भारत हेवी इलेक्ट्रिकल्स लिमिटेड
BHARAT HEAVY ELECTRICALS LIMITED

सामान्य प्रशासन समूह-भेल सदन / COMMON ADMIN GROUP-BHEL SADAN
प्लॉट सं. -25, सैक्टर-16 ए, फ़िल्म सिटी / PLOT No.-25, SECTOR-16A, FILM CITY
नोएडा-201301 (उ. प्र.) / NOIDA- 201301 (U.P.)

OPEN TENDER DOCUMENT

FOR

Comprehensive Operation and Maintenance Contract for Façade Access System (Building Maintenance Unit- 02 Nos) and Cleaning of External Façade (DGU Glass & Aluminium Composite Panel - ACP Sheets) at BHEL- SADAN, Sector -16A, Noida

निविदा संख्या/NIT No.- AA: CAG: BSN: 25 -26: FAS: 01 **DATE: 28.05.2025**

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निविदा जमा करने की प्रारम्भ तिथि/ Tender Submission Start Date : 29.05.2025 at 09:00 Hrs.

निविदा जमा करने की अंतिम तिथि/ Tender Submission Last Date: 07.06.2025 at 15:00 Hrs.

निविदा खोलने की तिथि/ Tender Opening Date : 07.06.2025 at 15:30 Hrs.

वीर सिंह/Veer Singh
Sr. Engineer (HR-Admin.)/Corporate HR-Admin. (CAG)/Bharat Heavy Electricals Ltd.
Plot No. 25/10th Floor, BHEL Sadan, Sector-16A, Noida-201301 (U.P.)

भारत हेवी इलेक्ट्रिकल्स लिमिटेड/ Bharat Heavy Electricals Ltd.

सामान्य प्रशासन समूह- भेल सदन कैम्पस, सेक्टर-16 ए, नोएडा- 201301 (उ. प्र.)

Common Administration Group - BHEL SADAN Campus, Sector-16A, Noida-201301 (U.P.)

खुली निविदा आमंत्रित करने की सूचना/NOTICE FOR INVITING OPEN TENDER

Sealed tenders are invited in Two Part Bid System for the following work: -

Name of Work	Comprehensive Operation and Maintenance Contract for Façade Access System (Building Maintenance Unit- 02 Nos) and Cleaning of External Façade (DGU Glass & Aluminium Composite Panel- ACP Sheets) at BHEL- SADAN, Sector-16ANoida.
NIT No.	AA_CAG_BSN_FAS_25 - 26_01 Dated: 28.05.2025
Completion Period	03 YEARS (THREE YEARS)
Last date for submission of e-Tender	**07.06.2025 at 15:00 Hrs**
Date of opening e-Tender	**07.06.2025 at 15:30 Hrs**
Venue for Opening of e-Tender	BHEL-SADAN Tower, Plot No- 25, Sector-16A, Film City, Noida.

The Tender Document may be obtained from the Office of Sr Engineer (HR-Admin./CAG), BHEL SADAN Building, Sector-16A, Noida free of cost or may be downloaded from BHEL e-Procurement Portal (https://eprocurebhel.co.in) and submit through online mode latest by 07.06.2025 at 15:00 Hrs. ***Tenderers have to submit their bids/offers electronically/ through online only by logging to BHEL e-Procurement portal https://eprocurebhel.co.in/. Sealed cover bids/E-mails/Fax/Manual offers will not be accepted.*** All corrigendum/addendum in subject NIT shall be updated on BHEL e-Procurement portal https://eprocurebhel.co.in/. Bidders are requested to visit above portals/website on regular intervals to keep abreast with latest updates. In case of any clarification the bidder can contact undersigned on Tel – 0120- 6748010, or at e-mail: veer.singh@bhel.in & or from Sr. Manager (HR-Admin/CAG) at e-mail: shrikant.verma@bhel.in.

For and on behalf of "BHEL"

Sr. Engineer (HR-Admin/CAG)

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Sr. Engineer (HR-Admin.)
Corporate HR-Admin. (CAG)
Bharat Heavy Electricals Ltd.
Plot No. 25/10th Floor, BHEL Sadan, Sector-16A, Noida-201301 (U.P.)

(Seal & Signature of the bidder)

PART 'A' – TECHNO- COMMERCIAL BID

A. INSTRUCTIONS FOR THE BIDDERS:

1. The offer shall be submitted as per the instructions of tender document. Only one set of tender documents duly signed & stamped on each page shall be submitted as detailed further. Tenderer should note specifically that all pages of tender document, including the NIT page for this particular tender shall be submitted by them (after signing/ stamping on each page) as a part of their offer. Price shall not be mentioned by them anywhere in the techno-commercial portion of offer, except in the relevant price bid and submitted ONLINE. In case of any clarification, bidder may contact this office.
2. Bid should be free from correction, overwriting, using corrective fluid, etc. any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature (s) of person (s) signing the bid else bid shall be liable for rejection.
3. Tenderers have to submit their bids/offers electronically/ through online only by logging to BHEL e-Procurement portal https://eprocurebhel.co.in/. Sealed cover bids/E-mails/Fax/Manual offers will not be accepted. Tender must be submitted in two parts, i.e., (i) Techno-Commercial Bid along with un-price bid and (ii) Price Bid.
4. Tender to be submitted through electronic mode only, by logging to e-Procurement portal https://eprocurebhel.co.in/. Sealed cover bids/E-mails/Fax/Manual offers will not be accepted.
5. It is mandatory to have a valid digital signature certificate (DSC) for submission of tender on e-Procurement portal.
6. Tenders shall be uploaded with all relevant PDF/zip format. The relevant tender documents should be uploaded by an authorized person having Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION digital signature certificate (DSC).
7. Bidders interested in participating against an electronic tender are advised to obtain "Digital Signature Certificate" and get themselves registered on "https://eprocurebhel.co.in/" website well in advance of the tender closing date. BHEL shall not be able to provide any assistance to the vendor in this regard, and shall not be responsible for failure of the vendor to submit their offer timely against the electronic tender. Bidders are advised to go through the FAQ available in the web portal.
8. Before quoting the price, Bidders are also requested to go through General Terms & conditions, Special Terms & conditions of tender, Scope of work, Technical details & Technical Data Sheets (copy encl), Terms & Conditions and all other documents which are part of tender and shall form part of the agreement to be entered into.
9. All the corrections / cancellations / insertions, if any, shall be duly attested by the Bidders concerned as per options available on the GePNIC portal.
10. Kindly ensure that the total size of the scanned documents to be uploaded remains minimum and within the permissible limits available on the GePNIC portal. If required, documents may be scanned at lower resolutions. However, it shall be sole responsibility of bidder that the uploaded documents are legible.
11. For two-part bid double covers system consisting 'Part-A & Techno-commercial Bid' in one cover & 'Part-B/Price Bid' in the second cover has to be submitted on the GePNIC portal.
12. Price bid should not be submitted along with the techno commercial bid in the cover type 'Part-A & Techno-commercial Bid' specified for techno commercial bid. The price bid has to be submitted separately in the cover type 'Part-B/Price Bid' specified for price bid only.
13. The digital signature of the tenderer on the e-tender form will be considered as confirmation that the tenderer has read, understood and accepted all the conditions laid down in the documents unless special deviation is quoted by the tenderer.
14. The Tender shall be digitally signed by the Authorized Signatory Only.

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15. The e-Bidding Notice shall be published on e-procurement portal, stipulating the bid submission end date and bid opening date. The bidders are strictly advised to follow date and time as indicated in the e- Bidding Notice. The date and time shall be binding on all bidders.
16. No Vendor shall be required to be present in the BHEL office for any e-Tender opening process. BHEL does not guarantee opening of tenders at the specified Date and Time which may change due to reasons beyond control and hence tenders can be opened after due date and time also. It will, however, be ensured that no bids are submitted after tender closing Date and Time. Vendors cannot submit any offer or attach any file after the due date and time as stipulated under the tender notice.
17. Price Bid should contain only the "Part-B, Price Bid Format" after quoting the rates as specified in the Price bid format.
18. Rates must be quoted in figures as well as in words.
19. On the date of opening of tender, only Techno-Commercial Bid shall alone be opened.
20. Price Bid Opening Date & Time Shall be intimated to qualified bidders after evaluation of Techno-Commercial Bid through e-mail or telephone.
21. BHEL reserves the right to accept or reject any or all offers without assigning any reason thereof. Also, BHEL shall not entertain any correspondence from bidders in this matter.
22. In case any typing error/other clerical errors is noticed by the tenderer, in the tender documents, the same must be pointed out and got clarified before submission of offer, or else, BHEL's interpretation shall prevail & shall be binding on the tenderer.
23. The Tenderer should accept all terms & conditions of the tender unconditionally. Tenders with deviations from terms and conditions shall be rejected.
24. In case any document required as per PQR is not submitted in techno-commercial bid (part-A) the party shall be asked to submit the same within 48 hours by email, etc. If the document(s) is/are not received within 48 hours the offer may be rejected.
25. **Tenderers are requested to go through the scope of work, visit the site/location etc. and get fully acquainted with the work place and prevailing working conditions to get all their doubts clarified regarding the subject work before submitting the offer.** Engineer-in-charge's decision will be full and final in the event of any doubt. Any queries regarding this tender may be clarified from Sr Engineer (HR-ADMIN/ CAG), Tel – 0120-6748010 or at e-mail: veer.singh@bhel.in & or from Sr. Manager (HR-Admin/CAG) at e-mail: shrikant.verma@bhel.in.

B. SCOPE OF WORK: -

1. **Introduction:** BHEL SADAN Tower is an 18 storied Office Complex Building, located at Plot No -25, Sector -16A, Film City Noida. BHEL SADAN Tower has B1 + B2 + GF +18 Floors and and the height of the tower is approx. 90 Meters. Façade Area of BHEL SADAN Tower is 25000 SQ Mt (ACP: 17000 SQ Mt + DGU 8000 SQ Mt). ACP Sheets and DGU have been used in External Façade of Tower from 2nd Floor onwards, while Granite stone and spider glazing have been used from GF to 2nd floor of tower for External Façade.
2. **Scope of Work**: 02 Nos Façade Access System (Building Maintenance Unit) have been installed at Terrace Floor of BHEL Tower to access the complete Façade system of the Tower & to facilitate its Cleaning & Maintenance. Complete Scope of work comprises of the following:

(i) Comprehensive Operation and Maintenance including Repair & Maintenance, Replacement of Electrical and Mechanical Parts/ Equipment's, accessories items etc. for 02 Nos. Façade Access System (Building Maintenance Unit) installed at Terrace Floor level. All the spare parts/materials/consumables that may be required for operation and maintenance of all the systems shall be as per OEM's Technical Data Sheet (copy attached).

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(ii) Cleaning of Entire BHEL- SADAN External Façade envelop comprising of ACP & DGU glasses from 2nd to 18th floors including double height Spider Glazing and Granite stone at GF & FF. Total External Façade envelop area is 25000 SQ MT (Façade DGU Area: 7500 Sq Mt and Aluminium Composite Panels (ACP) of Area: 17000 Sq Mt).

Note: a) The contractor shall provide comprehensive maintenance services to keep entire Façade Access System (Building Maintenance Unit- 02 Nos) equipment's etc. in good working conditions and without disruptions. The service will comprise preventive/corrective maintenance and also on call basis, in case of breakdown etc. The service will include carrying out of the necessary preventive, repair/maintenance, replacement of consumables/ accessories / parts/ equipments /accessories/ electrical panels etc. without any additional cost.

Note: b) The contractor shall supply and maintain all spare parts/materials/consumables etc as per OEM's Technical Data Sheet (copy attached) that may be required for maintenance of all the systems, free of costs and/or overhead/labour charges during the tenure of the contract. All routine, preventive maintenance, overhauling, breakdown maintenance etc. are included in the scope of work.

C. Technical Details of Façade Access System (Building Maintenance Unit) Equipments installed at terrace floor (Height: 85 Meter) of BHEL- SADAN Tower:

Si No	Parameter		Description
1	**Technical Data: Tele Series 3 Stage Telescopic Machine on Tracks with Fixed mast, Powered Cradle with Soft Rope and pull-in restraints.**		
(i)	Façade Access System (Building Maintenance Unit)	Model	ABM Tele Series
		Description	Traversing Telescope BMU with Fixed Mast.
(ii)	Mode of traverse		By Geared drives on either side of track
(iii)	Hoisting Height		120 Meter
(iv)	No of Stages (Telescopic jib)		03 (one fixed, 03 moving)
(v)	Telescopic Mechanism		Hydraulic ram in conjunction with progressive chain drive mechanism.
(vi)	Maximum outreach		27.5 Meter
(vii)	Minimum reach		12 Meter
(viii)	BMU length (maximum in parking)		20 Meter
(ix)	Cradle		Standard 3-meter self-powered, 2X800 Kg capacity cradle Size: (3.0 X 0.70 X 1.85) Mt
(x)	Electrical System		Control System supported by PLC and Digital inverter for sequential and smooth movements.
(xi)	Main Power Supply		3 Phase , 400 V, 50Hz, 32A
(xii)	Wire Rope		8.6 mm dia (47.40kN minimum breaking load)
2	**Technical Data: Roof Mounted Twin Track BMU (Fixed Jib) with fixed Mast, Powered Cradle with Soft Rope and Pull-in restraints.**		
(i)	Façade Access System (Building Maintenance Unit)	Model	ABM Long reach Sries.
		Description	Fixed Jib BMU with fixed Mast.

