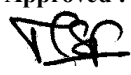


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COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.		PURCHASE SPECIFICATION FOR PASSENGER ELEVATOR				
		CUSTOMER: PE&SD, BHEL, R.C.PURAM PROJECT: PASSENGER ELEVATOR FOR PE&SD NEW BUILDING.				
Ref. Doc	Revision :00	Prepared:  RAJEEV JAIN	Checked:  GIRISH PRASAD PALO	Approved :  SIVA PRASAD BABU	Date : 11.10.17	
	Refer to record of revisions :					

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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 to submit the following documents a) Technical offer. b) Duly filled in datasheet. c) General Arrangement drawing d) Un-priced commercial offer as per price format as per Annexure-1 e) Deviations list as per Annexure-3 attached. f) Preparatory works to be taken care by owner.			
	Ref. Doc			

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<u>PURCHASE SPECIFICATION FOR PASSANGER ELEVATOR</u> 1.0 Intent of specification This specification covers the design, manufacture, testing at vendor's work, packing, transportation, receipt, unloading, storage, site erection, testing and commissioning and handover to owner of Passenger Elevator. 2.0 Applicable codes and standards Latest revision of all standards listed below shall be followed for design, manufacture, testing erection and commissioning 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.				

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3.0 Scope of supply and services

Designs, supply of material, fabrication, erection, and inspection & 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**

3.1 Scope of supply

- Scope of supply as per Annexure-2 [scope matrix] & as per technical specification [Main Item].
- Commissioning Spares as required [Main Item].
- Special tools & tackles as required [Main Item].
- 2 Years Recommended Spares (Optional Item).
- 2 Years AMC (Optional Item).

3.2 Scope of services

The scope of services shall include:

- 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.
- Bidder to furnish fabrication, erection & commissioning, testing and inspection procedure along with drawing / documents to facilitate fabrication, Erection & Commissioning, testing and inspection of Elevator
- Unloading of materials at site, storage, shifting of materials from storage spare to work place.
- Erection, 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.
- Services during warranty period shall be 12 months from the date of handing over.

4.0.0 Technical data

The following is the basic technical data for the passenger elevator

Sl. No.	Description	
1	Design Ambient Temp.	45 Deg. C
2	Location	PE & SD Building, BHEL, Ramachandrapuram, Hyderabad, Telangana, India
3	Area Classification	Safe Area
4	Type of Elevator	Machine Room less, gearless type Passenger elevator
5	Minimum Carrying Capacity	10 Passengers
6	Quantity	Two[2] numbers
7	Minimum Load Capacity	680 Kgs.
8	Car Enclosure material	Cold rolled stainless steel with hairline finish
9	Car Door	Centrally opened, Stainless steel Automatic Door,
10	Speed	1.0 m/sec
11	Travel Height Lift well dimension	As per Building Height [Refer Drawing,Annexure-4] Lift well size ~ 1.95 m x 1.95 m

