIL/HPCL’s approval, as minimum. The inspection shall be done by BHEL/TPI/HPCL/EIL. Further, bidder to take the requirements specified in enclosed BHEL & EIL/HPCL Specification as per [Annexure-6].For guidelines & format please refer Annexure-6. 10.0 Tests on Completion The following tests as a minimum shall be carried out to the satisfaction of BHEL. Bidder shall also include test which are mentioned in EIL specification for Electric Traction Lift (Doc. No. 6-61-0202Rev.1) (Annexure-2) & EIL Standard for Performance Test Procedure (Doc. No. 7-76-0103) (Annexure-2). i. Load Test with 100% and 110% of rated load as per IS 14665:2000 ii. As static Load test with 125% of rated load as per IS 14665-2000 to check that the brake will sustain the car. iii. All other tests on Electrical system as mentioned in IS 14665-2000. iv. Any other test required to ensure proper functioning and installation of unit v. Demonstration of functioning of all safety provisions made available in the elevator. The vendor shall arrange for weights, slings, wire ropes , stop watches and other necessary equipment’s instrument to carry out the test. vi. Insulation resistance and earth test for all electrical apparatus. vii. Continuous operation of the lift under full load conditions and simulated starts and stops (150 nos. per hour each) for one hour at the end of which time the service temperature of the motor and the operating coils shall be tested. This shall be as per B.I.S. specification. viii. The car shall be loaded until the weight on the rope is twice the combined weight of the car and the specified load. The load must be carried on for about 30 minutes, without any sign of weakness, temporary set or permanent elongation of the suspension rope strands. ix. The following items shall be tested : a. Levelling accuracy at each landing in conditions of fully loaded and empty car. b. No load current and voltage readings both on ‘Up’ and ‘Down’ Circuits. c. Full load current and voltage readings both on ‘Up’ and ‘Down’ Circuits. d. One and quarter load current and voltage readings both on ‘Up and ‘Down’ Circuits. e. Stalling current and voltage and time taken to operate overload. f. Overload protection. g. Gate sequence relays, if provided and installed. h. Car and landing door interlocks.		
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COPYRIGHT 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.		i. Collective control and priority sequences, if installed. j. Safety gear mechanism for car and counterweight with fully loaded car and also with only 68 kg load. k. Speeds on Up and Down travel with full load, half load and empty car. l. Door contacts. m. Final terminal stopping device. n. Normal terminal stopping device. o. Car and counterweight buffers with contract load and contract speed. p. Operation of controllers. q. Manual operation of lift at mid-way travel. r. Emergency operation. v. Tests on completion shall also be performed to the satisfaction of Inspector of Lifts and a certificate will be obtained from the ‘Lift Inspector ‘ by the contractor.		
		11.0 Statutory Approvals (As Applicable) All statutory approvals from commencement to commissioning of lifts shall be obtained by the Contractor from the relevant competent authority as applicable. However, the client will provide all necessary assistance for providing documents, drawings and certificates pertaining to other contractors, if required. Necessary fees in connection with the approval of installation of lifts to be borne by the Contractor, which shall be part of E & C price quoted by the bidder. 12.0 Sub vendor list Bidder shall follow sub vendors list as per Annexure-10. In case of any specific practical difficulty, bidder is requested to bring out the same with proper reason for not following vendor list. For other items for which sub vendors are not specified, bidder can follow their standard vendors. However, they have to ensure the Proven Track record of the sub vendors and Bidder to take prior approval of BHEL/EIL/HPCL for the same. 13.0 SAFETY In addition to other specifications, the lift shall be provided with safety devices as follows:- i. Against overload ii. Safety gear on car so that in the event of rope breaking or loosening, the car will be brought to rest immediately by means of grips on the guides. The over speeding car shall be automatically brought to a gradual stop on guide rails and power supply to the hoist motor shall be switched off. iii. Over speed centrifugal governor operating the safety gear in case of over speeding of car in the down direction. iv. Car gate lock so that in the event of car gate being opened when passengers are in the car, the lift will be brought to rest. v. Over travel limit switches at top and bottom limits of travel to disconnect the power supply and apply brakes to stop the car within a defined safe distance in case of over travel in either direction vi. Ultimate terminal switches to stop the car automatically within top & bottom clearances independently of normal over travel limit switches but with buffers operative. vii. Protective guards to counterweights in pit, rope sheaves and wherever required. viii. Toe guard apron to the car platform.		
Ref.	Doc			

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COPYRIGHT 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.		14.0 PAINTING: Surface preparation and painting shall be as per manufacturer's standard and shall be suitable for corrosive industrial environment unless otherwise specified in job specification/data sheet. 15.0 NAME PLATE (A checkpoint the quality assurance plan) The appropriate nameplate shall be put on the traction machine and on the car, noting the technical parameters/Safe Loads/Safety Notices-as applicable. 16.0 DOCUMENTATION: 16.1 MASTER DOCUMENT LIST: Refer Annexure-5 16.2 A master documentation shall be prepared during kick off meeting identifying all the DOCUMENTS / DRAWINGS to be submitted by the bidder as part of documentation. Bidder shall ensure submission of all documentation as per approved Master Document List. 16.3 Bidder to note that the dates of submission of all the documents shall be finalized based on PO date. It shall be solely bidder's responsibility to get approval on the entire document from purchaser to meet project schedule. 16.4 <u>DRAWING APPROVAL / REVIEW CATEGORY:</u> The master document list shall clearly identify the class of review to be performed against each document. Following classes of review shall be followed for all the documents engineered by the bidder • APPROVAL (A): Approval is mandatory and bidder cannot proceed without obtaining Purchaser's approval. • INFORMATION / RECORDS (I): This type of documents shall be submitted to Purchaser for his information. Bidder can proceed if Purchaser's comments are not received within 14 working days of receipt in Purchaser's office. 16.5 DRAWINGS REVIEW & APPROVALS: 16.5.1 Each drawing submitted by the bidder shall be with a title block furnished by BHEL during detailed engg stage. 16.5.2 All drawings / documents shall be thoroughly checked, duly signed, and stamped by the vendor including drawing /documents of sub-vendor, before submission to BHEL. Documents, which are unchecked, unsigned, and without revisions marked clearly, shall be returned without review. Any delay on account of this shall be to the vendor's account. After first review of documents, vendor to submit all the further revisions of documents along with comment resolution sheet. Successive documents submitted without comment resolution sheet shall be returned without review. 16.5.3 The approval and /or review by BHEL /End customer shall not be construed by the bidder as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and drawings. 16.5.4 Documents once reviewed in Code-1 shall not be submitted (incorporating some changes) again for review, however if some change is really necessary, the same shall be brought to the notice of BHEL separately through design change note for review / information. Finally, As – built drawings, duly updated, shall be submitted. 16.5.5 During detailed engg stage, BHEL shall furnish check list reg minimum contents in GA drawing. Bidder to submit GAD [duly incorporating all requirements as per the check list] along		
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COPYRIGHT 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.	with signed checklist. GAD shall not be reviewed without duly filled in checklist signed by the bidder.			
	16.6 NO. OF COPIES OF EACH DOCUMENT TO BE FURNISHED: All the documents shall be submitted as given below:			
	Sl. No.	Description	No. of Copies (Hard)/ Quantity to be Submitted	When to Submit
	1	Initial drawings/documents under approval and information category	Soft copy only	Within 2 weeks of placement of order
	2	*BHEL shall furnish their observation on submitted documents. *Guidelines(Checklist) for Preparations of Major Document shall be furnished after PO Placement by BHEL	Soft copy only	Within 2 weeks of Document Submission
	3	**Revised drawings/documents along with compliance sheet incorporating all BHEL comments. **Vendor to incorporate all BHEL comments so that further revisions can be minimized.	Soft copy only	Within One week of receipt of commented Drawings from BHEL
	4	BHEL shall furnish their observation on submitted documents	Soft copy only	Within 2 weeks of document submission
	5	Final Drawings/documents	12	2 months of placement of order.
	6	Erection Documentation	5	1 month before dispatch of equipment. The list of documents identified under master document list for erection to be furnished in 5 No's of folders
	7	Draft O & M Manuals for BHEL review. Note: Bidder to furnish final hard copy of O&M only after getting concurrence on soft copy.	Soft copy Only	At least 2 months before the delivery date of equipment
8	Revised O & M Manuals with Test Certificates to be submitted to BHEL (Hyderabad)	12	Within one month before the delivery date of equipment	
9	Final O&M manuals in a CD	4	Within one month after dispatch of equipment after BHEL concurrence on soft copy.	
Ref. Doc	NOTE: The O&M manuals shall contain the following as minimum: 1. The identification details of the equipment like BHEL P.O. No., Vendor's Job Identification No., full contact address with telephone, fax, & e-mail details. 2. Brief description of the system. 3. All approved documents [Drawings, documents & test procedures as per MDL] 4. Bill of material, BBU, LO schedule, sub vendor list, Mandatory & commissioning spares list etc. 5. Operation, Instruction & maintenance manuals of all equipments / items fo the complete package 6. System unloading, storage erection, start up, commissioning, shut down requirements.			

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COPYRIGHT 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.		7. Operational & environmental safety instructions. 8. Test reports and certificates. 9. Catalogues of the equipment & instrumentation. 17.0 PACKING: a) All packaging shall be done in such a manner as to reduce the volume. The equipment may be dismantled into major components, suitable for shipment and shall be properly packed to provide adequate protection during shipment. All assemblies shall be properly match marked for site erection. b) Attachments, spare parts of the equipment and small items shall be packed separately in wooden-cases. Each item shall be appropriately tagged with identification of main equipment, item denomination and reference number of the respective assembly drawing. c) Detailed packing list in water-proof envelope shall be inserted in the package together with equipment. d) Each equipment shall have an identification plate giving salient equipment data, make, year of manufacture, equipment number, name of manufacturer etc. e) Vendor shall furnish procedure for prolonged storage of supplied equipment/ material at site. 18.0 PRICE BID FORMAT: Bidder to indicate his offer as per Price Bid format enclosed as Annexure-4. All the items included in the price bid format shall be quoted as per tender specification and pre-bid clarifications as per annexure-8, if any. Responsibility of ensuring correctness & completeness of scope of supply as per specification requirement solely lies with bidder. The equipment supplied shall be complete in all respects. The bidder shall not be eligible for any extra payment in respect of such mountings, fittings, fixtures and accessories if required for the safe and reliable operation of the equipment. Any additional equipment, material, etc., which are not specifically mentioned here, but are required to make the supplied equipment complete in all respect, in accordance with the intent of this technical specification, contractual agreement, statutory requirements, relevant/applicable codes/standards, good engineering practices, and for safe and trouble-free operation, shall be deemed to be in bidder scope Only. Main offer consists of those items which will be part of main order after successful bidder is identified. Optional Items consists of those items which need to be quoted by bidder but may or may not be ordered by BHEL. Bidders are instructed to provide the pricing details listed under Main offer and Optional items as per the prescribed format. Prices quoted by the bidder shall remain firm till the successful handing over of the entire package to end customer. Any request for upward revision of price during any intermediate stage before handing over the plant to end customer will be summarily rejected by BHEL. 19.0 PRE-BID CLARIFICATIONS & DEVIATIONS: a) Bidders shall comply with various requirements of this specification. It may please be noted that the requirements specified here in this specification are the standard practices being followed by the bidders. However, same things are presented in a structured form so that it can be ensured that the requirements of ultimate customer are complied with. b) Bidders can bring out only those deviations which are impractical to meet, for our review in pre bid clarification only. c) Bidders may also please note that the data sheets for, valves, instruments etc., submitted along with the offer will be considered as indicative only, as the requirements specified in the specification are standard in nature. These will not be reviewed by BHEL before award of contract. Same will be reviewed during order execution stage in line with the requirements of specification and agreed deviations. d) All pre-bid clarifications & deviations shall be clear bring as per annexure- 9 & 10 Only.		
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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.		e) In case bidder doesn't bring any clarification/deviation in prebid stage, the same shall be brought in their offer with following conditions: i) Any deviations to Customer specifications, same are acceptable provided these deviations are also regularly accepted by Customer for their direct orders on bidders. In such cases, proof of the same shall be furnished along with the offer. ii) Bidders may please note that unless the deviations are specifically brought out under deviations clause, it will be considered that no deviations are taken, even if they are mentioned elsewhere directly/indirectly in the offer. iii) Price implication due to non-acceptance [by BHEL/Customer] of the deviations considered by bidder will not be permitted. iv) Deviations [if any] shall be clear bring as per annexure- 9 only. 20.0 ANNEXURES: Following input documents and specifications are enclosed to facilitate the bidder to furnish the offer and ensure compliance: <table border="1"> <thead> <tr> <th>ANNEXURE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr><td>1</td><td>Interface Scope Matrix</td></tr> <tr><td>2</td><td>Data Sheet of Good scum passenger Elevator and</td></tr> <tr><td>3</td><td>Civil Drawing for Switchgear Building & GIS Building</td></tr> <tr><td>4</td><td>Price Bid Format</td></tr> <tr><td>5</td><td>Checklist</td></tr> <tr><td>6</td><td>Quality Related Documents</td></tr> <tr><td>7</td><td>Master Document List</td></tr> <tr><td>8</td><td>Pre Bid Format</td></tr> <tr><td>9</td><td>Deviation format</td></tr> <tr><td>10</td><td>Vendor List</td></tr> </tbody> </table> <u>VARIANT TABLE</u> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Description</th> <th>Material code</th> </tr> </thead> <tbody> <tr><td>1</td><td>Goods cum Passenger Elevator-Switchgear Building-Main Supply</td><td>PY9751384010</td></tr> <tr><td>2</td><td>Goods cum Passenger Elevator-Switchgear Building- Commissioning Spares</td><td>PY9751384028</td></tr> <tr><td>3</td><td>Goods cum Passenger Elevator-Switchgear Building-Special Tools & Tackles</td><td>PY9751384036</td></tr> <tr><td>4</td><td>Goods cum Passenger Elevator-Switchgear Building-Mandatory Spares</td><td>PY9751384044</td></tr> <tr><td>5</td><td>Goods cum Passenger Elevator-GIS Building -Main Supply</td><td>PY9751384052</td></tr> <tr><td>6</td><td>Goods cum Passenger Elevator-GIS Building- Commissioning Spares</td><td>PY9751384060</td></tr> <tr><td>7</td><td>Goods cum Passenger Elevator-GIS Building -Special Tools & Tackles</td><td>PY9751384079</td></tr> <tr><td>8</td><td>Goods cum Passenger Elevator-GIS Building -Mandatory Spares</td><td>PY9751384087</td></tr> <tr><td>9</td><td>Goods cum Passenger Elevator-E&C</td><td>PY9851384097</td></tr> </tbody> </table>		ANNEXURE	DESCRIPTION	1	Interface Scope Matrix	2	Data Sheet of Good scum passenger Elevator and	3	Civil Drawing for Switchgear Building & GIS Building	4	Price Bid Format	5	Checklist	6	Quality Related Documents	7	Master Document List	8	Pre Bid Format	9	Deviation format	10	Vendor List	Sl. No.	Description	Material code	1	Goods cum Passenger Elevator-Switchgear Building-Main Supply	PY9751384010	2	Goods cum Passenger Elevator-Switchgear Building- Commissioning Spares	PY9751384028	3	Goods cum Passenger Elevator-Switchgear Building-Special Tools & Tackles	PY9751384036	4	Goods cum Passenger Elevator-Switchgear Building-Mandatory Spares	PY9751384044	5	Goods cum Passenger Elevator-GIS Building -Main Supply	PY9751384052	6	Goods cum Passenger Elevator-GIS Building- Commissioning Spares	PY9751384060	7	Goods cum Passenger Elevator-GIS Building -Special Tools & Tackles	PY9751384079	8	Goods cum Passenger Elevator-GIS Building -Mandatory Spares	PY9751384087	9	Goods cum Passenger Elevator-E&C	PY9851384097
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		Rev. No.	Date	Revision Details	Prepared By	Checked By	Approved By
		00	11.07.18	ORIGINAL ISSUE	RJ	GPP	SPB
		01	22.04.19	Change as per customer acceptance	RJ	GPP	SPB
		Ref. Doc.					

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				Annexure-1	
				Rev. No.	00

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

INTERFACE SCOPE MATRIX				
Sl. No.	Description	BHEL Scope	Bidders Scope	Remark
Civil				
1	Elevator Shaft with brick wall	✓		
2	Scaffoldings in Elevator Shaft	✓		
3	Pocket Cutting		✓	
4	Grouting and Packing		✓	
5	Buffer Block Construction	Pedestals in BHEL Scope(Buffers to be provided by Bidder),If required	Buffers by bidder	
6	Front Wall	✓		
7	Flooring at Landing	✓		
8	Architrave	✓		
9	Lockable Covered Storage Space (50m2)	✓		
10	Shaft Reduction Channel (if required)	✓		Bidder to specify the size
11	Pit flooring [excavation, flooring and compacting]	✓		
12	Structural Material/Channels	✓		Bidder to specify the size
13	Car Flooring		✓	
Electrical				
1	Elevator well lighting		✓	
3	Power Supply	BHEL will terminate one 3phase supply and one single phase supply at Machine Room for each elevator.	Further distribution to be included in Bidders Scope	
4	Earthing arrangement	✓	Bidder to provide the earth lugs.	
Machine Room ,Traction Motor Type Elevator				
1	Machine Room Construction	✓		
2	Machine room Ventilation	✓		
3	Portable Fire Extinguisher in Machine Room	✓		
4	" I " Section Beam at top of slab	✓		Bidder to specify the size
5	Chain Pulley Block required during installation		✓	

Sl. No.	Description	BHEL Scope	Bidders Scope	Remark
Miscellaneous				
1	Security within site premises	✓		
2	Unloading & shifting of material from storage to site	✓		
3	Elevator Shaft plastered & white washed	✓		
4	Power supply required during installation	✓		
5	All statutory Licenses, fees and approvals required for erection and operation shall be bidders scope		✓	

ESP-001- 2A Rev.00		PROJECT ENGINEERING & SYSTEMS DIVISION		Std. / Doc. Number	
				Annexure-2	
				Rev. No.	00