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(ii)	Mode of traverse	By Geared drives on front side of track
(iii)	Hoisting Height	120 Meter
(iv)	No of Stages (Telescopic jib)	Not Applicable.
(v)	Telescopic Mechanism	Not Applicable.
(vi)	Maximum outreach	15.5 Meter
(vii)	Minimum reach	15.5 Meter
(viii)	BMU length (maximum in parking)	15 Meter
(ix)	Cradle	Standard 2 meter self-powered, Size: (2.3 X 0.65 X 1.85) Mt
(x)	Electrical System	Control System supported by PLC and Digital inverter for sequential and smooth movements.
(xi)	Main Power Supply	3 Phase , 400 V, 50Hz, 32A
(xii)	Wire Rope	8.4 mm dia (47.40kN minimum breaking load)

Note: The above list of equipment is indicative only. Any equipment/device/wiring/electrical panel etc. which is not indicated in the above list, but forms part of the overall system, shall be deemed to be included in the scope of work as per originally manufactured specification of spare parts etc. The contractor may inspect the building/premises thoroughly, before quoting price for subject work. The contractor should physically inspect the entire systems which are to be covered under contract and also to make an assessment of the average consumption of consumables/spares etc., before quoting their rates.

D. PRE - QUALIFYING CRITERIA:

a) The Bidder should have minimum proven experience of 05 Years (experience before F/Y 18-19 will not be considered) for Operation & Maintenance of Fixed JIB Building Maintenance Unit (BMU) with a maximum outreach capacity of at least 15.5 meters in High rise buildings or multistoried modern buildings in PSUs/ PSU Banks/ Corporate MNC etc. (Technical Data Sheet Copy enclosed).

b) The Bidder should have minimum proven experience of 05(experience before F/Y 18-19 will not be considered) Years for Operation & Maintenance of 3 - Stage Telescopic JIB Building Maintenance Unit (BMU) with a maximum outreach capacity of at least 27.5 meters in High rise buildings or multistoried modern buildings in PSUs/ PSU Banks/ Corporate MNC etc (Technical Data Sheet Copy enclosed).

c) The Bidder should have minimum proven experience of 05 Years (experience before F/Y 18-19 will not be considered) in executing External Façade Cleaning works at working height of 80 Meters or higher in High rise buildings or multistoried modern buildings in PSUs/ PSU Banks/ Corporate MNC etc.

d) The Bidder's average annual financial turnover during the last three financial years i.e. 2021-22, 2022-23, 2023-24. (2024-25 may be submitted if available instead of f/y 21-22) should be at least Rs 42.40 Lacs (including GST).

e) The experience of having successfully completed similar Works (Similar work shall mean execution of Operation and Maintenance of Fixed JIB BMU with a maximum outreach capacity of at least 15.5 meters & 3 - Stage Telescopic JIB BMU with a maximum outreach capacity of at least 27.5 meters and Cleaning of External Façade at working height of 80 Meters or higher in High rise buildings or multistoried modern buildings in PSUs/ PSU Banks/ Corporate MNC etc) during any 5 years from 2018-2019 to 2024-2025 should be either of the following: -

i) Three similar completed jobs/ works costing not less than Rs. 56.54 Lacs (including GST) each.

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OR

ii) Two similar completed jobs/ works costing not less than Rs. 70.67 Lacs (including GST) each.

OR

iii) One similar completed jobs/ works costing not less than Rs. 113.07 Lacs (including GST).

Note: Failure to meet the above mentioned PQR requirement may result in disqualification from the Bidding or Contracting process.

E. DOCUMENTS REQUIRED IN SUPPORT OF PRE-QUALIFYING REQUIREMENT:

a) Complete tender document in all respects duly digitally signed as a token of acceptance of all the terms and conditions of tender.
b) Self-attested copies of CA Certificates of Average Annual Turnover bearing UDIN No. of last three financial years i.e. 2021-22, 2022-23, 2023-24. (2024-25 may be submitted if available instead of f/y 21-22)
c) Self-attested copies of CA certificates OR audited Balance Sheet and Profits & Loss Account statements bearing UDIN No. of last three financial years i.e. 2021-22, 2022-23, 2023-24 (2024-25 may be submitted if available. instead of F/Y 21-22)
d) Self-attested copies of acknowledgements of IT return of last three financial years i.e.2021-22, 2022-23, 2023-24 (2024-25 may be submitted if available. Instead of f/y 2021-22).
e) Self-attested copies of Work Orders/Award letters along with satisfactory Completion certificates in support of proof of experience for the works executed by the bidders during last 07 years ending on 31-03-2025. BHEL reserves the right to cross check the documents from the issuing department/ company. BHEL reserves the right to reject any or all applications at any stage without assigning any reason, thereof.
f) Working experience of having successfully completed similar Works (Similar work shall mean execution of Operation and Maintenance of Fixed JIB BMU with a maximum outreach capacity of at least 15.5 meters & 3 - Stage Telescopic JIB BMU with a maximum outreach capacity of at least 27.5 meters and Cleaning of External Façade at working height of 80 Meters or higher in High rise buildings or multistoried modern buildings in PSUs/ PSU Banks/ Corporate MNC etc.) during last 07 years ending on 31-03-.2025.
g) BHEL reserves the right to request for any further documents/certificate/clarification from the bidder/contractor relevant to above qualifying criteria and the same must be submitted within stipulated time of receipt of any such communication from BHEL, failing which suitable action shall be taken by BHEL.
h) Self-attested copy of the PAN No. & GST No.
i) Un-Price bid as per Annexure - C.
j) The Bidder must Submit a declaration (enclosed at Annexure - D), that the bidder has not been suspended /blacklisted by PSU or any organization.
k) No deviation certificate as per Annexure - E (enclosed) must be signed and stamped.
l) Bidder must submit the bidder's details in the enclosed format (Annexure - F).

F. GENERAL TERMS & CONDITIONS: -

1) BHEL will not be responsible for delay submission of tender under any circumstances for non-receipt of Tenders by due date & time.
2) BHEL has the right to reject all or any of the tenders and accept any tender(s) irrespective of its / their being the lowest / highest.

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3) The Contractor/ Agency/ Firm should have a Registered Office / Branch in Delhi/ NCR area at least for the last 03 Years.

4) If any information/ documents submitted by the tenderer are found false/fake at any stage, the tender will be cancelled.

5) The Tenderers are required to quote for the complete scope of work. Tenders for part of the work or incomplete in any respect are liable to be rejected.

6) Rates/amount/percentage quoted by the bidder will be firm for the entire contract period including extended period of contract. No price variation and escalation due to increase in labour / material cost will be allowed.

7) The Rates/amount/percentage quoted by the bidder are deemed to be inclusive of all and any other incidental works required to complete the work and inclusive of all the taxes including GST.

8) The rate should be indicated both in words and figures. All entries in the Tenders must be written in ink or typewritten. Over-writing should be avoided. Corrections, if any, should be attested with signature by the bidder.

9) Store and Accommodation in any manner will not be provided to the workers of the contractor deployed in the execution of work.

10) Shut Downs: No routine shut down shall be permitted during office hours. The contractor shall be at liberty to carry out maintenance on holidays and after office hours but with prior permission of BHEL.

11) This is being a pure works contract, the personnel engaged by the contractor and deployed by him at BHEL premises will be in no way be deemed as working under employment of BHEL and there shall not exist any employer-employee relationship between BHEL and the contractor or his personnel deployed by him. The Contractor or personnel shall have nothing to do with BHEL either in respect of wages/salary or such other statutory benefits or compensation etc. under the Labour Laws and other related Laws i.e. Gratuity, Bonus or Workmen Compensation Act or any other law in force. The contractor shall obtain an appropriate/adequate Policy i.e. Contractor All Risks (CAR) Policy so as to meet any obligation in any eventuality. The Contractor will be responsible for providing benefits like ESI, PF, Bonus, Group Insurance Scheme etc. under the relevant rules/laws of the State and Central Government. The Contractor shall be solely liable for any dispute that might arise in any matter in future for violation/non-compliance of Labour Laws/regulations and BHEL will have no responsibility, whatsoever.

12) Thorough checking of employees of the contractor during entry/exit would be done by security staff of BHEL.

13) The employees of the contractor will work strictly under the direction and administrative control of the contractor's Manager/Supervisor/Site Engineer. However, the contractor's supervisory staff will have to execute the work through their employees according to the requirement, need and/ instructions of the designated officers of BHEL.

14) The employee of the contractor will ensure strict discipline and behavior and diligent performance of their duties most befitting to the décor of the most modern mechanized building and the employees of the contractor shall not in any manner cause any interference, annoyance, nuisance etc. to BHEL staff or its business or working and will be liable for immediately replacing/relocating the individual employee if the services rendered by him are not found to be satisfactory.

15) In case of any damage to BHEL's property/premises for which contractor is accountable, the contractor will be liable to pay the compensation to BHEL as may be advised by BHEL. The contractor shall also take full responsibility and compensate BHEL for any loss/damage/break-down caused to the installation due to negligence of his workers.

16) BHEL will not be responsible for any injury/death caused to the employees provided by the contractor at site. It will be the responsibility of the contractor to abide with the all the provisions of

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the Workmen Compensation Act, 1923 and no compensation, whatsoever shall be paid by BHEL in this regard.

17) The workforce deployed by the contractor should be adequately covered under Personal Accident Insurance Plan.

18) If any information/ documents submitted by the tenderer are found false/fake at any stage, the tender will be cancelled.

19) The evaluation currency for this tender shall be INR (Indian National Rupee).

20) **VALIDITY OF RATES:** The rates in the Tender shall be kept open for acceptance for a minimum period of 90 days from last due date of offer submission (including extension, if any). In case BHEL (Bharat Heavy Electricals Ltd) call for negotiations, such negotiations shall not amount to cancellation or withdrawal of the original offer which shall be binding on the tenderers.

21) **EVALUTION CRITERIA:** The criteria of evaluation of techno-commercial bids shall be on the basis of documents submitted by the bidders. Estimated rates have been disclosed in the tender documents and percentage rate tenders are invited. Accordingly, the basic amount as per basic rates has been calculated against each item.

Bidders have to quote a single overall percentage, (+) above, (-) below or at par with the tender rates in ONLINE EXCEL Price Bid format. The same quoted percentage will be applied on every item of the BOQ. Evaluation of Price Bid will be done on overall L-1 rate inclusive of all including all taxes and duties.

In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders.

In case more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/ draw of lots, in the presence of the respective L-1 bidders(s) or their representative(s). Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.

22) **REVERSE AUCTION:**

"BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among all the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking."

23) **CORRECTION OF ARITHMETIC ERRORS**: Provided that the bid is substantially responsive, BHEL shall correct arithmetical errors on the following basis:

i) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the BHEL there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected.

ii) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.

iii) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (i) and (ii) above.

iv) If any bidder does not accept the correction of errors, their bids are liable to be disqualified.

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(Seal & Signature of the bidder)

v) If there is any discrepancy between total quoted amount and actual total amount after applying quoted percentage (above/ below/ at par), the actual total amount after applying quoted percentage shall be prevailing and corrected.

24) <u>WATER & ELECTRICITY:</u> Water and electricity shall be supplied to the contractor by BHEL subject to the following conditions: -

a) Water & Electricity shall be provided free of cost.
b) Contractor shall make his/ their own arrangement of water/ electricity connection and laying of pipelines of water/connection from existing main of source of supply as directed by Engineer in charge.
c) BHEL do not guaranty to maintain uninterrupted supply of water/ electricity and it will be incumbent on the contractor to make alternative arrangement for proper supply of the same at his/ their own cost in the event of any break down in the government water/ electricity mains so that the progress of his/ their work is not held up for the want of the same. No claim of damage or refund will be entertained on account of such break down.

25) STORES AND MATERIALS ON SITE: -

a) No space belonging to BHEL shall be occupied by the contractor without written permission of BHEL.
b) All materials for the work are to be deposited by the contractor only in places to be indicated by the Engineer-in-Charge.
c) The safety & security of the contractor's materials will be the responsibility of contractor himself.
d) BHEL will not provide any compensation due to theft or loss of contractor's materials. The stores provided by the contractor will not be utilized as the accommodation for the workers or for any other purpose.
e) Accommodation in any manner will not be provided to the workers of the contractor deployed in the execution of work.