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						13	No. of Openings	3 (Same Side)
						14	Drive	Electrical Variable Speed Drive
						15	Controls	Fully Automatic Microprocessor based full collative logic
						16	Control Panel	As per Bidder standard
						17	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.
						18	Special Features	1. Roof mounted ventilation fan 2. LED lighting inside car 3. Emergency fire man service 4. Emergency car light unit 5. Infrared curtain door time protection 6. Emergency alarm button 7. Door open close button 8. Automatic rescue operation 9. Belt inspection drive 10. Auto fan cut off 11. Intercom 12. Car arrival chime on car top 13. Display in car operating panel : Red LED dot matrix 14. Overload Signal
5.0 Technical requirement								
5.1 Wire Rope								
The car and counter weight shall be suspended by steel 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.								
5.2 CAR								
5.2.1 Car Frame and safety device								
- 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 MS finish with powder coated finish. - 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. - 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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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.		5.2.2. Car Enclosure 1. The car shall be enclosed on all sides by means of car body and door. The sides of the car shall be lined with heavy gauge steel sheet plate properly braced and reinforced. 2. The enclosure shall be flush on the inside and securely fastened to the platform. The car body floor shall be of M.S steel construction. 3. The car shall be equipped with fan with grills and suitable lighting with fittings. The light shall be left on during the all-time of use. 4. Necessary provisions shall be made for adequate ventilation of the car. Ventilation opening shall be provided in the enclosure roof as per requirement of IS: 14665 (Part 3) Sec 1 f 2)-2000. The controls for light and fan inside the car shall be automatic. 5. The enclosure of the lift car shall withstand a thrust of 35 kgs applied normally at any point, excepting any vision panel, without permanent deformation. 5.2. 3 Car Platform 1. Car platform shall be constructed of structural steel shapes or securely fastened with steel flooring covered with Anti-skid PVC tiles flooring. The platform shall be designed on the basis of rated loads evenly distributed. The car floor shall comprise a smooth non-slip surface. 2. Since the car levelling device will be used, subsequent aprons of sufficient depth shall be fitted to the car floor to ensure that no space is permitted between the threshold and the landing while the car is being levelled to a floor. 5.2.4 Car Roof 1. Car roof shall be covered with sheet metal to prevent dripping of lubricants from ropes-sheave bearings. The top flooring shall be of steel with decorative false ceiling. A three pin plug socket with a switch for head lamp shall be fitted on the top of the car for use during maintenance. The roof shall be strong enough to support at least two persons. 2. Provision for slow speed (1/2 of rated speed) operation from car top in up and down directions in Independent mode shall be made to facilitate maintenance of devices in the hoist way. Necessary fittings shall be provided for this purpose. 3. Difference in levels of the car floor and landing shall not exceed the figures indicated in IS -14665 (Para 3/Sec 1 & 2)-2000 under heading 'Levelling Accuracy ', 4. Suitable lubrication system shall be provided for guide rails as well as for other items. 5.2.5 Car Door 1. Centre opening automatic doors made of mild steel panels with power coated finish at car as well as at landing shall be provided. Necessary fixtures and all associated materials for installation shall be in the scope of vendor. 2. Car door shall have a clear opening as per standard. 5.2. 6 Hoist Way Door 1. Automatic type doors having a clear opening as per IS 14665 standard shall be provided at each of the landing for elevator door.		
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		2. Architrave fixation in each floor shall as per Annexure-02. BHEL to provide only clear opening of 1200mm x 2200mm to each floor. 3. For scope demarcation ref Annexure-02. 5.2.7 Door Hangers and Tracks 1. Hangers and tracks for car door and each having a clear hoist way door shall be provided. Suitable material shall be used to minimize the noise. Ball bearing rollers or equivalent arrangement shall be provided to take upward thrust of the doors. Suitable devices shall be provided for transmitting from one door panel to the other. 2. All requires material for landing entrance e.g. extruded aluminium or equipment sills, strut angles, headers etc. shall be provided. 5.2.8 Door operation for car door and hoist way doors The doors operations shall be automatic with Infrared screen protection. 5.2.9 Car Position Indicator in Car A signal indication shall be provided by the appropriate numeral (which shall be floor no. / Level of respective floor) being illuminated when the car is passing the corresponding floor. The Indication shall remain illuminated when the car is stopped at a floor. Up & Down direction jewel lights shall also be provided. The car position indicators are needed to be provided at all landings. 5.3 PUSH BUTTON STATION AND CALL- REGISTERED TELL-TALE LIGHTS AT HOIST WAY A single 'Up" and "Down" push button at terminal landings and 'Up" "Down' each push Intermediate landing including call register light for each push button shall be provided. These shall remain illuminated until the call is answered. 5.4 EMERGENCY EXIT The elevator car shall be provided with an emergency exit of adequate dimension. 5.5 TERMINAL BUFFERS Substantial spring buffers (2 Nos.) shall be furnished and installed in the pit under the car and counterweight. These buffers shall be mounted on RCC Pedestals in the pit. The car buffer spring must be of correct design to sustain the car with capacity load without damage should the car terminal limits become inoperative. The car buffers must be located symmetrically with reference to centre of car. The Contractor may alternatively offer oil type buffers. The plunger shall be mild steel, designed for a very high factor of safety and accurately machined. A toughened rubber bumper shall be fitted to the plunger top to cushion the impact of steel buffer plates attached under the car and the counterweight. An oil gauge shall be provided to check the oil level. Refer Annexure-02 for scope clarity. 5.6 COUNTER-WEIGHTS AND COUNTER-WEIGHT FRAMES Counter weight sections shall be mounted on structural metal frames/RCC pedestals so designed to retain the weights securely in its place. Counter -weight frame shall be guided on each guide rail by upper and Lower guiding members attached to the frame. A substantial metal counter- guard of required length shall be provided at the bottom of the hoist way. A compensating chain of adequate strength connecting car bottom and counter weight frame shall be provided for balancing the car and counter- weight while running with minimum load condition.			

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5.7 GUIDES FOR CAR AND COUNTER- WEIGHT

Car and counter- weight guides shall be of rigid steel and shall be continuous throughout the entire length and shall be provided with adequate steel bracings and stiffeners. Guide for both car and counter weight shall meet the requirement of IS: 4666-1980. The necessary lubrication device for guide rail shall be provided.

5.8 CAR SELF-LEVELING DEVICE

The elevator shall be equipped with automatic self-levelling devices to bring the car to the floor landings. These self-levelling shall be correct for over travel or under-travel and rope stretch.

