

DESIGN, DETAIL ENGINEERING, MANUFACTURE, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 25 KV AC TRACTION (RIGID OHE), 33 KV AUXILIARY SUB STATIONS (ASS), ASSOCIATED CABLING AND SCADA SYSTEMS FOR UNDERGROUND CORRIDORS OF JAIPUR MASS RAPID TRANSPORT SYSTEM PROJECT PHASE-1B

CONTRACT PACKAGE – JP/EW/1B/E2

Part-2
Auxiliary Sub Stations

BILL OF QUANTITIES
(BOQ)

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1. EXPLANATORY NOTES OF BOQ

1.1 General

The item description is intended to briefly describe the work to be performed under that item and to identify associated work. It is not a full and complete description of the work to be performed. The Contractor shall carry out all the work necessary to meet the requirements of the Specification.

1.2 AUXILIARY LINE

The following bills pertain to “Auxiliary Line” for different Sections:

| Bill No. | Section |
|----------|--|
| | Auxiliary Line Chand Pole – Badi Chaupar) |

The Explanatory Notes given hereunder are applicable to the corresponding items in the above Bills.

Item 1.0: 33kV/415V Transformers

The price shall cover the cost of supplying a 33kV/415V, 3 phase transformer, as per specification, complete in all respects, of capacities as mentioned below:

- 2500 kVA
- 3150 kVA

The above specified ratings are for the Air Natural cooling of the transformers.

The price shall also include the cost of necessary arrangements for installing the transformer inside the ASS Room, in a metallic enclosure to be provided along with the transformer, by the contractor, complete with doors, locks, interlocking arrangements etc. The price of Transformer shall be shown against the appropriate sub-item.

The Bidders shall ensure that all equipment, interlocks and interface equipment specified in the tender document are included under this item and detail of equipment etc., if any, other than those listed above, should be explicitly included hereunder, in the tender

Item 2.0: 33kV Switchgear (GIS)

Item 2.1: Protection Circuit Breaker Panel (1250A), with CT and PT, complete

The price shall cover the cost of supplying 33kV GIS Circuit Breakers including Earthing Switch Assembly, as per specification, for indoor installation in the ASS Room, complete in all respects. The price shall also include the cost of

- Current transformer for measurement and protection, as per specifications
- Potential transformer, as per specifications.

The price shall cover the cost of padlocks/interlocks to be provided on these breakers, in accordance with specifications.

Item 2.2: Protection Circuit Breaker Panel (1250A), with CT complete

The price shall cover the cost of supplying 33kV GIS Circuit Breakers including Earthing Switch Assembly, as per specification, for indoor installation in the ASS Room, complete in all respects. The price shall also include the cost of

- Current transformer for measurement and protection, as per specifications

The price shall cover the cost of padlocks/interlocks to be provided on these breakers, in accordance with specifications.

Item 2.3: Transformer Protection Circuit Breaker Panel (630A), with CT complete

The price shall cover the cost of supplying 33kV GIS Circuit Breakers including Earthing Switch Assembly, as per specification, for indoor installation in the ASS Room, complete in all respects. The price shall also include the cost of

- Current transformers for measurement and protection, as per specifications

The price shall cover the cost of padlocks/interlocks to be provided on these breakers, in accordance with specifications.

Item 2.4: Protection Circuit Breaker Panel (630A), with CT and PT, complete

The price shall cover the cost of supplying 33kV GIS Circuit Breakers including Earthing Switch Assembly, as per specification, for indoor installation in the ASS Room, complete in all respects. The price shall also include the cost of

- Current transformer for measurement and protection, as per specifications
- Potential transformer, as per specifications.

The price shall cover the cost of padlocks/interlocks to be provided on these breakers, in accordance with specifications.

Item 2.5: Protection Circuit Breaker Panel (630A), with CT complete

The price shall cover the cost of supplying 33kV GIS Circuit Breakers including Earthing Switch Assembly, as per specification, for indoor installation in the ASS Room, complete in all respects. The price shall also include the cost of

- Current transformer for measurement and protection, as per specifications

The price shall cover the cost of padlocks/interlocks to be provided on these breakers, in accordance with specifications.

Item 2.6: Bus PT Panel

The price shall cover the cost of supplying 33kV Panel with a 33 kV Potential Transformer, as per specification, for being deployed at Loop-coupling ASS's or other locations as per SLD for indoor installation, complete in all respects.

