ECL
Eastern Coalfields Limited

ईस्टर्न कोलफील्ड्स लिमिटेड
EASTERN COALFIELDS LIMITED
कोल इंडिया लिमिटेड की एक अनुषंगी
(A Subsidiary of Coal India Limited)
भारत सरकार का एक उपक्रम
(A Govt of India Undertaking)

NIT No.: ECL/HQ/GM(C)/EOI/33/e-Tender/445 **Date: 01.08.2024**

PRE-NIT NOTICE

Eastern Coalfields Limited (ECL) intends to invite e-Tender for the following works through e-Procurement portal of CIL (https://coalindiatenders.nic.in) detailed as under:

Description of work	Estimated Cost of Work (Including GST) (In ₹)	Period of Completion (In Days)
"Design, engineering, construction and commissioning of Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OC Project, Bankola Area, ECL on turnkey basis and Maintenance of the plant and machinary for five years."	**2500.69 Lakhs**	**Total contract period: 2365 days (540 days + 1825 days)** **a) Construction of Plant including trial run, PGT & Commissioning: 540 days** **Comprehensive Maintenance Period: 1825 days**

1. A Pre-NIT meeting will be held with the prospective bidders for discussion on draft Tender Document and Bill of Quantity for finalisation of the same in respect of above-mentioned work.

2. Complete set of draft Tender Document and Bill of Quantity, which are for pre-NIT purpose only, will be available on the e-procurement portal of CIL (https://coalindiatenders.nic.in) from 02.08.2024 (05:00 PM). The information shall also be available on Central Public Procurement Portal (https://eprocure.gov.in/cppp).

3. In order to download draft documents and upload suggestions, the bidders have to get themselves registered online on the e-Procurement portal of CIL/Subsidiary (https://coalindiatenders.nic.in) with valid Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and

which can be traced up to the chain of trust to the Root Certificate of CCA. The online Registration of the Bidders on the portal will be free of cost and one-time activity only. The registration should be in the name of bidder, whereas DSC holder may be either bidder himself or his duly authorized person. The bidder is one whose name will appear as bidder in the e-Procurement Portal.

4. ECL intends to invite feedback/suggestions from the prospective bidders on the draft Tender Document and Bill of Quantity. Prospective bidders are requested to study the draft documents carefully and upload their suggestions in .pdf format in the "SUGGESTION DOCS" folder provided in the portal. **No offer / EMD will be accepted against this Pre-NIT Notice.** Separate regular tenders will be floated by ECL after finalization of Tender Document and Bill of Quantity.

5. Time schedule for Pre-NIT meeting is as below:

Sl No	Event list	Date (DD:MM:YYYY)	Time (HH:MM)
1	EOI publishing date in CIL portal	02.08.2024	17.00 hrs
2	Document download start date	02.08.2024	17.00 hrs
3	Document download end date	22.08.2024	17.00 hrs
4	Uploading suggestion online start date (to be read as Bid submission start date as per the portal language)	02.08.2024	17.00 hrs
5	Uploading suggestion online end date (to be read as Bid submission end date as per the portal language)	22.08.2024	17.00 hrs
6	Suggestions opening date	24.08.2024	12.00 hrs
7	Pre-NIT Meeting date	At 11:00 Hrs on 27.08.2024 in D (F) Conference Hall (2nd Floor), Technical Building, ECL-HQ, Sanctoria	

6. The dates indicated for different activities like document download, bid submission start/End date, bid opening dates are only indicative to fulfil the tender portal requirements and not for bidding. However, the prospective bidders can upload their feedback/suggestions online with their DSC on the e-Procurement portal of CIL (https://coalindiatenders.gov.in) after getting themselves registered/enrolled on the portal from 02.08.2024 (05.00 PM) up to 22.08.2024 (05.00 PM).

7. The feedback/suggestions received shall be opened on 24.08.2024 (12.00 AM) and a Pre - NIT meeting is scheduled to be held in D (F) Conference Hall (2nd Floor), Technical Building, ECL-HQ. The date and timing of the meeting is 11:00 Hrs / 27.08.2024.

However, prospective bidders may also attend the said Pre-NIT meeting through Video Conferencing at the same date and time using the following link: -

https://railtel.webex.com/railtel/j.php?MTID=m23eec7b5ff1509bff3a3c2ac97733a05

Prospective bidders are requested to depute their authorized representatives (who is competent to discuss on the draft NITs, technical documents and other terms & conditions) on the scheduled date & time.

8. The feedback/suggestions received from bidders vis-à-vis various provisions of the draft Tender Document and Bill of Quantity will be deliberated and suggestions acceptable to ECL may be incorporated in the final document, subject to acceptance by ECL, before call of Tender which shall be floated separately at a later date for submission of on-line bidding from the bidders. ECL reserves its right to accept/reject any suggestion of prospective bidders and take its own view in framing the final document as per need and policies in vogue.

Note: Submission of feedback/suggestions or attending the Pre-NIT meeting is not mandatory for participation in the bidding process. However, this is to facilitate the deliberations upon improvement in the draft document.

General Manager (Civil)-HOD, ECL HQ

Note No. #1

Attachment:Tender Document Vol-II 29122021.pdf

सीएमपीडीआई
Cmpdi
A Mini Ratna Company

TENDER DOCUMENT
FOR
DESIGN, ENGINEERING, CONSTRUCTION AND COMMISSIONING
OF
EXCAVATION WORKSHOP & E&M WORKSHOP
AT
NAKRAKONDA-KUMARDIHI-B OPENCAST PROJECT
VOLUME – II (TECHNICAL)

EASTERN COALFIELDS LIMITED

DECEMBER, 2021

E & M DIVISION

Central Mine Planning and Design Institute Ltd.

(A Subsidiary of Coal India Ltd.)

Gondwana Place, Kanke Road,

Ranchi – 834031 (Jharkhand)

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CONTENT

CHAPTER – 1

PREAMBLE

1.1 Introduction

Eastern Coalfields Limited is in the process of opening up an opencast mine named Nakrakonda-Kumardihi-B Opencast Project at the site of two underground colliery units, i.e, Nakrakonda colliery and Kumardihi-B colliery. The mine is having a production capacity of 3.0 MTY. Various heavy earth moving and mining equipments are proposed to be deployed in the mine for production of coal. An Excavation workshop and E&M workshop have been envisaged near the mine entry for carrying out various repair and maintenance activities of the HEMM as well as the field equipment and modification/addition of facilities in the Existing Store Complex.

The present tender document envisages design, engineering, construction, supply, erection, commissioning, trial run and handing over of Excavation workshop and E&M workshop at the project and modification/addition of facilities in the Existing Store Complex, to be followed by five-year maintenance period during DLP. The proposed Excavation workshop will cater to the needs of repair and maintenance of dumper, dozer, drill, shovel and other auxiliary equipment. The proposed E&M workshop will carter to the needs of repair and maintenance of E&M items, like pumps, electrical machinery, light motor vehicles, etc. The existing store complex adjacent to the E&M workshop shall cater to the purpose of storage of various types of spares and consumables.

The tender document also covers all the associated sub-systems like EOT cranes, dumper washing system, dozer washing system, lubrication system, compressed air system, power supply, internal and external illumination, ventilation, firefighting, etc.

It may be noted that this is a brief description but does not cover all the aspects of tender, which are covered in Other Volumes as well as in subsequent chapters.

This tender document is being issued in three volumes

- Vol – I : General & Commercial terms and conditions
- Vol – II : Text , specifications & drawings
- Vol—III : Pricing Format

1.2 Location

Revised Nakrakonda geological block falls in the district of Burdwan of West Bengal state and is located between latitudes 23°39'44'' to 23°41'55'' and longitudes 87°16'16'' to 87°18'47''. The total area of the block is about 8.70 sq. km and is included in the Survey of India Topo Sheet No. 73 M/6 (RF 1:50,000).

The Nakrakonda block is easily accessible both by road and rail. Pandaveshwar and Ukhra are the nearest railway stations on Andal-Sainthia chord line of Eastern Railway which runs along west (and also marks the western limit) of the block. The area is also linked with G.T. Road via Raniganj-Suri Road via Ukhra-Madhaiganj Road.

1.3 Accessibility and Communication

The Nakrakonda block is ideally located and is about 50 km away from Asansol and 25 km from Raniganj by Road. Ukhra and Pandaveshwar (both approachable by metal roads) are the nearest railway stations on Andal-Sainthia chord line of Eastern Railway which runs along west (and also marks the western limit) of the block being only about 5 km to the north and south respectively. The area is also linked with G.T. Road via Raniganj-Suri Road (at Punjabi More) and Ukhra-Madhaiganj Road (at Andal More).

The state capital at Kolkata is about 200 km from the block. The nearest airport is Kolkata.

1.4 Climate

The area is situated on the Tropic of Cancer and has tropical climate. The temperature rises steadily from 25°C in January to 28°C in February, 34°C in March to 37°C in April and thereafter it falls steadily. Due to occurrence of 'Kalbaisakhi', a cyclonic storm forms occasionally during April to June, temperature falls. The temperature is more or less constant from June till November due to monsoon. The difference in day and night temperature during December is 14°C to 10°C. The average rainfall is around 1180mm, the major part of which precipitates during June to October.