5.9 CONTROL AND OPERATION

1. The elevator control i.e. the system governing starting or stopping the elevator machine, determine the direction of the travel, regulating the rate of travel, regulating the rate of acceleration and deceleration and controlling running speed of the moving member shall be through 3 phase speed squirrel cage induction motor. The AC drive motor for the elevator shall accelerate or decelerate the elevator according to requirement. Reversal in direction of movement of the elevator shall be achieved by reversing the motor 3phase supply.

2. The operation of the elevator i.e. method of actuating the control shall be "Selective Collective Automatic Operation" as per clause 3.41.3 of IS 14665 (Part2/Sec1): 2000 with and without attendant. All accessories required for the "collective operation as outlined therein, namely selector and its driving shall be furnished complete. The controller shall be microprocessor based.

5.10 TERMINAL LIMIT SWITCHES AND FINAL LIMIT SWITCHES

Terminal limit switches for normal operation shall be provided to slow-down and stop the car automatically at terminal landings and final limit switches shall be provided to automatically cut off the power and apply the brake, when the car travels beyond the terminal landing.

5.11 MOTORS:

i) Motors shall be suitable for Elevator duty. Motors shall comply with the latest revisions of all relevant standards of IS except as modified herein. The Motor shall be reversible, gearless type with brake and driving sheave, designed for Elevator service, with high starting torque and low starting current. Motor frame shall be de-rated as they are VFD operated duty.

ii) Motors shall be capable of running continuously at full load under following variations in Power supply:

Voltage: 415V (±) 10%

Frequency: 50 Hz +3% -5%.

Combined voltage & frequency: 10 %(sum of absolute % of voltage and frequency variation)

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.

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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.

6.0 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.

7.0 Tests on Completion

The following tests shall be carried out to the satisfaction of BHEL:

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.

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.

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Ref. Doc	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. 8.0 Statutory Approvals 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. 9.0 Performance Parameters The following parameters shall be achieved in the installation: <table border="0"> <tr> <td>* Levelling Accuracy</td> <td>± 3 mm for 1.5 m/s speed</td> </tr> <tr> <td>* Jerk level</td> <td>± 4 mm for 0.75 m/s speed</td> </tr> <tr> <td>* Noise level in car</td> <td>0.9 – 1.5 m/s³</td> </tr> <tr> <td>* Noise level at 1 M in machine room</td> <td>58 dB</td> </tr> <tr> <td>* Acceleration rate</td> <td>60 dB</td> </tr> <tr> <td>* Max. car vibration</td> <td>0.6 – 1.0 m/s² (adjustable)</td> </tr> <tr> <td></td> <td>20 milli gals.</td> </tr> </table> 10.0 Sub vendor list Bidder shall follow sub vendors list as mentioned below. 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 for the same. a) Electrical Equipment i. Motors -ABB/Siemens/Alstom /Bharat Bijlee/ Crompton Greaves ii. Contactors - Siemens/L&T/ABB/BCH iii. Limit Switches - Bettis/Honeywell Autotmation iv. Pendant Push button Station - Vendor's own make v. Oil dash pot type Overload relay - Kilburn/Electro gear vi. Thermal Overload relays - ABB/Siemens/Alstom/GE vii. Safety switches - Alstom/L&T/Siemens viii. Cables - a) LT Power Cable : Universal/RPG/FGI/Nicco/Torrent/KEI/Polycab b) Control Cable: Universal/RPG/FGI/Nicco/Torrent/KEI ix. Indicating lamps - Siemens/Technik x. Time Relays -BCH/L&T/Siemens/Schneider/Minilec xi. Fuses - Siemens/L&T/Alstom/GEC/ HH Elecon xii. MCCB -Indo Asian/ MDS/GE/Siemens/L&T Hager/Scheinder			* Levelling Accuracy	± 3 mm for 1.5 m/s speed	* Jerk level	± 4 mm for 0.75 m/s speed	* Noise level in car	0.9 – 1.5 m/s ³	* Noise level at 1 M in machine room	58 dB	* Acceleration rate	60 dB	* Max. car vibration	0.6 – 1.0 m/s ² (adjustable)		20 milli gals.
	* Levelling Accuracy	± 3 mm for 1.5 m/s speed															
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xiii. Brakes (DCEM) - BCH/EMM/E&P

xiv. Panels/Rectifier Panel - ABB/Siemens/Alstom/GE

xv. Resistance Boxes - EMM/SOC/Omega

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).

b) 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

11.0 Maintenance during Defects Liability Period

Comprehensive maintenance during Defects Liability Period [12 months from the date of handing over] inclusive of periodic servicing, prompt attention to BHEL complaint, prompt rectification of all malfunctions and equipment failures, replacement of defective equipment / parts, replacement of light fittings, lubrication including lubricants, maintaining correct alignment and leveling of cars and ensuring smooth running, starts and stops etc. all complete to BHEL satisfaction shall be done.