The price shall cover the cost of padlocks/interlocks to be provided on these breakers, in accordance with specifications.

Item 2.7: Measuring and Protection Equipment

Under this item, the price of supplying all equipment, including all control and relay boards along with necessary control switches, indications, relay and meters and all associated components, terminals and fittings, shall be included. The price of current transformers and potential transformers shall not be included under this item and shall be included in the relevant sub-items 2.1 to 2.6.

The price shall essentially include, but not limited to, the following:

- Ammeter with Selector Switch
- Over-current and Earth fault relays, Line differential protection relays and Pilot wire cables for protection of all cables in scope of this contractor (the pilot wire relay shall be Supplied & installed at either end of the adjoining elevated station/Midshaft and underground station similarly the pilot wire between AMS and ASS on either side, are scope of this Tender) , Restricted Earth Fault Protection, Transformer Differential Protection.
- Control and relay panel
- Interfaces with SCADA equipment, including Marshalling box

(All the protection to be as per Para 11 of Chapter 8A of TS)

The Bidders shall ensure that all equipment, relays and interface equipment for achieving the protection arrangement specified in the tender document, are included under this item and detail of equipment etc., if any, other than those listed above, should be explicitly included hereunder, in the tender.

Item 3: Auxiliaries

Item 3.1: Control & monitoring (C&M)

The price shall include the cost of control, monitoring, protection, interlocking and automatic sequencing of the 33 kV installations in the ASS.

The price shall also include the cost of a separate Marshalling panel, to accommodate the control output relays and other field Signal terminations.

Item 3.2 : Aux. Feeding (DC-UPS, Battery, Battery Chargers, Protection)

The price shall cover the cost of supplying 1 set of Battery and 2 sets of Battery chargers, as per specifications. The price shall also include the cost of automatic change-over system for the battery chargers and all other protective devices.

Item 3.3: Cables from ASS equipments to RTU

The price shall cover the cost of supplying all control and monitoring cables, required for interconnection of the equipment's at the ASS to RTU. The prices of all connectors, terminals, clamps etc. required for the connections with RTU be included in this item.

Item 3.4: Cables from Switching Station equipments to RTU

The price shall cover the cost of supplying all C&M (SCADA) cables from ASS equipment/ ETS connected to RTU & pilot wire cables etc for ASS works. Control and monitoring cables, required for interconnection of the equipment's at the Switching Station. to RTU. The prices of all connectors, terminals, clamps etc. required for the connections with RTU be included in this item.

Item 3.5: All other Equipments

The price shall cover all other equipments required to make the 110 V DC and Low voltage Auxiliary AC Power Supply System complete and fit to the deliver 110 V DC and Low voltage Auxiliary AC Power Supply to the equipments located in the ASS, as well as to equipments located in Switching Stations, as required under Specifications.

Item 3.6 : Safety Equipment

The price shall cover the cost of supplying all safety equipment, as per specification/statutory regulations, in the ASS room. The indicative list of Safety equipment to be provided is as follows:-

- Fire protection equipment, such as fire buckets, sand buckets, portable fire extinguishers, wall-mounted or wheel-type fire extinguishers etc.
- Caution and warning notices
- First Aid charts and First Aid boxes
- Tool Board with safety tools
- Keyboard, Shock treatment Chart, Hand gloves, Stretchers
- Insulation mat for 33 kV HV panels, transformers, ACDB, DCDB, chargers.
- Any other statutory requirement as per IE/ CEA rules.

Fire detection and hydrant system for the room is not to be considered as it is included in station buildings works.

Item 4 : Wiring

Item 4.1.1: 33 kV Cable and Connections

The price shall include the cost of supplying all medium voltage (33kV) cables , as per specifications from one ASS to the next ASS (to form ring main Auxiliary Network), from one corridor to another for interconnection of 33kV supply and inside

the ASS and all Cables for the Underground Section, . The price shall also include the cost of all necessary termination and jointing kit to make all connections, inside the ASS, from one ASS to the next ASS and so on, interlocking and also from the AMS to the nearest ASS, as per design. The price shall also include all the necessary termination and jointing kit including trefoil clamps, Bonding kits, SVL etc wherever required to make all connections.

Note : The Unit rate for this item shall be for 1 km of 33 kV cables, consisting of 3 single core cables and the terminations/ jointing required for all the 3 cores.