26) <u>CONTRACT PERIOD:</u> Subject Contract will be **initially for a period of 03 Years (Thirty - Six Months) with a provision of another Three Months (03 Months) extension subject to evaluation of the performance** of service provider/Contractor by BHEL. In the event of extension of contract for another 03 (Three) Months the service charges shall be the same as that quoted by the bidder for the Original 03 Year contract period and all other terms and conditions will remain unchanged. The performance of the service provider/Contractor will be evaluated every month on a continuous basis and the extension / renewal of contract will be based on performance evaluated by BHEL officials.

27) <u>QUANTITY VARIATION:</u> Depending on actual site conditions the individual BOQ item quantities given in the contract may change to any extent limited to ± 30 % of the awarded contract value. The quoted rates for individual items shall remain firm irrespective of any variations in the individual BOQ items quantities.

In case the finally executed contract value increases above the original awarded Contract Value due to quantity variation, there will be no upward revision in the rates for the individual items and also contractor is not eligible for any compensation.

28) <u>PAYMENT TERMS:</u>

a) No advance payment or the payment for mobilization of work will be made to the Contractor.

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b) Monthly Payment shall be made after verification of work done (as per score card as referred to in Annexure - G). Score card shall be prepared every month as per performance of the contracting agency by BHEL. As per the score card, penalty will be imposed and payment shall be released accordingly. Score card will be implemented after 01 Month from the date of start of contract.

c) The rates accepted by the BHEL shall remain fixed and valid for the entire 03 YEAR (Thirty-Six Months) Period of contract including extended period of contract (if any) except on account of variation due to revision in minimum wages through appropriate Gazette notification issued by the Uttar Pradesh State Government. The taxes will be paid extra as applicable at the time of billing.

d) Payment shall be made for the actual executed quantity of work after recording joint measurement on Measurement Book (MB) by Engineer-in-Charge. All the penalties/ fine (if applicable) shall be settled before making the payments. Service Provider shall not have any objection on the same.

e) Measurement shall be recorded in measurement book (MB) maintained by the Engineer-in- Charge who shall make entries regarding the work executed by the contractor under different items of bill of quantity (BOQ). These entries will be counter-signed by the contractor.

f) Bill (on monthly basis) complete in all respect along with all the requisite documents submitted by the Contractor will be paid within 45 Days for MSEs, 60 days For Medium Enterprises, 90 days for Non MSME of its receipt. Any clarification sought by BHEL, pertains to respective bill, must be clarified by Contractor at the earliest. Otherwise the delay in payment will be attributed to the Contractor. Aforesaid timeline shall be applicable from the day on which the last clarification/queries/document sought by BHEL and settled/submitted by the Contractor. The Contractors shall not be entitled to any interest with respect to any money, which may be due to him from BHEL.

g) The Payment of Final bill will be made only after obtaining certificate of satisfactory completion and satisfactory quality of the work as per tender by the Engineer-in-Charge, clearance of the site & clearance of all the liabilities on Contractors' part **& NO due certificate from the contractor.** No claim will be entertained after signing the bill.

h) The contractor shall be liable for indemnifying the BHEL from any liability on account of his employees and/or meeting any Statutory Obligations required under labour Laws of the Central/State Government(s). BHEL will therefore not assume any responsibility thereto.

i) The contractor/ agency shall ensure compliance to the minimum wages act., ESI & EPF and other aspects as applicable in labour laws and shall intimate the EPF & ESI nos. of personnel engaged in this contract to this office. The persons deployed by the bidder shall always carry the proof that they have been covered under ESI/EPF.

j) Monthly Running Bill Payment excluding GST portion, against the work executed shall be made to the Contractor. GST amount shall be released only after confirmation from GST portal that such invoice has been declared in GSTR-1 return filed by contractor and is available in GSTR-2B of BHEL within the stipulated time for the relevant period and tax amount thereon has been paid by contractor to Govt. within the stipulated time period as per GST Law. However only one running bill will be accepted in a month.

k) No payment shall be made for the work done without the permission of Engineer-in-Charge.

l) BHEL is not responsible for any injury/death caused to the employees provided by contractor at BHEL. It will be the responsibility of contractor to abide with the all the provisions of the Workmen Compensation Act, 1923 and no compensation, whatsoever shall be paid by BHEL in this regard.

m) The Contractor shall bear the expenditure involved if any, in making the measurements and testing of materials to be used/ used in the work. The contractor shall, without extra charges, provide all the assistance with appliances and other things necessary for measurement.

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29) TAXES AND DUTIES:

a) To enable BHEL to avail GST input tax credit, contractor shall submit GST compliant Tax invoice containing all the particulars as stipulated under invoice Rules of GST Law. Payment shall be made to the contractor only after submission of GST compliant Tax invoice. The contractor shall raise GST compliant invoice affixing GSTIN of BHEL's unit availing the services.
b) BHEL reserves the right to protect its interest against any loss on account of availability of GST credit.
c) GSTIN of BHEL is "09AAACB4146P2ZC".
d) Any new/ change in statutory levy as and when made applicable by the Government shall become applicable against documentary evidence.
e) Payment to the contractor will be subjected to TDS as per rules in force from time to time. The Tax Deduction at Source (TDS) shall be done as per the provisions of Income Tax Act & GST, as amended from time to time and a certificate to this effect shall be provided to the contractor by BHEL.
f) Invoice submitted should be in the format as specified under GST Laws viz. all details as mentioned in Invoice Rules like GSTIN registration number, invoice number, quantity, rate, value, taxes with nomenclature – CGST, SGST, IGST mentioned separately, HSN (Harmonized System of Nomenclature) Code/ SAC (Services Accounting Code) Code etc.
g) The vendor shall ensure strict compliance under GST Act & Rules so that input tax credit is available to BHEL. In case of any loss to BHEL on account of non-compliance by vendor, the same shall be to vendor's account. BHEL has a right to take necessary steps to protect its interest at the time of release of payment.

30) SUBLETING: The Contractor shall not sublet, transfer or assign the full work or any part thereof to any other person/company/organization. In case it is found that the work has been subletted, the contract shall be terminated immediately & Security Deposit shall be forfeited.

31) L. D./ PENALITY CLAUSE:

Subject Contract is time bound and works shall have to be carried out at desired pace throughout the execution period so as to complete the Scope of Work in the stipulated time. The contractor during the contract shall be responsible to maintain the complete systems/ equipments in good working condition by maintaining minimum uptime 95%, which would be calculated for each individual system, which form part of the overall system of the building.

The uptime would be calculated on monthly basis and proportionate deductions would be made from the payment to be made to the contractor for the correspondence months for which an uptime of 95% could not be maintained. The deduction as per Annexure – G (Score Card) would be as follows: -

Sl No	Uptime	Deductions
1	95 - 100%	No deduction
2	85 - 94%	5% of the total value of the Monthly bill
3	75 - 84%	10% of the total value of the Monthly bill
4	65 - 74%	15% of the total value of the Monthly bill
	Up to 64%	20% of the total value of the Monthly bill
Note:	(1) No complaints in regard to systems etc. should remain pending for more than 48 hrs., however these need to be attended immediately without loss of time.	
	(2) Non-availability of spares/any other reasons shall not be acceptable under any circumstances and will attract penalty, as applicable.	

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32) BONUS CLAUSE, PVC & ORC are not applicable for the Subject NIT.

The price quoted shall remain firm during the entire contract period including any extension of the original contract period and no price variation compensation shall be paid by BHEL for whatsoever reason. The contractor will not be entitled to any compensation/extra payment/ cost overrun compensation on this account.

33) EMD: EMD of Rs. 2.00 lacs is to be paid by tenderers for securing fulfilment of any obligations in terms of the NIT

Modes of deposit- The EMD may be accepted only in the following forms:
(i) Cash deposit as permissible under the extant Income Tax Act (before tender opening)
(ii) Electronic Fund Transfer credited in BHEL account (before tender opening)
(iii) Banker's cheque/ Pay order/ Demand draft, in favour of BHEL (along with offer)
(iv) Fixed Deposit Receipt (FDR) issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL

34) GUARATNTEE / MAINTENANCE PERIOD: - The work shall be guaranteed against any inferior quality of Repair/Replacement/ Maintenance of Electrical and Mechanical Parts/ Equipment's, accessories items and all the spare parts/materials that may be required for trouble free operation and maintenance of complete Façade Access System/equipments as per OEM's Technical Data Sheet (copy attached). The guarantee / maintenance period will be for a period of 12 months/one year from the date of actual completion of contract. The full Security Deposit (SD) amount shall be retained for the guarantee/ maintenance period of 12 months.

35) SECURITY DEPOSIT:

1) The total amount of Security Deposit will be **5 %** of the contract value. The security deposit should be collected before start of work by the contractor.
2) Security deposit may be furnished in any one of the following forms:

i) Cash (as permissible under the Income Tax Act)
ii) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL
iii) Bank Guarantee from Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.
iv) Fixed Deposit Receipt issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL)
v) Securities available from Indian Post offices such as National Saving Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL)

(**Note:** BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith)

vi) At least 50% of the Security Deposit, should be collected before start of the work. Balance of the Security Deposit can be collected by deducting 10% of the gross amount progressively from each of the running bills of the Contractor till the total amount of the required Security Deposit is collected.

3) The security deposit will be released only after completion of Guarantee/ Maintenance period.
4) The Security Deposit shall not carry any interest.

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5) Failure to pay the security deposit shall be treated as failure to discharge the duties under the contract and shall result in cancellation of the contract and the contractor shall be liable to compensate BHEL for any losses incurred by BHEL. BHEL reserves the right to appropriate any part / whole of the amount of the security deposit without prejudice to other claims against the contractor for losses suffered by BHEL due to failures on the part of the contractor, due to termination of contract or contractor becoming disqualified because of liquidation / insolvency. The decision of BHEL in respect of such losses, damages, charges, expenses or costs, shall be final and binding to the contractor.
6) Bidder agrees to submit performance security required for execution of the contract within 15 working days from the date of start of work order / contract. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI rate + 4 %) for the delayed period, shall be submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in NIT/ contract, from the bills along with due interest.
7) **Collection of Security Deposit:** At least 50% of the required Security Deposit, including the EMD (if applicable), should be collected before start of the work. Balance of the Security Deposit can be collected by deducting 10% of the gross amount progressively from each of the running bills of the Contractor till the total amount of the required Security Deposit is collected. If the value of work done at any time exceeds the contract value, the amount of Security Deposit shall be correspondingly enhanced and the additional Security Deposit shall be immediately deposited by the Contractor or recovered from payment/s due to the Contractor. The recoveries made from running bills (cash deduction towards balance SD amount) can be released against submission of equivalent Bank Guarantee in acceptable form, but only once, before completion of work, with the approval of the authority competent to award the work.
8) Electronic Fund Transfer may be credited in the following BHEL account: -

Bank name	KOTAK MAHINDRA BANK
Address of Bank	G-F 3A-3J, GROUND FLOOR, AMBA DEEP, 14 K.G. MARG, NEW DELHI
IFSC	KKBK0000172
CA No.	9011196535
MICR No.	110485002
BANK ACCOUNT NAME	BHARAT HEAVY ELECTRICALS LTD

36) <u>Responsibilities of the contractor in respect of local laws, employment of works etc</u>.

The contractor shall fully indemnify BHEL against any claims of whatsoever nature arising due to the failure of the contractor in discharging any of his responsibilities. The following are the responsibilities of the contractor in respect of observance of local laws, employment of personnel, payment of taxes etc:

1) Working at height is a high-risk job as even a small mistake can lead to a fatal injury. Along with safety precautions, it is also very important to assess medical fitness of employees to know or confirm the workmen's capability in terms of height phobia once before joining work. In this regard, for works at height, persons engaged should have valid Medical Fitness and Vertigo Test certificate from at least an MBBS doctor.
2) Contractor will produce medical fitness certificate for his workers prior to CLC clearance for working at height. Height passes to be obtained from BHEL Safety officer.