12.0 Annual Maintenance (AMC) For Two Years After One Year of Defects Liability Period

Comprehensive maintenance during AMC for 2(Two) years (after defect liability period) inclusive of periodic servicing, prompt attention to BHEL complaint, prompt rectification of all malfunctions and equipment failures, replacement of defective equipment / parts, replacement of light fittings, lubrication including lubricants, maintaining correct alignment and leveling of cars and ensuring smooth running, starts and stops etc. all complete to BHEL's satisfaction shall be done. AMC charges shall be quoted as optional item indicated in price bid format. Bidder to comply validity of AMC charges 15 months from the date of handing over.

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.

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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.		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.																																																						
		14.0 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.																																																						
		15.0 Documentation Bidder to submit the following documents during execution of project. All the documents shall be submitted within 2 weeks from LOI. BHEL will return with approval /comments within 2 weeks for first submission and in one week for subsequent submission. This will be utilized for reckoning the delay of delivery. <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Docs/Drawings</th> <th>For approval</th> <th>For Info</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Dimensional GAD with all technical details & catalogue</td> <td>X</td> <td></td> </tr> <tr> <td>2</td> <td>Catalogue of all sub systems with all technical parameters</td> <td></td> <td>X</td> </tr> <tr> <td>3</td> <td>BOM of main & sub system & various other items of the unit</td> <td>X</td> <td>X</td> </tr> <tr> <td>4</td> <td>Electrical & control system drgs./Circuit Diagram</td> <td>X</td> <td></td> </tr> <tr> <td>5</td> <td>Write up control system</td> <td>X</td> <td></td> </tr> <tr> <td>6</td> <td>QAP & FAQP</td> <td>X</td> <td></td> </tr> <tr> <td>7</td> <td>Site Erection, Commissioning, testing procedures</td> <td>X</td> <td></td> </tr> <tr> <td>8</td> <td>Shop testing procedure</td> <td>X</td> <td></td> </tr> <tr> <td>9</td> <td>O&M Manuals</td> <td></td> <td></td> </tr> <tr> <td>10</td> <td>2 year recommended spares list</td> <td></td> <td>X</td> </tr> <tr> <td>11</td> <td>Deviation List</td> <td></td> <td></td> </tr> <tr> <td>12</td> <td>List of Consumables</td> <td></td> <td></td> </tr> </tbody> </table>			Sl. No.	Docs/Drawings	For approval	For Info	1	Dimensional GAD with all technical details & catalogue	X		2	Catalogue of all sub systems with all technical parameters		X	3	BOM of main & sub system & various other items of the unit	X	X	4	Electrical & control system drgs./Circuit Diagram	X		5	Write up control system	X		6	QAP & FAQP	X		7	Site Erection, Commissioning, testing procedures	X		8	Shop testing procedure	X		9	O&M Manuals			10	2 year recommended spares list		X	11	Deviation List			12	List of Consumables		
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Number of drawings of all the documents mentioned above are to be submitted as follows: On completion of work, the contractor shall supply four sets of CD's and 1 (One) copies of all drawings, documents, procedures & BOM, QAP, Datasheets, Test Data & Material test certificates, Packing List, O&M Manuals & as built Drs./Docs, original certificates from 'Inspector of Lifts' for all the lifts.																																																								
Ref. Doc	16.0 Special tools and tackles																																																							

Ref. Doc	Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING HYDERABAD	PY 51291
				Rev No. 00
				Page 13 of 14
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.		All special tools & tackles shall be supplied, as applicable for maintenance of the system. These items must be enlisted in BOM & packed separately.		
		17.0 Spares and Consumables		
		1. Vendor shall supply required spares for "Erection & commissioning" of the system. They are part of main equipment supply & hence no separate price shall be quoted. In the event of no left over of these spares after erection & commissioning, the same shall be handed over to the owner.		
		2. Two years recommended spares shall be quoted as separate in the price list. The offer shall be kept valid for an extended period of nine months.		
		3. Vendor shall supply all the consumables required for site activities and quantity sufficient for six months operation..		
		18.0 Services		
		Vendor shall quote for erection & commissioning of the total system at site. Separate price to be indicated for this work in the price offer.		
		19.0 Packing		
		All the items shall be properly packed (Indicating packing box No.) after all the inspection & tests are carried out. The packing shall be suitable for standard transport facility and shall be so designed that the items are not damaged & remain safe during their transportation, handling & storing.		
		All the items shall be thoroughly cleaned, appropriately painted (Wherever applicable) before packing.		
20.0 Deviations				
Vendor shall clearly specify in their offers for any deviations taken, otherwise it will construe that this specification is complied with totality.				
21.0 Schedule				
Vendor shall submit their offers in 2 parts (a) Technical & b) Commercial, separately in two sealed covers. Unpriced commercial offer shall be part of the technical offer. Price format to be followed shall be as per Annexure-1				
22.0 Guarantee				
Vendor shall furnish a guarantee certificate for the satisfactory performance of the supplied equipment for a period of 12 months from the date of handing over.				
23.0 ANNEXURES:				
Following input documents and specifications are enclosed to facilitate the bidder to furnish the offer and ensure compliance:				
Annexure-1 : Price bid format				
Annexure-2 : Scope matrix between bidder and owner				
Annexure-3 : Deviation format				
Annexure-4 : Lift Well cross section drawing				