1.5 General

In case of any contradiction amongst these parts/ sections of the Bidding Documents, the Owner should be contacted for clarification. Also where there are discrepancies in text and drawings, the data given in the text is to be followed. All the equipment and facilities are to be supplied by the successful bidder within the estimated time period. All equipment/ systems shall be designed, fabricated and selected as per relevant Indian standard/ international standards and up to date engineering practices and necessary inspections / test certificates shall be submitted along with equipment supply to certify the quality and genuineness of critical components and capacity and other technical parameters of the equipment/ systems.

1.6 VOLUME-III (PRICING FORMAT)

The pricing format should be properly filled furnished in volume – III (Excel format). The Bidders will quote their bids as per the format described in Volume - III in separate excel sheet.

The Price bid in Excel format under different heads and/ subheads will be downloaded by the bidder and they will quote for all items/heads/subheads on this excel file as per instruction. Thereafter, the bidder will upload the same Excel file during bid submission. The price bid of bidder will have no condition. The price bid which is incomplete and not submitted as per Instruction given (and also online) will be rejected. Any alteration / modification in the Excel format may lead to rejection of bid.

1.7 Drawings

Volume-II of the tender document consists of drawings like, location plan, layout plan, plan/elevation/sectional view of the shops, schematic drawings, single line electrical drawings etc. The dimensions/parameters indicated in these drawings are indicative only and may vary during detail engineering as per system and design requirements; these are provided as guideline for estimation only.

Further, the bidders are requested to visit the site and assess for themselves the expected nature of sub-soil conditions before bidding. If any information is available, the area office may help the bidder in such assessment. However, the ECL does not bind itself toward providing such information to the potential bidders.

1.8 The bidders are requested to visit the site thoroughly for participating in the tender.

Further the bidder may please note that any item required for successful completion of the project and not specifically mentioned in the document are in the scope of this tender.

1.10 Also it is to be noted that after commission of the project, the bidder is responsible for 5 years maintenance of all the sub-systems of the workshop after construction and handing over under the clause of defect liability as detailed in Volume I.

This document forming part of the contract are to be treated as mutually explanatory of one another and in case of discrepancy between schedule of quantity and/or drawing the following order of preference shall be observed.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

- Description in bill of quantities of work
- Particular specification and special conditions, if any.
- Drawings
- General Specifications
- BIS specifications.

In the event of varying or conflicting provision in any of the documents forming part of the contract, the Accepting Authority decision / clarification shall hold well with regard to the intention of the document or contract as the case may be.

Any error in description , quantity and rate in bill of quantities or any omission there from shall not vitiate the contract or release the contractor from discharging his obligations under the contract including execution of work according to the approved drawings and specifications forming the part of the contract document.

CHAPTER - 2

GENERAL SYSTEM DESCRIPTION

2.1. Introduction

With the opening of a new opencast project at Nakrakonda-Kumardihi-B, requirement of repair and maintenance facilities for various machineries deployed in the mine will arise. Hence it has been proposed to construct a new Excavation & E&M workshop to carter to the repair and maintenance needs of the HEMM fleet and other machineries and modification/addition of facilities in the Existing Store Complex. These workshops shall be located near the mine entry point as shown in the location plan (*Drg no. HQ/E&M/301845*).

2.2. System Facility

The proposed workshops at Nakrakonda-Kumardihi-B opencast project of Eastern Coalfields Limited shall be having the following facilities.

a) Excavation Workshop,

b) E&M Workshop and

c) Modification/ addition of facilities in the Existing Store Complex (Excluding Civil construction of sheds/office)

2.2.1 The major shops/facilities proposed in these segments are the following:

SL. NO.	PARTICULARS
	EXCAVATION WORKSHOP
1	HEMM Repair Shop including Sub Assembly Repair shops and Office
2	Sub-Station
3	Dumper Parking Pavement
4	Dozer Parking Pavement
5	Scrap yard
6	Erection yard
7	Dumper Washing Station
8	Pump Houses for Fire Hydrant System, Dumper/Dozer Washing, etc.
9	UG sump
10	Over Head Tank
11	Dozer Washing Station
12	ETP
13	Security Post
14	Time & Security Office

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

SL. NO.	PARTICULARS
	E&M WORKSHOP
1	E&M Repair Shop and its office
2	LMV Repair Shop
3	E&M Store Shed
4	Scrap yard
5	Hard Stand
6	Canteen
7	LMV/Scooter parking Pavement
8	Security Post
	MODIFICATION/ ADDITION OF FACILITIES IN THE EXISTING STORE COMPLEX AS DESCRIBED IN THE CORRESPONDING CHAPTERS
1	Ventilation System
2	Fire-Fighting System
3	EoT Crane (5/1T)
4	Electrical Systems
	ROADS
1	Road for Dozer Movement
2	Road for Dumper Movement
3	LMV Roads at Excavation Workshop
4	LMV Roads at E&M Workshop
	DVELOPMENT WORK
1	Site Development (includes levelling and storm water drains)
2	Water supply distribution & Sewerage System
3	Culvert
4	Boundary Wall 2.1m at Excavation Workshop & E&M Workshop
5	Boundary Wall 1.5m at Excavation Workshop
6	Gates
7	Lighting Mast
8	Arboriculture

All other facility/activity as per process requirement such as levelling/dressing, soil exploration, plantation, landscaping, EOT cranes, Lubrication System, Fire-fighting system, Ventilation System, Dumper Washing System, Compressed Air system etc. as elaborated in the Mechanical, Electrical and Civil scope of work of the present document or necessary towards fulfilment of process requirement.

CHAPTER – 3
SCOPE OF SUPPLY & WORKS
GENERAL

3.0 Scope of supply and works

3.1 General

The scope of work under this tender shall include the following:

- Program schedule submission.
- Detailed survey.
- Soil investigation including soil resistivity test.
- Planning, design, engineering, submission of drawings and design calculations including all working manuals, getting approval of drawings and designs, record of Drawings.
- Setting Out.
- Pre-construction anti-termite treatment.
- Activities related to existing facilities as detailed in this document
- Levelling of site including clearing of jungles, vegetation, debris etc.
- Execution of all civil work including infrastructural facilities.
- All supply and works for manufacture, shop fabrication, assembly, testing, packing, transportation to site, insurance, delivery to site, receipt, unloading, handling, storage at site, fabrication at site, installation and erection of all plant and machinery (structural, mechanical and electrical) and other allied auxiliary facilities such as EOT crane, compressed air system, ventilation system, lubrication system, fire-fighting system, Washing System, etc.
- Testing, commissioning and start-up.
- Taking Over
- Maintenance of plant and machinery for five years Defect Liability Period (DLP)
- Training of employer staff

This being a turn-key work, all items of works needed for completion of the job in all respects and successful operation of the plant shall be deemed to be covered in the Scope of Work whether specifically mentioned herein or not.

Due consideration shall be given for economy, architecture and functional utilities. The tender drawings of this NIT indicate minimum functional and architectural requirements. The successful bidder has to comply with these requirements and submit detail drawings for Employer's approval.

The equipment and works mentioned hereinafter to be read in conjunction with preamble, system description, and technical specification are indicative and not limited to the description and/or list given.

3.2 Battery Limit

The proposed facilities are indicated in the general layout plan bearing drawing no. HQ/E&M/301846 and modification/ addition of facilities in the Existing Store Complex bearing drawing no. HQ/E&M/301850.

The contractor shall be responsible for design & engineering, construction, supply, erection, commissioning and execution of all components of the entire scope of works and services as detailed herein and elsewhere in the tender document. The battery limit for these services shall be taken as the concerned area bounded by proposed boundary wall where the proposed facilities are to come up as shown in the layout drawing as well as the adjacent areas, at least upto a distance of 10m from the proposed workshop boundary wall or such other areas as required for successful completion and functioning of the facilities.

3.3 Scope of Supply

a) Equipment, accessories, tools & tackles, facilities and spare parts.
b) Specification of mechanical system, civil structural and electrical equipment are given in the following sub-sections.

3.4 Scope of Works and Services

a) The scope of work covers all the related civil and structural works, transportation, insurance, storage at site, erection and commissioning, performance tests, detailed engineering, PAT & FAT and handing over of plants and includes but not limited to the following:

- Design & engineering of all mechanical, electrical, civil and structural work.
- Erection and commissioning of all the plant and equipment. Supervision at site and inspection and testing.
- Performance and guarantee tests, final acceptance.
- Training of Plant personnel.
- Any other works/services not mentioned but required for the completion and commissioning of the plant.
- Guarantee/Defect liability: The contractor shall warrant that the equipment will be new and in accordance with the contract documents and be free from

defects in material, design, manufacture and workmanship for a period of sixty (60) calendar months commencing immediately upon the taking over as elaborated in volume-I of the tender document.

b) All the items and works specified in this document and any other equipment and work found necessary but omitted is deemed to have been covered in the scope of supply and works in the tender without any increase in the contract price.

c) Obtaining approvals from Weights and Measure Department is the responsibility of the bidder.

d) Air, water and noise levels shall be within the permissive limits as specified in the bid document. Additional requirement and stipulation by State/ Central Pollution Control Board, if any, on the subject shall also be applicable.

3.5 Adherence to Indian Standards

a) All the works including designs, drawings, construction, fabrication, testing, erection, etc. shall be done strictly as per Indian Standards. In absence of Indian standards, International standards like British, American, German or Russian may be used. A copy of the standard used shall be furnished along with the concerned drawing /document during approval.

b) The technical parameters to be furnished are subject to scrutiny/ approval at the detailed design stage which may undergo minor changes keeping in view the system requirement and various codes of practices/ regulation by the statutory bodies. This is also true for drawings. The parameters not specifically mentioned in the bid document shall be decided at the time of detailed engineering subject to owner's approval.