Item 4.1.2: 415V Cable and connection

The price shall include the cost of supply low voltage and control & monitoring cables as per specification, for laying inside the ASS & from nearest ASS, and along the alignment (at grade or viaduct/tunnel) in the cable ducts/cable trenches for the portion of work executed by this contractor.

The price shall also include all the necessary termination and jointing kit make the required connection.

Item 5: Earthing

The price shall cover the cost of providing the necessary earthing materials as per specification (see para 3.3.8 of chapter-8 TS) for

- Laying an Earth bus inside the ASS Room.
- Separately connecting the transformer neutral to the earth Station in accordance with specification.
- Connecting the metallic parts of equipment inside the ASS Room to the Earth bus (double earthing).
- Connecting the Earth bus inside the ASS Room to station earth, as required.

The price shall cover all necessary materials to provide an effective earthing system, as per specifications.

Item 6(a): Erection (other than 33kV Network Cable)

The price shall include the cost of

- foundations for transformers, panels etc as necessary
- erection, of all ASS equipments in each ASS's covered in the respective Bill
- Erection, including jointing and termination of all 33 kV cables and LT Control cable for the 33 kV inside each ASS's.

Item 6(b): Erection of 33kV Cables

The price shall include the cost of erection including jointing and termination of all 33 kV cables and LT Control cable from AMS right up to the ASS, and for 33kV Network in between the ASS's.

Item 7: Testing and Commissioning

The price shall include the cost of testing and commissioning, as per employers requirement of the entire Auxiliary Network ASS equipment and systems, in all ASS's and in between the ASS's.

Item 8: Manning of Commissioned ASS

The Contractor shall, if required by the Employer, provide skilled supervisors / skilled workers / unskilled workers in the ASS's / AMS already commissioned and handed over to the Employer, for manning the installations, before commencement of the Revenue operation of the line. The staff team deployed at the ASS's / AMS shall be thoroughly conversant and competent to operate the various switchgear and systems and shall be able to provide auxiliary power, if so desired by the Employer, to other Agencies working in the Station area or elsewhere and also to provide power shut-downs of the commissioned systems, if so directed by the Employer. The all-inclusive man-day charges shall be included against the relevant sub-item under this Item. For measurement purposes, a period of 8 hours of deployment of one staff will be considered as 1 man-day.

The all-inclusive man-day charges included herein shall take into consideration the minimum wages to be paid by the Contractor to the employers, as prescribed by the Ministry of Labour, State Government and/or Central Government, provisions of Minimum Wages Acts and other statutory provisions. The Contractor shall indemnify the JMRC by providing a suitable.

Item 9: Emergency Tripping System (ETS)

Contractor shall provide Emergency Tripping System to achieve an electrical tripping scheme to de-energize the OCS section during emergency condition. The supply and erection of ETS, cables and any other material to complete the work will be included in the price against this item. However the SCADA work including the supply and erection of the RTU/PLC will be done by other contractor as specified elsewhere in the contract.

ETS consists of ETS Boxes, ETS Cable. ETS boxes shall be provided at the end of each platform, station control room & cross passages in tunnel.

Note: ETS Cable shall comply with the requirement of NPA-130 and shall be capable of withstanding fire upto 950°C for 3 hrs.

The bidder shall inspect the site for understanding the scope of work before quoting the price and the price offered shall take in to account all contingencies.

Item 10: Modification to the existing Station

Item 10.1: At Chand Pole

The price shall cover all the items required for modification works as per clause 2.1 of chapter 8 part A

Item 11: SCADA Works of ROCS & ASS

Item 11.1: RTU for Underground ASS works:

The price shall include the cost of supplying the RTU, needed for the control, monitoring , protection and automatic sequences of the ASS at underground stations. The RTU shall be located in ASS room.

The price shall also include the cost of communication cables for linking RTU to TER or intermediate switch and earthing connection from MET to RTU.

Item 11.2: RTU for switching room

The price shall include the cost of supplying the RTU, needed for the control, monitoring , protection and automatic sequences of the switching station at underground stations. The RTU shall be located in traction switching station room.

The price shall also include the cost of OFC communication cables for linking RTU to TER or intermediate switch and earthing connection from MET to RTU.

Item 11.3: Testing & commissioning of SCADA system for ASS & ROCS.

The price shall include the cost of testing and commissioning, as per Employer's Requirements and Specifications, the entire C&M equipment, systems and Software, at ASS & SSP room.