TD-106-3 Rev No. 5 Form No.	 HYDERABAD	PRODUCT STANDARD BHEL, HYDERABAD –32. PROJECT ENGINEERING – MECHANICAL				PY 51291	
						Rev No. 00	
						PAGE 14 of 14	
RECORD OF REVISIONS							
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.	Rev. No.	Date	Revision Details	Prepared By	Checked By	Approved By	
	00	11.10.17	ORIGINAL ISSUE	RJ	GPP	SPB	
	Ref. Doc.						

**Annexure-1 for
Doc. No. PY 51291**

	BHARAT HEAVY ELECTRICALS LIMITED R.C.PURAM, HYDERABAD-502032				
Project Engineering and systems Division					
PRICE FORMAT FOR PASSENGER ELEVATOR					
SL NO	ITEM DESCRIPTION	QTY	UNIT	UNIT RATE (RS.)	TOTAL (RS.)
	Bidder's Name : Bidder's Offer No. & Dt. : Bidder's Ref No. & Dt. : BHEL Enq. No. & date :				
I	Main offer				
A	SUPPLY				
A1	Design, manufacture, inspection, supply at site, storage and handling at site of passenger Elevator - including commissioning spares	2	Nos.		
A2	Special tools & tackles-Supply	1	Set		
B	Erection & Commissioning (E&C)				
	Assembly, erection, testing and commissioning and performance testing of passenger Elevator	2	Nos.		
II	Optional				
A	Annual Maintenance Charges for 2 Years	2	Years		
B	2 Years Recommended Spares Detailed List to be furnished with price split up for each spare item	As per List	Set		
TAXES AND DUTIES:					
(Packing and Forwarding, Freight, Insurance, Taxes & Duties as applicable to be quoted below separately for both Supply and E&C)					
(a) For Supply:					
(i) Packing & Forwarding :					
(ii) Freight:					
(iii) Insurance:					
(iv) Taxes and Duties					
(v) Any other:					
(b) For E&C:					
(i) Service Tax:					
(ii) Any other:					
Notes:					
1) Bidder to quote strictly as per BHEL's NIT requirements.					
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 . 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. 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 Bidder must not change the indicated item description, quantity & units in the price bid format. Bidder should only fill the unit rates & total price.					
6. Bidder to quote for all the items as per price bid format. Incomplete/partial offer may be liable for rejection.					
7. Bidder to quote the base rates only. All other commercial charges for packing, freight, transportation, insurance, taxes & duties etc., shall be indicated separately.					
8. Evaluation criteria:: The over all L1 bidder will be arrived by adding A1+A2+B.					

**Annexure-1 for
Doc. No. PY 51291**

- | |
|---|
| 9) Reference document: PY51291 & 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. |

Annexure-2
for Doc. no. PY 51291

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 Top of building for each elevator.	Further distribution to be included in Bidders Scope	
4	Earthing arrangement	✓	Bidder to provide the earth lugs.	
Machine Room Less Type Elevator				
1	Machine Room Construction	Not Required		
2	Machine room Ventilation	Not Required		
3	Portable Fire Extinguisher in Machine Room	Not Required		
4	" I " Section Beam at top of slab	✓		Bidder to specify the size
5	Chain Pulley Block required during installation		✓	