3.6 Discrepancies in contract documents and adjustments thereof

This document forming part of the contract are to be treated as mutually explanatory of one another and in case of discrepancy between schedule of quantity and/or drawing the following order of preference shall be observed.

- Description in bill of quantities of work
- Particular specification and special conditions, if any.
- Drawings
- General Specifications
- BIS specifications.

In the event of varying or conflicting provision in any of the documents forming part of the contract, the Accepting Authority decision / clarification shall hold well with regard to the intention of the document or contract as the case may be.

Any error in description, quantity and rate in bill of quantities or any omission there from shall not vitiate the contract or release the contractor from discharging his obligations under the contract including execution of work according to the approved drawings and specifications forming the part of the contract document.

3.7 Format of Language/Units

The language of all documents shall be in English. Units of measurement in the documents, on the drawings, and the submissions shall be in S.I. / Metric Units.

3.8 Details of Works and Services

a) Program schedule submission

As soon as practicable, after the acceptance of this tender, the contractor shall submit to the engineer for his approval a program showing the order of procedure and methods in which he proposes to carry out the work. The contractor whenever required by the engineer or his representative shall furnish these information/particulars in writing regarding the contractor's arrangement for carrying out work and mobilization of the constructional plant and equipment that the contractor intends to use as the case may be for completion of contract. The submission to and approval by the engineer or his representative of such program or the furnishing of such particulars shall not relieve the contractor of any of his duties or responsibilities under the contract. The contractor shall submit monthly progress report to the engineer in duplicate by 5th day of every month showing status of supply of equipment, design and drawing submission progress, status of civil and structural execution at site along with detailed program of the next month and revised/updated PERT chart submitted earlier.

b) Detailed survey:

Scope of work under this head of the contract envisages detailed survey, soil investigation, preparation & submission of report & approval of the same as detailed afterwards in this document.

c) Soil investigation including soil resistivity test

No soil data has been made available in this document. The tenderer is required to inspect and examine the site and its surroundings and satisfy himself as to the nature of the ground and the soil & the availability and suitability of their requirements before bidding.

d) Planning, design, engineering, submission of drawings and design calculations including all working manuals, getting approval of drawings and designs, record of drawings:

i) Elaboration and furnishing of system design/ drawing, based on actual parameters of equipment to be supplied. The system design as proposed in the system description shall form the basis of this elaboration.

ii) Preparation and furnishing of all relevant detailed engineering drawings based on elaborated system design drawing duly approved by consultant in writing. This includes fabrication, assembly, installation and erection drawings.

iii) Furnishing of detail design calculations in support of different design and equipment parameters.

iv) Furnishing of equipment specification supported by manufacturer's illustrative pamphlets and literature.

v) Furnishing of operational, maintenance and spare parts manual supported by the illustrative pamphlet and literature of manufacturers.

vi) All approved drawings and documents shall be supplied as elaborated in the following sections of this document.

vii) All drawings shall comply with current Indian Standard specifications and shall be sufficiently detailed with dimensions and shall be clear and legible.

- **Design & Engineering shall also include the following:**

  Design of service buildings and sheds, auxiliary buildings, roads, culverts, pavements, drains, O/H water tanks and U/G reservoirs, gates, boundary walls, scrap yards, water line, compressed air line, hydrant pipes, ramps, settling tanks for dumper/dozer washing, ETP and other civil and structural works based on specifications and tentative layout drawings furnished in this tender document.

  Design, supply, erection, commissioning, testing and trial run of mechanical systems with all equipment and accessories viz. EOT crane, fire hydrant system, lubrication system, compressed air system, dumper/dozer washing system, ventilation system, pumps for drinking water, industrial water and fire-fighting, settling tanks, ETP, etc. including all related civil and electrical works based on the technical specifications and tentative lay out and system drawings furnished with this tender document.

  The layout plan and design of the shops and other facilities will be submitted to the department by the successful bidder for owner's approval. The department can ask for alteration/modification of the same to suit the specific departmental requirement as per scope of work and structural safety of the work and the contractor shall not make any extra claim on that account.

- **Design of works:**

  The contractor shall be entirely responsible for the detailed design of the works including civil, process, structural, mechanical and electrical designs for the duties specified and to achieve the quality standard specified earlier, to the entire satisfaction of the department.

  Design standards shall accord with the best modern practices and shall facilitate satisfactory operation, inspection, maintenance and lubrication of the works. The process, the plant or any item of equipment may be of the contractor's standard design, provided that it is generally in accordance with the specification in intent and purpose.

- **Reference for design:**

  For design work, the contractor shall follow the latest editions of relevant Indian Standard Specifications and codes of practices by the Bureau of Indian Standards, guidelines of other Govt. agencies. Standard texts/documents and reference books may be followed with the permission of the employer. In case of any contradiction, the decision of the employer shall be final.

- **Process Drawing:**

  Within one month of the date of acceptance of the tender, the contractor shall submit to the department General Arrangement (GA) drawings. These documents shall incorporate the provisions of the bid document including that of the tender drawings therein. On scrutiny, the employer may suggest modifications in these drawings which has to be incorporated in the revised drawing. These drawings shall be approved and intimated to the contractor. The list of the drawing to be submitted by the contractor is given below. This list may be revised / extended if necessary, during the progress of work.

  i) Site plan with finished contours.

  ii) General arrangement (GA) drawing of proposed shops and allied facilities on site plans with finished contours, showing all structures.

  iii) Layout plan and cross section of drains, boundary wall/fencing, roads and pavements.

  iv) Drawing showing General Arrangement and working of all the electrical and mechanical systems in the shop.

  v) Electrical cable diagrams and instrumentation drawings.

  vi) Any other design/ drawing as desired by the Employer

- **Structural Designs / Detailed Drawings:**

  Within one month of the date of approval of the General Arrangement (GA) drawings, the contractor shall submit sets of the detailed structural designs and construction drawings for the work. The detailed drawings shall include the following:

  (i) Detailed dimensions and locations of all civil components, openings, plinths, fixings, fittings, flanges, mountings, steps, ladders etc.

  (ii) Detailed dimensions and exact locations of all other items of plants including mechanical & electrical items.

  (iii) Architectural & structural drawings for all civil structures.

  (iv) Detailed drawings of electrical panels, distribution boards etc.

  (v) Details of internal and external surface finishing, protective coatings and lining.

  (vi) Detailed electrical diagrams, cable runs, lighting arrangements, instrumentation and power points.

  (vii) Detailed working drawings to proceed with the civil construction work.

  (viii) Any other design/ drawing as desired by the Employer or as per requirement either expressed elsewhere in this document or otherwise.

- **Construction Drawings:**

  After preliminary approval, one set of design and drawing shall be returned to the contractor, who shall submit copies of corrected design and drawing for final approval. After final approval, copy of approved design and drawing shall be returned to the contractor who shall within 10 (ten) days time submit copies of such approved design/drawings to the department.

- **Preparation and Submission of Operation & Maintenance Manual**

  The scope of contract shall include the preparation and submission of Operation & Maintenance Manual prior to plant commissioning. The manual shall cover the following aspects:

a) Equipment details, operational instructions & maintenance procedures (Instruction Manual).

b) Plant start-up, commissioning, normal operation, emergency operation steps.

The contractor shall deliver to the Engineer-in-charge copies of draft operation and maintenance manuals for the plant equipment prior to its delivery to site. The manuals shall fully and clearly set out the contractor's own recommendations and instructions for the satisfactory operation and maintenance of the plant or equipment. The text or accompanying drawings shall in addition show the electrical wiring, handling and

erection instructions. Draft manual shall, during the testing and commissioning of the works, be carefully checked by the contractor and updated and modified during the testing and commissioning period to ensure that it is fully descriptive and applicable to the final process plant as installed and as found to be have under operational conditions. No section of the works will be certified by the Engineer-in-charge as complete, unless this requirement has been met, and the plant is put to satisfactory trial run. The draft manual shall be in English and/or Hindi and may include manufacturer's standard literature but the contractor shall fully supplement the literature by his own descriptive text explanations and drawings.

Copies of the finally approved manual for the plant shall be submitted to the Engineer-in-charge prior to the commencement of the maintenance period. This should be securely bound in A-4 sized loose leaf binders, clearly titled, indexed and cross referenced. The final manual shall incorporate instructions, recommendations, and advice for the operation of the entire process covering all the conditions. If during the operation period, the Engineer-in-charge finds that the manual requires modification or enlargement as a result of subsequent operational and maintenance experience in the works, the contractor shall provide approved modifications for each manual.

The manual shall include a checklist for mechanical and electrical plants, procedures for their smooth operation and maintenance.

- **Record of Drawings:**

The Contractor shall furnish on completion of the work and handing over the same to the department, sets of white print plans mounted on cloth, showing the working detail of the several components, units of the plant and equipment, including civil works (i.e. building etc.), installed and erected, together with a descriptive specification for the daily working, operation and maintenance. The original cloth tracings of the above completion plans shall also be handed over to the department for record. The record drawings shall be handed over to the Engineer-in-charge within 6 (six) months of the date of the handing over of the plant.

Further Detail on Design Engineering including preparation, submission and approval procedure of drawings/documents have been deliberated in clause no. 3.8.1.

e) Setting out

The tenderer shall be responsible for the true and proper setting out of the works relating to original points, lines and levels of reference given by the Engineer in writing

and for the correctness (subject to above mentioned) of the position, levels, dimensions and alignment of all necessary instruments, appliances and labour in connection therewith.

f) Pre-construction anti-termite treatment

Pre-construction anti-termite treatment of soil in foundation and floors should be carried out as per the technical requirement and/or as recommended by soil expert in the soil test report.

g) Levelling of site including clearing of jungles, other vegetations, debris, Dismantling of existing structures etc.