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

 ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)				DATA SHEET FOR GOODS CUM PASSENGER LIFT				Doc. No. B016-606-80-43-DS-0001											
1	Project	VRMP				Quantity													
2	Client	HPCL				Location		Visakhapatnam											
3	Job No.	B016		Tag no.		Manufacturer		*											
4	Unit No./Building					Type/Service		Goods cum passenger lift											
5	☒ Denotes applicability		Applicable standards:EIL Std. spec. no.6-61-0202 and codes & standards referred therein.																
6	Applicable to	☒ Proposal	☐ Purchase	☐ As built															
Purchaser's Requirement																			
8	Capacity (kg)					Control drive				Control									
9	Speed of travel (m/sec.)					Power supply		Refer Electrical specification											
10	Area classification	☐ Hazardous	☐ Safe	Mode of Lift operation		☒ Automatic	☐ Manual												
11	Duty/Operation	Heavy Duty/Intermittent Operation				No. of start per hour		*											
12	Painting specification	☐ Vendor standard	☐ EIL specification																
13	Environment	☐ Corrosive	☐ Highly corrosive	Anti spark design		☐ Yes	☐ No												
Landing / Door Opening Details																			
15	Floors	GF	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th			
16	Landings	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐			
17	Door opening on both side	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐			
18	Landing floor elevations,m																		
19	Overhead (mm)																		
Car Details																			
21	Car Inside size (WxD) (mmxmm)																		
22	Car construction details	As per EIL Standard Specification of Lift (6-61-0202)																	
23	Type of car entrance door	☐ Single slide, horizontal (either left or right) ☐ Central opening horizontal slide door ☐ Single slide, vertical ☐ Vertical slide, biparting door ☐ Horizontal slide from one side, collapsible type door ☐ Vertical slide, collapsible grill type door																	
24	Door Operation (Car entrance)	☒ Automatic ☐ Manual																	
25	No. of car door	☐ One (If opening on same side on all floors) ☐ Two (If opening on two sides on any floor)																	
26	Car entrance size (WXH) (mmXmm)																		
27	Car height (H) (mm)																		
Machine Room Details																			
29	Position of machine room	Overhead																	
30	Pressurization inside the machine room	☐ Provided ☐ Not provided																	
35	Machine room beam for Chain Pulley Block	☒ By vendor ☐ By purchaser																	
36	Trap Door	☐ Required ☐ Not required																	
Hoistway (Well) Details																			
38	Type of Hoist way	☐ Fully enclosed ☐ Partially enclosed																	
		☐ Steel Structure ☐ Brick wall structure																	
39	Type of hoist way entrance door	☐ Single slide, horizontal (either left or right) ☐ Central opening horizontal slide door ☐ Single slide, vertical ☐ Vertical slide, biparting door ☐ Horizontal slide from one side, collapsible type door ☐ Vertical slide, collapsible door																	
40	Door Operation (Hoistway entrance)	☒ Automatic ☐ Manual																	
41	No. of hoist way doors for each lift	☐ One (If opening on same side on all floors) ☐ Two (when opening on both sides)																	
42	Hoistway size (WxD) (mmXmm)																		
43	Hoist way entrance size (WXH) (mmXmm)																		
Pit Details																			
45	Pit Depth (mm)																		
46	Buffer Type	☐ Spring Buffer (Speed≤1.5m/s) ☐ Oil Buffer (Speed>1.5m/s)																	

 ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)		DATA SHEET FOR GOODS CUM PASSENGER LIFT		Doc. No.	
				B016-606-80-43-DS-0001	
47	Vendor's Data				
48	Car			Hoistway	
49	Car outside dimension (WxDxH) (mm X mm X mm)	*		Hoistway entrance size (WXH) (mm X mm)	*
50	Car entrance size (WXH) (mm X mm)	*		Hoistway entrance door size (WXH) (mm X mm)	*
51	No. of door section (as applicable)	*		No. of light required inside hoist way	*
52	Total weight of car un-laden (kg)	*		No. of door section (as applicable)	*
53	Traction Motor			Machine room	
54	Make / Model	*	*	Machine room inside dimens.(LxWxH)(mmxmmxmm)	*
55	Rating (kW)	*		Machine room entrance door size (WXH) (mmXmm)	*
56	R.P.M.	*		Machine room trap door size (LXW) (mmXmm)	*
57	Weight (kg)	*		Weight of heaviest component inside machine room (kg)	*
58	Gear Box	*		Machine room CP Block capacity (kg)	*
59	Gear box (Make/model)	*	*	Total lift required for CP Block (mm)	*
60	Type of Gear	*		Machine room beam size	*
61	Reduction ratio	*		Brake	
62	Service factor	*		Make/Model	* *
63	Governor			Type	*
64	Governer type	*		Braking capacity at full load torque	*
65	Governer (Make / Model)	*	*	Designed distance for complete stopping from full speed, mm	*
66	F.O.S of governor rope	*		MOC of brake shoe	*
67	Safety Gear			Sheave	
68	Type(Instantenous/Progressive)	*		MOC of drive sheave	
69	Stoping distance of car	*		MOC of deflector sheaves	*
70	Traction Rope			No. of deflector sheaves ,if any.	*
71	Specification	*		Counter weight	
72	Construction	*		Total counter weight (kg)	*
73	Tensile designation	*		Wt. of each counter weight	
74	F.O.S of each rope	*		Counter weight rope dia. (mm)	*
75	Guide Rail			Counter weight rope length (mm)	*
76	Specification	*		M.O.C of counter weight	*
77	Rail Size	*			
78	MOC	*			
79					
80	*- To be furnished by the lift vendor/ contractor.				

विद्युत संकर्षण लिफ्ट के लिए मानक विनिर्देशन STANDARD SPECIFICATION FOR ELECTRIC TRACTION LIFT

1	26/03/15	REVISED AND ISSUED AS STANDARD SPECIFICATION	MS	SPC	PB	SC
0	05/09/11	ISSUED AS STANDARD SPECIFICATION	SPC	PB	AKN	DM
Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	

Abbreviations:

AMC	:	Annual Maintenance Contract
ARD	:	Automatic Rescue Device
BASEEFA	:	British Approval Service for Electrical Equipments for Flammable Atmospheres
CCOE	:	Chief Controller Of Explosives
CEA	:	Central Electricity Authority
CMRI	:	Central Mining Research Institute
CS	:	Carbon Steel
CT	:	Current Transformer
DC	:	Direct Current
DGMS	:	Director General of Mines Safety
EIL	:	Engineers India Ltd.
FM	:	Factory Mutual
IEC	:	International Electrotechnical Commission
IEEE	:	Institute of Electrical and Electronics Engineers
IS	:	Indian Standard
LCIE	:	Leboratoire Central Des Industries Electrique
LED	:	Light Emitting Diode
MCCB	:	Moulded Case Circuit Breaker
NEMA	:	National Electrical Manufacturers Association
OISD	:	Oil Industry Safety Directorate
PDB	:	Power Distribution Board
PESO	:	Petroleum and Explosives Safety Organisation
PGTR	:	Performance Guarantee Test Run
PTB	:	Physikalisch-Technische Bundesanstalt
PVC	:	Poly-Vinyl Chloride
SPN	:	Single Phase Neutral
TEFC	:	Totally Enclosed Fan Cooled
TPN	:	Three Phase Neutral
UL	:	Underwriters Laboratories
VDE	:	Verband der Elektrotechnik
VVVF	:	Variable Voltage Variable Frequency Drive

Packaged Equipment Standards Committee

Convenor: Mr. P. Bhattacharjee

Members: Mr. Sanjay Mazumdar
Mr. P. P. Pandey
Mr. Shishupal Choudhary
Mr. R.R Shrivastava
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1.0 GENERAL

- 1.1** This specification outlines the minimum requirements for design, engineering, manufacture, testing, painting and supply of Electric Traction lift complete with all accessories, control and instruments, electrical and associated items. Compliance with this specification shall not relieve the vendor of the responsibility of furnishing equipment with accessories/auxiliaries of proper design, materials and workmanship to meet the intended service.

2.0 CODES AND STANDARDS

- 2.1** Latest edition of the following codes and standards including amendments as on the date of enquiry shall govern:

IS 14665 Part 1	: Guidelines for Outline Dimensions of Passenger, Goods, Service and Hospital Lifts.
IS 14665 Part 2 /Sec 1&2	: Code of Practice for Installation, Operation and Maintenance: Passenger and Goods Lifts & Service Lifts
IS 14665 Part 3 /Sec 1&2	: Safety Rules: Passenger and Goods Lifts & Service Lifts
IS 14665 Part 4 /Sec 1 to 9	: Electric Traction Lifts: Components
IS 14665 Part 5	: Inspection Manual
BS EN 81-1	: Safety rules for the construction and installation of lifts
ASME A17.1	: Safety Code for Elevators and Escalators
EIL Std.- 7-76-0103	: Instructions to Vendor for Site Performance guarantee Requirements for Package units

- 2.2** Other international standards may also be acceptable subject to their being equivalent or superior to those listed above, with prior approval of purchaser.
- 2.3** For provisions not covered by the above codes & standards, applicable good engineering practices and norms shall govern subject to prior approval of Purchaser.
- 2.4** National Law and statutory provisions together with any local bylaws for the state wherein lift is required to be installed shall be complied with.

3.0 TECHNICAL REQUIREMENTS

3.1 General

- 3.1.1** Lift shall be designed for minimum 20 years of service under normal operating conditions.
- 3.1.2** Lift shall be suitable for machine rooms located immediately over the lift well. The machine room shall not be pressurized. All electrical components for hazardous area lift shall be suitable for non pressurized machine room, unless otherwise specified in job specification/data sheet.
- 3.1.3** Machine room shall be provided with 1 no. Ventilation fan of required cfm and 1 no. window with bird screen and louvers.
- 3.1.4** All mechanical and electrical components and accessories shall be suitable for the area classification mentioned in job specifications/data sheets.

- 3.1.5 If the distance between consecutive landing doorsills exceeds 11m, intermediate emergency doors shall be provided, such that the distance between the sills is not more than 11m. Emergency door type shall be same as lift car door type.
- 3.1.6 No. of starts/stops per hour for motor shall be selected based on peak traffic requirement, lift speed and length of travel and no. of landings. However in no case no. of starts/stop per hour shall be less than 120.
- 3.1.7 Sill gap between car sill and landing sill at each landing shall not exceed 30 mm.
- 3.1.8 Pit ladder shall be provided irrespective of pit depth.
- 3.1.9 Following details shall be displayed inside car:
- a) Name plate indicating capacity of lift.
 - b) Operating instructions in English, Hindi and Local language.
- 3.1.10 Emergency rescue procedure shall be displayed in machine room.
- 3.1.11 Provision shall be made to extend the alarm to nearby control room (for industrial applications) or security/guard room (for non industrial applications).
- 3.1.12 Provision shall be made to connect Lift telephone to the existing telephone system. All Cabling beyond Telephone junction box up to Telephone socket shall be in Vendor scope.
- 3.1.13 Vendor shall arrange inspection and initial certification of Lift installation at site by concerned statutory authorities.

3.2 Mechanical

3.2.1 Drive Unit

- 3.2.1.1 The Drive Unit shall be of traction type, and shall include a electric motor, electro-mechanical brake, gear box (if required), rope sheave/pulley and safety guards. Geared motor in place of electric motor and gear box is also acceptable.
- 3.2.1.2 Controller shall be microprocessor based VVVF drive type.
- 3.2.1.3 Adequate means of lubrication shall be provided for all bearings and gearbox.
- 3.2.1.4 Drive unit shall be placed in machine room directly above the hoist way.
- 3.2.1.5 Drive base plate shall be supported on suitable steel structure with anti-vibration pads in between.
- 3.2.1.6 All couplings, gears, pulleys, lift wire rope entry and exit point and other exposed rotating parts shall be provided with adequate protection guards.

3.3 Brake

- 3.3.1 The brake shall be of fail -safe type and shall be designed to provide smooth stops under variable loads.
- 3.3.2 Brake shall be selected for 125% of the braking torque at rated load.
- 3.3.3 Provision shall be made for releasing the brake manually in case of emergency. As soon as hand pressure is released, brake shall be applied automatically.

3.4 Rope

- 3.4.1 Lift shall be provided with steel ropes of suitable construction and tensile designation.
- 3.4.2 Factor of safety of suspension ropes shall be selected as per applicable code.

3.5 Guide Rails

- 3.5.1 Steel Guide rails (T- Section) of adequate strength with necessary brackets for both car and counterweight shall be supplied by Vendor.
- 3.5.2 Car and counter weight shall be guided by roller guides for lifts in industrial applications, irrespective of lift speed.
- 3.5.3 It shall be capable of taking care of forces imposed due the operation of safety gears and deflections due to uneven loading of the car.

3.6 Car

Unless otherwise specified in Job Specification/Data Sheet, car construction shall be as specified below:

Type of Lift	Components	Purchaser's requirement
Passenger Lift	Car enclosure	*Stainless Steel with hair line/chequered finish
	Car Floor	CS with polished granite floor
	Car & Landing Doors	*Stainless Steel with hair line/chequered finish
	Car ceiling	*Stainless steel with hair line finish
Goods Lift	Car enclosure	Painted/Powder coated CS sheet
	Car Floor	Galvanized CS Chequered Plate
	Car & Landing Doors	Painted CS sheet
	Car ceiling	Painted CS sheet

3.7 Car Operating Panel (COP)

- 3.7.1 Car Operating Panel shall be made from Stainless Steel plate.
- 3.7.2 Following Push Button (Luminous type) shall be provided as a minimum;
- Car Movement
 - Button for all floors
 - Door open/close override push button
 - Fan on-off
 - Emergency stop
 - Emergency alarm
 - Emergency light
 - Push to talk button

3.8 Landing Door and Car Door

- 3.8.1 The type of door for car as well as landing shall be as specified below:

Type of Lift	Type of door (Car and Landing)
Passenger Lift	Automatic central opening sliding type door.
Goods Lift	Automatic central opening sliding type door.

- 3.8.2 Door shall be provided with an interlock, which shall prevent movement of car away from the landing unless all the doors are closed and locked. The interlocks shall also prevent opening of the doors except at the landing level.
- 3.8.3 Infrared full curtain electronic door detection system shall be provided for the automatic power operated door.

- 3.8.4 A timer relay shall be provided to render the car in-operative from the landing buttons for a few seconds after a stop is made.

3.9 Counter Weight

Adequate counter weight moving in guided structural steel frame shall be provided.

3.10 Over Speed Safety

- 3.10.1 An over speed safety device to stop the car whenever the car achieves runaway speed limit resulting from high speed of the car, shall be provided. The device shall be operated by a centrifugal governor, which continuously and automatically senses the car speed. The actuation of the safety device shall cut off the power supply to the motor and apply the brake immediately.
- 3.10.2 Lift shall be provided with Safety gear. It should be capable of stopping the car carrying the rated load, at the tripping speed of the overspeed governor, even if the suspension devices break, by gripping the guides, and holding the car there.
- 3.10.3 For car having rated speed less than or equal to 0.75 m/s, instantaneous type safety gear shall be used. For car having rated speed greater than 0.75 m/s progressive type safety gear shall be used.

3.11 Pit Buffers

- 3.11.1 Buffers in the pit shall be mounted on steel sections placed beneath both the car and counterweight guide rails. Steel sections to support the buffers shall be provided by Vendor.
- 3.11.2 Energy accumulation type buffers (spring buffer) shall be used for speed up to 1.5 m/s. Energy dissipation type (Oil buffers) may be used for all speeds.

3.12 Accessories

Following accessories shall be provided as a minimum:

- Fan/Blower inside the car.
- Car call push buttons at landing floors.
- Voice Communication system inside the car.
- Car door & Landing door open indicator (Audio/Visual).
- Fireman switch with hammer at main lobby ground floor.
- LED Car Lighting and LED Emergency light with battery and battery charger.
- Automatic Rescue device (ARD).
- Alarm bell at ground floor.
- Suitable class Fire Extinguisher (Dry Chemical powder type) in Machine Room.
- Trolley Mounted Chain Pulley Block of Adequate Capacity in Machine room (loose supply). Monorail beam inside machine room shall be provided by Contractor/others.

3.13 Indications

Minimum following indications (digital type) required at landing and inside the car:

- Car position indicator.

- b) Car travel direction indicator.
- c) Car overload indicator with audio/visual alarm.

3.14 Terminal and Final Limits

Terminal limit switches shall be provided to slow down and stop the car automatically at the terminal landing. To arrest movement of car beyond the terminal landings, final limit switches shall be provided which on operation shall cut off the power and apply the brake immediately. Accuracy level of positioning of car with the landings shall be within $\pm 5\text{mm}$.

3.15 Speed

Speed of the lift shall be selected based on the guidelines given below, unless otherwise specified in data sheet:

Type of Lift	Recommended Speed (Approx.)		
Passenger Lift	Upto 2 floors	-	0.5 m/s
	From 3 to 5 floors	-	1.0 m/s
	From 6 to 12 floors	-	2.0 m/s
	More than 12 floors	-	2.5 m/s
Goods Lift	For Travel length $\leq 30\text{ m}$	-	0.5 m/s
	$30\text{ m} \leq \text{Travel Length} < 40\text{ m}$	-	0.6 m/s
	Travel Length $\geq 40\text{ m}$	-	0.7 m/s

3.16 Electrical

3.16.1 Site Conditions

The equipment shall be suitable for continuous operation under the site conditions specified elsewhere. If not specifically mentioned, a design ambient temperature of 40 degree Celsius and an altitude not exceeding 1000 meters above mean sea level shall be considered.

3.16.2 Codes and Regulations

3.16.2.1 The electrical equipment shall meet the requirement of this specification, in addition to the relevant Indian Standards / code of practices, statutory regulations and sound engineering practices. Complete system shall also conform to the latest revisions of following, as applicable:

- a) Indian Electricity Act and rules.
- b) Fire insurance Regulations.
- c) Indian Petroleum rules and any other regulations laid down by chief Controller of Explosives.
- d) The factory Act and any other regulations laid down by Factory Inspectorate.
- e) Regulations laid down by local statutory authorities and CEA/ Electrical Inspectorate.
- f) Oil Mines regulations (For Projects under DGMS jurisdiction).
- g) OISD guidelines.

3.16.2.2 Where Indian Standards do not exist, the relevant IEC, British or German (VDE)/ IEEE/NEMA standards shall apply.

3.16.2.3 In case of imported equipment, standards of the country of origin shall be applicable, if these standards are equivalent or more stringent than the applicable Indian Standards.

3.16.3 Power Supply system from Purchaser

- a) Power supply & Frequency : 415V $\pm$ 6%, 50Hz $\pm$ 3%, TPN (at one point in machine room)
- b) Power supply & Frequency : 240V $\pm$ 10%, 50Hz $\pm$ 3%, SPN (at one point in machine room)
for Lighting

3.16.4 Utilization Voltage

- a) Motors rated upto 160 kW : 415V, 3 ph
- b) Anti-condensation heaters : 240V, 1 ph
- c) Lighting : 240V, 1 ph

3.16.5 Design requirements for Power distribution board

- a) Ammeter & Voltmeters in : Required
Incomer
- b) Control supply for motor : 240V, A.C.
starter feeders
- c) Contactor & switch fuse : Upto 55 kW
with overload relay
- d) Field ammeters : Req'd. for motors > 5.5KW
- e) Clear working space for : Front 1000mm, Rear Flush Mounted
PDB

3.16.6 Minimum degree of protection for electrical equipments shall be as under:

- a) Power distribution Board : IP-41
- b) Motors : IP-55
- c) Controller with Variable : IP-31
frequency drive

3.16.7 Area Classifications and Equipment Selection.

In case of hazardous area Lift, same shall meet the following requirements:

- a) Electrical equipments for hazardous areas shall be certified by CMRI or equivalent recognised independent test house such as BASEEFA / LCIE / PTB / UL / FM. All equipment (Imported) shall also have valid statutory approvals from CCOE/PESO for use in the specified hazardous area. The indigenous equipment shall conform to Indian standards and shall be approved by CCOE/DGMS as applicable. All indigenous flameproof equipments shall have valid BIS license and marking as required by statutory authorities.
- b) All electrical equipment including Telephone for hazardous area lifts shall be Flameproof type (Ex d), suitable for specified gas group and temperature Class T3 as minimum.

3.16.8 Power distribution board (PDB)

- a) Vendor shall provide PDB for lift with one incomer and outgoing feeders for feeding all electrical loads of the package. Purchaser shall only provide Power Supply at the incomer of Vendor's PDB, including supply and laying of power cables upto Vendor's PDB. The PDB shall be located in machine room.

- b) PDB shall house switch, fuse/MCCB, voltmeter, and CT ammeter etc. Power supply ON indicating lamps (3 Nos.) shall also be provided on the PDB. This PDB shall distribute power to micro-processor controller with VVVFD, ARD panel etc.
- c) All Outgoing power & control cables from PDB to individual load shall be supplied, laid & terminated by Vendor. The interlocking between the PDB and the package equipments shall be provided by Vendor.