Annexure-2
for Doc. no. PY 51291

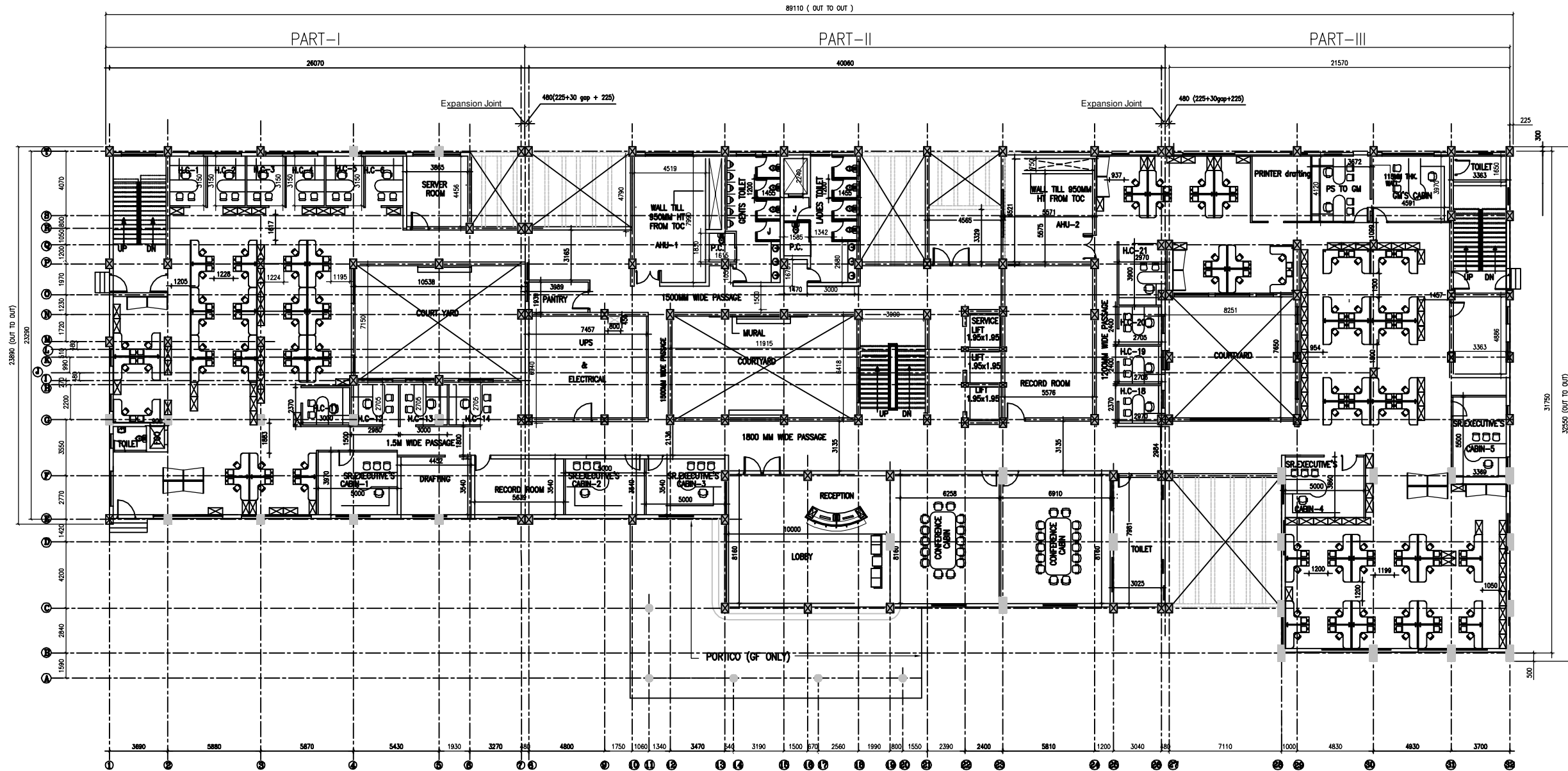
Sl. No.	Description	BHEL Scope	Bidders Scope	Remark
Miscellaneous				
1	Security within site premises	✓		
2	Unloading & shifting of material from storage to site		✓	
3	Elevator Shaft plastered & white washed	✓		
4	Power supply required during installation	✓		
5	All statutory Licenses, fees and approvals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

**Annexure-3 for
Doc. no. PY 51291**

	BHARAT HEAVY ELECTRICALS LIMITED R.C.PURAM, HYDERABAD-502032		
	Project Engineering and systems Division		
	FORMAT FOR Deviation		
	Bidder's Name : Bidder's Offer No. & Dt. : Bidder's Ref No. & Dt. : BHEL Enq. No. & date :		
Sl. No	Clause no	Devaition	Reason for deviation.

ANNEXURE-4 to Doc. No. PY 51291

Lift Well Cross Section drawing



GROUND FLOOR PLAN

ITEM	SEATING	SIZE
WORK STATION	94	1500X1500
HALF CABIN	14	2400X3000
SR.EXECUTIVE'S CABIN	05	5000X3500
GM CABIN	01	4600X4000
CLERICAL WS	14	1300x800

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PE & SD OFFICE BUILDING			
 BHARAT HEAVY ELECTRICALS LTD. HYDERABAD		NAME	SIGN.	DATE	NO.OF VAR.
		DRN. BMR		15.07.14	
		CHD. SUDHEER		15.07.14	NA
DEPT. F-CVIL		SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.
CODE 333		1:150	NA	1-97-333-2002	NA
TITLE		GROUND FLOOR PLAN		DRAWING NO.	REV.
				1-97-333-1998	03
				SHEET NO. 01	NO OF SHEETS 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.

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

1-97-333-2002

DRG. NO.