The tenderers are required to personally inspect the site of construction to get themselves acquainted with the site condition. Scope of work includes all necessary site preparation including clearing of vegetation, debris etc. Leveling, grading and dressing required for the proper drainage of the whole battery limit shall have to be done within the scope of this work.

h) Execution of all civil and structural work including infrastructural facilities -

The Scope of work under this head shall include all related civil works/activities for facilities listed in chapter-4 of the present document. The scope of work shall also include the following:

- Service walk-way & Ladders for different Crane Girders and Gantry Girders
- Plinth protection & garland drains
- Water Supply System (Drinking & Industrial), Drainage & Sanitation.
- Sewage, Surface Drainage & Pollution Control Arrangements.
- Drainage Arrangement
- Landscaping & Arboriculture
- Other Works - All other works as required for successful operation of the shops and its allied facilities

The Detail specifications of the above have been elaborated in chapter-8.

i) Erection and Commissioning

All supply and works for manufacture, shop fabrication, assembly, testing, packing, transportation to site, insurance, delivery to site, receipt, unloading, handling, storage at site, fabrication at site, installation and erection of all plant and machinery (mechanical and electrical) and other allied auxiliary facilities such as EOT crane, dumper washing system, lubrication system, compressed air system, ventilation system, used oil disposal system, electrical system, illumination, etc. including the following:

- Erection & commissioning of all the major shops, sheds and utility buildings.

- Erection & commissioning of all mechanical systems, like EOT cranes, fire-fighting system, bulk bay lubrication and burnt oil disposal system, compressed air system, dumper washing system, ventilation system, etc. along with their electricals.

j) Obligation to provide documentation

The contractor shall, as an integral part of the contract, provide detailed documentation and working drawings of the process and the equipment to be supplied by him within the specified periods and assist in checking the design calculations, other information or data relating to problems arising from the design or supply of the process or the mechanical and electrical equipment. The contractor shall supply all the documentation and drawings asked for or implied in this section or elsewhere in the specification. Approval of design, drawings, calculations or equipment supplied by the contractor shall not relieve the contractor from any of his contractual responsibilities or obligations if any rectification or replacement is felt necessary at a later stage.

k) Testing, Commissioning and start-up:

Detailed procedure of testing

Detail procedures of testing of all the items as applicable shall be submitted to the employer for approval before performance tests.

Test Certificates/ Test curves/ data to be submitted

- Materials and components test certificate.
- Performance test results and characteristics curves of E.O.T. cranes, fans, drive motors, pumps, compressors etc.
- Non –destructive test report.
- Reports and certificates of each test.
- Type test and routine test certificates.
- Technical data of all drive motors.
- Technical data of all control panels.

l) Taking over

As elaborated in “General Terms and Conditions” of Volume-I (Commercial).

m) Maintenance of plant and machinery for five year Defect Liability Period (DLP)

For this contract the DLP is five years which will start from the date of taking over of the plant. During this entire period the contractor shall maintain all plant and machinery (P&M), provide all required spare parts for the P&M, trouble shoot as indicated below and guarantee the design, workmanship and performance for all bought out items as detailed in subsequent clauses of this document.

- **Trouble shooting during the Defect Liability Period**

The contractor shall ensure proper working of all mechanical and electrical, controls, safety and protective devices, in presence of the Engineer-in-Charge and the same should be duly recorded. Even after satisfactory commissioning and start-up, the contractor shall be wholly responsible for all trouble-shooting including all maintenance of plant and equipment during the whole of five year defect liability period as further elaborated in "General Terms and Conditions" of Volume-I (Commercial).

- **Plant Guarantees**

  The Contractor shall stand the guarantees as given in the under mentioned clauses:

- **Manufacturer's Guarantees**

  The manufacturer's guarantee for design, workmanship and performance for all bought out items shall be made available to the employer and shall be valid for the entire Defect Liability Period.

  In the event of failure of any particular equipment which fails more than three times during this guarantee period as mentioned in clause below, the contractor shall replace that equipment at his own cost. Manufacturer's/Contractor's guarantee as mentioned above, for such replaced equipment shall also be made available to the employer and should be kept at least for one year from the date of last replacement and till the end of Defect Liability Period, or whichever is later.

- **Performance Guarantees**

  The Contractor shall give guarantee run for a period of five years from the date of successful commissioning for the shop and associated works against design, defective materials, workmanship and performance quality. Any defects found in workmanship, materials or performance of the shop and associated works shall be made good by the contractor at his own cost within the time specified by the Engineer-in-charge.

  For this purpose, the security deposit furnished by the contractor, as per general conditions of contract shall be retained till the completion of the guarantee period as stated above.

n) Training of employer staff:

During this start-up, commissioning and operation period the contractor shall train the employer's staff (both on-job and/or class room as desired by the Engineer-in-charge) in the operation and maintenance practice for the shop and its allied facilities.

3.8.1 DESIGN DRAWING & DETAILED ENGINEERING

Broadly all the dimensions as given in NIT document/drawings are to be followed for bidding purpose. In case of conflicting or varying provisions in the NIT Text vis-à-vis NIT drawings, the provisions made in the Text shall be guiding. These dimensions are indicative & may require changes during detail design.

3.8.1.1 Preparation

All drawings shall be prepared in accordance with the provision of latest Indian Standards.

All drawings should be prepared on AutoCAD in standard format

All drawings shall be sufficiently detailed and dimensioned to help in speedy construction, fabrication and erection of structures.

Wherever, any structure is presented in more than one sheet of drawings, same scale and notations shall be used in all the sheets for linking the drawings with each other.

All modifications made in structure during various stages of construction should be duly incorporated in working drawings.

Bar bending schedule, detailed material list and specification of works shall be prepared / detailed.

Working drawing shall also include general arrangement drawings showing plans at different levels with sectional elevations.

Separate detailed drawing shall be prepared for inserts and anchor bolts including their fixing details.

The design drawings associated with steel structure should show the force in the members, complete details of all members, joints, gusset plates, welding, riveting, bolting, etc. The drawings should also show the weight of each assembly/sub-assembly as far as possible.

In addition to design drawings, fabrication drawings shall also to be prepared, showing item-wise details, erection units, materials list, details of fasteners with assembly, etc.

3.8.1.2 SUBMISSION/APPROVAL

3.8.1.2.1 Submission of Documents

All required documents including design calculations, drawings and other documents have to be submitted in hard copies as detailed hereunder. However, depending on necessity, the employer may permit submission of these documents in soft copies as well for scrutiny. The methodology of such soft copy submission has also been deliberated below.

Submittals from contractor have been classified in five categories. The details are provided in the following table. The documents shall be submitted as per the schedule furnished in the form of the PERT diagram during agreement.

Table 1

CATEGORY	TYPE OF DOCUMENTS	ACTION BY OWNER/ CONSULTANT OF OWNER
APPROVAL (A)	All Survey Drawings All GA/Layout drawings All System drawings for civil/stuctural/mechanical/electrical All construction/detail civil/ stuctural/mechanical/electrical drawings etc.	For scrutiny. Approval shall be communicated to contractor if found in order.
ACCEPTANCE (C)	Soil Report Laboratory Test Report Design Basis Report PERT Diagram etc. including detail schedule for drawing submission	For scrutiny. Acceptance shall be communicated to contractor if found in order to proceed with subsequent activities.
REFERENCE (R)	Detail Design Calculation System/Equipment/Other designs Any report/document not specifically mentioned in this Table	For scrutiny. If felt necessary, comments to be communicated to contractor
INFORMATION (I)	Mix Design Fabrication Drawings Bar bending Schedule Bill of quantities etc. Operation & Maintenance Manual Instruction Manual Spare parts Catalogue	For information. If felt necessary, shall be scrutinized and comments communicated to contractor.
AS-BUILT (B)	As built Drawing	For Final information

A. Hard copy submission:

i) All required documents including design calculations, drawings and other documents as per requirement are to be submitted in hard copies

as detailed hereunder.

Table 2

Category	No. of copies			
	For initial Scrutiny as per requirement	For final scrutiny as per requirement	Post Approval/ Acceptance	Total required copies
(1)	(2)	(3)	(4)	(5) (2 or 3+4)
A	2	2	4	6
C	2	2	0	2
R	2	2	0	2
I	3	3	0	3
B	6			

ii) On submission of drawings/documents on standard size sheet in hard copies by contractor, the same shall be scrutinised by the owner/its consultant. If they are found in order, the same will be approved and the contractor shall be accordingly conveyed for submission of additional copies as per Table 2. If any revision is required, the contractor shall revise the same, and submit copies as deliberated in the same table for further scrutiny.

iii) Detail design calculations shall include STAAD input file, analysis of force/stress in the structure along with the source (except BIS codes) from where data have been taken. Photocopies of such data shall be submitted along with the design.

iv) In addition, contractor shall also submit soft copies of all above drawings/documents including STAAD input files, excel files with formula etc. Soft copies of the survey plan, General Layout drawings as well as all As-built drawings shall have to be submitted in both .pdf and AutoCAD format. Additionally, if the owner/its consultant requires any of the other system/construction drawings in AutoCAD format, the contractor shall submit the same. For other documents, soft copies in the relevant software format may also have to be provided by the contractor as per owner requirement. The As-built drawings in .pdf format as well as in in AutoCAD format shall be submitted in a CD. None of the soft copies shall be restrictive in nature.

v) The soft copies can be either mailed to the owner (or its consultant if asked by the owner or both) or submitted in storage devices like CD.