3.16.9 Motors

- a) The rating of all motors shall be selected to take care of loading conditions, cyclic duration factor, service factor and de-rating factor for ambient temperature as per applicable code.
- b) Motors shall be suitable for S4 duty and Cyclic Duration Factor (CDF). No. of starts / stops per hour shall be as specified elsewhere in the bid document. Wherever, lift has to operate in higher ambient temperatures, suitable de-rating factor shall be considered.
- c) All motors shall have class F insulation and temperature rise limited to Class B limits. Squirrel cage induction motors shall have TEFC enclosure with IP-55 degree of ingress protection. The slip ring motors shall also have dust proof enclosure preferably of IP-5X class. All motors to be installed in hazardous areas shall be flameproof type irrespective of the area classification where the lift is to be installed.
- d) The standard motor kW rating and frame sizes shall be selected as per Indian Standards, to facilitate future replacement.
- e) VFD Controlled motor shall be provided with thermister.

3.16.10 Microprocessor Controller with Variable Voltage Variable Frequency Drive

Microprocessor Controller with Variable Voltage Variable Frequency drive (VVVFD) shall be provided by Vendor for smooth control of lift motor and energy saving. Make of variable frequency drive unit shall be subject to Purchaser's approval based on satisfactory past track record of the manufacturer. VVVFD shall be as per Vendor's standard to suit the application. In case Air Conditioning is required for VVVFD panel, same shall be provided by Vendor. Air Conditioning shall be suitable for specified area classification.

3.16.11 Automatic Rescue Device (ARD)

ARD shall be provided by Vendor for safe exit from car in case of power outage. This ARD shall consist of maintenance free DC Battery, battery charger & inverter which shall feed power to lift motor on power outage for inching operation in order to align the car with the nearest landing. On being aligned, the doors shall automatically open enabling safe exit of occupants from car. Make of ARD and DC batteries shall be subject to Purchaser's approval based on satisfactory past track record of the manufacturer. ARD shall be as per Vendor's standard to suit the application.

3.16.12 Cabling

All cabling from machine room PDB//Lighting Panel to all the loads shall be done with PVC insulated; armoured cables where as cabling between hoist way Junction box to the lift car shall be done with copper conductor, braided trailing cables. Separate and distinct trailing cable shall be provided for power, control, signalling, and lighting circuit. Minimum conductor size for power cable shall be 4 sq. mm and 2.5 sq. mm copper for

control cable. Power cables up to 16 sq. mm conductor size shall be of copper conductor. All cables shall be flame retardant type

3.16.13 Lighting

Lighting within Lift Car, Hoistway & Pit is to be provided by Vendor. Hoist way lighting shall be provided at regular interval in the hoist way for carrying out maintenance. Minimum one number lighting fixtures shall be provided by the Vendor at each landing in the hoist way.

3.16.14 Earthing

- a) One no. earth plate shall be provided by Purchaser near PDB in machine room. Further distribution & connection of individual items with earthing system is under Vendor's scope.
- b) The metal enclosure of all the electrical equipment shall have an effective earthing connection by means of two numbers earthing terminals.

3.16.15 Vendor shall supply suitable Cable glands and tinned copper lugs for equipments supplied by them. Cable details of purchaser's cable shall be provided during detail engineering.

3.16.16 All indicating lamps shall be LED type.

3.16.17 The lift package shall be complete with all the safety interlocks and devices for safe and reliable operation of the lift, all of which are included in Vendor's scope.

4.0 INSPECTION AND TESTING

Equipment shall be subjected to stage wise expediting, inspection and testing at Vendor's/Sub-vendor's works by purchaser/its authorised inspection agency. Vendor shall submit Inspection and Test Plan (ITP) before commencement of fabrication. Approved ITP shall form the basis for equipment inspection.

4.1 Testing at Works

4.1.1 Vendor shall perform tests and inspection necessary to ensure that the material and workmanship confirm to the requirement of this specification.

4.1.2 Testing at Vendor's works shall be carried out in accordance with applicable codes and shall include following tests as minimum.

- a) Visual Check
- b) Dimensional check
- c) Assembly of major subassembly components such as drive unit, car body, doors.
- d) Any or all the tests, at purchaser's option, shall be witnessed by purchaser/its authorized inspection agency. However, such inspection shall be regarded as check-up and in no way absolve the Vendor of his responsibility.

4.2 Performance Testing and Guarantees at Site

4.2.1 A field performance test shall be conducted by the Vendor to demonstrate the performance of the equipment after commissioning in accordance with Performance test procedure prepared as per EIL Standard 7-76-0103. The procedure of performance testing shall be submitted for Purchaser's review and shall be mutually agreed between the purchaser and the Vendor.

- 4.2.2 Vendor shall carry out the tests as required by the code and as per normal practice of the Lift industry. However following tests shall be carried out as a minimum:
- Test to determine the motor, brake, control equipment, door locking devices and limit switches function correctly.
 - Brake shall be tested to check whether it can sustain a car at rest with 125 % of rated load.
 - Over speed test to determine that the safety gear stops the lift car with rated load. Over speed test shall be made with ropes attached all electrical apparatus operative except the over speed switch on the governor. The stopping distance of the lift car is the actual slide as observed from the marking on guides.
 - Test to determine the lift car raises and lowers rated load.
 - Test to determine that the lift car achieves the rated speed.
 - Accurate positioning of the lift at all landings.
- Parameters mentioned at d), e) and f) above are part of performance guarantees.
- 4.2.3 During PGTR, performance parameters mentioned against cl. No. 4.2.2 (d, e, f) above shall be demonstrated by the vendor as per Owner's instruction for ten (10) times within One (1) hour duration with rated load for system acceptance by the owner.
- 4.2.4 In case bidder is not able to demonstrate/meet PGTR checkpoints as mentioned above three (3) times out of Ten (10) attempts, then bidder shall take corrective action and rectify the troubleshoot cause without any cost and time implication to owner till required performance is achieved.
- 4.2.5 All parts of the lift shall operate satisfactorily with no vibration, noise, shock or display of any other unfavourable characteristics during the performance test.
- 4.2.6 Necessary instruments for the performance testing shall be arranged by the Vendor, and shall be tested and calibrated before undertaking the performance test. Only test load shall be provided by purchaser near test site.
- 4.2.7 If any additional loose instruments apart from installed ones are required to demonstrate performance guarantee test of the system, the same shall be arranged by the vendor which shall be duly tested and calibrated before undertaking the performance test. Vendor shall take back all such loose instruments after successful commissioning and system acceptance by purchaser.

5.0 ANNUAL MAINTENANCE CONTRACT (AMC)

After the warranty/guarantee period, comprehensive AMC services shall be available on chargeable basis from Lift vendor for regular maintenance (i.e. attending breakdown of lift within short notices, checking of clearances, necessary adjustment, lubrication etc.) including supply and replacement of damaged/failure/defective parts (Mechanical, Electrical, Instrumentation, software etc. with consumables) for which lift vendor shall quote AMC charges for 1st, 2nd, and 3rd year after completion of warranty/guarantee period. Vendor shall be obliged to provide AMC (renewable every year) for lifetime of the equipment. Comprehensive AMC charges shall be considered for price evaluation.

Notes:

- Maintenance (Free as well as comprehensive AMC) shall consist of monthly examinations and any necessary adjustment and lubrication of the equipment by Bidder's maintenance staff. The required supplies and spare parts shall be furnished by the Bidder without any charges.

- B) Attending breakdown of lifts shall be a part of maintenance work.
- C) Any Operational failure shall be promptly attended to avoid any inconvenience to the residents of the residential complex. However, preventive maintenance shall be carried out by the bidder. Emergency and Man Trap rescue services shall be provided 24 hrs and 7 days by the vendor.
- D) The software provided by the bidder for system operation shall be updated and upgraded on regular intervals with the latest patches or latest version as soon as it is available with them during the guarantee/warranty as well as comprehensive AMC period.
- E) For software, bidder shall grant a non-exclusive license to the purchaser/end user to use the control software to operate the equipment for their own purpose.

6.0 PROTECTION AND PAINTING

Surface preparation and painting shall be as per manufacturer's standard and shall be suitable for corrosive industrial environment unless otherwise specified in job specification/data sheet.

7.0 PACKAGING AND IDENTIFICATION

- 7.1 All packaging shall be done in such a manner as to reduce the volume. The equipment may be dismantled into major components, suitable for shipment and shall be properly packed to provide adequate protection during shipment. All assemblies shall be properly match marked for site erection.
- 7.2 Attachments, spare parts of the equipment and small items shall be packed separately in wooden-cases. Each item shall be appropriately tagged with identification of main equipment, item denomination and reference number of the respective assembly drawing.
- 7.3 Detailed packing list in water-proof envelope shall be inserted in the package together with equipment.
- 7.4 Each equipment shall have an identification plate giving salient equipment data, make, year of manufacture, equipment number, name of manufacturer etc.
- 7.5 Vendor shall furnish procedure for prolonged storage of supplied equipment/ material at site.

8.0 SPARE PARTS

- 8.1 Vendor shall submit list of two (2) years recommended spares with quantities and itemized price for the normal operation and maintenance of the lift along with the offer. Two (2) years recommended spares shall be ordered only in case Purchaser decides not to go for AMC services. Proper coding and referencing of spare parts shall be done so that later identification with appropriate equipment is facilitated.
- 8.2 Vendor shall ensure that adequate quantity of commissioning spares have been included in the offer so as to ensure that commissioning of the lift is not hampered for shortage of commissioning spares. Any additional spares required during commissioning shall be provided by Vendor without any cost and time implication to Purchaser.

6-78-0003	Documentation requirement from Suppliers
7-76-0103	Instructions to Vendor for Site Performance Guarantee Requirements for Package Units

3.0 TECHNICAL REQUIREMENTS

3.1 Goods cum Passenger Lift for Multi-floor Building/ Substation (with more than two floors) (Tag No. to be assigned by Contractor)

- 3.1.1 Machine room shall be non-pressurised and all electrics in the machine room and elevator shaft shall be suitable for the area classification specified.
- 3.1.2 Actual elevations, number of landings, door opening(s) etc. shall be reviewed post order stage for compliance with operational and safety requirements of the plant.
- 3.1.3 Additional features required as per Vendor's standard design shall also be provided.
- 3.1.4 For other technical requirements, refer EIL Standard Specification for Electric Traction Lift (Doc. No. 6-61-0202) (to be read along with following amendments):

Sl. No.	Clause no./ Page no.	Addition/ Deletion/ Modification (A/D/M)	Description
1.	3.1/ 4 of 13	A	Manual override switch/ key shall also be provided in the automatic door lifts so that operator can keep the door open for any period according to his need.
2.	3.1.2/ 4 of 13	M	Machine room shall be located above the highest landing level and shall be non-pressurized. All the VFD/Controller shall be kept in the machine room and shall be suitable for specified electrical area classification.
3.	3.7.2/ 6 of 13	M	Clause "Following Push Button (Luminous type) shall be provided as a minimum" to be read as below: "Following Push Button (as per vendor standard suitable for specified electrical area classification) shall be provided as a minimum".
4.	3.8.5/ 7 of 13	A	Landing and Car door of hazardous area lifts shall be provided with a "Sealed Toughened Glass Window" suitable for classified electrical hazardous area to facilitate the passenger of the lift whether the car has landed the desired floor properly or not. The minimum size of Glass window on each door shall be: 2 ft (long) X 1 ft (width).

			The "Glass window on car door" shall coincide with the "Glass window on landing door" at each floor.
5.	3.12 d)/ 7 of 13	M	Car door and landing door open indicator. Both audio & visual indication shall be provided. The audio & visual indication shall also be provided to know at which floor the lift has reached during its travel.
6.	4.2.2 g)/ 12 of 13	A	Test to determine ARD's (Automatic Rescue Device) performance during power failure situation and check whether it reaches the nearest landing platform safely, without any problem.
7.	5.0/ 12 of 13	D	Clause 5.0 (Annual Maintenance Contract) stands deleted.

3.2 **Air Conditioning System for Substation Building, GIS Building & Analyser Room/ Container (Tag No. to be assigned by Contractor)**

3.2.1 Air conditioning of Substation Building & GIS Building shall be catered either by vapour compression refrigeration (VCR) based air cooled chillers with chilled water coil AHUs and chilled water re-circulating pumps or by vapour absorption refrigeration system (VAR System) with chilled water coil AHUs and chilled water re-circulating pumps. For capacity requirements of less than 70 TR, air cooled chillers with chilled water coil AHUs and chilled water re-circulating pumps shall be considered. For capacity requirements of 70 TR & above, vapour absorption refrigeration system with chilled water coil AHUs and chilled water re-circulating pumps.

Air conditioning system (air cooled) for Analyser Room/ Container shall be as per Instrumentation Specification/ EIL Standard Specification No. 6-52-0087 attached elsewhere in the tender.

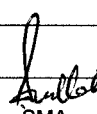
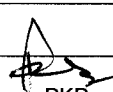
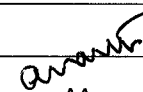
3.2.2 Air cooled Chillers, if any, shall have 50% standby. In case of Vapour Absorption Refrigeration System (VAR System), if any, two no. of Vapour Absorption Machines, each of 65% capacity, shall be considered.

3.2.3 VCR based Air Cooled Air Conditioning System (as applicable) shall consist of but not limited to the following:

- Air cooled chillers comprising of reciprocating/ scroll/ screw compressor, electric motor for the compressor, air cooled condenser, drive package with guard, interconnected insulated refrigerant piping complete with necessary fittings, control and line accessories, cubicle type gauge panel.
- Chilled water re-circulating pumps (1W+1S) with insulated supply and return chilled water piping including fittings and valves as per piping material specification attached elsewhere in the tender, instruments like pressure gauges, temperature gauges, temperature transmitter at inlet and outlet and flow indicator in supply line (orifice plate & DP Transmitter type). Gate/Globe valve shall be provided in supply and return chilled water piping respectively.

पैकेज यूनिटों के लिए साइट निष्पादनता गारंटी अपेक्षाएं तैयार करने हेतु विक्रेता को अनुदेश

INSTRUCTIONS TO VENDOR FOR SITE PERFORMANCE GUARANTEE REQUIREMENTS FOR PACKAGE UNITS

1	30.05.2008	Revised & Reissued				
0	10.11.2003	ISSUED AS STANDARD	PKR	PM	VC	SKG
Rev. No	Date	Purpose	Prepared by	Checked by	Standards Committee Convenor	Standards Bureau Chairman
					Approved by	

Abbreviations:

LSTK	:	Lumpsum Turnkey
PG	:	Performance Guarantee

General Engg. Standards Committee

Convenor :	Mr. A. Ananthanarayan
Members :	Mr. P.K. Rastogi
	Mr. Arvind Kumar
	Mr. A.K. Pal
	Mr. D. Malhotra
	Mr. Vinay Kumar
	Mr. N. Kaul
	Mr. S. Kaul (Proj.)

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1.0 INTRODUCTION

As a part of engineering services, EIL procures different types of Package Units for various Projects, for and on behalf of the Owner/Purchaser. The vendor is required to design, engineer, manufacture/procure, inspect, test and supply to site, and also in many cases construct/erect, commission and Performance test the Package Units before handing over the same to Owner/Purchaser, based on Process and Technical requirements defined in the Inquiry/Order document.

2.0 PURPOSE

This document provides instructions to Vendor for Site Performance Guarantee (PG) Requirements for Package Units and shall form a part of the contract, wherever site performance guarantee test is specified in the Inquiry/Order document. The aim is to provide clarity to the Vendor as well as the Commissioning team on site performance guarantee parameters, their measurements during PG Test, and the acceptance of the Package Unit by the Owner/Purchaser after the successful PG Test.

3.0 SCOPE

The requirements of this standard are applicable for all Package Units including LSTK Bid Packages, which require Performance Guarantee Test, after installation and commissioning of the unit at site.

4.0 DEFINITIONS

- 4.1** "Vendor" means the person(s), company, organization from whom EIL procures products/services as a part of services rendered to the Owner/Purchaser. "Contractor", "Supplier" are considered synonymous to "Vendor".
- 4.2** "Owner" means the person(s), company, organization to whom EIL is rendering services for the Project.
- 4.3** "Purchaser" means the person(s), company, organization which awards order for the Package Unit on the Vendor.

5.0 PERFORMANCE GUARANTEE TESTING AT SITE

5.1 General

- 5.1.1** The overall performance testing of the completely assembled/erected Package unit as a whole shall be carried out at site to establish the performance guarantee parameters specified in Inquiry/Order document. In addition, certain critical equipment/sub-packages may also be performance tested at site if so specified in Inquiry/Order document. The duration of site performance guarantee run shall be as defined in the Inquiry/order document.

The measured parameters, where necessary, shall be adjusted to account for the variation in ambient/operating conditions actually prevailing at site during performance testing, before comparing it with the guaranteed value.

- 5.1.2** Performance test shall be carried out as per relevant Codes, Standards and Specifications. The Vendor shall submit the following during detail engineering and the same shall be subject to Owner/Purchaser's approval:

- Detailed Test procedure including measurement tolerances, if applicable, calculations/ correction curves for changes in ambient/ operating conditions, and complete test layout, etc.
- Site Performance Guarantee Test Proforma completed in line with enclosed format 7-76-0103-F1.
- Vendor shall list out parameters to be measured and corresponding installed instrument type and tag no. to be used for measurements. Any instrument/measurement device, (required for testing) not installed at site, shall be arranged by vendor. Vendor shall furnish list of such instruments alongwith instrument details.
- Log sheets indicating all parameters that are to be recorded.
- Method of computation of test results including interpretation of test results.

5.2 Test Instruments

All necessary test instruments required for measuring the performance guarantee parameters shall be arranged by the vendor free of charge. These instruments shall be tested & calibrated from reputed test houses like National Physical Laboratories (NPL), Institute for Design of Electrical Measuring Instruments (IDEMI), Electronics Regional Test Laboratories (ERTL) or any other test house approved by the Owner. All test instruments shall have valid calibration reports. The Vendor shall furnish calibration certificates before putting them to use and also, wherever applicable, after completion of the PG test.

5.3 Performance Guarantee Parameters

Guarantee performance parameters shall be as defined in the Process/Mechanical data sheets, Specification, etc. included in the Inquiry/Order document.

5.4 Repair/Rectification/Modification

- 5.4.1 In case the unit fails to meet the guaranteed parameters, the Vendor shall carryout, necessary repair, rectification and modification within the time frame defined in the contract or as mutually agreed with the Owner/Purchaser, at his own risk and cost to establish the guaranteed parameters in the final performance test. All costs involved for above activities i.e. supply of manpower, materials, consumables and machines etc. shall be to Vendor's account.
- 5.4.2 In spite of repair/rectification, incase the guaranteed performance parameters are not met, penalty/rejection as defined in the contract document for shortfall from guaranteed performance parameters shall be applied.

6.0 SITE PERFORMANCE GUARANTEE TEST PROFORMA

Typical Proforma shown in enclosed Format 7-76-0103-F1, shall be used for assessment of Performance guarantee parameters during site PG test.

7.0 ATTACHMENTS

Format No. 7-76-0103-F1 : SITE PERFORMANCE GUARANTEE
TEST PROFORMA.

3. OBSERVATIONS:

4. CONCLUSIONS :

**Vendor's
Representative**
Date

**Owner's
Commissioning Incharge**
Date

Owner
Date

Copy : Engineer-In-Charge.