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3) The contractor shall comply with all applicable Uttar Pradesh State Government Statutory Rules, Laws and Regulations etc. such as Payment of Wages Act, Minimum Wages Act, Workmen Compensation Act, Employer's Liability Act, Industrial Dispute Act, Employers Provident Act, Employees State Insurance Scheme, Contract Labour (Regulation and Abolition) Act 1970, Payment of Bonus & Gratuity Act and other Acts, Rules and Regulations for labour as may be enacted by the Government during the tenure of the Contract and having force or jurisdiction at Site.
4) The Contractor shall pay all taxes, fees, license charges, deposits, tolls, royalties, commission or other charges which may be liable on account of his operations in executing the contract.
5) The Contractor shall ensure that no damage is caused to any person/property of other parties working at site. If any such damage is caused, it is responsibility of the contractor to make good the losses or compensate for the same.
6) All safety rules and codes applied by the BHEL at site shall be observed by the contractor without exception. The contractor shall be responsible for the safety of the equipment/material and works to be performed by him and shall maintain all light, fencing guards, slings etc. or other protection necessary for the purpose. Contractor shall also take such additional precautions as may be indicated from time to time by the Engineer with a view to prevent pilferage, accidents, fire hazards. Due precautions shall be taken against Fire Hazards and Atmospheric conditions. Suitable number of Clerical staff, watch and ward, store keepers to take care of equipment/materials and tools and tackles shall be posted at site by the contractor till the completion of work under this contract.
7) The contactor shall arrange for such safety devices as are necessary for such type of work and carry out requisite site tests of handling equipment, lifting tools, tackles etc. as per prescribed standards and practices.
8) Contractor has to ensure the implementation of Health, Safety and Environment (HSE) requirements as per directions given by BHEL. The contractor has to assist in HSE audit conducted by BHEL and submit compliance Report. The contractor has to generate and submit record/reports as per HSE plan/activities as per instruction of BHEL.
9) The contractor will be directly responsible for payment of wages to his workmen.
10) The contractor shall hand over a copy of all legal and statutory documents and records to BHEL for fulfilling any future requirement with the statutory authority.
11) The contractor has to provide proper uniform with his organization's name/logo, shoe, raincoat, umbrella and I-card etc. to the manpower deployed at BHEL.
12) The Contractor shall establish a fully equipped First Aid Box on the Site to deal with accidental injuries. The Contractor shall provide such First Aid and Medical facility to at his own cost. The Contractor shall make necessary arrangements with a local hospital and with local doctors so that his sick or injured persons may receive prompt medical treatment with minimum delay at any hour of the day or night.
13) Daily work progress record data to be maintained by using any smart app or Whats App Group etc.
14) The Contractor shall take full responsibility for the adequacy, stability and safety of all Site operations and ensure that the methods of carrying out the Work by the Contractor including his workmen, employees, Sub-Contractors and Vendors meet all the necessary safety standards and requirements of the HSE Plan.
15) **Implementation of Safety Measures:** Notwithstanding anything herein before contained, the Contractor shall be liable to ensure and implement all safety measures, whether or not statutorily prescribed, to safeguard, preserve and protect the life, health and welfare of every workman employed/deployed/engaged directly or indirectly by the Contractor on the Site and in relation to or connected with the Work and all Vendors employed in later phases of the Project in addition to installing, providing every prescribed safety and protective equipment, clothing etc., and the mere absence of any reference to or specification of a particular statute or rule or regulation in this Contract shall not absolve the Contractor of an obligation to comply with every such law, rule or regulation. The obligations stipulated in the contract shall not in any manner be deemed to limit or restrict any obligation or duty that any law, rule or regulation may otherwise impose upon the Contractor. The

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Contractor shall be liable for all consequences/liabilities arising out of his violating any of the aforesaid provisions, including fines, penalties, compensations, damages, prosecutions, proceedings, medical expenditure and costs, rehabilitation costs and all other expenses connected therewith.

37) Insurance:

a. It is the sole responsibility of the contractor to insure his materials, equipments, workmen, etc. against accidents and injury while at work and to pay compensation, if any, to workmen as per Workmen's compensation Act. The work be carried out in protected area and all the rules and regulations of the BHEL in the area of project which are in force from time to time will have to be followed by the contractor.

b. If due to negligence and or non-observation of safety and other precautions by the contactors, any accident/injury occurs to the property/manpower belong to third party, the contractor shall have to pay necessary compensation and other expense, if so by the appropriate authorities.

c. **Compensation**: BHEL shall recover the amount of compensation paid to victim(s) by BHEL towards loss of life / permanent disability due to an accident which is attributable to the negligence of contractor, agency or firm or any of its employees as detailed below:

(i) Victim: Any person who suffers permanent disablement or dies in an accident as defined below.

(ii) Accident: Any death or permanent disability resulting solely and directly from any unintended and unforeseen injurious occurrence caused during the manufacturing/ operation and works incidental thereto at BHEL factories/ offices and precincts thereof, project execution, erection and commissioning, services, repairs and maintenance, trouble shooting, serving, overhaul, renovation and retrofitting, trial operation, performance guarantee testing undertaken by the company or during any works / during working at BHEL Units/ Offices/ townships and premises/ Project Sites.

(iii) Compensation in respect of each of the victims:

- *In the event of death or **permanent disability** resulting from Loss of both limbs: □10,00,000/- (Rupees Ten Lakhs).*
- *In the event of **other permanent disability**: □**7,00,000/-** (Rupees Seven Lakhs).*

(iv) Permanent Disablement: A disablement that is classified as a permanent total disablement under the proviso to Section 2 (I) of the Employee's Compensation Act, 1923."

d. The contractor will take necessary precautions and due care to protect the material, while in his custody from any damage/loss due to theft or otherwise till the same is taken over by BHEL or customer. The contractor will submit necessary documents for lodging/processing of insurance claim. BHEL will recover the loss from the contractor, in case the damage /loss is due to carelessness / negligence on the part of the contractor. In case of any theft of material under contractor's custody, matter shall be reported to police by the contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL for taking up with insurance. However, this will not relieve the contractor of his contractual obligation for the material in his custody.

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38) TERMINATION OF CONTRACT: BHEL may terminate the contract earlier by giving not less than 30 Days (Thirty Day's) written notice of termination to the successful tenderer, if the successful tenderer does not remedy a failure in performance of their obligation under the contract or without assigning any reason, within thirty days after being notified and without prejudice to the rights of the Company to recover any amount becoming due under this Contract. In such a case, the Contractor shall not be entitled to any compensation thereof. The decision of BHEL about the failure on the part of the Contractor shall be final and binding on the Contractor.

39) TERMINATION OF CONTRACT ON DEATH: Without prejudice to any of the rights or remedies under this contract, if the contractor dies, BHEL shall have the option of terminating the contract without compensation to the contractor's survivors.

40) RECOVERY FROM CONTRACTOR: Whenever under the contract, any sum of money shall be recoverable from or payable by the contractor, the same may be deducted from any sum then due or which at any time thereafter may become due to the contractor under the contract or under any other contract with BHEL or from his security deposit, or the contractor shall pay the claim on demand without any terms & conditions.

41) POST TECHNICAL AUDIT OF WORK AND BILLS: BHEL reserves the right to carry out a post payment audit and technical examination of the work and final bill including all supporting vouchers, abstracts etc. and to enforce recovery of any sums becoming due as a result thereof in the manner provided into the proceeding sub-paragraph provided however, that no such recovery shall be enforced after One Year of passing the final bill.

42) ARBITRATION / CONCILIATION: In the event of any dispute arising between the parties hereafter referred as BHEL and Contractor in respect of or connected with this contract, General & Special terms & conditions of tender, then the same shall be referred to Arbitration and Arbitrator will be nominated by the Head of Administration of BHEL Corp. Office, New Delhi, whose decision shall be final and binding on both the parties. However, any differences or doubt pertaining to meaning/ interpretation of any phrase word used in terms or in the schedule of services, their nature and manner of rendering of such services shall be the excepted matter and be referred to the Head of Administration of BHEL Corp. Office, New Delhi, whose decision shall be the final and binding. The provisions of Arbitration and Conciliation Act, 1996 or any statutory modification and re-enactment thereof will apply to such arbitration provided however, in all matters the venue of proceedings will be Delhi and only Delhi or appropriate Courts will have jurisdiction over the same.

43) CANCELLATION OF CONTRACT IN FULL OR IN PART: BHEL at its sole discretion can terminate the contract at any time during the period of contract, If the Contractor:

1) At any time makes defaults in proceeding with the works with due negligence and continues to do so even after a notice in writing from the BHEL Ltd.; or
2) Commits default in complying with any of the terms and conditions of Contract and does not remedy it or take effective steps to remedy it within 15 days after a notice in writing is given to him in that behalf by the BHEL.; or

3) Fails to yearly performance evaluation of the service provider/contractor by BHEL or third party inspection report or both; or
4) Violates any of the terms and conditions stipulated in the agreement/tender document.

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44) RIGHTS of BHEL: -

1) BHEL reserves the following rights in respect of this contract during the original contract period or its extensions if any, as per the provisions of the contract, without entitling the contractor for any compensation.
2) To terminate the contract or get any part of the work done through other agency or deploy BHEL's own/hired/otherwise arranged resources, at the risk and cost of the contractor after due notice period of two weeks by BHEL in the event of:

(i) Contractor's continued poor progress.

(ii) Withdrawal from or abandonment of the work before completion of the work

(iii) Contractor's inability to progress the work for completion as stipulated in the contact.

(iv) Poor quality work

(v) Insolvency of the Contractor

(vi) Persistent disregard to the instructions of BHEL

(vii) Assignment, transfer, sub-letting of contract without BHEL's written permission

(viii) Non fulfilment of any contractual obligations.

45) BREACH OF CONTRACT, REMEDIES AND TERMINATION: - Following cases shall be considered as terms of breach of contract:

i. Contractor's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to contractor including unexecuted portion of work does not appear to be executable within balance available period considering its performance of execution.
ii. Withdrawal from or abandonment of the work by contractor before completion of the work as per contract.
iii. Non-completion of Work by the Contractor within scheduled completion period as per Contract or as extended from time to time, for the reasons attributable to the contractor.
iv. Termination of Contract on account of any other reason (s) attributable to Contractor. If at any time the Contractor defaults in proceeding with the work with due diligence and continues to do so or commit any default in complying any of the tender terms and conditions even after the notice in writing is given, BHEL may, without prejudice to any other right to remedy which shall have accrued or shall accrue thereafter to BHEL, to terminate the contract by giving 15 days' notice in writing. The notice will be deemed to have been served as and when sent to the address given in the tender.
v. Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL. The Contractor is solely responsible to BHEL for the work awarded to him.
vi. Non-compliance to any contractual condition or any other default attributable to Contractor.

RECOVERY IN CASE OF BREACH OF CONTRACT

In case of breach of contract, 10% of the contract value shall be recovered from the contractor. The recovery shall be made from Security Deposit (if any)/ Retention Money (if any)/ available bills. In case 10% amount is not recovered from these instruments the balance amount shall be recovered from the bills available under any other contract with BHEL unit(s)/Division(s).

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Further, levy of liquidated damages, debarment, termination, de-scoping, short-closure etc., shall be applied as per provisions of contract.

In case of breach of contract, wherever the value of security instruments like Security Deposit / Performance Bank Guarantee available with BHEL against the said contract is at least 10% of the contract value, the same may be encashed. In case the value of the security instruments available is less than 10% of the contract value, the balance amount be recovered from other financial remedies (i.e. available bills of the contractor, retention amount, etc. with BHEL) or legal remedies be pursued. The balance scope shall be got done independently without Risk & Cost of the failed supplier/ contractor. Further, levy of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per provisions of the contract. Accordingly, the tender/ contract terms shall be structured in such a way to ensure recovery of an amount equivalent to 10% of the contract value in case of breach of contract.

G. SPECIAL CONDITIONS OF THE CONTRACT

1) Manpower: The contractor shall deploy adequate manpower including relievers of experienced skilled persons in the relevant field having minimum 3 years' experience in the respective areas i.e. operation & maintenance of BMU (Building Maintenance Unit) roof machines and cleaning of external Façade at BHEL- SADAN Tower to the satisfaction of BHEL at the site in appropriate shift duties. The contractor shall also deploy at site an experienced Site Supervisor/technician having minimum 5 years' experience, handled similar job in high rise buildings/ modern storied buildings. The site supervisor shall be responsible for liaisoning the maintenance activities at site etc. All break-down shall be reported to BHEL immediately and rectified without any loss of time. These personnel deployed shall work 8 hours a day and six days a week basis. However, these personnel deployed by the contractor should be allowed to observe the national holidays. In case of exigency, the contractor has to deploy their services during Sundays without any extra payment. BHEL will not be responsible for any overtime payments to the personnel deployed by the contractor for any reason whatsoever. Duty allocation and roaster control shall be the contractor's responsibility. Exact working hours will be fixed in consultation with officer-in-charge of BHEL. A list of the persons deployed, together with their qualification and experience shall be submitted to BHEL immediately on commencement of the contract. BHEL reserves the right to advise replacement/change the manpower deployed by the contractor, if his service is not found satisfactory. In case the proposed manpower deployed by the contractor is reduced, the monthly charges will also be reduced proportionately. Similarly, the charges for extra deployment would be made as per the minimum wages.
2) The contractor has to provide proper uniform with his organization's name/logo, shoe, raincoat, umbrella and I-card etc. to the manpower deployed at BHEL
3) The rates accepted by the Competent Authority of BHEL shall remain fixed and valid for the entire period of contract except on account of variation due to revision in minimum wages through appropriate Gazette notification issued by the Uttar Pradesh State Government. The taxes will be paid extra as applicable at the time of billing.
4) The contractor shall be liable for indemnifying the BHEL from any liability on account of his employees and/or meeting any Statutory Obligations required under labour Laws of the Central/State Government(s). BHEL will therefore not assume any responsibility thereto.
5) BHEL is not responsible for any injury/death caused to the employees provided by contractor at BHEL. It will be the responsibility of contractor to abide with the all the provisions of the Workmen Compensation Act, 1923 and no compensation, whatsoever shall be paid by BHEL in this regard.
6) The contractor shall ensure that the any major reported fault request is attended to promptly and in any case within 72 Hours from the reporting time and rectification done on priority basis.
7) The Contractor shall also arrange visit of its expert technician/engineer at our site on regular basis (during the contract period) to have update about the functioning of the entire Façade Access System

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(Building Maintenance Unit- 02 Nos) and in case of any fault, should take corrective measures for immediate rectification of defects.