B. Soft copy submission:

i) It has been clarified earlier that depending on situation, the owner may permit the contractor to submit all required documents including design calculations, drawings and other documents in soft copies as detailed hereunder.

ii) Contractor shall submit soft copies of all 4 categories of above drawings/documents as detailed in Table 1, including STAAD input files, excel files with formula etc.

iii) Soft copies of the survey plan, General Layout drawings as well as all As-built drawings shall have to be submitted in both .pdf and AutoCAD format. Additionally, if the owner/its consultant requires any of the other system/construction drawings in AutoCAD format, the contractor shall submit the same. For other documents, soft copies in the relevant software format may also have to be provided by the contrator as per owner requirement. The As-built drawings in .pdf format as well as in in AutoCAD format shall be submitted in a CD. None of the soft copies shall be restrictive in nature.

iv) All soft copies in .pdf format shall be duly signed and stamped by the contractor.

v) The soft copies can be either mailed to the owner (or its consultant if asked by the owner or both) or submitted in storage devices like CD.

vi) Additionally, Contractor shall submit Hard copies on standard size sheet/document for scrutiny as per Table 3 below.

Table 3

Category	No. of copies		
	For initial Scrutiny as per requirement	For final scrutiny as per requirement	Post Approval /Acceptance for final stamping
(1)	(2)	(3)	(4)
A	1	1	6
C	1	2	0
R	1	2	0
I	3	3	3
B	6		

vii) These drawings/documents shall be scrutinised as per requirement by the owner/its consultant. If they are found in order, the same will be approved in soft copy. The contractor will submit drawings approved and duly stamped by owner/its consultant as per Table 3 above. If any revision is required, the

contractor shall revise the same, and submit the revised drawings/documents in soft copies as well as in hard copies as per Table 3 for further scrutiny as per requirement.

C. As Built Drawings

Contractor shall make necessary correction /modification in the drawing as per actual work and shall prepare as built drawing. The Contractor shall supply such 6 (six) sets of prints of as built drawing to the Owner along with one set of reproducible drawings on polyester paper in ink. The same will hold good for other documents also to be supplied by the Contractor under the heading of basic scope. All drawings should be prepared on AutoCAD in standard format and CD containing such drawing shall also be supplied along with hard prints.

D. PERT NETWORK

After the issue of letter of Intent, the bidder will prepare a master plan PERT NETWORK incorporating all the major activities for the successful installation and commissioning of plant on turnkey basis and submit it to customer for his approval and comments.

The detailed PERT NETWORK will be prepared for all major activities enlisted in the master PERT NETWORK. The detailed PERT NETWORK will be further discussed with customer and form the basis of monitoring of the project as a whole or activity wise. Necessary corrections will be carried out from time to time by the bidder in consultation with the representative of customer but within the overall limit of time as described in master NETWORK. All the activities of the contract will proceed on the line of approved PERT NETWORK.

3.8.1.2.2 Procedure of Approval of drawings under Category A

The Owner shall have the final say in the approval of drawings. Drawings so submitted will become the property of the owner. The approval of the drawings does not absolve the Contractor from the overall responsibility of the plant for its successful operation. The Contractor shall be responsible for and shall pay for any alterations of the work due to any discrepancy, errors or omissions in the drawings or particulars supplied by him, whether Owner has approved such drawings or other particulars.

Scrutiny and approval of drawings may be carried out by the owner/through the consultant engaged by owner. Approval process for Hard copy submission as well as for Soft-copy submission is deliberated below:

A. Hard copy submission:

If on scrutiny, the submitted drawings are found to be in order, the same will be conveyed to the contractor. Then the contractor will submit requisite no. of additional copies as per table 2 above. All the finalised drawings (total six copies) shall be duly signed and stamped by the owner/its consultant. One copy of such signed/stamped drawing shall be returned to the contractor.

If on scrutiny, it was felt that the submitted drawings need revisions, the same will be conveyed to the contractor. The contractor shall carry out the necessary rectification in drawings after discussion with owner in a reasonable time as agreed upon mutually and re-submit such revised drawings for approval of owner. Revised drawings shall then again be scrutinised and if found in order, the same will be conveyed to the contractor. Then the contractor will submit requisite no. of additional copies as per table 2 above. All the finalised drawings (total six copies) shall be duly signed and stamped by the owner/its consultant. One copy of such signed/stamped drawing shall be returned to the contractor.

B. Soft copy submission:

If on scrutiny, the submitted drawings are found to be in order, the soft copies of the drawings shall be duly signed/stamped by the owner/its consultant and mailed back to the contractor. The contractor will take the prints of these signed and stamped drawings and will be conveyed to the contractor. Then the contractor will submit requisite no. of copies as per table 3 above to the owner. The owner will return one of these copies to the contractor after putting their signature on these drawings. The balance copies shall be kept by the owner for record.

If on scrutiny, it was felt that the submitted drawings need revisions, the same will be conveyed to the contractor. The contractor shall carry out the necessary rectification in drawings after discussion with owner in a reasonable time as agreed upon mutually and re-submit such revised drawings for approval of owner. Requisite no. of hard copies of these drawings as per Table 3 are also to be submitted. Revised drawings shall then again be scrutinised and if found in order the soft copies of the drawings shall be duly signed/stamped by the owner/its consultant and mailed back to the contractor. The contractor will take the prints of these signed and stamped drawings and will submit requisite no. of copies as per table 3 above to the owner. The owner will return one of these copies to the contractor after putting their signature on these drawings. The balance copies shall be kept by the owner for record.

CHAPTER – 4
SCOPE OF SUPPLY & WORKS
CIVIL

4.1 SYSTEM DESCRIPTION

The proposed workshop and store facilities are to be constructed at Nakrakonda-Kumardihi-B opencast project of Eastern Coalfields Limited. (The requirements/specifications indicated hereunder are minimum unless otherwise noted and are to be synchronised with process/ functional/ design/ normative/ codal/ statutory/ aesthetic and such other requirements expressly stated in this document or otherwise). In case of area requirements being specified, the dimensions may vary as per system requirement fulfilling the specified minimum area requirement for the respective facility.

The technical specification for Civil Work as given in chapter 8 may be read in conjunction with relevant scope of work as deliberated hereunder.

The major civil/structural/infrastructural facilities and other required activities proposed are as follows:

SL. NO.	PARTICULARS
	EXCAVATION WORKSHOP
1	HEMM Repair Shop including Sub Assembly Repair shops and Office
2	Sub-Station
3	Dumper Parking Pavement
4	Dozer Parking Pavement
5	Scrap yard
6	Erection yard
7	Dumper Washing Station
8	Pump Houses for Fire Hydrant System, Dumper/Dozer Washing, etc.
9	UG sump
10	Over Head Tank
11	Dozer Washing Station
12	ETP
13	Security Post
14	Time & Security Office
	E&M WORKSHOP
1	E&M Repair Shop and its office

SL. NO.	PARTICULARS
2	LMV Repair Shop
3	E&M Store Shed
4	Scrap yard
5	Hard Stand
6	Canteen
7	LMV/Scooter parking Pavement
8	Security Post
MODIFICATION/ ADDITION OF FACILITIES IN THE EXISTING STORE COMPLEX AS DESCRIBED IN THE CORRESPONDING CHAPTERS	
1	Ventilation System
2	Fire-Fighting System
3	EoT Crane (5/1T)
4	Electrical Systems
ROADS	
1	Road for Dozer Movement
2	Road for Dumper Movement
3	LMV Roads at Excavation Workshop
4	LMV Roads at E&M Workshop
DVELOPMENT WORK	
1	Site Development (includes levelling and storm water drains)
2	Water supply distribution & Sewerage System
3	Culvert
4	Boundary Wall 2.1m at Excavation Workshop & E&M Workshop
5	Boundary Wall 1.5m at Excavation Workshop
6	Gates
7	Lighting Mast
8	Arboriculture

4.2 DETAILED SCOPE OF CIVIL WORKS:

The scope of work under this tender shall include Planning, Detailed soil investigation and survey, Design, Construction & Supply including Transportation of plant and machinery to site, all civil and structural works, erection of equipment and structures, supply of detailed design, working manuals, working drawings including all relevant calculations, testing and commissioning, elimination of all teething troubles, performance tests and handing over of the plant as envisaged in detailed Scope of

Work and system description. Due consideration shall be given for economy, architecture and functional utilities. The tender drawings of this NIT indicate functional and architectural requirements. The successful bidder has to comply with these requirements and submit detailed construction drawings for Employer's approval. This being a turn-key work, all works needed for completion of work in all respect and successful operation of the plant shall be deemed to be covered in the *Scope of Work* whether specifically mentioned herein or not. Furthermore, bidder has to execute all work as detailed hereunder at their own cost whether specifically mentioned in the Bill of Quantities (BOQ) (Part-III of Tender Document) or not and in case any such item is not indicated in the BOQ (e.g., setting out, clearing jungles, levelling, dressing, clearing debris, dismantling existing structures, landscaping, Drinking water fountain with provision of water coolers and water purifier etc. and all such work as per Scope of work/as required for successful execution of the job) the cost involved in such work shall be deemed to be included in the most relevant items which form Part-III of the document. The decision of the Engineer-in-charge regarding such inclusion will be binding on the contractor in case of any doubt.