COMPLETENESS OF FINAL DOCUMENTATION

Name of Supplier/Contractor :

Customer :

Project :

EIL's Job No. :

Purchase Order No./

Contract No. :

Purchase Requisition No./

Tender No. :

Rev. No. :

Name of the Work/

Equipment :

Tag. No. :

Supplier's/ Contractor's

Works Order No. :

Certified that the Engineering Documents/ Manufacturing & Test Certificates submitted by the supplier are complete in accordance with the Vendor Data Requirements of Purchase Requisition.

Signature :

Date :

Name :

Designation :

Department :

Signature :

Date :

Name :

Designation :

Department :

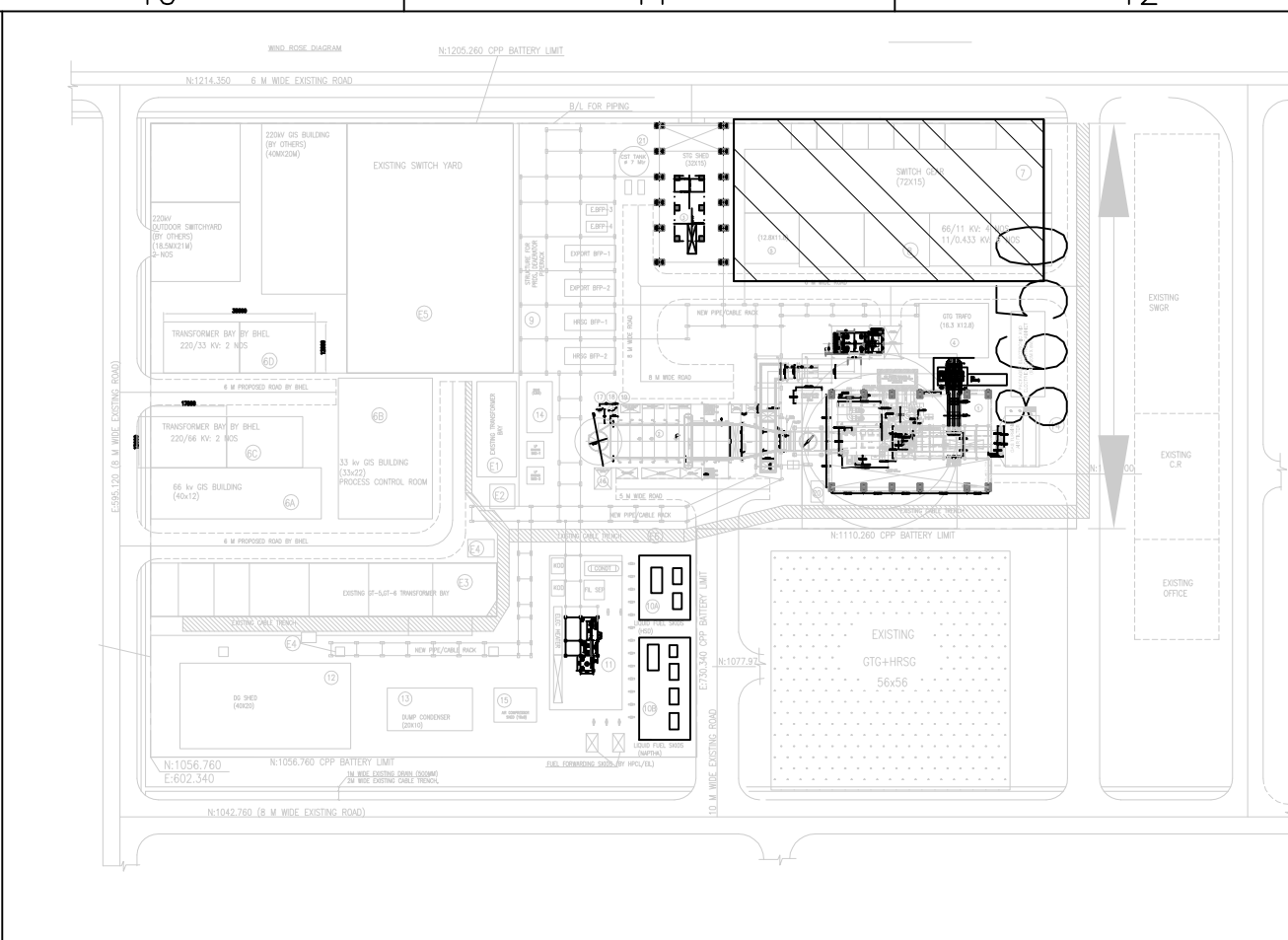
Supplier/Contractor

EIL/TPIA

ESP-001- 2A Rev.00		PROJECT ENGINEERING & SYSTEMS DIVISION		Std. / Doc. Number	
				Annexure-3	
				Rev. No.	00

COPYRIGHT 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.	Annexure-3 CIVIL DRAWING FOR SWITCHGEAR BUILDING &GIC BUILDING				

Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	



1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES, UNO.
2. EL. 99.45 REFER TO FGL OF CCPP AREA WHICH CORRESPONDS TO RL+4.25M.
3. EL. 100.00 REFER TO FFL OF CCPP AREA WHICH CORRESPONDS TO RL+4.80M
4. NO DIMENSIONS FROM THIS DRAWING ARE TO BE SCALED OFF AND ONLY FIGURED DIMENSIONS SHALL BE FOLLOWED.
5. ALL BRICK WALLS ARE 230MM THK & FIRE WALL ARE 345 MM THK (EXCLUDING PLASTER).
6. FOR STAIRCASE DETAILS REFER SEPPERATE DRAWING.
7. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TERMS AND CONDITIONS OF THE CONTRACT AND SPECIFICATIONS & REFERENCE DRAWINGS.
8. CHECK ALL DIMENSIONS, CO-ORDINATES & ELEVATIONS IMMEDIATELY, REPORT ANY DISCREPANCIES, CONFLICTS OR ERROR FOR CLARIFICATION PRIOR TO COMMENCING WORK.
9. CUTOFF SHOWN IS INDICATIVE ONLY FOR EXACT DETAIL RELEVANT ELECTRICAL DRAWING IS REFERRED.

LEGEND

FFL – FINISHED FLOOR LEVEL  – 230MM BRICK WALL

TYP – TYPICAL  – 345MM FIRE WALL

NTS – NOT TO SCALE

THK – THICKNESS

FGL – FINISHED GROUND LEVEL

 – PVC DRAIN PIPE

THIS DRG SHALL BE READ IN CONJUNCTION WITH ALL ARCH. DRAWINGS OF SS94 BLDG

REFERENCE DRAWINGS		
SL.No.	DESCRIPTION	DRAWING No.
01	PLOT PLAN	PY-LQ-0-M104-2001-01
02	SWITCHGEAR ROOM LAYOUT	PY-LE-1-M104-2035-01

* WALLS ARE OUTER FLASHED. DIAMENSTION INDICATED SHALL BE VERIFIED AFTER COMPLETION OF STRUCTURAL DESIGN.

PROJECT:	CAPTIVE POWER PLANT (CPP) PACKAGE VISAKH REFINERY MODERNIZATION PROJECT (VRMP) JOB NO. B016
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OWNER:  HINDUSTAN PETROLEUM CORPORATION LIMITED

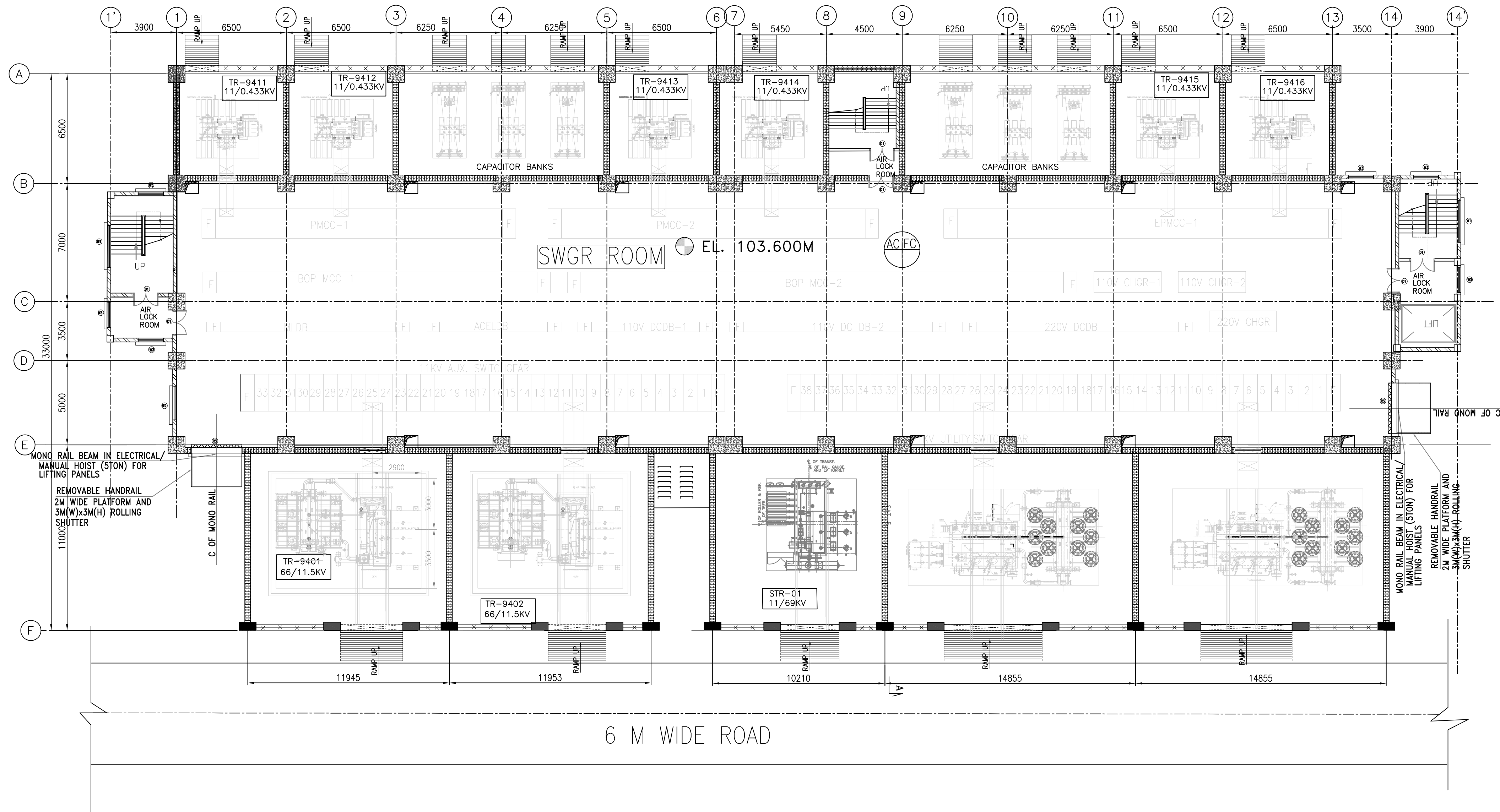
PMC:  ENGINEERS INDIA LIMITED (EIL), NEW DELHI

	BHARAT HEAVY ELECTRICALS LTD.			NAME	SIGN.	DATE	NO. OF VAR.
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			CHD.	GPP	-sd-	16.05.18	
			APPD.	EC	-sd-	17.05.18	

DEPT. PH&SD CODE.	UNTL. GR	DIMS. G/M/F		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO OF ITEMS
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TITLE SWGR BUILDING (SS-94)					CARD CODE	BHEL DRG. NO. PY-DA-1-M104-1225-01		REV
ARCHITECTURAL PLAN © EL.100.00					N.A.	CUST DRG. NO.		00
					SHT. No 01	NO. OF SHT.		01

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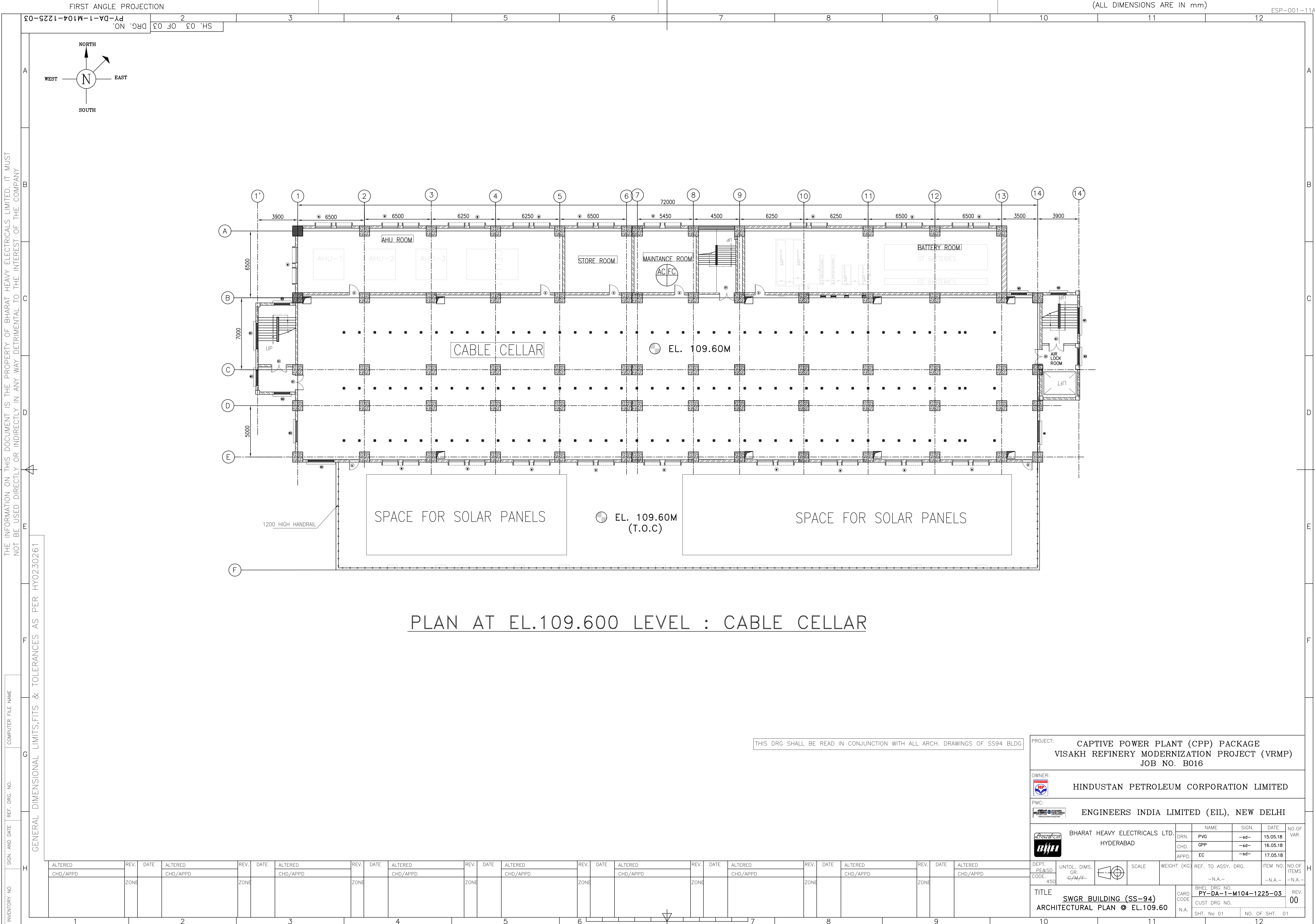
SH. 01	OF 01	2
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6 M WIDE ROAD

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																					
 BHARAT HEAVY ELECTRICALS LTD. HYDERABAD	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">DRN.</th> <th style="width: 30%;">NAME</th> <th style="width: 20%;">SIGN.</th> <th style="width: 20%;">DATE</th> <th style="width: 20%;">NO.OF VAR.</th> </tr> <tr> <td></td> <td>PVG</td> <td>-sd-</td> <td>15.05.18</td> <td></td> </tr> <tr> <td></td> <td>CHD.</td> <td>GPP</td> <td>-sd-</td> <td>16.05.18</td> </tr> <tr> <td></td> <td>APPD.</td> <td>EC</td> <td>-sd-</td> <td>17.05.18</td> </tr> </table>	DRN.	NAME	SIGN.	DATE	NO.OF VAR.		PVG	-sd-	15.05.18			CHD.	GPP	-sd-	16.05.18		APPD.	EC	-sd-	17.05.18
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	APPD.	EC	-sd-	17.05.18																	
DEPT. PE&SD CODE. 450	UNTOL DIMS. GR. G/M/F		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG. -N.A.-	ITEM NO. -N.A.-	NO.OF ITEMS -N.A.-														
TITLE SWRG BUILDING (SS-94) ARCHITECTURAL PLAN @ EL.103.60					CARD CODE N.A.	RHEL DRG NO. PY-DA-1-M104-1225-02 CUST DRG NO.	REV. 00														

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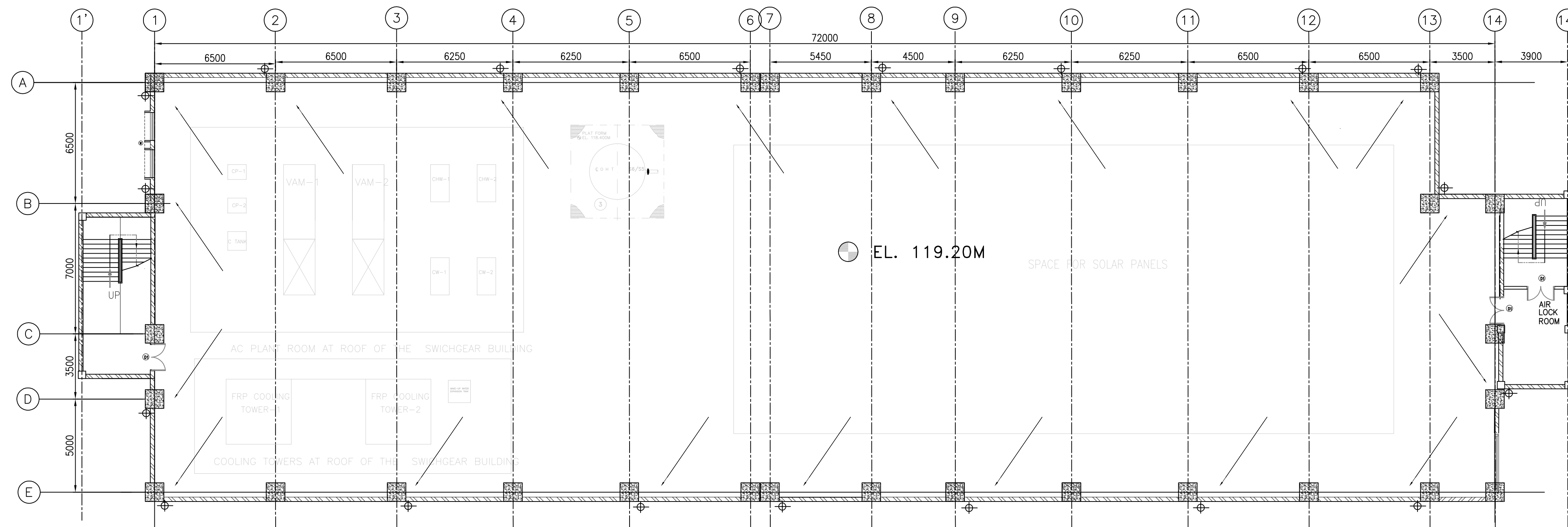
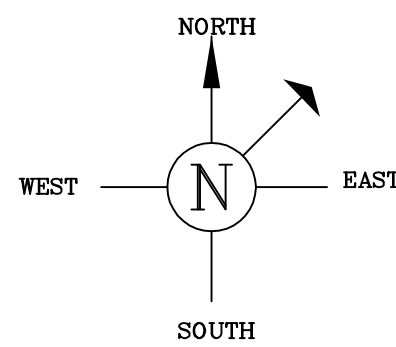