Item 12: Installation, Testing and Commissioning of SCADA System at OCC, Mansarovar Depot

The price shall include the cost of installation, testing and commissioning of all SCADA equipments, as per Employer's Requirements and Specifications, the entire C&M equipment, systems and Software, at OCC for complete integration of controlled stations.

Item 13: Furniture for SSP room.

The price shall include the cost of supplying the desk and chairs, as per specifications at the SSP room.

Note that the Contractor will have to interface for the design and materials to be used.

Item 14: AMC cost for Line equipments

After completion of DLP, JMRC may enter into Annual Maintenance Contract upto a maximum period of 8 years as a supplementary agreement to be drawn at the option of JMRC with the bidder. The bidder shall quote the price for 1st year (after DLP) in the relevant price schedule. In case AMC period is extended for more than one year, the bidder shall be eligible for a price escalation @5% per annum for each year, after 1st year of AMC. Before commencement of AMC, the bidder shall submit a bank guarantee equal to 10% of the AMC charges as applicable and valid upto one month beyond the AMC period. The BG shall be released after completion of AMC.

The bidder shall provide 24X7 sufficient technical staff at Jaipur which is capable of attending SCADA faults. The faults shall not be allowed to persist so as to affect the normal train operation.

1.3 General Requirement

1.3.1 Training of Employer's staff

This item shall cover the Training of Employer's staff as specified in the chapter 6 of TS of Employer's requirement. The total man-weeks included therein shall be as follows:-

| Item | Nos. |
|-----------------------|------|
| Off-shore (Man-weeks) | 03 |
| In India (Man-weeks) | 05 |

It shall essentially include, but not limited to:

- Training plan
- Training tools and staff wages
- Training documentation

The price shall also include the cost of the training documents implementing as well as advises after the contract.

The price shall not include the travelling and accommodation cost of trainees.

1.3.2 Maintenance & Operations manuals

This item shall cover the Maintenance & Operations manuals as specified in the chapter-11 of GS & chapter 6 of TS of Employer's requirement

The Manuals shall include all Operations and Maintenance Manuals pertaining to all equipment/ systems which have been used/ deployed in the various sections of the corridor:-

The Manuals is meant to essentially include, but not limited to:

- Operation manuals
- Maintenance manuals, drawings and procedures

The price shall also include the Maintenance & Operations documents implementing as well as documents originals, copies, and electronic files cost.

The documents shall be supplied in the prescribed number of copies.

Interactive Manual

The contractor shall submit in English language Interactive Electronic Technical Manuals (IETMs) to manage technical documentation. IETMs shall compress volumes of text into DVDs which may include sound and video, and shall allow readers to locate needed information rapidly than in paper manuals.

This IETM shall follow the structure and format of a printed book, with indexes and table of contents that are hyperlinked into the content of the document. All figures, tables and section references shall be linked.

The data to be stored in a relational database, obtaining benefits of data integrity and removal of data redundancy. Relationships in the content that are presented as hyperlinks, are mapped directly to relations in the database scheme. The IETM shall be able to change the content dynamically based on users navigation and input through the content; the content may now be user specific.

1.3.3 Maintenance supervision

This item shall cover the Maintenance supervision for defect liability period as specified in the chapter 12 of GS of Employer's requirement.

The role of the relevant and experienced engineers will be to ensure that the maintenance during this period is carried out by the employer's staff properly and that the warranty/ guaranty obligations of the Contractor remain undiluted.

For this purpose the Contractor shall provide a Maintenance Supervision Organisation, consisting of 2 teams deployed as follows or as mutually agreed between the Employer and the Contractor.

Each Team shall, at the minimum, contain 1 experienced Engineer, 2 Senior Supervisors and 3 skilled staff. The rates to be quoted for each team months.

Contractor shall comply all labour laws irrespective of rates quoted.

1.3.4 Integrated testing & commissioning

These items shall cover the integrated testing & commissioning as specified in the chapter 4 of TS of Employer's requirement.

As explained in Chapter 4 of TS, the integrated testing and commissioning shall be performed for each section of the corridor, after the first 15 days of operation, during which the various actuation and operation situations (putting into service, normal actuation, failure tripping etc) shall be simulated.

The Integrated Testing & Commissioning shall essentially include, but not limited to:

- Integrated testing & commissioning plan
- Tools, instruments, tackles, and documents required;
- Providing attendance to the Employer's Representative, including during inspection by statutory Authorities, Ministry of Railways and Commissioner of Railway safety.
- Carrying out the appropriate integrated testing & commissioning functions.