4.3 ADHERENCE TO INDIAN STANDARDS:

All designs, drawings, construction, fabrication, testing, operation, materials etc. shall be in strict conformity as per relevant and latest IS/BIS Code of practice and CPWD/NBO provisions & guidelines. Wherever no Indian Standard is available other International Standards may be followed only on approval from the Employer.

4.4 DETAILS OF WORKS AND SERVICES

a) Program schedule submission

This has been discussed earlier in this document.

b) Detailed survey:

Scope of work under this head of the contract envisages detailed survey, soil investigation, preparation & submission of report & approval of the same as below:

Some drawings have been provided with this document as guidance for enabling the bidder to assess quantum of work. However, it is the contractor's responsibility to carry out detail survey of the relevant areas as per scope of work and design requirement. The bidder should satisfy himself and verify the data provided with this document, if felt so, before submitting the tender. Department shall not be responsible for any variation of these data with the actuals at site at the time of execution. The successful tenderer will have to undertake detailed survey of the concerned areas in association with the Employer or his representative, if so desired by employer, and prepare and submit survey drawings indicating contour plan, project boundary, existing features and other important aspects of the area surveyed.

c) Soil investigation including soil resistivity test

No soil data has been made available in this document. The tenderer is required to inspect and examine the site and its surroundings and satisfy himself as to the nature of the ground and the soil & the availability and suitability of their requirements before bidding.

The contractor has to carry detailed and comprehensive geo-technical investigation of the area as per requirement and relevant code provisions regarding intensity and extent of investigation. The scope of work shall include making test bores/drills upto a depth as per geotechnical requirement / code provisions/ standard literature, in soils/rock including taking out requisite number of undisturbed samples at different depths as required for laboratory tests, making standard penetration tests at different depths, recording ground water levels, if any, maintaining driving records, preparation of bore hole log for each bore hole etc., conducting direct load test including cyclic loading and unloading operations wherever required, Plate bearing load tests, Laboratory tests on collected samples for determining natural moisture content, particle size analysis, index properties, wet and dry density, swelling pressure, Tri-axial shear test, consolidation tests, permeability tests, CBR test, modular subgrade reaction and any other tests required as per site conditions and design requirement. If rock is encountered before the specified depth, drilling is to be done minimum upto 3 M in bed rock or upto a depth where adequate core recovery is obtained as to prove the solidity of the bed rock. The tests for the rock samples shall include determination of crushing strength and other engineering properties. The geo-technical report shall be submitted by the contractor which shall include all field reports, lab test results, recommendations for type of foundation, allowable bearing capacity for different types of foundations based on shear and settlement criteria for required sizes and depths along with calculations, CBR values, modulus of subgrade reaction if required, capacities of piles if envisaged etc., probable settlement for foundations etc. for approval/acceptance of the employer based on the scope of work defined hereinafter. If the employer is not satisfied with the report submitted by the contractor, and asks for revision, the same has to be carried out by the contractor at no extra cost to the employer. The revised report has to be again submitted to the employer for its acceptance.

For designing the earthing system, the contractor shall carry out tests at their own cost to determine the resistivity of soil. The tests should preferably be done in dry season or at different times of year to get real value of soil resistivity. The soil results of soil resistivity tests should preferably be a part of the soil report.

Report approved/accepted by the Employer shall be finally adopted for design & engineering. No extra amount shall be paid for change in design and type of foundation as assumed at the time of tendering.

However, before carrying out the tests approval should be taken from the Employer regarding the location of the test to be carried out. During the investigation of soil being done by the tenderer, the employer shall be associated during field exploration, laboratory testing and report finalisation, if so desired.

All field records shall be submitted to the Engineer in duplicate as and when they are recorded during the process of soil investigation.

For cost assessment, tendering and actual execution the tenderer shall be wholly responsible for soil investigation and detailed survey of the area as required. They should include the approximate cost of such investigation in their offer as per the price bid pro-forma.

d) Setting out

The tenderer shall be responsible for the true and proper setting out of the works relating to original points, lines and levels of reference given by the Engineer in writing and for the correctness (subject to above mentioned) of the position, levels, dimensions and alignment of all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of the works any error shall appear or arise in the position, levels, dimensions or alignment of any part of the works, the contractor shall rectify the same on being required to rectify to do so by the Engineer or Engineer's Representative unless such error is based on incorrect data supplied in writing by the Engineer or the Engineer's Representative in which case the expense of rectifying the same shall be borne by the Employer. The checking of any setting out or of any line or level by Engineer or the Engineer's representative shall not in any way relieve the contractor of his responsibility for the correctness thereof and the contractor shall carefully protect and preserve all bench marks, sight rails, pegs and other things used in setting out the works.

The survey and drawing instruments, plumb lines, reference points and bench marks etc. shall be to the satisfaction of the Engineer.

e) Pre-construction anti-termite treatment

Pre-construction anti-termite treatment of soil in foundation and floors should be carried out as per the technical requirement and/or as recommended by soil expert in the soil test report.

f) Levelling of site including clearing of jungles, other vegetation's, debris,

The tenderers are required to personally inspect the site of construction to get themselves acquainted with the site condition. Scope of work includes all necessary site preparation including clearing of vegetation, debris etc. Leveling, grading and dressing required for the proper drainage of the whole battery limit shall have to be done within the scope of this work. Formation levels of various infrastructures and roads, drains etc. proposed in the complex shall be fixed considering proper drainage requirement as per actual site conditions. The leveling shall be done at least upto a distance of 10 m beyond the battery limit as shown on the drawings as well as in line with functional requirements including areas beyond boundary line, if any.

g) Design & Engineering:

Design of all buildings/sheds, auxiliary buildings, roads, culverts, pavements, drains, O/H water tanks and U/G reservoirs, gates, boundary walls, scrap yards, water line, compressed air line, hydrant pipes, ramps, ETP and other civil and structural & infrastructural works based on specifications and tentative layout drawings furnished in this tender document.

h) Execution of all civil and structural work including infrastructural facilities -

The Scope of work under this head shall include all related civil works/activities for facilities listed in chapter - 4 of the present document or in the General Layout drawing of the workshop provided with this document. The scope of work shall also include the following:

- Service walk-way & Ladders for different Crane Girders and Gantry Girders
- Plinth protection & garland drains
- Water Supply System (Drinking & Industrial), Drainage & Sanitation.
- Sewage, Surface Drainage & Pollution Control Arrangements.
- Drainage Arrangement
- Landscaping & Arboriculture
- Other Works - All other works as required for successful operation of the shops and its allied facilities

The Detail specifications of the above have been elaborated in chapter - 8.

i) Erection and Commissioning

All supply and works for manufacture, shop fabrication, assembly, testing, packing, transportation to site, insurance, delivery to site, receipt, unloading, handling, storage at site, fabrication at site, installation and erection of all plant and machinery and other allied auxiliary facilities including erection & commissioning of all the major shops, sheds and utility buildings.

Further details of Scope of work and specifications under this head have been elaborated in chapter – 4 & 8.

4.5 PLANT CLEANING FACILITIES

The contractor shall make all arrangements to provide cleaning facilities of shop floors, sheds, pavements, roads, offices, other buildings and all such facilities/infrastructure which need to be cleaned for a sound work environment as desired and to the satisfaction of the owner. However, procurement of major tools for such activity is outside the scope of this contract.

4.6 FIRE FIGHTING SYSTEM

As mentioned in mechanical system.

4.7 OTHER FEATURES

Though the aforesaid facilities are to be provided by the successful tenderer within emerging battery limits as elucidated in the preceding para, successful tenderer will have to duly consider 'totality concept' and provide such features within the battery limits accordingly.

4.8 WATER SUPPLY, EFFLUENT, SEWAGE AND DRAINAGE ARRANGEMENT

4.8.1 General

Tenderers are expected to visit project site and familiarize themselves with engineering and other requirements of workshop premises, site conditions etc. which would, inter-alia, include soil and sub-soil data, topography and drainage in and around the work site, meteorological and other relevant data so that successful tenderer can successfully carryout the tasks of planning, implementing/providing and commissioning following facilities, with due regards to engineering design, techno-economics of the various features, fulfilment of the various associated guarantees and compliance with the relevant statute as follows :

- Water supply with associated pipelines, valves & specials, storage arrangement etc. with a view to provide required quantity potable and industrial water to the Workshops and the adjoining offices
- Sewage (domestic and industrial) collection at the source, conveyance, treatment as required and recycling/final disposal to the nearby available point as per scope of work.
- Surface drainage.
- Pollution control arrangements.

Tenderers are required to take note of requirements and other stipulations with regard to the various facilities which have been indicated elsewhere in the tender document. Battery limits for the above facilities as have been defined in this document, with

express stipulation that notwithstanding anything stated in the tender document, successful tenderer's scope of work would necessarily include all features incidental to and attendant upon proper execution of the work in its entirety and having regard to operational and functional requirements.

4.8.2 Other features

Though the aforesaid facilities are to be provided by the successful tenderer within emerging battery limits as elucidated in the preceding para, successful tenderer will have to duly consider 'totality concept' and provide such features within the battery limits accordingly.

4.8.3 Location

In the layout drawing, Tentative Location of water reservoirs and overhead tanks have been indicated. However, the scope of work includes finalizing such locations including those of the pump houses and facilities toward treatment of domestic and industrial sewage/effluent in view of site conditions, technical and other requirements, techno-economics in respect of various alternatives and various guarantees and compliance with provisions of relevant Central and/or State Statute. Locations of the above, wherever given in the Tender, may be considered as tentative.