PLACE OF APPLICATION	FLOORING			WALL				CEILING	
				INTERIOR		EXTERIOR			
	FLOOR FINISH	SKIRTING	DADOING	PLASTER	PAINT	PLASTER	PAINT	PLASTER	PAINT
CABLE CELLAR	HEAVY DUTY CEMENT CONCRETE FLOORING	125MM HIGH HEAVY DUTY CEMENT CONCRETE SKIRTING		12MM THICK CEMENT PLASTER (CM 1:4)	CEMENT PLASTER AND OIL BOUND DISTEMPER PAINT	18MM THICK CEMENT PLASTER (CM 1:4)	ACRYLIC PAINT	6MM THK CEMENT PLASTER (CM 1:4)	OIL BOUND DISTEMPER
SWITCHGEAR ROOM	HEAVY DUTY CEMENT CONCRETE FLOORING	125MM HIGH HEAVY DUTY CEMENT CONCRETE SKIRTING	—	12MM THICK CEMENT PLASTER (CM 1:4)	POP PUNNING WITH PLASTIC EMULSION	18MM THICK CEMENT PLASTER (CM 1:4)	ACRYLIC PAINT	6MM THK CEMENT PLASTER (CM 1:4)	ALUMINIUM PANEL FALSE CEILING
BATTERY ROOM	CHEMICAL ABRASION RESISTANT EPOXY COATING OVER CEMENT CONCRETE FLOOR FINISH	—	CHEMICAL RESISTANT EPOXY COATING UPTO 2500 HIGH	12 THK CEMENT PLASTER (CM 1:4)	POP PUNNING & PLASTIC EMULSION PAINT ABOVE 2500MM CHEMICAL RESISTANT EPOXY COATING OVER CEMENT PLASTER UPTO 2500MM HEIGHT	18MM(IN TWO LAYER) THICK IN CM 1:4	ACRYLIC PAINT	6 THK CEMENT PLASTER (CM 1:4)	OIL BOUND DISTEMPER
PANELS ROOM	FALSE FLOORING	—	GRANITE STONE DADO IN CONSOLE ROOM.	12 THK CEMENT PLASTER (CM 1:4)	OIL BOUND DISTEMPER PAINT	18MM(IN TWO LAYER) THICK IN CM 1:4	ACRYLIC PAINT	6 THK CEMENT PLASTER (CM 1:4)	ALUMINIUM PANEL FALSE CEILING
MAINTENANCE BAY	HEAVY DUTY CEMENT CONCRETE FLOORING	—	GRANITE STONE CLADDING 1500MM HIGH	12 THK CEMENT PLASTER (CM 1:6)	POP PUNNING WITH PLASTIC EMULSION PAINT	18MM(IN TWO LAYER) THICK IN CM 1:4	ACRYLIC PAINT	6 THK CEMENT PLASTER (CM 1:4)	OIL BOUND DISTEMPER
STAIR CASE,STAIR LOBBY,STEPS etc CORRIDOR	GRANITE STONE WITH ANTI SLIP GROOVES	125MM HIGH KOTA STONE SKIRTING	—	12 THK CEMENT PLASTER (CM 1:6)	POP PUNNING WITH PLASTIC EMULSION PAINT	18MM(IN TWO LAYER) THICK IN CM 1:4	ACRYLIC PAINT	6 THK CEMENT PLASTER (CM 1:4)	OIL BOUND DISTEMPER
TOILETS	VITRIFIED TILES	—	VITRIFIED TILES DADO 2100MM HIGH	12 THK CEMENT PLASTER (CM 1:6)	POP PUNNING WITH PLASTIC EMULSION PAINT	18MM(IN TWO LAYER) THICK IN CM 1:4	ACRYLIC PAINT	6 THK CEMENT PLASTER (CM 1:4)	OIL BOUND DISTEMPER

THIS DRG SHALL BE READ IN CONJUNCTION WITH ALL ARCH. DRAWINGS OF SS94 BLDG

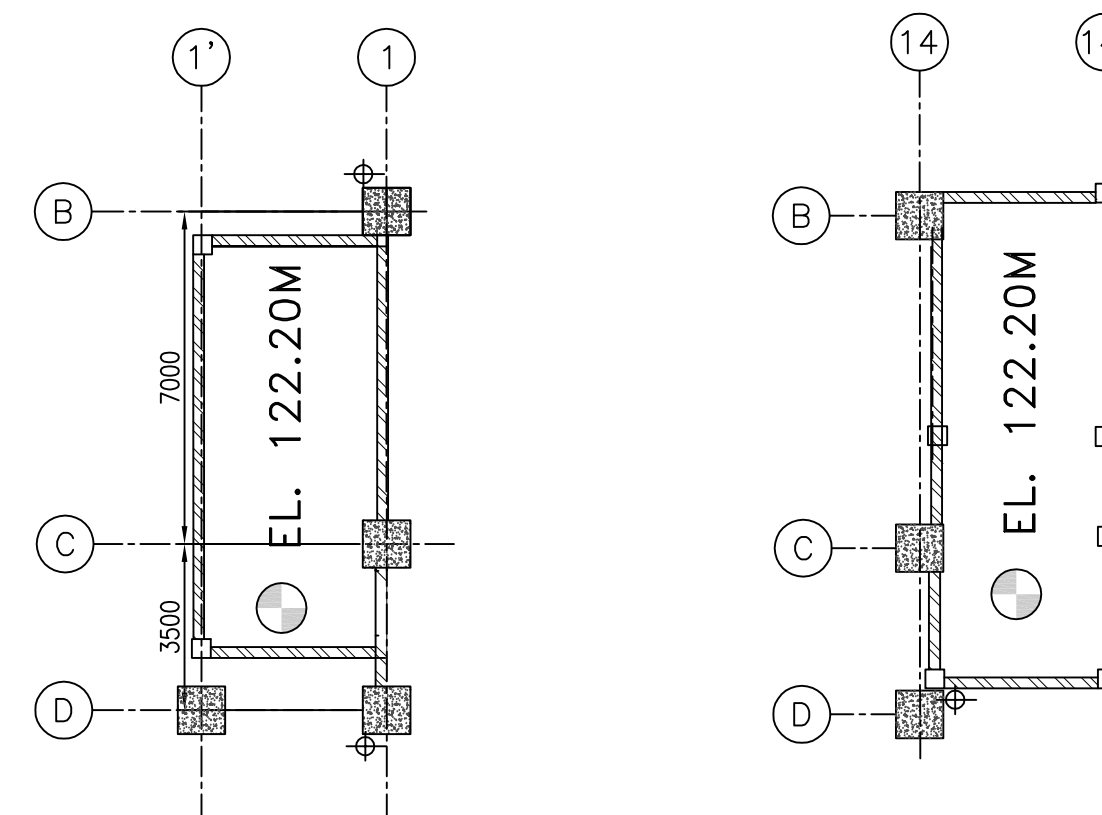
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OWNER:		HINDUSTAN PETROLEUM CORPORATION LIMITED									
PMC:		ENGINEERS INDIA LIMITED (EIL), NEW DELHI									
BHARAT HEAVY ELECTRICALS LTD. HYDERABAD			NAME	SIGN.	DATE	NO OF VAR.					
		DRN.	PVG	~sd~	15.05.18						
		CHD.	GPP	~sd~	16.05.18						
		APPD.	EC	~sd~	17.05.18						
DEPT. PE&SD CODE.	UNTOL. DIMS. OR 450		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS				
					~N.A.~	~N.A.~	~N.A.~				
TITLE SWGR BUILDING (SS-94) ARCHITECTURAL PLAN © EL.113.20				CARD CODE N.A.	BHEL DRG NO. PY-DA-1-M104-1225-04 CUST. DRG NO.		REV. 00				
10		11		12							



PLAN AT EL.119.200 M LEVEL : ROOF LEVEL

SCHEDULE OF DOORS, VENTILATORS AND OPENINGS									
TYPE	OPENING		DESCRIPTION	EL. +100.000 LVL.	EL. +103.600 LVL.	EL. +109.600 LVL.	EL. +113.200 LVL.	EL. +119.200 LVL.	TOTAL NOS
	WIDTH	HEIGHT							
RS	3000	3000	STANDARD STEEL ROLLING SHUTTER	–	2	–	2	–	4
W	3500	1500	GLAZED OPENABLE/FIXED WINDOWS WITHALUMINIUM FRAME	0	0	18	18	1	37
W1	2500	1500	GLAZED OPENABLE/FIXED WINDOWS WITHALUMINIUM FRAME	3	2	3	2	1	12
W2	2000	1500	GLAZED OPENABLE/FIXED WINDOWS WITHALUMINIUM FRAME	2	1	2	0	0	5
W3	1500	1500	GLAZED OPENABLE/FIXED WINDOWS WITHALUMINIUM FRAME	6	6	6	5	0	23
D	1000	1000	FULLY GLAZED DOOR WITH ALUMINIUMFRAME	0	0	7	9	0	12
D1	750	1500	FULLY GLAZED DOOR WITH ALUMINIUMFRAME	6	6	5	6	3	26



PLAN AT EL.112.200 M LEVEL

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		

PROJECT: CAPTIVE POWER PLANT (CPP) PACKAGE VISAKH REFINERY MODERNIZATION PROJECT (VRMP) JOB NO. B016																												
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	NAME	SIGN.	DATE	NO. OF VAR.																								
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CHD.	GPP	-sd-	16.05.18																									
APPD.	EC	-sd-	17.05.18																									
DEPT. E&SD CODE: 450		UNTOL. DIMS. GR. G/M/F-				SCALE		WEIGHT (KG)		REF. TO ASSY. DRG. -N-A-		ITEM NO. -N-A-		NO. OF ITEMS -N-A-														
TITLE SWGR BUILDING (SS-94) ARCHITECTURAL PLAN @ EL.11-20						CARD CODE PY-DA-1-M104-1225-05		N.A.		BHEL DRG. NO. REV. 00		CUST DRG. NO.		REV. 00														
10						11		12		NO. OF SHT. 01		12		01														

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261	UNIT
--	------

INVENTORY NO



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		8		9		10		11		12		13		14		15	

PROJECT: CAPTIVE POWER PLANT (CPP) PACKAGE

VISAKH REFINERY MODERNIZATION PROJECT (VRMP)

JOB NO. B016

OWNER:



HINDUSTAN PETROLEUM CORPORATION LIMITED

PMC:

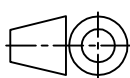


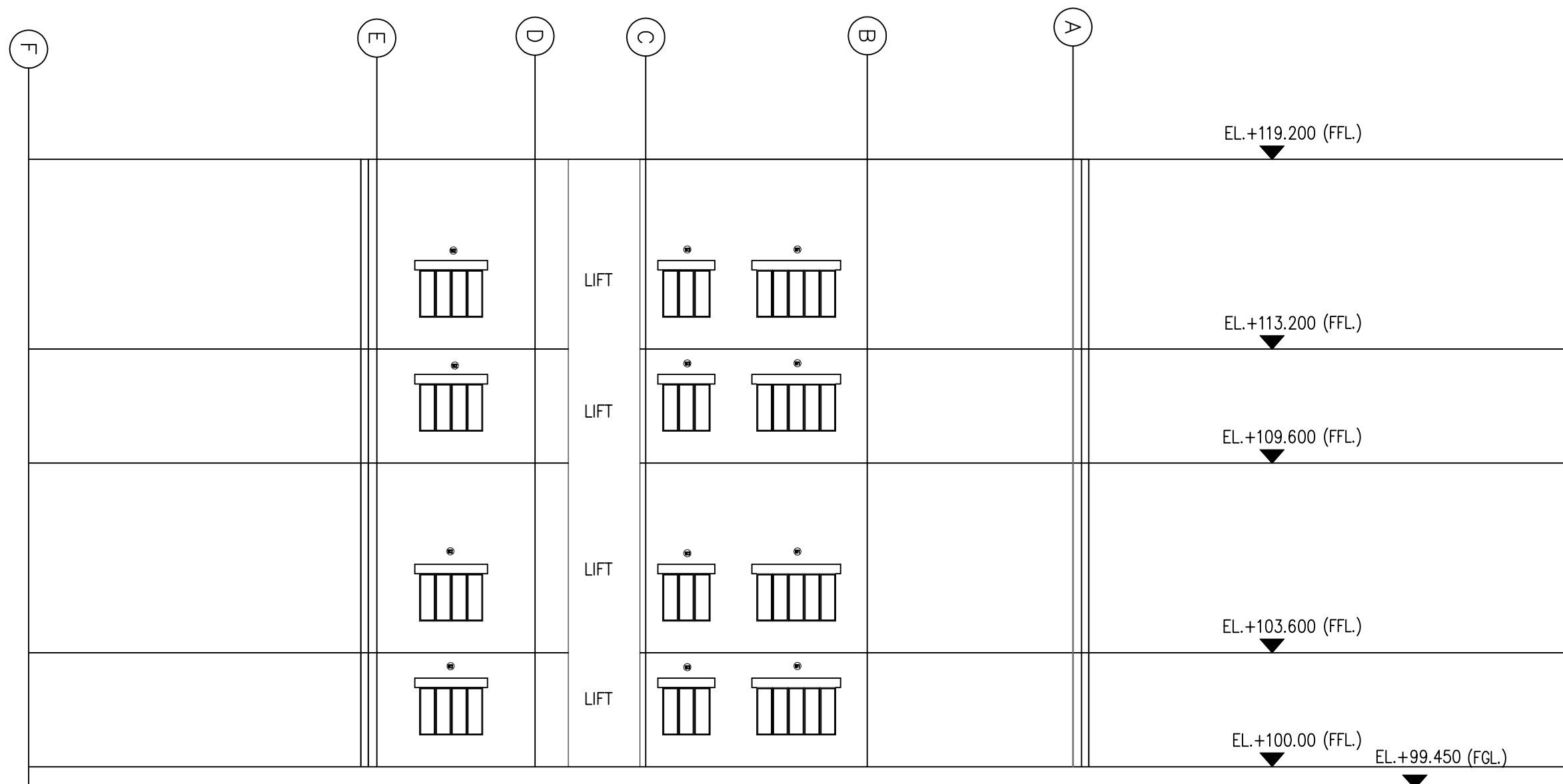
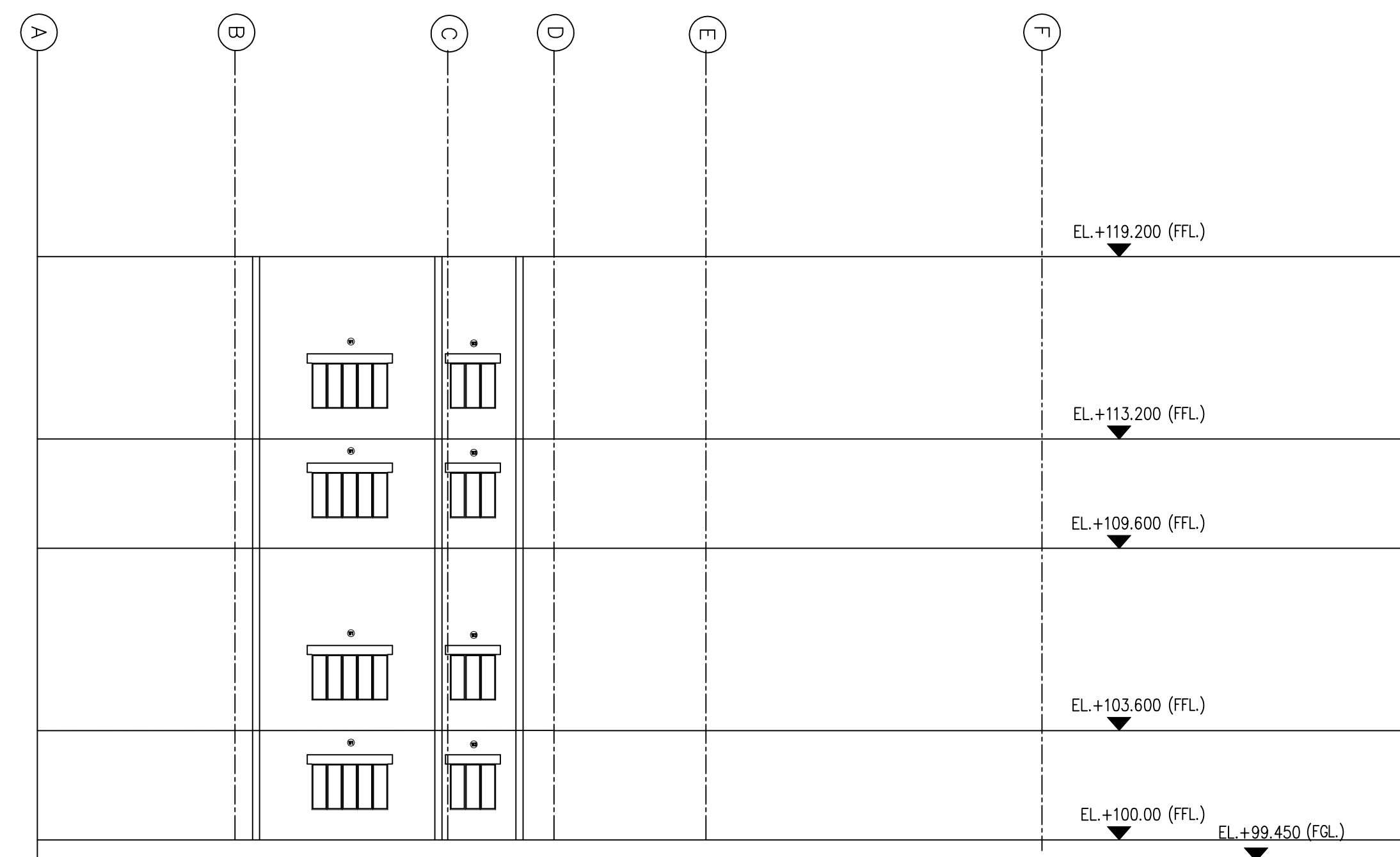
ENGINEERS INDIA LIMITED (EIL), NEW DELHI



BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

		NAME		SIGN.		DATE		NO.OF VAR.	
DRN.		PVG		--sd--		15.05.18			
CHD.		GPP		--sd--		16.05.18			
APPD.		EC		--sd--		16.05.18			

DEPT. PE&SD		UNTOL. DIMS. GR.				SCALE		WEIGHT (KG)		REF. TO ASSY. DRG.		ITEM NO.		NO.OF ITEMS	
CODE.		450				N.A.--		N.A.--		N.A.--		N.A.--			
TITLE		SWGR BUILDING (SS-94) ELEVATIONS- NORTH & SOUTH				CARD CODE N.A.		BHEL DRG NO. PY-DA-1-M104-1225-06		CUST DRG NO.		REV. 00			
					SHT. No 01		NO. OF SHT.		01						

ELEVATION AT EASTELEVATION AT WEST

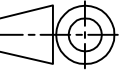
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CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD		
	ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE	
1		2		3		4		5		6		7							9	