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

NOTES:-

I. GENERAL:-

- 01) THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS GIVEN IN THE DRAWING BEFORE COMMENCING ANY WORK
- 02) ANY DISCREPANCIES, IF FOUND IN DRAWING OR AT SITE-SHALL BE INFORMED TO THE ENGINEER-IN-CHARGE IMMEDIATELY
- 03) DO NOT SCALE THE DRAWING & FOLLOW FIGURED DIMENSIONS ONLY
- 04) THIS DRAWING IS COPY RIGHT & SHALL NOT BE REPRODUCED WITHOUT PERMISSION

II. TECHNICAL:-

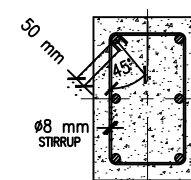
- 01) THIS DRAWING SHALL BE READ IN CONJUNCTION WITH RELEVANT CONNECTED DRGS
- 02) FOR FOUNDATIONS, IF HARD SOIL IS NOT ENCOUNTERED AT DEPTH SHOWN FROM NGL, FURTHER EXCAVATION SHALL BE CARRIED TILL HARD SOIL IS ENCOUNTERED
- 03) SAFE BEARING CAPACITY OF SOIL HAS BEEN TAKEN AS 350KN/Sq.mtr AT 3.2mtr DEPTH FROM NGL
- 04) STRUCTURE DESIGNED FOR G+4 FLOORS FOR OFFICE USE & UNIFORM PLAN IN ALL FLOORS
- 05) THE PROVISIONS MADE IN IS456-2000 & SP 34 SHALL BE STRICTLY ADHERED TO DURING EXECUTION

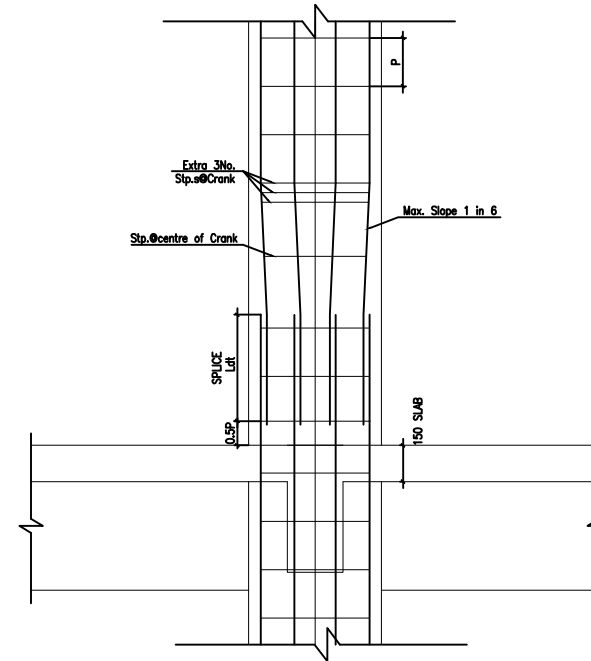
a. Form Work:-

- 01) THE FORM WORK SHALL BE SUCH THAT IT REMAINS SUFFICIENTLY RIGID DURING PLACING & COMPACTION OF CONCRETE
- 02) IT SHALL BE FREE FROM CHIPPINGS, SHAVINGS & SAW DUST. IT SHALL PREVENT LOSS OF SLURRY FROM THE CONCRETE
- 03) FOR STRIPPING TIME OF FORM WORK, CLAUSE 11.3 OF IS:456, 2000 SHALL BE ADHERED