Accordingly, and in the light of such proposals, as are accepted by the owner, emerging/resultant scope of work vis-a-vis battery limits would be binding on the successful tenderer, whether the same entails deviation in the battery limits delineated or not.

4.8.4 Water Supply Arrangement

Required Industrial and potable water for operation and maintenance of the workshop facilities will be supplied to the bidder at the following locations:

Sl.	Workshop premises	Water supply point
1	Nakrakonda-Kumardihi-B Workshop	At one point near proposed entry gate of Excavation Workshop.

It is the responsibility of the contractor to make adequate arrangement for distribution of the supplied water. Industrial water connections to each bay of the dumper shops as well as in other industrial facilities are to be provided.

In general, relevant stipulations/guidelines given in "Manual on Water Supply" and "Manual on Sewerage and Sewage Treatment" (latest edition) by Central Public

Health and Environmental Engg. Organisation, Ministry of Urban Development, New Delhi & CPWD/NBO specifications shall be followed.

Pump House shall be provided near the reservoirs as suggested in the layout drawings. The size of pump houses shall be as per requirement and shall house the following pumps & accessories but in no cases the size of the pump houses shall not be less than those given in the relevant drawings provided with this document.

i) Firefighting pumps (Elec. & Diesel Drives).
ii) Pump for filling overhead tanks.
iii) Pump for direct supply to individual overhead tanks/consuming/washing units.

The pipe line provided for de-mineralizing plants for HEMM repair complexes and arboriculture shall also be connected with this pump with valve arrangement so that water can be pumped into the pipe line as and when required.

The different pipe line network shall be:

a) Distribution network for drinking & industrial use in different shops and buildings.
b) Distribution network for arboriculture etc.
c) Firefighting hydrant system as per TAC.

Pipes of adequate sizes as determined by detailed engineering computation and in terms of relevant IS code of practices etc. complete with fittings, valves, scales, jointing materials, saddles & supports etc. shall be provided. While laying the various pipes, connections with off-take valves at places, as directed by the Engineer, shall have to be left for withdrawal of water from external sources. The pumps provided for different use shall be centrifugal type. Supporting calculations for arriving at the capacity shall be submitted along with the tender.

The capacities of the tanks/reservoirs shall be fixed after calculation of water requirement on the basis of relevant norms/system requirements. In the underground reservoir of not less than 200 cum capacity, a partition wall should be constructed, so that a minimum quantity (As per TAC) of water is ensured for fire-fighting purpose at any point of time. In any case, the minimum storage capacity for fire-fighting purposes shall be 150cum. Minimum capacity of reservoir for washing and other relevant requirements shall be 50cum. All underground reservoirs/ tanks shall be covered, with provision of necessary free board, ladders etc. Water supply lines and arrangements shall be provided for fire-fighting and dust suppression as explained elsewhere.

An Over Head Tank (OHT) of minimum 25 cum capacity shall be provided to ensure gravity flow to the individual points of consumption including Roof top tanks at offices for HEMM repair shop, E&M Repair Shop, Store shed, Canteen etc. as well as underground sumps adjacent to the washing stations.

The capacity of the reservoir shall be fixed after calculation of water requirement on the basis of relevant norms/system requirements.

Water supply distribution pipeline network originating from bulk water receiving reservoirs for conveyance of water (industrial use, potable use etc.) via OHT to various water consumption points within battery limits of workshop complex areas shall be provided by the contractor. Industrial water and potable water pipeline network would be of Cast Iron S&S pipe/G.I. medium quality pipe as the case be and conforming to relevant IS. However, pipeline grid for firefighting shall be of M.S. or G.I. heavy quality and of size not less than 150 mm internal bore with connection for fire hydrants with necessary valve/s etc. Fire hydrant points would be spaced at 30 meters or closer intervals as per requirement.

All pipeline grid is deemed to include pipes of required size/s, fittings, specials, valves (sluice/air/scour/ non-return/any other type as required), saddle supports/trench excavation and refilling, anchor blocks, holding clamps etc. wherever required and cost thereof is deemed to be included in the tendered bid whether specifically mentioned in the tender or not.

Notwithstanding anything stated elsewhere in the tender document, contractor shall be responsible to carry out the work in its entirety and complete with pipe embedment, all pipe fittings, specials, valves (sluice/de-slugging) etc. for inlet, outlet, washout and overflow etc. The contractor shall guarantee structural stability, water tightness, permissible leakage/losses conforming to relevant IS in respect of all the water retaining structures and reservoirs (ground and overhead). In the case of reservoirs tenderer shall provide water level indicators. For overhead reservoirs lightning arrestor with earthing device conforming to relevant IS code of practice and statute shall be provided.

Scope of work shall be inclusive of all safety appurtenances, valves, fittings, etc. required for successful commissioning of the system.

4.8.5 Off-take Main & Allied Arrangements

In the context of elaboration, successful tenderer would provide, if required, properly designed cast iron S&S Pipes conforming to IS : 1536 - 1976 (suitable for the requirement and provided with lead caulked jointing) of required class and compete with all required fittings, specials, valves (sluice/air/scour/non return - as required), lead joints, trench excavation & refilling and/or suitably designed saddle supports and anchors as the case be, for conveyance of water from water source (point of delivery of required water by the owner to the contractor) to the point of consumptions within the battery limits.

Notwithstanding anything stated elsewhere in the tender document, successful tenderer shall be responsible to carry out the work in its entirety and complete with

pipe embedment, all pipe fittings, specials, valves (sluice/de-slugging) etc. for inlet, outlet, washout and overflow etc. Successful tenderer shall guarantee structural stability, water tightness, permissible leakage/losses conforming to relevant IS in respect of all the water retaining structures and storage arrangements.

4.8.6 Pumping Facilities

These are to be provided as per technological requirements.

4.8.7 Drinking water and Public Conveniences

These would be provided by successful tenderer at locations indicated by Prime Consultant/Owner in the shops as well as in the offices, laboratories. Toilets, canteen-cum-rest room and such other facilities. RCC/PVC Roof top tanks of minimum 2cum capacity shall be provided at offices for HEMM repair shop, E&M Repair Shop, Store shed, Canteen etc. Drinking water fountain with provision of water coolers and water purifier with RO system (conforming to relevant IS specifications) of adequate capacity shall be provided at suitable points in the workshop as directed by the Engineer. However, the drinking water fountain with cooler shall not be provided in attached toilet.

For determining scale of above facilities, provision of IS: 1972 (amended up-to-date) shall be followed. For the purpose of assessment of potable water requirement, Total number of persons in a shift in the three Workshop facilities shall be taken under:

Sl.	Workshop premises	Manpower per shift to be considered for assessment of potable water requirement
1	Nakrakonda-Kumardihi-B Workshop	100

4.8.8 Industrial Effluent Collection, Conveyance & Disposal Arrangements:

- **ETP for Workshop**

An ETP is to be provided to treat industrial effluent from the whole premises. The tentative location of the proposed ETP has been given in drawing no. HQ/E&M/301846. This ETP shall have oil & grease removal facilities, coagulation, flocculation and settling arrangements, clarified effluent tank etc. as per process/statutory/relevant manual/codal requirements. Wherever applicable, these facilities shall be of RCC with minimum M30 grade of concrete. Arrangements should be made by the contractor for carrying the clarified effluent to Dumper and Dozer washing station so that it may be used for washing dumper/dozer. A reservoir for clarified effluent and pumping facility shall be provided by the contractor. An alternative arrangement for disposal of clarified effluent to natural course may also be necessary as per site condition.

The contractor shall be responsible for collecting effluent samples from any other suitable source as directed by the Engineer, carrying out laboratory tests, design and engineering, getting due approval of design and drawings from the owner as per methodology stated elsewhere in this document regarding Design engineering.

Method of disposal of waste shall be governed by site conditions, soil and subsoil characteristics and necessity for compliance with Statute/regulations of the Central and/or State Govt. or any authority having jurisdiction legally tenable as the case be. Tenderer may also assimilate what is stated and elaborated elsewhere in this chapter. It is expressly understood that offer of the tenderer is deemed to include cost of all features for execution of collection, conveyance, treatment and disposal arrangements of domestic sewage and industrial effluent in entirety and from the consideration of operation and maintenance of this facility.

The Scope of work for providing the proposed ETP shall include the following additional activities:

- Sampling of effluents and Laboratory Tests
- Planning, Design and engineering, Submission of drawings and design calculations including all working manuals, Getting approval of drawings and designs, Record of Drawings
- Execution of all civil and structural works including infrastructural facilities as required
- Construction & Supply including transportation of plant and machinery to site if required
- Erection of equipment (mechanical including process equipment and electrical) including laying of pipe lines with all required structures if required
- Testing and commissioning, elimination of all teething troubles, performance tests

Treated effluent shall be conform to prescribed latest MoEF&CC / CPCB standards for industrial effluent.

4.8.9 Sewage, Surface Drainage & Pollution Control Arrangements.

4.8.9.1 General

Tenderers are expected to visit project site and familiarise themselves with engineering and other requirements of workshop areas, site conditions etc. which would, inter-alia, include soil and sub-soil data, topography and drainage in and around the work site, meteorological and other relevant data so that successful tenderer can successfully carryout the tasks of planning, implementing/providing and commissioning following facilities, with due regards to engineering design, techno-economics of the various features, fulfilment of the various associated guarantees and compliance with the relevant statute as follows :

- Sewage (domestic and industrial) collection at the source, conveyance, treatment and recycling/final disposal.
- Surface drainage.
- Pollution control arrangements.