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

				BHARAT HEAVY ELECTRICALS LTD.				NAME		SIGN.		DATE		NO. OF VAR.	
				HYDERABAD				DRN.		PVG		-sd-		15.05.18	
								CHD.		GPP		-sd-		16.05.18	
								APPD.		EC		-sd-		17.05.18	

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

TITLE SWGR BUILDING (SS-94) ELEVATIONS- EAST & WEST	CARD CODE N.A.	BHEL DRG. NO. PY-DA-1-M104-1225-07		REV. 00
		CUST DRG. NO.		
10		11	12	

DRG. NO. PY-DA-1-M104-1269-01

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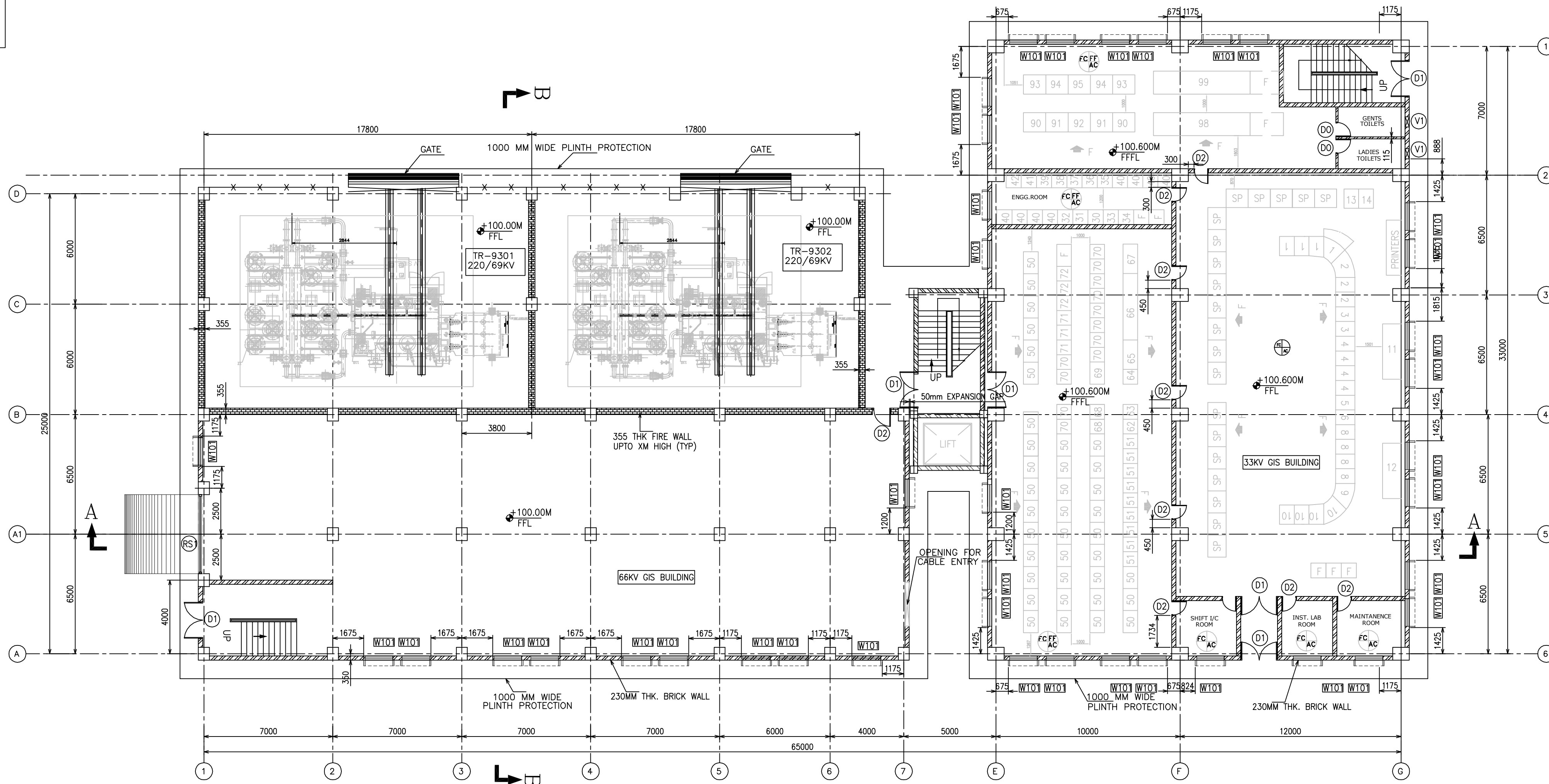
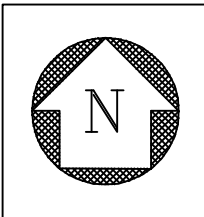
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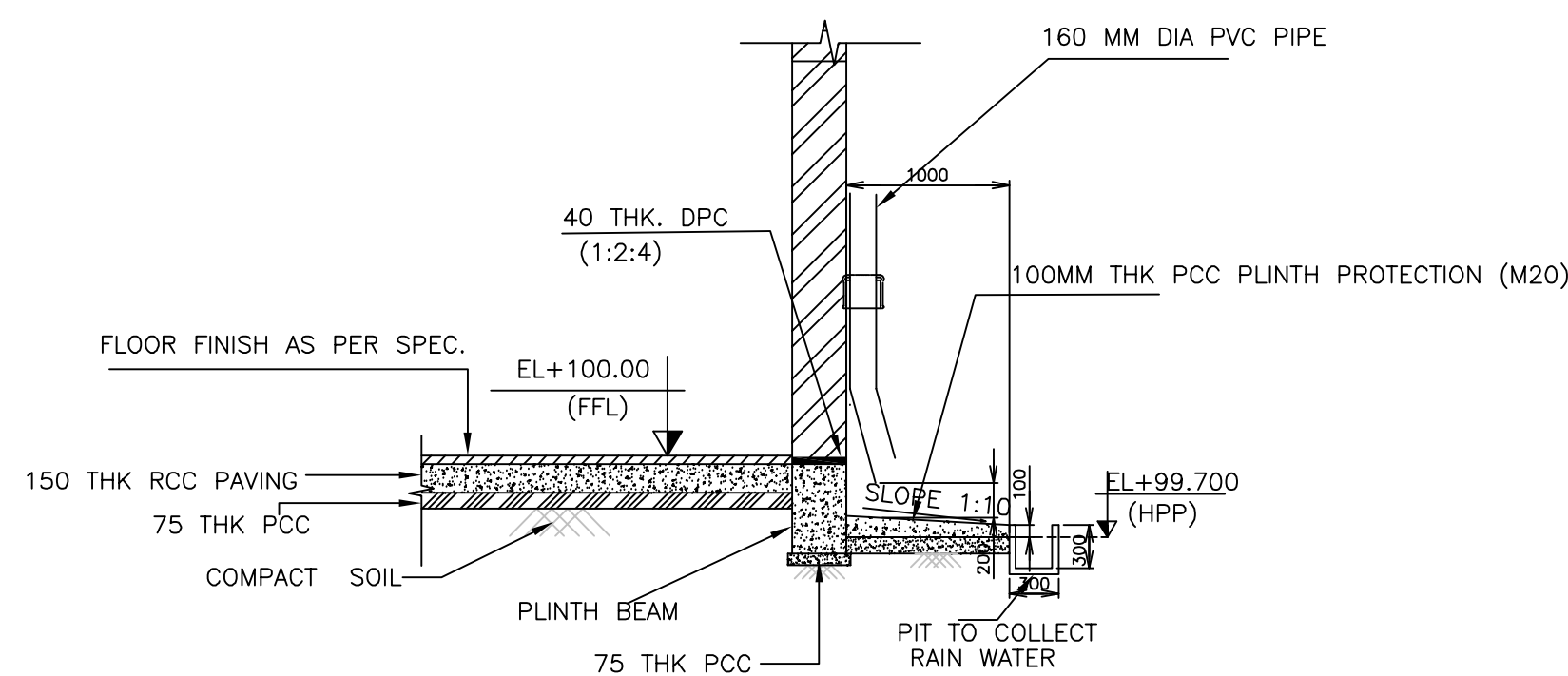
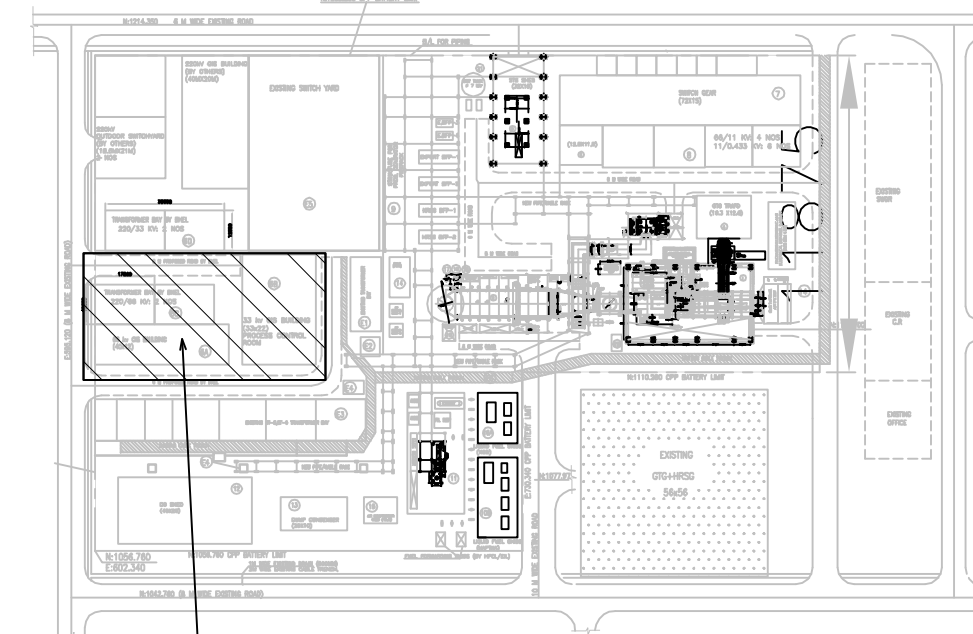
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11

12



PLAN AT EL.+100.00M LVL FOR 66kV & 33 Kv GIS BUILDING

FOR SECTION A-A & B-B
(REFER DWG. NO.PY-DA-1-M104-1269-05)TYP. DETAILS OF PLINTH PROTECTION
& R.C. SURFACE DRAIN
(NTS)66kV & 33kV GIS
BUILDING
KEY PLAN
NTS

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS, UNO.
2. FINISHED FLOOR LEVEL EL.+100.000 CORRESPONDS TO +4.80M R.L. AT SITE.
3. NO DIMENSIONS FROM THIS DRAWING ARE TO BE SCALED OFF AND ONLY FIGURED DIMENSIONS SHALL BE FOLLOWED.
4. ALL BRICK WALLS ARE 230MM THK & FIRE WALL ARE 355 THK.
5. FOR STAIRCASE DETAILS REFER SEPARATE DRAWING.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TERMS AND CONDITIONS OF THE CONTRACT AND SPECIFICATIONS & REFERENCE DRAWINGS.
7. CHECK ALL DIMENSIONS, CO-ORDINATES & ELEVATIONS IMMEDIATELY, REPORT ANY DISCREPANCIES, CONFLICTS OR ERROR FOR CLARIFICATION PRIOR TO COMMENCING WORK.
8. LOCATION & SIZE OF CUTOUTS SHALL BE VERIFIED FROM RELEVANT PIPING/ELECTRICAL DRAWING.
9. FOR INTERIOR DETAILS OF TOILET REFER SEPARATE DRAWING.
10. FOR STAIRCASE DETAILS REFER SEPARATE DRAWING.

LEGEND

	- 355 THK. FIRE WALL
	- 230 THK. BRICKWALL
F.F.L.	- FINISHED FLOOR LEVEL
F.F.F.L.	- FINISHED FALSE FLOOR LEVEL
TYP.	- TYPICAL
NTS	- NOT TO SCALE
THK	- THICKNESS
GI	- GALVANIZED IRON
TOG	- TOP OF GRATING
TOC	- TOP OF CONCRETE

REFERENCE DRAWINGS		
SL.No.	DESCRIPTION	DRAWING No.
01	PLOT PLAN	PY-LQ-0-M104-2001-01-S01
02	SWITCHGEAR ROOM EQUIPMENT LAYOUT (SS-93)	PY-LE-1-M104-2019-01
03	CONTROL ROOM EQUIPMENT LAYOUT (SS-93)	PY-LE-0-M1048-121-01
04	GIS BUILDING(SS-93) ARCHITECTURAL PLAN AT 66KV GIS (EL+103.60M) AND CABLE CELLAR (EL+106.00M) FOR 33KV FLOOR	PY-DA-1-M104-1269-02
05	GIS (SS-93)BUILDING ARCH. PLAN @ EL+109.60M(TRANSFMR ROOF), EL+112.60M LVL (66KV GIS ROOF), & EL.+109.60M LVL(33KV-GIS & ELECTRICAL CONTROL ROOM)	PY-DA-1-M104-1269-03
06	GIS (SS-93) BUILDING ARCH. PLAN AT ROOF LEVEL FOR 33 Kv GIS	PY-DA-1-M104-1269-04
07	GIS BUILDING(SS-93) ARCHITECTURAL ELEVATIONS	PY-DA-1-M104-1269-05
08	GIS BUILDING(SS-93) SECTIONAL DETAILS	PY-DA-1-M104-1269-06
09	GIS BUILDING(SS-93) FINISHING SCHEDULE	PY-DA-1-M104-1269-07

PROJECT: CAPTIVE POWER PLANT (CPP) PACKAGE
VISAKH REFINERY MODERNIZATION PROJECT (VRMP)
JOB NO. B016OWNER:
 HINDUSTAN PETROLEUM CORPORATION LIMITEDPMC:
 ENGINEERS INDIA LIMITED (EIL), NEW DELHI

	BHARAT HEAVY ELECTRICALS LTD.			NAME	SIGN.	DATE	NO.OF VAR.
	HYDERABAD		DRN.	SKP		10.05.18	
			CHD.	KAINKUN		17.05.18	
			APPD.	ESHAN		17.05.18	

DEPT.	UNTOL.	DIMS.	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS
PE&SD	GR.	6/11/18			-N.A.-	-N.A.-	
CODE							
450							
TITLE GIS BUILDING(SS-93) ARCH.PLAN AT CABLE CELLAR (EL+100.00) FOR 66KV PROCESS CONTROL ROOM(EL+100.600)FLOOR FOR 33KV					CARD CODE		
					N.A.		
					SHT. No 01	NO. OF SHT. 01	

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

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

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

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		
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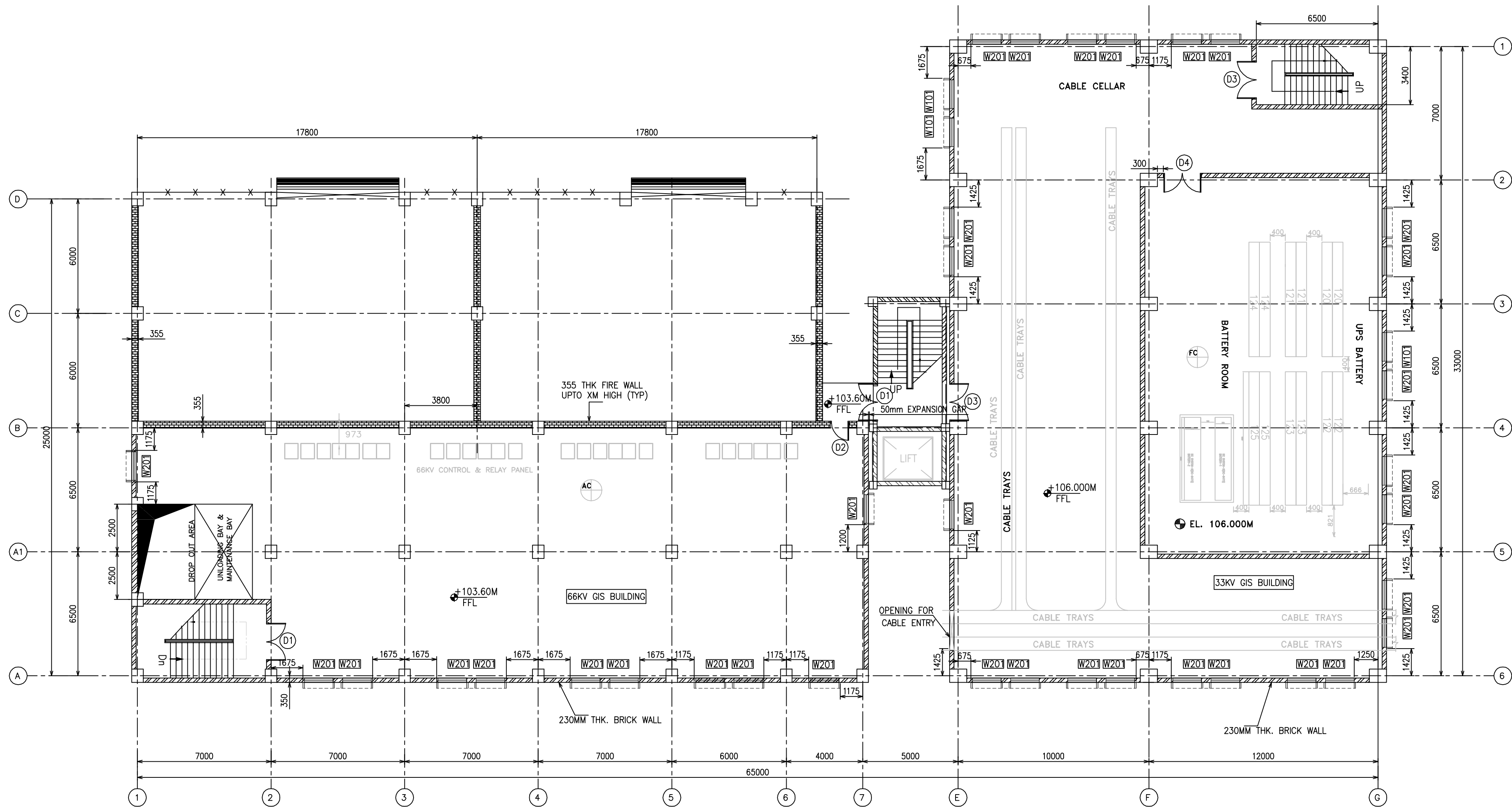
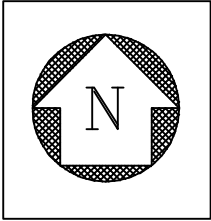
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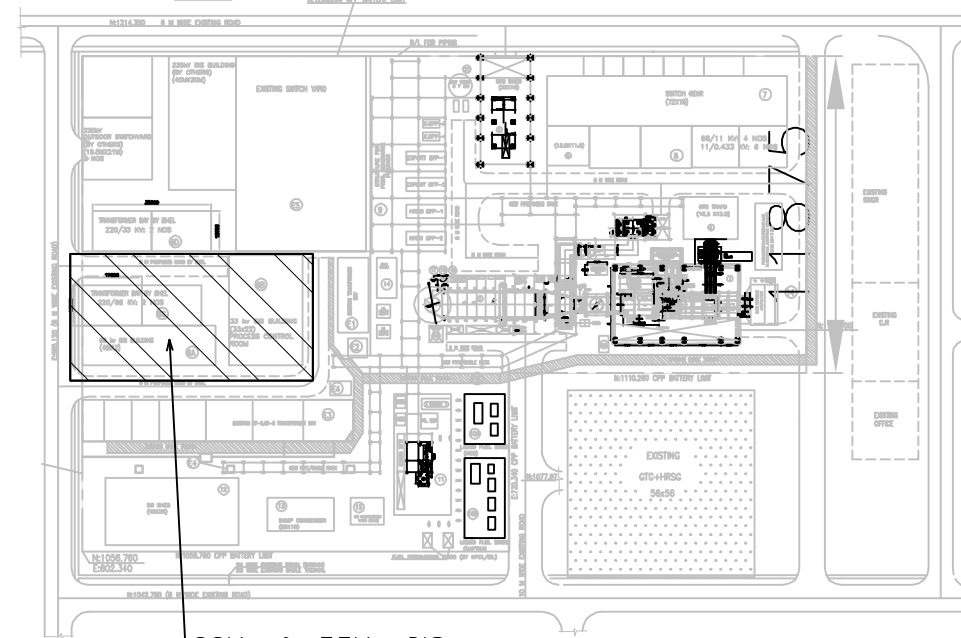
DRG. NO. PY-DA-1-M104-1269-01

SH. OF 2



ARCH. PLAN AT 66KV GIS FLOOR(EL+103.60M)

& CABLE CELLAR FLOOR(EL+106.00M) FOR 33Kv



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS, UNO.
2. FINISHED FLOOR LEVEL EL.+100.000 CORRESPONDS TO +4.80M R.L AT SITE.
3. NO DIMENSIONS FROM THIS DRAWING ARE TO BE SCALED OFF AND ONLY FIGURED DIMENSIONS SHALL BE FOLLOWED.
4. ALL BRICK WALLS ARE 230MM THK & FIRE WALL ARE 355 THK.
5. FOR STAIRCASE DETAILS REFER SEPARATE DRAWING.
6. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH TERMS AND CONDITIONS OF THE CONTRACT AND SPECIFICATIONS & REFERENCE DRAWINGS.
7. CHECK ALL DIMENSIONS, CO-ORDINATES & ELEVATIONS IMMEDIATELY, REPORT ANY DISCREPANCIES, CONFLICTS OR ERROR FOR CLARIFICATION PRIOR TO COMMENCING WORK.
8. LOCATION & SIZE OF CUTOUTS SHALL BE VERIFIED FROM RELEVANT PIPING/ELECTRICAL DRAWING.
9. FOR INTERIOR DETAILS OF TOILET REFER SEPARATE DRAWING.
10. FOR STAIRCASE DETAILS REFER SEPARATE DRAWING.