8) In case of any damage to BHEL's Property i.e. Façade DGU's and ACP's for which contractor is accountable, the contractor will be liable to pay the compensation to BHEL as may be advised by BHEL. The contractor shall also take full responsibility and compensate BHEL for any loss/damage/break-down caused to the installations due to negligence of his workers. During maintenance special precaution is to be taken by the vendor to avoid any damage to BHEL Signage Logos installed on Terrace and at 17th Floor.
9) The contractor has to ensure that entire building should always be Neat and Clean and there should not be any accumulation of soaps/ residue from chemicals and any remain of silicon /tapes/stickers and other foreign matters etc. on DGU glass and ACP. The contractor has to ensure cleaning of entire BHEL SADAN building from every side Once in every 50 (Fifty) days. If it is noticed that the installed Façade Access System (Building Maintenance Unit) is not able to clean any area at BHEL-SADAN Tower, the contractor has to make their own additional arrangement for cleaning the uncovered area and cost incurred thereon shall be borne by the contractor.
10) Manpower Requirement: The contractor shall deploy minimum team of 08 (Eight) nos. of Façade Access System Machine Operators-cum-Cleaners including Supervisor/Rescue Supervisor for satisfactory & safe operation of Façade Access System (Building Maintenance Unit). Rescue Supervisor should be deputed to ensure prompt rescue of operators in case of any accident/emergency.
11) The contractor or his/her authorized Technical Supervisor would physically inspect the entire system daily along with other equipments etc. and shall ensure that the same are working as per the accepted norms as applicable to the type of equipments. BHEL shall not be responsible for any lapse in this regard.
12) The contractor shall regularly monitor the work of his team through his Engineer/supervisor, who will visit the BHEL SADAN Tower at least Twice in a Month, in coordination with BHEL Officer-in-charge.
13) A log book to be maintained to record the daily work done as well as the regular maintenance being carried out along with an attendance register at site.
14) The monthly charges are inclusive of all cleaning/maintenance tools and glass cleaning consumables like TASKI R2 & R3, ERGO Tech Scrapper (Make- UNGER), Hand Gloves, Safety Goggles, Yellow & White Duster, Suction Cups, Polyamide Rope (14 mm), Rope Protector, Descender etc or equivalent. The contractor has to ensure that cleaning material being used should be of standard quality as per BIS specification and must comply with environmental legislation as required to clean Façade DGU glass and ACP at BHEL SADAN, Noida.
15) All personnel travelling the cradle shall be equipped with safety belts and helmets, safety ropes etc. The contractor has to be provided required safety items and plastic covers etc. The plastic cover shall be used for protection of the BMU roof machines in the rainy seasons. The Painting on required parts of machines etc. as and when directed by BHEL is also in the scope of contractor at his/her own cost.
16) The contractor shall ensure that all the critical parts/ assemblies/ sub-assemblies/ controls etc. would be checked and replaced before the meantime of their failure. All the parts etc. as required for the upkeep of the systems would be supplied by the contractor during tenure of the contract. OEM
17) The contractor will maintain an inventory of critical spare parts /consumables etc. (at BHEL premises) for the purpose of corrective and preventive maintenance. Make of consumable/replacement item shall be reputed make after due approval of BHEL as per OEM specification.
18) The platforms/cradles along with the operators shall be made available by the contractor as and when required by BHEL for carrying out the maintenance of the Façade ACP and DGU glasses etc.
19) Any other servicing which are not covered but necessary for smooth and trouble-free working of entire BMU System(s) are also included in the scope of work.

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20) All systems/equipment would be operated as per mutually agreed programmers. The contractor should maintain proper entry and upkeep of relevant log books/registers as per statutory obligations in physical and shall also maintain complaints register, and work done/carried out reports to the satisfaction of BHEL. The same can also be maintained in MS Word/ excel sheet format.

21) All the systems/Equipment would be operated and maintained by authorized Skilled personnel of the Contractor. Due to any wrong operation or improper maintenance of any equipments, if any breakdowns occur in the system (s) or damage to the machinery(ies), the contractor has to repair/replace the damage equipment(s) for smooth operation of the systems.

22) After completion of the said contract period, it will be the responsibility of the contractor to depute his existing operational team at least 10 days and depute at least one representative for a minimum period of 30 days to explain about the installed equipment(s)/system(s) to the new contractor/agency.

23) BHEL may ask the contractor to carry out any specific work/ installation of additional equipment's /accessories/up-gradation/modernization/replacement, as per requirement, which is not covered.

24) BHEL at its discretion can ask the contractor to conduct third party inspection at the end of each year of the contract of the equipment maintained by the contractor during the period of the contract. Contractor will be responsible to carry out third party inspection by the vendor/agency/firm of the similar type. The contractor has to submit name of at least 2 firm/Vendor for third party inspection upon submission of which BHEL will decide the name of final vendor for third party inspection. The cost of third-party inspection shall be borne by Contractor.

25) After completion of the contract, if the said work is awarded to another agency/firm/vendor, smooth handing over of entire system be done within 30 days in good working condition to next selected contractor. During the process of Handing Over- Taking Over, if any fault is observed by BHEL/new contractor, the same should be rectified within 30 days period of identification of the issue/defect. If the defect is not rectified within 30 days than BHEL shall be at liberty to deduct 0.5% of the contract value per week or part thereof delay up-to a maximum of further 2 months from contractor running /pending bills/security deposit. Thereafter, BHEL shall be free to get the work done through another agency/firm and payment shall be recovered from contractor balance payments/security deposit and contractor will have no objection to such deeds.

26) **CONTRACTOR'S OBLIGATION:**

a) Contractor shall supervise the Work allotted to him to be carried out by his workforce. The contractor shall visit the site every day to ensure the work is carried out in fast pace for completion within schedule time.

b) Contractor to ensure that the workforce deployed in the premises of BHEL are physically and mentally fit and do not have any criminal record. Such employees should possess requisite skill, proficiency, qualification, experience etc.

c) The workforce deployed by the contractor shall be hail and healthy and should not be suffering from any communicable diseases.

d) BHEL will have no liability whatsoever concerning the persons deployed by the contractor for the purpose. The contractor shall keep the Company indemnified against all losses or damages or liability arising out of or imposed in the course of employment of persons by the contractor.

e) Statutory requirement of the local authority / State Govt. / Central Govt. shall be responsibility of the contractor.

f) The contractor will be solely responsible for any unlawful act of their workforce while on duty. In case of theft or loss of Company's property take place due to the negligence or carelessness of workforce, the contractor will be responsible and shall make good of the same.

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g) The Contractor shall duly comply with all acts, laws, or other statutory rules, regulations, bye-laws applicable or which might be applicable to with regard to the performance of the contract included herein or concerning this Agreement but not limited to Environmental Pollutions Acts, Minimum Wages Act- 1948, Contract Labour (Regulation & Abolition) Act, 1970, Industrial Dispute Act, 1947, Workmen's Compensation Act 1923, Employees' State Insurance Act 1948 (to the extent as may be applicable, if any), Employees' Provident Fund and Misc. Provisions Act, 1952 and the amendments made thereafter to these Acts / Laws and from time to time take such steps as may be deemed necessary in this regard. The Contractor shall keep the Company Indemnified against all penalties, claims and liabilities of every kind under or for any violation of such acts, laws or regulations etc. by him or his workers.

h) In case, while on duty and during the course of engagement in work premises of the Company under this Agreement, if any of the Contractor's workforce suffers with any injury / indisposition due to accident or other natural calamities, the Contractor shall ensure that immediate and adequate medical aid viz., first -aid and subsequent treatment facilities are provided to the person(s) concerned free of cost without fail. In addition, the Contractor shall also be liable for meeting with statutory liabilities like ESI etc. in respect to his workers.

i) The Contractor shall be fully responsible for the timely payment of wages, Allowances, Bonus or any other benefits payable under the aforesaid Acts, Laws and regulations to the workforce engaged by him at the work premises of the Company. Contractor shall also be fully responsible for timely deposit of PF and ESI with the appropriate authority including submission of return of PF & ESI and issue of PF slip issued by the PF Authority. The Company shall not be responsible for these payments or any other liability on this account. The Contractor shall also indemnify and compensate the Company for any liability incurred by the Company, if any, including costs incurred thereon. In that event the nominated officer of the Company shall be entitled to recover the amount so paid, from the contractor, including forfeiture of the Security Deposit; and, if the sum so payable and / the Security Deposit is less than the Company's claim, it shall be lawful for the Company to recover the balance amount as a debt from the Contractor.

j) The Contractor shall indemnify and compensate the Company, if the Company as Principal Employer under the Contract Labour (Regulation and Abolition) Act, 1970 becomes liable to assume any liability towards the workforce engaged by the contractor. In that event, the provisions relating to recover as provided in relevant clauses of the said Act shall be applicable in Toto.

k) The Contractor shall be held responsible for any damage / loss to the work premises /or the properties of the Company (i.e. missing or broken fittings, equipments, furniture etc. and loss of such things) caused due to the negligence of his work force and shall have to replace the same at his own cost. The decision of the Engineer-in-charge shall be final and binding on the Contractor.

l) The contractor shall hand over a copy of all legal and statutory documents and records to BHEL for fulfilling any future requirement with the statutory authority.

m) The contractor shall abide by all the rules / regulations / status imposed by the Govt. or other concerned authorities. The contractor will be responsible for workmen’s compensation & other requirements of local Municipalities / Govt. or any other law regulating bodies

n) Contractor to maintain appropriate records of his employees deployed to carry out the job (s).

o) Contractor to get all his employees insured against all type of risks at his own cost.

p) Contractor to ensure that all precautions are taken for safety of his employees and equipments.

q) In the event of termination of contract for any reason whatsoever, the contractor shall withdraw all his employees from the site of BHEL. In case contractor decides to terminate services of his employees, he should settle all terminal dues including retrenchment compensation.

r) The contractor must comply to all statutory labour law regulations applicable to this contract like minimum wages act, timely payment of wages etc. including taking of insurance cover etc. for

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workers employed for this contract. Any obligation on account of the above will be the liability of the successful tenderer.

s) In case of any objection from any statutory / local authority, the contractor has to liaison with them for smooth progress of work.

t) The Contractor shall ensure proper conduct and behavior of the workforce engaged by him on the site and shall remove with immediate effect, the engagement of such person(s) who does/do not conduct himself / themselves properly or misbehave(s) with the residents of township or the staff of Estate office.

27) **CARE OF BUILDINGS:** Care shall be taken by the contractor to avoid damage to the existing buildings during execution of work. He shall be responsible for repairing all the damages and restoring the same to their original finish at his cost.

28) **QUALITY OF MATERIALS**: All materials supplied by the contractor shall be new. They shall be such design, size and materials as given in BOQ and to satisfactorily function.

29) **INSPECTION OF MATERIALS**: All the materials delivered by the contractor at site shall be inspected and verified by Engineer-in-charge before use.

30) **WORKMANSHIP**: Good workmanship is an essential requirement to be complied with. The entire work shall conform to sound engineering practice. In case of bad workmanship re-work will be done by the contractor on no extra claim.

31) **SUPERVISION OF WORK**: The contractor will deploy sufficient numbers of Supervisors/ Engineers of appropriate qualification and experience to ensure proper execution of work. They will carry out instructions of Engineer-in-charge and other senior officers of BHEL during the progress of work.

32) **POST TECHNICAL AUDIT OF WORK AND BILLS:** BHEL reserves the right to carry out a post payment audit and technical examination of the work and final bill including all supporting vouchers, abstracts etc. and to enforce recovery of any sums becoming due as a result thereof in the manner provided into the proceeding sub-paragraph provided however, that no such recovery shall be enforced after three years of passing the final bill.