1.3.5 Deleted

Spare parts

The price under this item shall include the cost of supplying spare parts, as listed in the chapter 7 of TS of the employer's requirements. **The price list of unit item of spares as per Chapter 7 of TS shall be included in the financial proposal.**

If however the Bidders feels that some more items or more quantities are required for the proper operation and maintenance of the installations supplied and erected by him, for a period of at least 2 years commencing from the expiry of the defect liability period, the Bidders shall in that case include such items in his bid and quote them in this very item. All conductor supplied as spare shall be in robust steel drums.

1.3.7 As Built Drawings

The price, under this item, shall include the cost of supplying at least one original and five copies of As-Built drawings related to the complete scope of work.

Under this item, the contractor shall prepare the following drawings:

- As built drawings depicting the completed works that have been certified as complete.
- Shop drawings containing information related to the permanent works.
- Working drawings containing the information related to the temporary works depicting the construction of permanent works.

1.3.8 Other drawings

The price shall include the cost of the other drawings to be prepared by the Bidders as specified in Technical Specification (TS) Volume 4 included in the scope.

BID TOTAL FOR ASS WORKS & GENERAL REQUIREMENT UNDER THE CONTRACT (PART 2)

(THIS DOCUMENT IS TO BE PREPARED AND COMPLETED BY THE BIDDERS)

In accordance with the accompanying and signed form of tender, we (the Bidders) offer to supply, install, test, commission, and remedy at any defects of the whole said works, in conformity with the said drawings, particular specifications, conditions of contracts and other contract documents of JP/EW/1B/E2 for the following sums:

| S.No. | DESCRIPTION | Total brought from above Bills | |
|--|---|--------------------------------|------------------|
| | | Indian Rupees | Foreign Currency |
| 1. | Auxiliary Line (Chand pole – Badi chaupar | | |
| 2. | GENERAL REQUIREMENT | | |
| Grand Total for Auxiliary | | | |
| SUM IN WORDS, OF INDIAN RUPEES | | | |
| | | | |
| SUM IN WORDS, OF FOREIGN CURRENCY | | | |
| | | | |

The Bills of Quantities consists of following Bills, as follows:

1. Auxiliary Line – (Chand pole to badi chaupar)

| Auxiliary Line – (Chand Pole – Badi Chaupar) | | | | | | | | Country of Origin |
|--|---|------|------|---------------|---------------------|---------------|---------------------|-------------------|
| Item No. | Work Description | Unit | Qty. | Unit Rate | | Total | | |
| | | | | Indian Rupees | In Foreign Currency | Indian Rupees | In Foreign Currency | |
| 1.0 | 33 kV / 415 V Transformers | | | | | | | |
| 1.1 | 33 kV / 415 V Transformers, 2500 kVA | Set | NIL | | | | | |
| 1.2 | 33 kV / 415 V Transformers, 3150 kVA | Set | 04 | | | | | |
| 2.0 | 33 KV GIS SWITCHGEAR | | | | | | | |
| 2.1 | Protection Circuit Breaker (1250A) panels, with CT and PT, complete | Set | 08 | | | | | |
| 2.2 | Protection Circuit Breaker (1250A) panels, with CT, complete | Set | 2 | | | | | |
| 2.3 | Transformer Protection Circuit Breaker (630A) Panels, with CT, complete | Set | 4 | | | | | |
| 2.4 | Protection Circuit Breaker (630A) panels, with CT and PT, complete | Set | 0 | | | | | |
| 2.5 | Protection Circuit Breaker (630A) panels, with CT, complete | Set | 0 | | | | | |
| 2.6 | Bus PT Panel | Set | 2 | | | | | |
| 2.7 | Measuring and Protection Equipment(Each ASS's) | Set | 4 | | | | | |
| | | | | | | | | |