LEGEND

	- 355 THK. FIRE WALL
	- 230 THK. BRICKWALL
FFL	- FINISHED FLOOR LEVEL
FFF	- FINISHED FALSE FLOOR LEVEL
TYP	- TYPICAL
NTS	- NOT TO SCALE
THK	- THICKNESS
GI	- GALVANIZED IRON
TOG	- TOP OF GRATING
TOC	- TOP OF CONCRETE

REFERENCE DRAWINGS		
SL.No.	DESCRIPTION	DRAWING No.
01	PLOT PLAN	PY-LQ-0-M104-2001-01-S01
02	SWITCHGEAR ROOM EQUIPMENT LAYOUT (SS-93)	PY-LE-1-M104-2019-01
03	CONTROL ROOM EQUIPMENT LAYOUT (SS-93)	PY-LE-0-M1048-121-01
04	GIS BUILDING(SS-93) ARCHITECTURAL PLAN AT CABLE CELLAR (EL+100.00) & PROCESS CONTROL ROOM(EL+100.600) FLOOR	PY-DA-1-M104-1269-01
05	GIS (SS-93)BUILDING ARCH. PLAN @ EL+109.60M(TRANSFMR ROOF), EL+112.60M LVL (66KV GIS ROOF), & EL.+109.60M LVL(33KV-GIS & ELECTRICAL CONTROL ROOM)	PY-DA-1-M104-1269-03
06	GIS (SS-93) BUILDING ARCH. PLAN AT ROOF LEVEL FOR 33 Kv GIS	PY-DA-1-M104-1269-04
07	GIS BUILDING(SS-93) ARCHITECTURAL ELEVATIONS	PY-DA-1-M104-1269-05
08	GIS BUILDING(SS-93) SECTIONAL DETAILS	PY-DA-1-M104-1269-06
09	GIS BUILDING(SS-93) FINISHING SCHEDULE	PY-DA-1-M104-1269-07

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

	BHARAT HEAVY ELECTRICALS LTD.		NAME	SIGN.	DATE	NO.OF
	DRN.	SKP			11.05.18	VAR.
	CHD.	KANKUN			17.05.18	
	APPD.	ESHAN			17.05.18	

DEPT. PE&SD	UNTOL.	DIMS.	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF
CODE. 450	GR.	G/M/F			-N.A.-	-N.A.-	ITEMS
TITLE GIS BUILDING(SS-93) ARCH. PLAN AT 66KV GIS FLOOR(EL+103.60M) &CABLE CELLAR FLOOR(EL+106.00M) FOR 33Kv					CARD CODE	BHEL DRG NO. PY-DA-1-M104-1269-02	REV.
					N.A.	CUST DRG NO.	00
						SHT. No 01	NO. OF SHT. 01

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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

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

ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE
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1			2			3			4			5			6			7		

GIS BUILDING

6 M ROAD (BY BHEL)

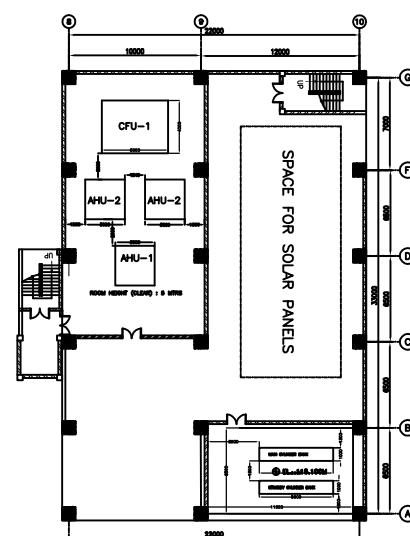
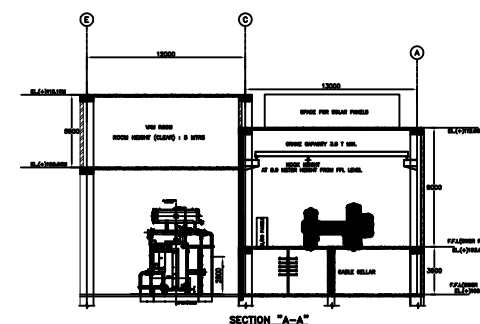
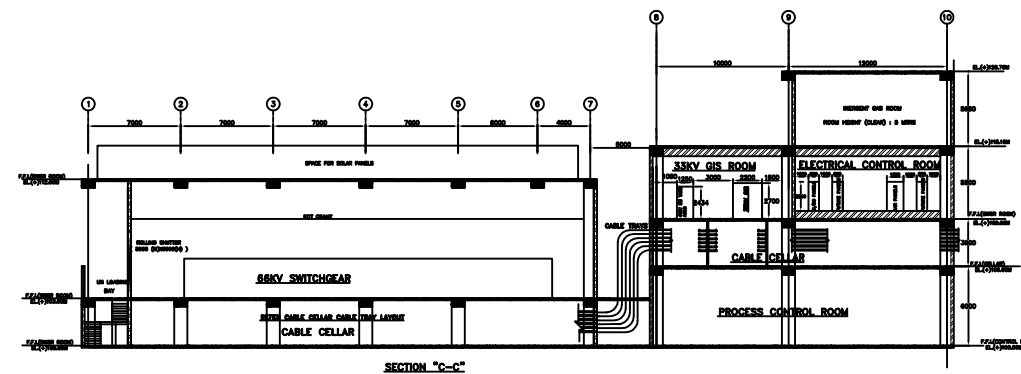
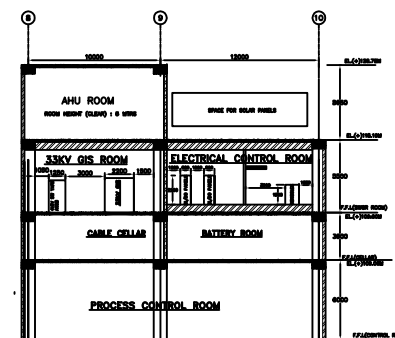
6 M ROAD (BY BHEL)

PLAN AT EL. 105.500 M LEVEL FOR 66Kv & 33 Kv GIS BUILDING

6 M ROAD (BY BHEL)

6 M ROAD (BY BHEL)

PLAN AT EL.109.100 M LEVEL FOR 66Kv & 33 KV GIS BUILDING



PLAN AT EL.115.100 M LEVEL FOR 66Kv & 33 KV GIS BUILDING

NOTES:-

REFER SHEET-1 OF 2 FOR NOTES

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 ITEMS
DRN. A.V.SURESH	--sd--	27.03.18	--N.A.--
CHD. P.SURESH	--sd--	27.03.18	--N.A.--
APPD. J.K.PATTANIK	--sd--	27.03.18	--N.A.--

DEPT. / P.E. & S.D. CODE	UNTOOL. DIMS. GR. / G.M.F.	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEMS
450				--N.A.--	--N.A.--	--N.A.--

TITLE	CARD CODE	REV.
SWITCHGEAR ROOM EQUIPMENT LAYOUT (SS-93)	N.A.	02P

ESP-001- 2A Rev.00		PROJECT ENGINEERING & SYSTEMS DIVISION		Std. / Doc. Number	
				Annexure-4	
				Rev. No.	00

COPYRIGHT 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.	Annexure-4 PRICE BID FORMAT
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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

 BHARAT HEAVY ELECTRICALS LIMITED R.C.PURAM, HYDERABAD-502032					
PROJECT ENGINEERING & SYSTEMS DIVISION					
PRICE FORMAT (R00) FOR GOODS CUM PASSENGER ELEVATOR FOR SWITCHGEAR BUILDING CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED,VIZAG PROJECT: CAPTIVE POWER PLANT(CPP) PACKAGE, VISAKH REFINERY MODERNIZATION PROJECT (VRMP),JOB No. B016 CONSULTANT:ENGINEERS INDIA LIMITED (EIL), NEW DELHI					
SL NO	ITEM DESCRIPTION	QTY	UNIT	UNIT RATE (RS.)	TOTAL (RS.)
	Bidder's Name : <Bidder to indicate> Bidder's Offer No. & Dt. : <Bidder to indicate> Bidder's Ref No. & Dt. : <Bidder to indicate> BHEL Enq. No. & date : <Bidder to indicate>				
I	MAIN OFFER				
	[Note:Prices for individual items to be quoted as indicated in the price bid format.]				
A	MATERIAL SUPPLY: GOODS CUM PASSENGER ELEVATOR FOR SWITCHGEAR BUILDING [CAPACITY : 1.5 MT]				
1	Design, manufacture, inspection & Testing, supply to site of Goods cum passenger Elevator for Switchgear Building	1	No.		
2	Commissioning spares				
	Commissioning spares as per manufacturer's recommendation. Lump sump price for Supply of Commissioning spares. Bidder to furnish the list along with the offer.(Ref. Note-7) [1 Set required for complete requirement of 1 No. of Goods cum Passenger Elevator]	1	Set		
3	Special tools & tackles				
	Special Tools & Tackles as per manufacturer's recommendation. Lump sump price for Supply of tools and tackles. Bidder to furnish the list along with the offer. [1 Set required for complete requirement of 1 No. of Goods cum Passenger Elevator]	1	Set		
4	Erection & Comissioning(E&C) of Goods cum Passenger Elevator				
	Assembly, erection, commissioning and performance testing of Goods cum passenger Elevator for Switchgear building	1	No.		
B	MATERIAL SUPPLY: GOODS CUM PASSENGER ELEVATOR FOR GIS BUILDING [CAPACITY : 1.5 MT]				
1	Design, manufacture, inspection & Testing, supply to site of Goods cum passenger Elevator for GIS Building	1	No.		
2	Commissioning spares				
	Commissioning spares as per manufacturer's recommendation. Lump sump price for Supply of Commissioning spares. Bidder to furnish the list along with the offer.(Ref. Note-7) [1 Set required for complete requirement of 1 No. of Goods cum Passenger Elevator]	1	Set		
3	Special tools & tackles				
	Special Tools & Tackles as per manufacturer's recommendation. Lump sump price for Supply of tools and tackles. Bidder to furnish the list along with the offer. [1 Set required for complete requirement of 1 No. of Passenger Elevator].	1	Set		
4	Erection & Comissioning(E&C) of Goods cum Passenger Elevator				
	Assembly, erection, commissioning and performance testing of Goods cum passenger Elevator for GIS building	1	No.		
II	Optional Items				
A	2 Years Recommended Spares				
	Recommended spares list for two years normal operation along with unit price breakup for Goods cum Passenger Elevator (List with price break up to be enclosed) (1 set stands for quantity required for the replacement of one Goods cum Passenger Elevator)	As per List	Set		
	TOTAL				
Notes:					
1) Bidder to quote strictly as per BHEL's NIT requirements.					

	BHARAT HEAVY ELECTRICALS LIMITED R.C.PURAM, HYDERABAD-502032				
PROJECT ENGINEERING & SYSTEMS DIVISION					
PRICE FORMAT (R00) FOR GOODS CUM PASSENGER ELEVATOR FOR SWITCHGEAR BUILDING CUSTOMER: HINDUSTAN PETROLEUM CORPORATION LIMITED,VIZAG PROJECT: CAPTIVE POWER PLANT(CPP) PACKAGE, VISAKH REFINERY MODERNIZATION PROJECT (VRMP),JOB No. B016 CONSULTANT:ENGINEERS INDIA LIMITED (EIL), NEW DELHI					
SL NO	ITEM DESCRIPTION	QTY	UNIT	UNIT RATE (RS.)	TOTAL (RS.)
Bidder's Name : <Bidder to indicate> Bidder's Offer No. & Dt. : <Bidder to indicate> Bidder's Ref No. & Dt. : <Bidder to indicate> BHEL Enq. No. & date : <Bidder to indicate>					
2) Bidder to note that this is a LUMP SUM Turn-Key Order. However (a) Changes to the tender specification during execution of the project for successful operation of the system need to be carried out by bidder and commercial implications if any will be settled suitably. (b) Unit rates quoted by bidder shall be applicable for any changes in BOQ during detailed engineering stage.					
3) Main offer consists of those items which will be part of main order after successful bidder is identified. Optional Items consists of those items which need to be quoted by bidder but may or may not be ordered by BHEL. Bidders are instructed to provide the pricing details listed under Main offer and Optional items as per the prescribed format.					
4) Prices quoted by bidders for items under main offer : SL No. I (A+B) will be considered for evaluation of lowest bidder. However, BHEL reserves the right (a) To include any of the optional items in scope of supply (as per customer contract requirements) and accordingly consider the same in evaluation. Any such scope increase and change in evaluation will be intimated to vendor during technical evaluation(before price bid opening). (b) To place PO for any of the Optional items with in the contract period. Hence bidders need to mandatorily quote reasonable prices for all optional items considering such requirement and keep the validity of the prices till the end of contract period.					
5.a) For all items including Optional items, prices to be furnished in this prescribed price bid format only for each individual item. No combined prices, common prices or any other format will be accepted and such bids may be liable for rejection. 5.b) Bidder must not change the indicated item description, quantity & units in the price bid format. Bidder should only fill the unit rates & total price. 5.c) Bidder to quote for all the items as per price bid format. Incomplete/partial offer may be liable for rejection.					
6) Bidder to quote the base rates only. All other commercial charges for packing, freight, transportation, insurance, taxes & duties etc., shall be indicated separately.					
7 a.) Commissioning spares are those spares which are required at the time of commissioning and shall be recommended(as per bidders experience) and quoted by bidder. However commissioning spares indicated in the price bid format shall be quoted as minimum. 7.b) Commissioning spare consumed over and above the recommended commissioning spares, during commissioning shall be supplied free of cost by the equipment vendor.					
8)With respect to Mandatory Spares; A) If any of above items indicated by the specified name are not applicable, bidder to offer alternative item serving the same function as per equipment's design and indicate below the item being replaced. B) If bidder is not able to meet the above note, then bidder may mention "Not Applicable". However, if found applicable during detailed engg. stage or alternative item as per equipment design can serve the same function, bidder to supply the specified quantity with out any delivery and commercial implications to BHEL.					
9) Reference document: BHEL Doc. No. PY51384 R00 & annexures.					
10) Unpriced price bid format indicating as quoted against each applicable item shall be submitted duly signed & stamped along with technical offer by bidder as a token of concurrence that prices are submitted in this format only. The offer shall be liable for rejection in case if un-priced price bid format is not submitted or any modification is carried out in price bid format.					
11) In case the systems are being supplied from outside India, reputed Third Party Inspection like Llyods or equivalent has to be considered and the charges should be included in the Main offer. For those bidders who are supplying from India, such third party inspection charges need not be considered and same will be arranged by BHEL/BHEL nominated inspection agency.					
12) PO for E&C Shall be placed by BHEL-Power sector region & LOI by BHEL-PE&SD					

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				Annexure-5	
				Rev. No.	00

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

CHECKLIST FOR OFFER of GOOD CUM PASSANGER ELEVATOR

Description	Enclosed (Yes/ No)
Bidder to confirm to the scope of supply shall be as per BHEL tender Specification (DOC. No. PY 51384).	
Bidder to confirm to the scope of Service shall be as per BHEL tender Specification (DOC. No. PY 51384).	
Bidder to confirm that the scope matrix as given in Annexure-1 of BHEL tender specification is acceptable to them and there is no comments on the same.	
Bidder to confirm that selected elevator (for switchgear & GIS building) entrance door size shall be minimum 1500 (W) and 2000 (H).	
Bidder to confirm that selected elevator (for switchgear & GIS building) car size of elevator shall be 1700 mm Wide x 2000 mm Deep, as per IS 14665.	
Bidder to confirm that the Machine room, Traction Type Geared Motor/Motor with Gear box type goods cum passenger elevator is considered.	
Bidder to confirm that all accessories required to make Elevator operation trouble free & all the accessories required during Erection & commissioning shall be in their scope.	
Bidder to confirm that the Elevator has been designed in line with Indian/International standards duly taking care of EIL Specification (Doc. No. 6-61-0202) as mentioned in BHEL tender specification (DOC. No. PY 51384).	
Bidder to confirm that the Elevator for Switchgear Building is offered for the travel height as mentioned in the BHEL tender specification (DOC. No. PY 51384) & as per Switchgear Building Civil Drawing.	
Bidder to confirm that the Elevator for GIC Building is offered for the travel height as mentioned in the BHEL tender specification (DOC. No. PY 51384) & as per GIC Building Civil Drawing.	
Bidder to furnish a list of commissioning spares considered as per applicability.	
Bidder to furnish a list of Special Tools & Tackles considered as per applicability.	
Bidder to highlight specific comments on the inspection requirements wrt scope of supply. (Refer Cl no 9.0 & 10.0)	
Bidder to highlight any deviation wrt the sub vendor list with proper justification. Bidder shall follow sub vendors list as per Annexure-10. In case of any specific practical difficulty, bidder is requested to bring out the same with proper reason for not following vendor list. For other items for which sub vendors are not specified, bidder can follow their standard vendors. However, they have to ensure the Proven Track record of the sub vendors and Bidder to take prior approval of BHEL/EIL/HPCL for the same.	
Bidder to confirm that all the statutory approvals & certification (As per applicability) is considered in bidder's scope.	
Bidder's confirmation required for furnishing a list of 2 year recommended spares in their offer separately with optional price.	
Deviation list to the specification. All other requirements except for the deviation brought out under deviation list, have been taken into consideration.	
Bidder to quote as per BHEL price format only. Price quoted as per the price bid format, clearly indicating all the applicable items are quoted, and not applicable items are clearly highlighted. Un priced copy of the same is enclosed.	
Bidder to confirm that the reference list or EQC is provided as per Cl. No. 8.0.0 of BHEL tender Specification (Doc. No. PY51384).	
Bidder to check the master document list and submit all the required documents as per the master document list (Annexure-07) without fail and take the approval of BHEL/Fictner	