33) **DEFECT LIABILITY PERIOD:** The work shall be guaranteed against any inferior quality/ workmanship. The defect liability/guarantee/maintenance period will be for a period of 12 months/one year from the date of actual completion of contract. The full Security Deposit (SD) amount shall be retained for the guarantee/ maintenance period of 12 months. It shall be released after satisfactory carrying out all rectification/ repaired works during defect liability period as informed by the Engineer-in-charge. In case of not attending any rectification/ repairing work by the contractor, the rectification work will be carried out by any outside agency and recovery will be done from the contractor.

34) The bidders are advised to inspect & examine the site and obtain all the necessary information related to the scope of work/ specifications, risk & contingencies involved before submitting their offers. Any queries regarding this tender may be clarified from the Sr. Engineer (HR-Admin./ CAG), on Phone No.- 0120 674 8010 or at e-mail: veer.singh@bhel.in & or from Sr. Manager (HR-ADMIN / CAG) at e-mail: shrikant.verma@bhel.in.

For & on behalf of "BHEL"

Sr Engineer (HR-ADMIN/CAG)

वीर सिंह/Veer Singh
Sr. Engineer (HR-Admin.)/Corporate HR-Admin. (CAG)/Bharat Heavy Electricals Ltd.
25/10th Floor, BHEL Sadan, Plot No. 25, Sector-16A, Noida-201301 (U.P.)

ANNEXURE - C

UN-PRICE BID/BOQ

Validate Print Help

Tender Inviting Authority: GM (CORP ADMIN & ISMG)

Name of Work : Comprehensive Operation and Maintenance Contract for Façade Access System (Building Maintenance Unit- 02 Nos) and Cleaning of External Façade (DGU Glass & Aluminium Composite Panel - ACP Sheets) at BHEL- SADAN, Noida.

NIT No : AA_CAG_BSN_25 - 26_FAS_01 **Dated: 28.05.2025**

Name of the Bidder/ Bidding Firm / Company :		**To be filled By Bidder**

PRICE SCHEDULE

(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevent columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)

NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER	NUMBER		NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER #	TEXT #
S. No.	**Item Description**	**Quantity**	**Units**	**Estimated Rate inclusive of all but excluding GST in Rs. P**	**Duration in Months for initial 02 Years contract period**		**Total Amt. For initial 02 Years contract period inclusive of all but excluding GST in Rs. P**	**5% per month inflation charge applicable during 3rd year inclusive of all but excluding GST in Rs. P**	**Duration in Months for 3rd year of contract period**	**Total Amt. for 3rd Year inclusive of all but excluding GST in Rs. P**	**Total Amt. for 03 Years of Contract Period inclusive of all but excluding GST in Rs. P**	**Applicable GST Amt. @ 18% on total 03 years of contract period Rs. P**	**Total Amt. for 03 Years of Contract Period Inclusive of all including GST in Rs. P**	**TOTAL AMOUNT In Words**
1	**2**	**3**	**4**	**5**	**23**		**26**	**27**	**28**	**29**			**6**	**8**
1	**Comprehensive Operation and Maintenance including Repair & Maintenance, Replacement of Electrical and Mechanical Parts/ Equipment's, accessories items etc. for 02 Nos. Façade Access System (Building Maintenance Unit) i.e Telescopic JIB BMU Max outreach 27.5 Mt and Fixed JIB BMU Max outreach 15.5 Mt, installed at Terrace Floor level.**	1.00	Job	0.00									**0.00**	INR Zero Only
1.1	Telescopic JIB BMU max outreach 27.5 Mt	1.00	No.	68067.00	24		**1633608.00**	**71470.35**	12	**857644.20**	**2491252.20**	448425.40	**2939677.60**	INR Twenty Nine Lakh Thirty Nine Thousand Six Hundred & Seventy Seven and Paise Sixty Only

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कॉर्पोरेट मा.सं.-प्रशासन (सी.एच.ए.)/Corporate HR-Admin. (CAG)
भारत हेवी इलेक्ट्रिकल्स लिमिटेड/Bharat Heavy Electricals Ltd.
दरबारी भवन, प्लॉट संख्या, प्लॉट नं. 25/10th Floor, BHEL Sadan, Plot No. 25
सेक्टर-16ए, नोएडा-201301 (उ.प्र.)/Sector-16A, Noida-201301 (U.P.)

(Seal & Signature of the bidder)

1.2	Fixed JIB BMU max outreach 15.5 Mt	1.00	No.	48806.00	24		**1171344.00**	**51246.30**	12	**614955.60**	**1786299.60**	321533.93	**2107833.53**	INR Twenty One Lakh Seven Thousand Eight Hundred & Thirty Three and Paise Fifty Three Only
2	**Cleaning of Entire BHEL-SADAN External Façade envelop including double height Spider Glazing from inside and outside at GF & FF. External Façade including DGU Glass of area 7500 Sq Mt and Aluminium Composite Panels (ACP) of area 17000 Sq Mt.** **Note:** 1. For Cleaning of External Façade (DGU & ACP Sheets) all the consumables, cleaning material, T&P etc. are included in the scope of work and the consumable/ cleaning materials must be of standard make and conforming to ISI/BIS specifications. 2. Minimum Manpower Deployment Plan for job at Sl No- 1&2 above: - Overall Site Supervisor (Skilled) – 01BMU operator (Skilled) – 02Cradle Operator (Skilled) - 02Spider Man (Skilled)– 01Glass & ACP Cleaner- 02 (Semi-Skilled)Total - 08 Manpower3. Payment for item at sl no-2 above shall be made only on the basis of minimum wages through appropriate Gazette Notification issued by Uttar Pradesh State Government.	24500.00	Sqm	213900.00	36		**7700400.00**	**0.00**	0	**0.00**	**7700400.00**	1386072.00	**9086472.00**	INR Ninety Lakh Eighty Six Thousand Four Hundred & Seventy Two Only

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वरि. प्रशासन (मा. सं.-प्रशा.)/Sr. Engineer (HR-Admin.)
कॉर्पोरेट मा. सं.-प्रशासन (सी.ए.जी)/Corporate HR-Admin. (CAG)
भारत हेवी इलेक्ट्रिकल्स लिमिटेड/Bharat Heavy Electricals Ltd.
दसवीं मंजिल, बीएचईएल सदन, प्लॉट सं. 25/10th Floor, BHEL Sadan, Plot No. 25
सेक्टर-16ए, नोएडा-201301 (उ.प्र.)/Sector-16A, Noida-201301 (U.P.)

Total in Figures													**14133983.13**	INR One Crore Forty One Lakh Thirty Three Thousand ..Only
Quoted Rate in Figures			**Select**	**To be filled by bidder**									**Auto Calculated 0.00**	INR **xxxxx Auto Filled** Only
Quoted Rate in Words		**INR xxxxx Auto Filled xxxxxOnly**												

Note: -

1. % to be quoted by selecting (+/-) in Price Bid/Schedule format (Part-B) only.
2. The Percentage above or below (+/-) shall be used to arrive at rate for each item of BOQ including GST (i.e. Total Quoted in Amt. figures/words).
3. Any deviation by means of changing the estimated rate of an individual item or modification of quantity provided will be treated as non-acceptance of tender terms and bid will be rejected.

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(Seal & Signature of the bidder)

ANNEXURE - D

DECLARATION

I / We, do hereby declare that there is no case with the Police/Court/Regulatory authorities against the proprietor/firm/partner. Also, l/We have not been suspended / delisted / blacklisted by any other Govt. Ministry / Department/Public Sector Undertaking/ Autonomous Body/Financial institution/Court. We also certify, that either our firm or any of the partners are not involved in any scam or disciplinary proceedings settled or pending adjudication

Place:

Date:

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(Seal & Signature of the bidder)

ANNEXURE - E

NO DEVIATION CERTIFICATE

Notwithstanding anything mentioned in our bid, we hereby accept all the terms and conditions of the above tender and there is no deviation in the terms & conditions of tender. We confirm that the offer submitted by is confirming to all the terms and conditions mentioned in the tender document. We hereby undertake and confirm that we have understood the scope of services properly and shall carry out the job as mentioned in this tender.

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(Seal & Signature of the bidder)

ANNEXURE - F

BIDDER'S DETAILS

Name of the Contractor /Party/ Firm	
Name of Representative	
Postal Address	
Phone/ Landline No.	
Mobile No.	
Fax No.	
E-Mail Address	
Web Site Address (If Any)	
Bank details for payment through NEFT/RTGS *	Name of Bank: …… Branch: …… Address: …… …… Account No.: …… IFSC No. …… MICR No.: ……

Note: Submit a cancelled cheque for verification of above bank details.

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(Seal & Signature of the bidder)

ANNEXURE – G

SCORE CARD **Month: -**

Sl. No	Area	Performance Marks	Target	Scores different levels of performance					Actual score for the month
1	**SAFETY**								
	No. of incident involving the Contractor's worker	**10**	0	Nil occurrences	1 occurrence	2 occurrences	3 occurrences	more than 3 occurrence	
				10	8	6	4	2	
2	**ATTENDANCE**								
	% of attendance for compulsory manning positions	10	100%	95 - 100%	85 - 94%	75 - 84%	65 - 74%	Less than 65%	
				10	8	6	4	2	
3	**3 - STAGE TELESCOPIC JIB BMU**								
	Regular, Punctual working & performance	10	100%	95 - 100%	85 - 94%	75 - 84%	65 - 74%	Less than 65%	
				10	8	6	4	2	
4	**FIXED JIB BMU**								
	Regular, Punctual working & performance	10	100%	95 - 100%	85 - 94%	75 - 84%	65 - 74%	Less than 65%	
				10	8	6	4	2	
5	**FAÇADE ACP CLEANING**								
	a Schedule Cleaning Completion as per contract	10	100%	95 - 100%	85 - 94%	75 - 84%	65 - 74%	Less than 65%	
				10	8	6	4	2	
	b BHEL officials cleaning complain	10	100%	within 05 days	within 10 days	within 15 days	within 20 days	within 25 days	
				10	8	6	4	2	
6	**FAÇADE DGU CLEANING**								
	a Schedule Cleaning Completion as per contract	10	100%	95 - 100%	85 - 94%	75 - 84%	65 - 74%	Less than 65%	
				10	8	6	4	2	
	b BHEL officials cleaning complain	10	100%	within 05 days	within 10 days	within 15 days	within 20 days	within 25 days	
				10	8	6	4	2	
7	**ATTENDING ELECTRICAL / MECHANICAL FAULTS**								
	Performance as per contract,	10	Days	within 05 days	within 10 days	within 15 days	within 20 days	within 25 days	
				10	8	6	4	2	
8	**Non-availability of major spares parts**	10	Days	within 05 days	within 10 days	within 15 days	within 20 days	within 25 days	
				10	8	6	4	2	
	TOTAL MARKS	100	100						

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(Seal & Signature of the bidder)

TECHNICAL DATA SHEET

FOR ROOF MOUNTED TWIN TRACK (3 Stage Telescopic Jib) with traction Hoist Four Wire Suspension Cradle, Soft Rope & Pull-in Restrain System.

Work Add: Plot No - 176, IMT Manesar, Gurgaon (Hr.) - 122050
Reg. Add: E-14, Ansal Villas, Satbari, Chattarpur, New Delhi - 110074
CIN: U74950DL2005PTC138561

Tel: +91 - 9560593970
Fax: +91 - 124-4056915
Mail: mail@appletree.co.in
Web: www.appletree.co.in

1. Technical Data – Tele- Series 3 Stage Telescopic Machine on tracks with Fixed mast, Powered Cradle with Soft Rope and pull-in restraints

Project: BHEL, Noida

1.1 General Data

Safe working load	250	kg
Static Mass	~25500	kg
Lifting height, max.	~100	m
Hoisting speed (approx.)	8 to 10	m/min
Jib arm working reach from Centre of pedestal to centre line of cradle	min 13 m; max. 27.5 m	
Number of stages for telescopic mechanism	3	
Type of telescopic mechanism	Hydraulic Cylinder with progressive chain drive	
Rope diameter	8.6	mm
Number of suspension ropes	4	off
Cradle length	3.0	m
Cradle width	0.7	m
Cradle height	1.85	m
Mains power supply	3-phase, 400 V / 50 cycle	

1.2 Electrical Equipment

Electric geared motors:		
Cradle Traction Hoist	2 x 1.8	kW
Traversing	2 x 1.1	kW
Main Slewing	0.37	kW
Telescoping (jib & column)	15.0	kW
Spreader Slewing	0.12	kW
Electric cable installed	5 x 2.5	sq.mm

1.3 Control of Gondola System

Roof carriage

- all movements — by single push buttons, dead man type
- emergency stop — by mushroom push button

Cradle

- all movements — by single push buttons, dead man type
- emergency stop — by mushroom push button

1.4 Applicable Safety Regulations — EN1808

1.5 Factor of Safety of wire ropes — 12. 1 (min criteria) EN1808 Clause 6.7.1

1.6 Make of wire ropes — Mahadev / Usha Martin (or equivalent)

1.7 Façade protection — Soft rubber roller

2. General Description Apple Tree Tele-Series Telescopic Machine

THE SYSTEM

The proposed APPLE TREE Building Maintenance Unit for window cleaning and light maintenance for building facades is a fully automatic machine with telescopic action. All movements are controllable from the roof machine as well as from the cradle.