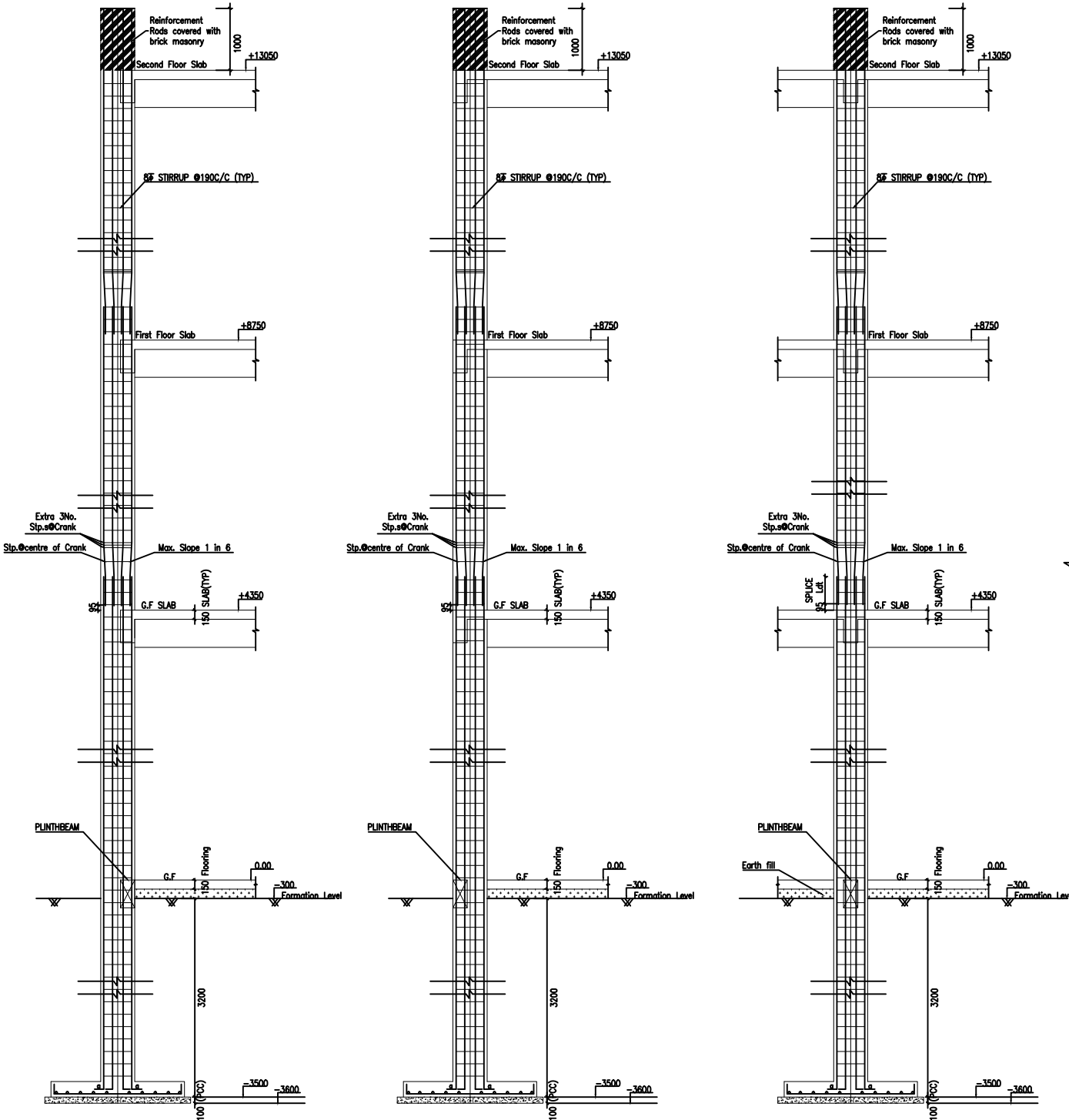
b. Reinforcement:-

- 01) GRADE OF STEEL SHALL Fe500 CONFORMING TO IS:1786-1984
STEEL SHALL BE FREE FROM RUST & SCALES AT THE TIME OF PLACING IN FORMS
- 02) CLEAR COVER FOR ;
FOOTINGS : 50 mm
COLUMNS (MEASURED TO STIRRUP) : 40 mm
- 03) Ld VALUES FOR TYPICALLY USED REINFORCED BARS ;

DIA (mm)	Ld (mm)	Ld (mm)
12	583	466
16	777	621
20	971	777
25	1214	971
- 04) IN COLUMNS, 2 LEGGED STIRRUP END ANCHORING IS DONE AS SHOWN BELOW (TYPICAL)
- 05) IN FOOTINGS, WHERE TOP RODS ARE TO BE PLACED-ADEQUATE CHAIRS ARE TO BE PROVIDED SO THAT THE TOP BARS DO NOT BEND WHILE CONCRETING
- 06) FOR COLUMN BAR SPICING SEE THE TYP.DETAIL OF COLUMN IN DRG.1-97-333-2002, SHEET No.02
- 07) IN COLUMNS, NOT MORE THAN 50% OF LONGITUDINAL REINFORCEMENT SHALL BE LAPPED AT CENTER OF COLUMN.



TYP. SPICING DETAIL OF
COLUMN REINFORCEMENT



TYPICAL END SPAN COLUMN
L/S SHOWING FLOOR LEVELS

TYPICAL L/S OF COLUMN AT
EXP. JOINT SHOWING FLOOR LEVELS

TYPICAL MID SPAN COLUMN
L/S SHOWING FLOOR LEVELS

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PE&SD OFFICE BUILDING			
BHARAT HEAVY ELECTRICALS LTD. HYDERABAD		NAME	SIGN.	DATE	NO. OF VAR.
DRN. SUDHEER		CHD. SRK	APPD. SARKAR	08.08.13	08.08.13
DEPT.		SCALE	WEIGHT (KG)	REF. TO ASSY DRG.	ITEM NO.
CODE 333		1:50	NA		
TITLE COLUMNS TYPICAL LONG SECTION		DRAWING NO. 1-97-333-2002		REV. 00	
		SHEET NO. 02		NO OF SHEETS 02	