| | | | | | | | | |
|----------|---|-----|-------|--|--|--|--|--|
| 3.0 | AUXILIARIES | | | | | | | |
| 3.1 | Control and monitoring | Set | 4 | | | | | |
| 3.2 | Auxiliary Feeding (DC-UPS, Battery, Battery Chargers, Protection) | Set | 4 | | | | | |
| 3.3 | Cables from ASS equipments to RTU | Lot | 4 | | | | | |
| 3.4 | Cables from SSP equipments to RTU | Lot | 1 | | | | | |
| 3.5 | All other Equipments | Set | 4 | | | | | |
| 3.6 | Safety Equipment | Set | 4 | | | | | |
| | | | | | | | | |
| 4.0 | WIRING | | | | | | | |
| 4.1.1 | 33 kV Cables and connections | | | | | | | |
| 4.1.1 a) | 33 kV Cables (with 400 sq mm copper) and connections (FRLS-OH) | km | 6 | | | | | |
| 4.1.1 b) | 33 kV Cables (with 95 sq mm Copper) and connections (FRLS-OH) | km | 0.080 | | | | | |
| 4.1.1 c) | 33 kV Cables (with 400 sq mm Copper) and connections (FRLS) | km | 0 | | | | | |
| 4.1.2 | 415 V Cables and connections | Set | 4 | | | | | |
| | | | | | | | | |
| 5.0 | EARTHING | | | | | | | |
| 5.1 | Earth bus inside the ASS | Set | 4 | | | | | |
| 5.2 | Earthing Connections | Set | 4 | | | | | |
| | | | | | | | | |

| | | | | | | | | |
|------|---|-------|-----|--|--|--|--|--|
| 6.0 | Erection | | | | | | | |
| 6.a | Erection of (other than 33kV Network cables) in one ASS's | Set | 4 | | | | | |
| 6.b | Erection of 33kV Network Cables | Km | 6 | | | | | |
| 7.0 | Testing and Commissioning (4 ASS's) | Lot | 1 | | | | | |
| | | | | | | | | |
| 8.0 | MANNING OF COMMISSIONED ASS's | | | | | | | |
| 8.1 | Skilled Supervisor | M-day | 60 | | | | | |
| 8.2 | Skilled Worker | M-day | 900 | | | | | |
| 8.3 | Unskilled Worker | M-day | 900 | | | | | |
| | | | | | | | | |
| 9.0 | Emergency Tripping System | Set | 20 | | | | | |
| | | | | | | | | |
| 10 | Modification to the existing Station | | | | | | | |
| 10.1 | At Chand Pole as per clause 2.1 of TS chapter 8A | Lot | 1 | | | | | |
| | | | | | | | | |

| | | | | | | | | |
|------|--|-----|---|--|--|--|--|--|
| 11 | SCADA works of ROCS & ASS combined | | | | | | | |
| 11.1 | RTU for underground ASS works | No | 4 | | | | | |
| 11.2 | RTU for underground Switching Stations | No | 1 | | | | | |
| 11.3 | Testing & commissioning of SCADA system for ASS & ROCS | Lot | 5 | | | | | |
| | | | | | | | | |
| 12 | Testing & commissioning of SCADA System at OCC, Mansarovar Depot as per Chapter 8D clause no 11.1 | Lot | 1 | | | | | |
| 13 | Furniture for SSP room (clause no 3.5.1 of TS- ROCS) | Set | 1 | | | | | |
| 14 | AMC cost for all equipments under SCADA as per TS | Lot | 1 | | | | | |
| | Total Amount | | | | | | | |

| BILL NO. GENERAL REQUIREMENT | | | | | | | | Country of Origin |
|---------------------------------------|---|------------|-----|---------------|---------------------|---------------|---------------------|-------------------|
| WORK DESCRIPTION | WORK DESCRIPTION | UNIT | Qty | Unit Rate | | Total | | |
| | | | | Indian Rupees | In Foreign Currency | Indian Rupees | In Foreign Currency | |
| 1.0 | Training of Employer's staff | | | | | | | |
| | Off-Shore (Man Weeks) | M-W | 3 | | | | | |
| | In India (Man Weeks) | M-W | 5 | | | | | |
| 2.0 | Maintenance & Operations manuals (consisting of one original and five copies), to be supplied after 3 months of the vendor approval of major equipment. | Set | 1 | | | | | |
| 3.0 | Maintenance supervision as per clause 1.3.3 of BOQ (Man Month of each team) | Team month | 24 | | | | | |
| 4.0 | Integrated testing & commissioning | Set | 1 | | | | | |
| 5.0 | Spare Parts (The price list of unit item of spares as per Chapter 7 of TS is enclosed.) | Set | 1 | | | | | |
| 6.0 | As Built Drawings (One original and five copies) for complete scope under the contract. | Set | 1 | | | | | |
| TOTAL BILL GENERAL REQUIREMENT | | | | | | | | |