THE ROOF MACHINE

The 4.15m above terrace floor trolley rigid base frame has four traversing wheels for a safe load distribution to the track rails. Each wheel on either track is equipped with an electrical driven geared motor. Limit switches control and stop the movement when the path end is reached. The machine has a base frame mounted on wheel assemblies designed to run on twin I beam rails which is laid as per the prescribed layout on the floor level. The wheel-assemblies comprise of crab wheels on under each wheel assembly to further aid the machine along web of the I beam track and direct along the laid out route. A rigid column sits above the base frame to support the slew mechanism. Slewing mechanism is assembled above the column on machined flanges. On the mid portion of Slew System the fixed jib system is seated. The whole jib system is arranged into this fixed jib.

THE JIB ARM SYSTEM

The jib arm is formed by sheet metal sheared, bent and welded to offer close manufacturing tolerances for trouble free movement of jib system in three stages. The main jib's bottom is connected to the base of a support structure frame which incorporates the slewing mechanism with well dimensioned slew flanges.

The main jib is mounted with trunnion and hydraulic ram. In the rear of the main jib fixed counted weight mounted. The moving counter weight is placed on rails above main jib and connected to the second jib movement by which the counter weight is made to travel in opposite direction to that of the extension and contraction of telescopic jib.

The telescopic action is by an electrically powered hydraulic power pack and hydraulic cylinder mechanism. The hydraulic ram is mounted on trunnion to move along with the deflection of the jib during extension. Limit switches and a clevis eye system guarantees a safe and reliable telescopic operation under all environmental conditions. While the hydraulic cylinder pushes the first section the other two sections are progressively extended by the employment of chain and sprocket mechanism.

THE SPREADER JIB ARM SYSTEM

The Spreader jib arm is made from formed standard profile. The arm is housed with slewing gear and motorized gear drive to enable positioning of cradle parallel to facade. The either ends of spreader arm provisions are given to suspend the wire ropes which are connected to the cradle through hoisting unit and safety bloc system.

THE CRADLE WINCH

The machine is equipped with self powered cradle. Hoists are fixed on either sides of the cradle through which wire ropes are routed to be wound on the motorized reelers. The hoists are of "ABM" make of appropriate capacity to hoist the safe working load. The hoists climb the suspended ropes up and down with frictional phenomena. The hoist works in conjunction with the safety system not to allow the cradle to tilt beyond workable slope.

THE SUSPENSION ROPES

The suspension wire ropes are made from galvanized iron wire strands in a configuration suitable for hoisting as recommended by the hoist manufacturer. The wire rope has a minimum breaking load capacity of minimum 47.4 kN.

THE CRADLE

The cradle, a walk through double stirrup type, is of tubular construction covered with stainless steel cladding. This will have anti-slip aluminum chequered plate flooring. The cradle stirrups will be steel tubular construction hot-dip galvanized. The cradle will have two ABM 800kg capacity electrical hoist mounted on the cradle. This will have an electrically powered wire winder capable of winding two wire ropes from hoists and safety devices. Safety devices will be mounted on the cradle above the hoist. This will have electrical control panel for full operation of the system by the operators from the cradle. The Two wire winders will provide winding for the wire ropes from the hoists. Two safety devices (slack rope) will protect the system against excessive inclination of the cradle and will hold the cradle in case of failure of main suspension wire ropes. The cradle has the main control panel with enclosure IP54 for full operation of the system by the operators. The safe working load for the cradle will be 250kg. The cradle will be provided with rubber rollers to protect the façade from metal impact, and a trip bar to stop the movement downward if any obstacle. Cradles size is 3500 x 700 x 1850 mm (L x W x H).

The cradle is equipped with Independent Soft Rope (ISR) system to allow the cradle to move sideways and in positive sloped area independent of the previous position of the main suspension rope. Following are the elements of soft rope system.

- Powered soft rope reeler mounted at rear side of cradle
- Soft Rope semi-static kerramental rope of 9 mm diameter 100m
- Rope routing system with lock in position during working
- Karabiners to connect soft rope to façade mounted restraint plates

The cradle also equipped with pull-in restraint system with following elements

- Pull in hand winch mounted on the front bar of cradle (ratchet type)
- Pull in lanyards and restraint lanyards to connect to restraints mounted on façade

ABM Traction Hoist

Power supply:	400 V +/-10%, 3 phase 50Hz
Hoist capacity:	800 kg
Control current	24 Volts
Rope winders:	Motor driven with capacity 150 m
Power Consumption:	5.0 kW
Hoist speed	8.5 m/min.
Ropes:	2 suspension & 2 Safety ropes
Self weight	45 kg/ hoist
Construction:	8.6mm, 4X31 Galvanized
Safe working load	250 kg

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3. Description of Standard Systems Equipment

3.1 General

- All moving parts equipped with sealed and life-time lubricated ball bearings
- High protection for all electrical parts exposed to environmental hazards
- Dead man's control buttons at all control panels
- End positions of all movements are limited by operation limit switches and, if necessary, by additional emergency shutoffs or solid mechanical buffers

3.2 Cradle

- Tubular steel super structure, Galvanized upon framing
- Half board height aluminium panelling
- Four point suspension, two at each cradle end
- 2 load bearing and 2 safety lines
- Cradle trip bar
- Suspension points for safety harnesses
- Non-marking buffer protective rubber rollers
- Wire winders specially designed for long drops with slip clutch system
- Independent soft rope system
- Pull-in restraint system
- Chequered base plate for non slip surface

3.3 Suspension Ropes

- Galvanised, each strand separately
- 5x26 Construction
- Rope ends protected by rope end pods
- Ropes fixed to spreader bar by suspension elements of high quality
- Ropes routed to motorized reelers to store and release

3.4 Jib arm assembly

- Three stages telescopic jib arm
- Rigid box section design
- Guides and rollers are designed with life time operation and bearings
- Motion by hydraulic cylinder and progressive chain drive

3.5 jib head Spreader

- Housed in the fly end of the jib
- Rigid RHS profile
- Slewing mechanism for rotation of cradle

3.6 Roof carriage / machine housing

- Rigid base frame and steel plate/ profile design
- Column with slewing mechanism and provision for housing the jib assy

3.7 Hoisting mechanism

- Traction Hoisting unit of "ABM" make
- Safety bloc preventing out of limit lifting of cradle
- Capacity suitable for building-specific requirements

3.8 Gondola Control Systems

- Mains switch
  Mains switch, key locked at roof car
- Control panel
  Control panel with push buttons for all movements located in cradle

Control panel with push buttons for all movements located at roof car

- Emergency bush-buttons located:
  - In cradle and
  - In roof car

3.9 Safety Items Provided

- Emergency stop at all control panels
- Emergency limit switch for upper cradle working position over-run
- Emergency limit switch for lower cradle working position over-run
- Electromagnetic brake in winch motor (primary brake)
- No-power emergency descent manually controlled
- Slack rope safety device on safety bloc
- Obstruction sensing trip bar for descent motion with limit switch
- PLC + inverter controlled machine
- Main slew limits Mechanical and electrical
- Spreader Slew limits Mechanical and electrical
- Traverse end limits Mechanical and electrical
- Second reduced speed of traverse in corners
- Top and ultimate hoisting limits
- Restraint safety limits during ascending

Control Systems

Each motor is served by a contactor, which is activated by a PLC through an Inverter

Control of all motors by push buttons both from roof carriage as well as from the cradle control panel

In-coming power is routed through an emergency contactor activated by an emergency stop button on each control station, the phase sequence relay and also the cradle ultimate up-position switch.

- **Electric Requirements.**

  - The electrical equipment is designed to be watertight and suitable for Marine environment at hotaired desert climates.
  - Cable glands are provided to ensure sealed passage
  - All hanging or loose cables are provided with cable grips or restrainers or socks to avoid any damage.
  - The equipment is protected against overloads and short-circuits in compliance with the standards in force.
  - A sealed box control box positioned on the cradle / Roof carriage encloses the motor contacts / hydraulic circuits used to operate various movements using push buttons: Lifting, lowering, translation, tilting, etc. as applicable.
  - All the terminals are equipped with reference marks that correspond to the electrical diagram
  - All these buttons are locked by a key prohibiting the use of the appliance by unauthorized persons or simultaneous control from the cradle or a carriage
  - 20m capacity - drum spring winder (cable reeler) is provided on the carriage of BMU with cable end limit switch. Power points are coordincated every 30m once (nominal) to assist the BMU traverse with cable released from reeler
  - An electrical protection stops movement before the cable reaches the end of its run on the drum
  - An IP55 sealed switchgear cabinet shall be mounted on the cradle, and contains a selector switch (for operation between roof installation & cradle), control buttons (UP/DOWN) and an emergency STOP control ("knockout switch") fitted with a key-lock system.
  - Electrical equipment is of the IP55 sealed type. In addition gland packing is provided at all cable penetrations
  - Motors are protected against overloads and short circuits in compliance with current standards (fuses, thermo magnetic shunts). The control and monitoring system are supplied at 24 volts
  - All electrical equipment shall have phase protection
  - The motor control switches are housed in a sealed box mounted on the structure, and associated with the control buttons governing UP/DOWN control
  - All terminals are identified with the same markings as shown on the electrical diagrams

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BMU Description for BHEL Building Noida, NCR				
No	Parameter			Description
1	BMU		Model	ABM Tele-Series
2			Description	Traversing Telescopic BMU with Fixed mast
3	Mode of traverse			By geared drives on either sides of track
4	Hoisting height, m			120
5	No. of Stages (telescopic jib)			3 (one fixed, 3 moving)
6	Track description			Hot dip galvanized rolled steel of grade E350
7	Track Size			254x254x73
8	Foot Span, m			3.0 X 3.0
9	Telescopic Mechanism			Hydraulic ram in conjunction with progressive chain drive mechanism
	Telescoping Speed, m/min		Jib	4
			Column	Not Applicable
7	Maximum outreach, m			27.5
8	Minimum reach, m			12.0
9	Functions		e-hoisting	Traction Hoist in Self Powered cradle
10			e-slewing	Motorized, slew planetory gear ringed rotation
11			e-traversing	Motorized, Parallel geared drive
12			e-spreader	Straight bar type, motorized parallel geared drive
13			e-Luffing	Not Applicable
			e-telescoping	Hydraulic drive in conjuction with progressive chain system
14	BMU length (maximum) in parking, m			20 approx
15	Maximum height of BMU in Working (from terrace + 4.15 roof level), m			4m approx
16	Minimum height of BMU in parking, m			4m approx
17	Hydraulic ram stroke, m			Not Applicable
18	Cradle		Type	Standard 3 metre Self Powered, 2x800 kg capacity cradle
			Size (lxbxh), m & Mass, kg	(3.0x0.70x1.85)
			SWL, kg	250
			Capacity	2 men
			Floor & Panel	5mm aluminum chequered and stainless steel
19	Electrical Communication			Through electric cable of Ho7RNF type
20	Electrical System			Control system supported by PLC & digital inverter for sequential and smooth movements.
21	Main Power Supply			3 phase, 400V, 50Hz, 32A
22	Control Voltage, V			24
23	Wire Rope		Size, dia, mm	8.6 (47.40 kN minimum breaking load)
			Type	5x16 seale, galvanized
	Capacity of Electrical Equipment installed		Qty	2 (all load bearing) & 2 (Safety Lines)
			Hoist, kW	2 x 1.8
			Main Slew, kW	1 x 0.37
			Traverse, kW	2 x 0.75
			Spreader Slew, kW	1 x 0.12
			Hydraulic (jib), kW	Not Applicable
	Speeds		Hoisting, m/min	8 ~ 10
			Main Slewing, m/min	10 (max) at the tip of jib
			Spreader Slewing deg/min	25
			Jib Telescoping, m/min	Not Applicable
			Column Telescoping, m/min	Not Applicable

TECHNICAL DATA SHEET

FOR ROOF MOUNTED TWIN TRACK BMU (FIXED JIB) with traction Hoist Four Wire Suspension Cradle, Soft Rope & Pull-in Restrain System.