DATE: _____

SIGNATURE:
NAME:
DESIGNATION:
COMPANY: _____

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				Annexure-6	
				Rev. No.	00

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

MASTER DOCUMENT LIST													
System Name:			Supplier:		Project:			Supplier Doc. No.					
					Supplier Job No.		BHEL PO No.		Rev No.				
					Date				Date				
LIST OF SUPERCIDED DRAWINGS / DOCUMENTS					S		NO COMMENTS					1	
LIST OF ACTIVE DRAWINGS / DOCUMENTS							COMMENTS AS MARKED CLEARED FOR MANUFACTURE					2	
LIST OF DRAWINGS/DOCUMENTS UNDER PREPARATION					UP		COMMENTS AS MARKED					3	
LIST OF DESEIN / APPROVED DRAWINGS					ADS		RETAINED FOR INFORMATION					4	
SL. NO.	DRAWING/ DOCUMENTS*	DWG. NO.	APPR (A/I)	SCHEDULE OF SUBMISSION	REV	SENT BY VENDOR (SOFT COPY)	HARD COPY RECEIVED FROM VENDOR	COMMENTS SEND TO VENDOR	STS	PENDING WITH (BHEL/VENDOR)	BHEL APP STATUS	REMARKS	
MECHANICAL													
* - The list is exhaustive in nature. Final document list shall be furnished during detail engg. after mutual discussion & agreement.													
1	Data sheet of Goods cum Passanger Elevator		A										
2	GAD of Goods cum Passanger Elevator		A										
3	Trolley Arrangement		I										
4	Data sheet of Brought Out Items		I										
5	Motor Documents		A										
6	Load List		I										
7	SLD for Elevator system		I										
8	Power Control System for Control Panel		I										
9	Bill of Materials		A										
10	Packing List		A										
PROCEDURES & MANUAL													
1	OPERATION & MAINTENANCE MANUAL (Soft Copies & Hard copies)		I										
2	OVERALL SYSTEM OPERATION PHILOSOPHY		I										
3	STARTUP PROCEDURE		I										
4	SURFACE PREPARATION & PAINTING SPECIFICATION		I										
5	ERECTION PROCEDURE		I										
6	COMMISSIONING PROCEDURE		I										

SL. NO.	DRAWING/ DOCUMENTS*	DWG. NO.	APPR (A/I)	SCHEDULE OF SUBMISSION	REV	SENT BY VENDOR (SOFT COPY)	HARD COPY RECEIVED FROM VENDOR	COMMENTS SEND TO VENDOR	STS	PENDING WITH (BHEL/VENDOR)	BHEL APP STATU S	REMARKS
7	FAT PROCEDURE		I									
8	INSPECTION/TESTS REPORTS/CERTIFICATE		I									
9	WELDING PROCEDURE (If any)		I									

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				Annexure-7	
				Rev. No.	00

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

TD-201 Rev No. 00 Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE
			Rev No. 00
			Page 1 of 3
COPYRIGHT 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.	QAP GUIDELINES & FORMAT (ANNEXURE) The QAP format and guidelines for filling up the format shall be used by vendor for preparation and submission of QAP after order placement. Note : 1. Typical /Indicative /Standard QAP(s) for equipment /package attached is reference document and to use by successful bidder in future for preparation and submission of QAP for BHEL /CUSTOMER approval. 2. No deviation to reference document is acceptable.		

Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE
	Rev No. 00		
	Page 2 of 3		
COPYRIGHT 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.	<u>GUIDELINES TO VENDORS FOR PREPARATION OF QUALITY ASSURANCE PLAN</u> - QAP shall be made in landscape mode on A4 size paper as per the format enclosed. Font size shall be minimum 10. - Each page of QAP shall contain the following information. - Vendor's name & address. - Customer: BHEL, Hyderabad. - Project. - BHEL Product Standard Number/revision number as referred in P.O. - BHEL Purchase Order Number & Date. - Product as per P.O. description. - QAP Number (unique and shall not repeat)/revision number/date. - Page number and number of pages - QAP shall contain four parts / stages as follows. - Raw materials and bought out items. - In process Control / Inspection. - Final assembly, Inspection & Testing. - Painting, preservation & packing. - Under 'Component', indicate name of the component (say casing, rotor, pressure gauge, etc). - Under 'Characteristics', indicate appropriately (say chemical analysis, mechanical properties, NDT (UT,DP etc.), hydrostatic test, calibration check etc.) - Under 'Class', indicate minor, major or critical depending on the importance of characteristic. - Under 'Type of check', indicate appropriately (say chemical, mechanical, UT, DP etc.) - Under 'Quantum of check', indicate appropriately (say 100%, 10%, sample, per melt, per heat, all pieces etc.) - Under 'Reference document' and 'Acceptance norms', appropriate National & International standards, BHEL standards, approved drawing references etc. should be indicated. It is not correct to mention as "Vendor's internal standards or Vendor's standard practice etc.". If vendors' internal standards are referred, same shall be in line with BHEL Spec. indicated in the P.O. These may require review & approval by our Engineering dept. - Under 'Format of record', indicate appropriately supplier's test certificate, calibration certificate, lab report, inspection report etc.		
		Ref. Doc	Please refer 'Agency' in QAP format. Under P: Perform, W: Witness, V: Verify Indicate against each characteristic 1: (BHEL CQS/Nominated inspection agency), OR 2: (Vendor / Sub vendor)

Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE Rev No. 00 Page 3 of 3
COPYRIGHT 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.	Note: Performing agency is normally vendor or his sub vendor (Legend 2). Where witness points are indicated in specification, P.O., Drawing etc., for such operations, under Witness (W) column use 1. Under 'Verify' column, use code1. 12. Under 'D' please put (✓ Tick) against each characteristic where vendor proposes to submit test certificate/report etc. OR as required as per BHEL Specification. 13. Vendor's signature & stamp should be available on each page of QAP. 14. Vendor should read the BHEL Product Standard thoroughly and QAP should be made only inline and relevant to the Specification & Approved Drawings. 15. The following operations/characteristics/check points may be included (AS APPROPRIATE) a) Visual check b) Dimensional check c) Mechanical and Chemical properties. d) Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting etc. as the case may be.) e) Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc. f) Check for correctness for all components mounted as per General arrangement Drawing, Bill Of Materials (BOM), etc. for range, rating, make, color, size, location as per GA, quantity, label description including tag nos., annunciator facia, loose components, accessories, spares etc. g) Verification of test certificate for protection class for the enclosures. h) Mechanical functioning of switches. i) Continuity of earthing and provision of earth points. j) Colour coding of wiring, size, tightness & dressing of wiring. k) Review of test certificates of assembled items, raw materials, internal test reports etc. l) Witness of functional checks, which may include mechanical run & electrical run, H.V.test, IR measurement, Electrical and Mechanical tests etc. m) PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc. n) Material identification (for punch marks of serial numbers, Heat No, Melt No, Inspector's stamp etc.) o) Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and other Non Destructive Tests. p) Tests on Galvanised items (Visual, Hammer Test, Knife Test, Thickness, Pierce Test (Copper sulphate test), Hydrogen evaluation test, Stripping test (for Mass of Zinc coating) q) All tests as per BHEL Product Standard & approved drawings including Type tests and Routine tests on individual items and on System as a whole. r) Packing and Preservation. 16. QAP Format enclosed. 17. Typical Manufacturing QAP is attached.		
	Ref. Doc		

VENDOR'S NAME & ADDRESS:			MANUFACTURING QUALITY PLAN						QP. NO.:				
									REV NO:		DATE:		
			CUSTOMER: BHEL, HYDERABAD – 32. PROJECT: PRODUCT:			BHEL P.O.NO.: P.O.DATE: BHEL SPEC:			REV:			PAGE1 OF1	
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
2.0	INPROCESS INSPECTION												
3.0	FINAL INSPECTION & TESTING												
4.0	PRESERVATION & PACKING												

VENDOR TO NOTE: THIS FORMAT IS IN MICROSOFT WORD. HEADER & FOOTER SHALL BE AVAILABLE IN EACH PAGE OF QP. QP SHALL BE IN LANDSCAPE & A4 SIZE ONLY. FONT SIZE SHALL BE MIN 10. VENDOR SHALL SIGN & STAMP IN EACH PAGE OF QP. LOI REF. & DATE ARE NOT ACCEPTABLE. P.O.NO. & DATE SHALL BE INDICATED. QP NO. SHOULD BE UNIQUE AND SHALL NOT REPEAT. ALL THE TESTS / CHECKS INDICATED IN THE BHEL SPEC. SHALL BE INDICATED IN THE QP.

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL/BHEL NOMINATED INSPECTION AGENCY 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED BY	APPROVED BY	APPROVED BY
	VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP

SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
1.0 RAW MATERIALS & BOUGHT OUT ITEMS													
1.1	Car Rails	Mech. Dimensions	Major	Mech.	100 %	IS 14665 – Part 1 to Part 5 / As per BHEL App drawing / spec and Data Sheet.		Test Cert.	√	2		1	
1.2	Motor	Ele. Ratings	Major	Electrical	100 %			Test Cert.	√				
1.3	Machine	Specifications	Major	Performance				Test Cert.	√				
1.4	CWT Rails	Mech. Dimensions	Major	Mech.	100 %			Insp. Report	√				
1.5	Cabin Platforms	Mech. Dimensions	Major	Mech.	100 %			Insp. Report	√				
1.6	LOP	Functional Operations	Major	Functional	100 %			Insp. Report	√			1	
1.7	COP	Functional Operation	Major	Functional	100 %			Insp. Report	√			1	
1.8	OSG	Functional Operation	Major	Functional	100 %			Test Cert.	√			1	
2.0 INPROCESS INSPECTION													
2.1	Rail Alignment	Mech. Dimensions	Major	Mech.	100 %	IS 14665 – Part 1 to Part 5 / As per BHEL App drawing / spec and Data Sheet.		Insp. Report	√	2	1		
2.2	Car Assembly	Mech. Dimensions	Major	Mech.	100 %			Insp. Report	√				
2.3	Landing Door	Operations	Major	Operations.	100 %			Insp. Report	√				
2.4	Car Door	Operations	Major	Operations	100 %			Insp. Report	√				
2.5	Safety operations	Testing	Major	Electrical & Mech.	100 %			Insp. Report	√				
3.0 FINAL INSPECTION & TESTING													
3.1	All Test as per BHEL Specification		Major	Electrical and performance	100 %	IS 14665 – Part 1 to Part 5 / As per BHEL App drawing / spec and Data Sheet.		Insp. Report	√	2	1		
3.2			Major	Performance	100 %			Testing Report	√				
4.0 PRESERVATION & PACKING													
	As per BHEL Specification									2	1		

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL/BHEL NOMINATED INSPECTION AGENCY 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.

PREPARED BY

VENDOR'S SIGNATURE & STAMP

APPROVED BY

BHEL QA SIGNATURE & STAMP

APPROVED BY

CUSTOMER'S SIGNATURE & STAMP

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	



PROJECT ENGINEERING & SYSTEMS DIVISION

Std. / Doc. Number

Annexure-12

Rev. No. 00

Sheet 2 of 2

DEVIATION SCHEDULE TECHNICAL

Bidder are requested to mark “✓” as applicable

☐ No Deviation required

☐ Deviation required

List of deviations (expectations and /or addition requested by Bidder) from specification, standards and /or drawing etc.

Sl. No.	Section / Part/Subsection	Page No.	Clause No.	Bid Specification	Bidder's Query	Purchaser's Reply

Note: Bidder to furnish this duly filled format along with SEAL & SIGN at pre-bid stage only and any deviations appearing elsewhere shall not be considered.

SIGNATURE : _____

NAME : _____

DESIGNATION : _____

COMPANY : _____

DATE : _____

COMPANY SEAL

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				Annexure-9	
				Rev. No.	00

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

**DEVIATION SCHEDULE
(TECHNICAL)**

DEVIATION SCHEDULE - TECHNICAL (BFP PACKAGE)

Bidders are requested to mark “√” as applicable

☐ NO DEVIATION REQUIRED

☐ DEVIATION REQUIRED

List of deviations (exceptions and / or additions requested by bidder) from specification, standards and / or drawings etc.

Sl. No.	DOCUMENT(S)/ DRAWING(S)		DEVIATION PROPOSED
	NO. AND TITLE	PARAGRAPH/ CLAUSE/ DETAIL	

BIDDER'S NAME:

BIDDER'S SIGNATURE
AND SEAL/STAMP

DATE:

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				Annexure-10	
				Rev. No.	00

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Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	
	Rajeev Jain	Girish Prasad Palo	Siva Prasad Babu	

SUB VENDOR LIST FOR GOODS CUM PASSENGER ELEVATOR:**1. ELECTRICAL EQUIPMENT**

ALL THE ELECTRICAL EQUIPMENT IN THE PASSENGER ELEVATOR SHALL BE EARTHED AS PER INDIAN ELECTRICITY. RULES & INDIAN STANDARDS BY THE VENDOR (IN THE SCOPE OF VENDOR).

SL. N.	COMPONENT	MAKE
1)	MOTORS	ABB/SIEMENS/MARATHON /BHARAT BIJLEE/ CROMPTON GREAVES/KIRLOSKAR ELECTRIC
2)	CONTROL PANEL	ABB INDIA LTD (BANGALORE)/ ALSTOM T & D INDIA LTD (FORMLY A347/GE INDIA INDUSTRIAL PVT LTD/ SIEMENS LIMITED/ SCHNEIDER ELECTRICAL INDIA PVT LTD.
3)	CONTACTORS	SIEMENS/L&T/ABB/BCH
4)	LIMIT SWITCHES	BETTIS/HONEYWELL AUOTMATION
5)	POWER CABLE	ASSOCIATED FLEXIBLES & WIRES [P] LTD/ CORDS CABLE INDUSTRIES LTD/ FINOLEX CABLES LTD./ GEMSCAB INDUSTRIES LTD/ HAVELLS INDIA LTD/ KEC INTERNATIONAL LTD-SILVASSA (FR133)/ KEI INDUSTRIES LIMITED/ POLYCAB WIRES PVT LTD/ RALLISON ELECTRICALS PVT. LTD./ RAVIN CABLES LTD/ SRIRAM CABLES PVT LTD/ TORRENT CABLES LTD/ UNIVERSAL CABLES LTD
6)	CONTROL CABLE	ASSOCIATED CABLES PVT LTD/ ASSOCIATED FLEXIBLES & WIRES [P] LTD/ CMI LIMITED/ CORDS CABLE INDUSTRIES LTD/ DELTON CABLES LIMITED/ ELKAY TELELINKS LTD./ FINOLEX CABLES LTD./ GEMSCAB INDUSTRIES LTD/ HAVELLS INDIA LTD/ ICON CABLE LTD./ KEC INTERNATIONAL LTD-SILVASSA (FR133)/ KEI INDUSTRIES LIMITED/ NORTH EASTERN CABLES PVT LTD/ POLYCAB WIRES PVT LTD/ RALLISON ELECTRICALS PVT. LTD./ RAVIN CABLES LTD/ SCOT INNOVATION WIRES & CABLES PVT LTD/ SRIRAM CABLES PVT LTD/ SUYOG ELECTRICALS LTD/ THERMO CABLES LTD (FORM. T-150)/ TORRENT CABLES LTD/ UNIVERSAL CABLES LTD
7)	CONTROL SWITCHES / SELECTOR SWITCHES	ALSTOM T&D / KAYCEE INDUSTRIES LTD. / LARSEN AND TOUBRO LTD-AHMEDNAGAR/ RELIABLE ELECTRONIC COMPONENTS PVT LTD. / SIEMENS LIMITED/SWITRON DEVICES

8)	AUXILLARY RELAYS	ABB/ ALSTOM T&D/ SCHNEIDER/OMRAN/OEN
9)	MCB	SCHNEIDER/ ABB / HAVELLS INDIA LTD/ LEGRAND (INDIA) PVT. LTD / SIEMENS LIMITED/ L&T
10)	FUSES	COOPER BUSSMAN INDIA PVT LTD/ GE INDIA INDUSTRIAL PVT LTD/ LARSEN & TOUBRO LTD-AHMEDNAGAR/ SIEMENS LIMITED/ABB
11)	PUSH BUTTON AND INDICATING LAMPS	ESSEN DEINKI/ LARSEN & TOUBRO LTD-POWAI/ SCHNEIDER ELECTRIC INDIA P LTD/ SIEMENS LIMITED/ TEKNIC ELECTRIC (I) PVT. LTD.
12)	TIMERS	LARSEN & TOUBRO LTD-AHMEDNAGAR / SIEMENS LIMITED/ SCHNEIDER ELECTRICAL INDIA PVT LTD./ LEGRAND INDIA PVT LTD
13)	TERMINAL BLOCK	WAGO / PHOENIX / SCHNEIDER-TELEMECHANIQUE/ CONNECTWELL / ELMEX
14)	LED LAMP (PANEL MOUNTED INDICATION LAMP ONLY)	BINAY / SCHREIDER-TELEMECHANIQUE / GE INDIA / BCH
15)	CABLE GLANDS	ELECTROMAC INDUSTRIES/ FCG FLAMEPROOF CONTROL GEARS/ FLAMEPROOF EQUIPMENTS PVT.LTD./ PROMPT ENGINEERING WORKS/ FCG POWER INDUSTRIES/ FLEXPOR ELECTRICALS PVT. LTD./ UNITED AGRO ENGINEERING PVT. LTD.
16)	CABLE LUGS	AUTOMIC ELECTRIC/ CHETNA ENGINEERING CO./ ELECTROMAC INDUSTRIES/ FORWARD ENGINEERING INDUSTRIES

MECHANICAL EQUIPMENT

I WIRE ROPE - FORT WILLIAM/USHA MARTIN/ BOMBAY WIRE ROPE/ UNITED WIRE ROPE/
MOHATA HACKLE/ JK STREET/JCT

II LIFTING HOOKS -B.R. HERMAN & MOHATA/ STEEL FORGINGS/ HF&AI/ KWA FORGING/FORGING
ENTERPRISES/ FREE TRADING

III BEARINGS -SKF/FAG/NORMAL/ZKL/TIMKEN/ BC/NRB/SNTN/KOYO

IV GEAR BOXES - VENDOR OWN MAKE

V BRAKE DRUM - VENDOR OWN MAKE

VI GEARED COUPLINGS - VENDOR OWN MAKE

VII OIL SEALS - VACO SEALS/ RUBBER EQUIPMENT &ENGG CO. LTD / SWASTIK/REPUTED

VIII LUBRICATION SYSTEM -TACALMIT/PRAKASH/LUBCON/ SHAAN LUB SYSTEM

**NOTE: ITEMS FOR WHICH VENDORS ARE NOT AVAILABLE, BIDDER TO HIGHLIGHT THE SAME DURING OFFER SUBMISSION
STAGE.PRIOR APPROVAL OF THE SAME SHALL BE TAKEN FROM BHEL.**