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Technical Data – Roof Mounted Twin Track BMU (Fixed Jib) with Fixed mast, Powered Cradle with Soft Rope and pull-in restraints

Project: BHEL, Noida

1.1 General Data

Safe working load	250	kg
Static Mass	~17500	kg
Lifting height, max.	~100	m
Hoisting speed (approx.)	8 to 10	m/min
Jib arm working reach from centre of pedestal to centre line of cradle	15.5m max	
Rope diameter	8.6	mm
Number of suspension ropes	4	off
Cradle length	3.0	m
Cradle width	0.7	m
Cradle height	1.85	m
Mains power supply	3-phase, 400 V / 50 cycle	

1.2 Electrical Equipment

Electric geared motors:

Cradle Traction Hoist	2 x 1.8	kW
Traversing	2 x 0.75	kW
Main Slewing	0.37	kW
Spreader Slewing	0.12	kW
Electric cable installed	5 x 2.5	sq.mm

1.3 Control of Gondola System

Roof carriage

- all movements — by single push buttons, dead man type
- emergency stop — by mushroom push button

Cradle

- all movements — by single push buttons, dead man type
- emergency stop — by mushroom push button

1.4 Applicable Safety Regulations — EN1808

1.5 Factor of Safety of wire ropes — 12: 1 (min criteria) EN1808 Clause 6.7.1

1.6 Make of wire ropes — Usha Martin/Mahadev (or equivalent)

1.7 Façade protection — Soft rubber roller

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2. General Description Apple Tree Fixed Jib Machine

THE SYSTEM

The proposed APPLE TREE Building Maintenance Unit for window cleaning and light maintenance for building facades is a fully automatic machine. All movements are controllable from the roof machine as well as from the cradle.

THE ROOF MACHINE

The 8.3m above terrace floor trolley rigid base frame has four traversing wheels for a safe load distribution to the track rails. Each front wheel is equipped with an electrical driven geared motor. Limit switches control and stop the movement when the path end is reached. The machine has a base frame mounted on wheel assemblies designed to run on twin I beam rails which is laid as per the prescribed layout on the floor level. The wheel-assemblies comprise of crab wheels on under each wheel assembly to further aid the machine along web of the I beam track and direct along the laid out route. The rear side of the base frame is equipped with swinging outriggers to adjust the track gauge whicle negotiating corners. The traversing speed is reduced to half with PLC control at the corners by limit switches on outriggers to reduce the movement of jig at the extreme radius where the cradle is suspended. A rigid column sits above the base frame to support the slew mechanism. Slewing mechanism is assembled above the column on machined flanges. A rigid body is assembled over slewing mechanism to which the jib rear end is connected with bushes and pins.

THE JIB ARM SYSTEM AND BODY

The jib arm is formed by sheet metal sheared and welded to offer close manufacturing tolerances to achieve a geometry intended for Jib configuration. The rear end of jib is connected to the body of the machine which incorporates the slewing mechanism with well dimensioned slew flanges.

The Body is extended to the rear according to the intended stability for placement of counterweight. To rear side bottom of the jib in a dummy jack is placed to level the jib and offer support.

The jib is connected at the 12m from the rear of the jib with male female system with pins for transporting and assembly and after erection at site welded to offer higher joint strength.

THE SPREADER JIB ARM SYSTEM

The Spreader jib arm is made from formed standard profile. The arm is housed with slewing gear and motorized gear drive to enable positioning of cradle parallel to facade. The either ends of spreader arm provisions are given to suspend the wire ropes which are connected to the cradle through hoisting unit and safety bloc system.

THE CRADLE WINCH

The machine is equipped with self powered cradle. Hoists are fixed on either sides of the cradle through which wire ropes are routed to be wound on the motorized reelers. The hoists are of "ABM" make of appropriate capacity to hoist the safe working load. The hoists climb the suspended ropes up and down with frictional phenomena. The hoist works in conjunction with the safety system not to allow the cradle to tilt beyond workable slope.

THE SUSPENSION ROPES

The suspension wire ropes are made from galvanized iron wire strands in a configuration suitable for hoisting as recommended by the hoist manufacturer. The wire rope has a minimum breaking load capacity of minimum 47.4 kN.

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THE CRADLE

The cradle, a walk through double stirrup type, is of tubular construction covered with stainless steel cladding. This will have anti-slip aluminum chequered plate flooring. The cradle stirrups will be steel tubular construction hot-dip galvanized. The cradle will have two ABM 800kg capacity electrical hoist mounted on the cradle. This will have an electrically powered wire winder capable of winding two wire ropes from hoists and safety devices. Safety devices will be mounted on the cradle above the hoist. This will have electrical control panel for full operation of the system by the operators from the cradle. The Two wire winders will provide winding for the wire ropes from the hoists. Two safety devices (slack rope) will protect the system against excessive inclination of the cradle and will hold the cradle in case of failure of main suspension wire ropes. The cradle has the main control panel with enclosure IP54 for full operation of the system by the operators. The safe working load for the cradle will be 250kg. The cradle will be provided with rubber rollers to protect the façade from metal impact, and a trip bar to stop the movement downward if any obstacle. Cradles size is 3500 x 700 x 1850 mm (L x W x H).

The cradle is equipped with Independent Soft Rope (ISR) system to allow the cradle to move sideways and in positive sloped area independent of the previous position of the main suspension rope. Following are the elements of soft rope system.

- Powered soft rope reeler mounted at rear side of cradle
- Soft Rope semi-static Keramental rope of 9 mm diameter 100m
- Rope routing system with lock in position during working
- Karabiners to connect soft rope to façade mounted restraint plates

The cradle also equipped with pull-in restraint system with following elements

- Pull in hand winch mounted on the front bar of cradle (ratchet type)
- Pull in lanyards and restraint lanyards to connect to restraints mounted on façade

ABM Traction Hoist

Power supply:	400 V +/-10%, 3 phase 50Hz
Hoist capacity:	800 kg
Control current	24 Volts
Rope winders:	Motor driven with capacity 150 m
Power Consumption:	5.0 kW
Hoist speed	8.5 m/min.
Ropes:	2 suspension & 2 Safety ropes.
Self weight	45 kg/ hoist
Construction:	8.6mm, 4X31 Galvanized
Safe working load	250 kg

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3. Description of Standard Systems Equipment

3.1 General

- All moving parts equipped with sealed and life-time lubricated ball bearings
- High protection for all electrical parts exposed to environmental hazards
- Dead man's control buttons at all control panels
- End positions of all movements are limited by operation limit switches and, if necessary, by additional emergency shutoffs or solid mechanical buffers

3.2 Cradle

- Tubular steel super structure, Galvanized upon framing
- Full board height stainless steel panelling
- Four point suspension, two at each cradle end
- 2 load bearing and 2 safety lines
- Cradle trip bar
- Suspension points for safety harnesses
- Non-marking buffer protective rubber rollers
- Wire winders specially designed for long drops with slip clutch system
- Independent soft rope system
- Pull-in restraint system
- Chequered base plate for non slip surface

3.3 Suspension Ropes

- Galvanised, each strand separately
- 5x26 Construction
- Rope ends protected by rope end pods
- Ropes fixed to spreader bar by suspension elements of high quality
- Ropes routed to motorized reelers to store and release

3.4 Jib arm assembly

- Three stages telescopic jib arm
- Welded rigid box section design
- Guides and rollers are designed with life time operation and bearings
- Motion by hydraulic cylinder and progressive chain drive

3.5 jib head Spreader

- Housed in the fly end of the jib
- Rigid RHS profile
- Slewing mechanism for rotation of cradle
- Slewing limits Electrical and mechanical

3.6 Roof carriage / machine housing

- Rigid base frame and steel plate/ profile design
- Column with slewing mechanism and provision for housing the jib assy

3.7 Hoisting mechanism

- Traction Hoisting unit of "ABM" make
- Safety bloc preventing out of limit tilting of cradle
- Capacity suitable for building-specific requirements

3.8 Gondola Control Systems

- Mains switch

Mains switch, key locked at roof car

- Control panel
  Control panel with push buttons for all movements located in cradle
  Control panel with push buttons for all movements located at roof car
- Emergency bush-buttons located:
  in cradle and
  in roof car

3.9 Safety Items Provided

- Emergency stop at all control panels
- Emergency limit switch for upper cradle working position over-run
- Emergency limit switch for lower cradle working position over-run
- Electromagnetic brake in traction hoist (primary brake)
- Safety Bloc as secondary device
- No-power emergency descent manually controlled
- Slack rope safety device on safety bloc
- Obstruction sensing trip bar for descent motion with limit switch
- PLC + inverter controlled machine
- Main slew limits Mechanical and electrical
- Spreader Slew limits Mechanical and electrical
- Traverse end limits Mechanical and electrical
- Top and ultimate hoisting limits
- Restraint safety limits during ascending

Control Systems

Each motor is served by a contactor, which is activated by a PLC through an Inverter

Control of all motors by push buttons both from roof carriage as well as from the cradle control panel

In-coming power is routed through an emergency contactor activated by an emergency stop button on each control station, the phase sequence relay and also the cradle ultimate up-position switch.

- **Electric Requirements.**
  - The electrical equipment is designed to be watertight and suitable for Marine environment at hotaired desert climates.
  - Cable glands are provided to ensure sealed passage
  - All hanging or loose cables are provided with cable grips or restrainers or socks to avoid any damage.
  - The equipment is protected against overloads and short-circuits in compliance with the standards in force.
  - A sealed box control box positioned on the cradle / Roof carriage encloses the motor contacts / hydraulic circuits used to operate various movements using push buttons. Lifting, lowering, translation, tilting, etc. as applicable.
  - All the terminals are equipped with reference marks that correspond to the electrical diagram
  - All these buttons are locked by a key prohibiting the use of the appliance by unauthorized persons or simultaneous control from the cradle or a carriage

- 20m capacity - drum spring winder (cable reeler) is provided on the carriage of BMU with cable end limit switch. Power points are coordincated every 30m once (nominal) to assist the BMU traverse with cable released from reeler
- An electrical protection stops movement before the cable reaches the end of its run on the drum
- An IP55 sealed switchgear cabinet shall be mounted on the cradle, and contains a selector switch (for operation between roof installation & cradle), control buttons (UP/DOWN) and an emergency STOP control ("knockout switch") fitted with a key-lock system.
- Electrical equipment is of the IP55 sealed type. In addition gland packing is provided at all cable penetrations
- Motors are protected against overloads and short circuits in compliance with current standards (fuses, thermo magnetic shunts). The control and monitoring system are supplied at 24 volts
- All electrical equipment shall have phase protection
- The motor control switches are housed in a sealed box mounted on the structure, and associated with the control buttons governing UP/DOWN control
- All terminals are identified with the same markings as shown on the electrical diagrams

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No	Parameter		Description
1	BMU	Model	ABM Long reach Series
2		Description	Fixed Jib BMU with Fixed mast
3	Mode of traverse		By geared drives on front side of track
4	Hoisting height, m		120
5	No. of Stages (telescopic jib)		Not Applicable
6	Track description		Hot dip galvanized rolled steel of grade E350
7	Track Size		203x203x60
8	Foot Span, m		2.25 X 2.25
9	Telescopic Mechanism		Not Applicable
	Telescoping Speed, m/min	Jib	Not Applicable
		Column	Not Applicable
7	Maximum outreach, m		15.5
8	Minimum reach, m		15.5
9	Functions	e-hoisting	Traction Hoist in Self Powered cradle
10		e-slewing	Motorized, slew gear ringed rotation
11		e-traversing	Not Applicable
12		e-spreader	Straight bar type
13		e-Luffing	Not Applicable
14	BMU length (maximum) in parking, m		15 approx
15	Maximum height of BMU in Working (from roof level), m		As applicable to building requirements.
16	Minimum height of BMU in parking, m		Not Applicable
17	Hydraulic ram stroke, m		Not Applicable
18	Cradle	Type	Standard 2 metre Self Powerd X500 cradle
		Size (lxbxh), m & Mass, kg	(2.3x0.65x1.85), & 280
		SWL, kg	250
		Capacity	2 men
		Floor	5mm aluminum chequered
19	Electrical Communication		Through electric cable of Ho7RNF type
20	Electrical System		Control system supported by PLC & digital inverter for sequential and smooth movements.
21	Main Power Supply		3 phase, 400V, 50Hz, 32A
22	Control Voltage, V		24
23	Wire Rope	Size, dia, mm	8.4 (47.40 kN minimum breaking load)
		Type	5x16 seale, galvanized
		Qty	2 (all load bearing) & 2 (Safety Lines)
	Capacity of Electrical Equipment installed	Hoist, kW	2 x 1.0
		Main Slew, kW	1 x 0.37
		Traverse, kW	Not Applicable
		Spreader Slew, kW	1 x 0.25
		Hydraulic (jib+column), kW	1 x 10
	Speeds	Hoisting, m/min	8 ~ 10
		Main Slewing, m/min	10 (max) at the tip of jib
		Spreader Slewing deg/min	75
		Jib Telescoping, m/min	4
		Column Telescoping, m/min	Not Applicable

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