Tenderers are required to take note of requirements and other stipulations with regard to the various facilities which have been indicated elsewhere in the tender document.

Battery limits for the above facilities are indicated earlier in this document, with express stipulation that notwithstanding anything stated in the tender document, successful tenderer's *scope of work* would necessarily include all features incidental to and attendant upon proper execution of the work in its entirety and having regard to operational and functional requirements.

4.8.9.2 Sewage Collection, Conveyance & Disposal Arrangements

Successful tenderer shall provide suitable arrangements for collection and conveyance arrangements separately for domestic sewage and industrial effluent within workshop battery limits and arrangements for recycling/disposal of the same. Method of disposal of waste shall be governed by site conditions, soil and subsoil characteristics and necessity for compliance with Statute/regulations of the Central and/or State Govt. or any authority having jurisdiction legally tenable as the case be. Tenderer may also assimilate what is stated and elaborated elsewhere in this chapter. It is expressly understood that offer of the tenderer is deemed to include cost of all features for execution of collection, conveyance, treatment and recycling/disposal arrangements of domestic sewage and industrial effluent in entirety and from the consideration of operation and maintenance of this facility. As earlier elaborated wherever pumps are proposed by the successful tenderer, 100% standby pump/s shall be provided by the successful tenderer.

4.8.9.3 Drainage Arrangements

Successful tenderer shall provide drainage of adequate dimensions, specifications and slope within the battery limits of workshop complexes to fully take care of run off which is likely to be encountered, having regard to topography and natural drainage of the project site. Dimensions and specifications of drains and cross drainage works shall be so engineered and constructed so as to take into consideration run off from area even outside battery limits if the same constitutes an integral part of natural drainage in the context of topography and other relevant factors. Cost of all such features should be included in the offer of the tenderer.

The successful tenderers are to provide suitably designed drain covers/culverts etc., wherever necessary, suitable for HEMM equipment as listed elsewhere in this document, which are required to move around in the area.

4.8.9.4 Domestic sewerage

Domestic sewerage system shall consist of septic tanks and soak pits/soakage well/soakage gallery, as per design requirements based on IS : 2470 or other relevant IS codes and subsoil conditions, with suitable size stone ware pipes and manholes, as required and approved by Prime Consultant/Owner.

4.8.9.5 Architectural Requirements

The structures in the all workshop areas shall have appropriate industrial architectural look, with appropriate colour, shades and structural networks. All the structures should portray architectural excellence with due care to better utilization of space, service requirements etc. and also encompassing concerns as varied as contemporary design, area conservation and environmental issues. The buildings with brickwork, concrete and plastered faces shall have cement based paints in aesthetically sound shades, as approved and all steel structures shall have oil based paints with louvers and openings for ventilation and better use. The successful tenderers are required to submit the artistic view of the whole complex with important features as shown on the drawing.

4.9 LANDSCAPING & ARBORICULTURE

Landscaping and arboriculture will be done in the workshop complex as stipulated in the NIT. However, the successful tenderers are required to furnish the detailed scheme proposed by them for the purpose.

4.9.1 Plantation & Horticulture

Plantation and horticulture to be done as suitable within such workshop complex, facilitating as sound barrier, dust barrier etc. as far as possible and also to create aesthetic appeal and a feeling of neatness and softness, to dilute the harshness of such industrial setup. Hedge plantations, edge plantations, shrubs and trees, Lawns and seasonal flower gardens are to be set up– with required soil layer, manure etc. and with regional appropriateness of plant species to ensure better durability. In the layout drawing, garden areas and the areas for developing green areas have been suggested. Indicative tree plantations have been suggested in the layout drawing as well. For watering these areas, provision for sprinklers, water connections etc. are to

be provided as per requirement. Necessary tree guards are also required to be provided. However, the successful tenderers are required to furnish the detailed scheme proposed by them for the purpose of plantation and horticulture. Tenderer shall engage experienced and adequate number of skilled workers for undertaking the development of garden and landscaping work in the workshop premise as shown in the main layout drawing.

4.10 RAINWATER HARVESTING

Rainwater Harvesting arrangement will be done in the workshop areas as per statutory and functional requirement. However tenderers are required to furnish the detailed scheme proposed by them for the purpose for approval of the Company.

4.11 SAFETY MEASURES

In respect of safety, Part-7 Constructional Practices and Safety of National Building Code-2005 shall be followed. All necessary safety measures to be adopted as recommended by relevant IS/ BIS code to protect adjunct/ nearby structure, workmen etc.

All works shall be carried out as per the item description and design and drawing supplied by the company, as per the relevant IS/ BIS/ NBC-05/ as per direction of the Engineer-In-Charge.

4.12 OTHER WORKS

All works as mentioned in the Tender Document will be undertaken as per site requirement, relevant Indian Standard Codes and instructions of the authorized representative of Prime Consultant/Owner. All the shops/sheds/offices/other service buildings and facilities, wherever applicable shall have their name displayed on the external surface/at suitable locations of the buildings/facilities. Layout maps of the entire workshop areas shall be displayed at the entry of the common facility and suitable number of sign boards shall be erected beside the roads showing the direction/location of the various shops/sheds/offices/facilities. Additionally the scope of work of this NIT includes provision/installation of EOT crane, fire fighting & ventilation arrangement, electricals etc. for the existing adjacent store shed as indicated in the Layout drawing and elsewhere in this document. The contractor has to make required civil/structural arrangement towards these provisions. Any alteration/modification of the existing structures as per requirement and making good

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

the structures are part of the scope of this NIT. The bidders are requested to visit the site for proper assessment before bidding.

CHAPTER - 5
SCOPE OF SUPPLY & WORKS
MECHANICAL

5.0. The technical specification for Mechanical system as given in chapter 7 may be read in conjunction with relevant scope of work as deliberated hereunder.

5.1 SCOPE OF WORK

The scope of work under mechanical system shall comprise:

a) Design, engineering, manufacture/ procurement, inspection at works, transportation to the site, handling and storage at site, insurance, erection and commissioning at site, successful trial run, training to purchaser/ his representative for the operation and maintenance of the equipment/ systems, performance and guarantee test of equipment/ systems along with all accessories complete in all respect as per the specification given in Chapter-7 of the document.

b) Supply of all equipment, accessories, consumable, tools and tackles and any other material needed for successful erection, testing, removal of teething trouble and successful commissioning of the system under the scope of this tender.

c) Performance test and fulfillment of guarantee parameters during the guarantee period and handing over the plant/ equipment to the employer in a satisfactory operating condition.

d) Supply of drawings, operation and maintenance manuals, spare parts manual in six sets along with compact disc containing all drawings.

e) Maintaining all the mechanical systems in optimum operating condition for 60 months after handing over, including scheduled maintenance, breakdown maintenance, repair, replacement of spare parts, components, equipment, etc.

5.2 SYSTEM DESCRIPTION

A brief description of mechanical systems provided in the workshop are given below.

5.2.1 EOT Cranes

EOT cranes of suitable capacities have been proposed in various shops of Excavation & E&M workshop and existing store complex for handling of heavy components, spares and machinery. The quantity, capacity and other technical parameters have been detailed in technical specification (Mechanical).

5.2.2 Fire Fighting System

Fire hydrant system and fire extinguishers have been proposed to protect the entire premises of Excavation & E&M workshop and existing store complex from fire hazards. Suitable fire extinguishers have been proposed in all the proposed shops/facilities in the other workshops. The design and installation of the system shall comply with the regulations of the Tariff Advisory Committee (TAC) of India/ National Fire Protection Association (NFPA), USA, Codes. The detailed parameters have been elaborated in technical specification (Mechanical).

5.2.3 Lubrication System

Lubrication system has been proposed for the HEMM repair shop. This system will facilitate lubrication of dumpers, dozers and auxiliary HEMM.

5.2.4 Compressed Air System

Compressed air system have been proposed in the HEMM repair shop and E&M & LMV repair shop of the workshop. The system shall be having compressors and compressed air pipelines serving all the HEMM repair bays and sub-assy repair shops and E&M & LMV repair shop repair bays. The compressed air shall also be used to run the lubrication system, various pneumatic tools and air filling of tyres. The detailed parameters have been elaborated in technical specification (Mechanical).

5.2.5 Ventilation & Air Conditioning System

Ventilation system of suitable capacity has been proposed in all the shops/sheds/buildings/offices of entire premises of Excavation & E&M workshop and existing store complex depending on the nature of work. The quantity, capacity and other technical parameters have been detailed in technical specification (Mechanical).

5.2.6 Washing System

One no. of dumper washing system have been envisaged for washing the fleet of dumpers in the project. One no. dozer washing system has been envisaged for washing of auxiliary equipment as well as dozers in the workshop. The detailed parameters have been elaborated in technical specification (Mechanical).

5.3 LIST OF MECHANICAL SYSTEM / EQUIPMENT:

Sl. No.	Description	Quantity
1.	EOT Cranes of various capacities	3 Nos.
2.	Compressed air system (HEMM Repair Shop and E&M & LMV Repair Shop)	1+1 set
3.	Pressurised lubrication system (at HEMM repair shop)	2 sets
4.	Fire Hydrant System	Lot
5.	Fire Extinguisher for Fire Fighting	Lot
6.	Ventilation and Air Conditioning	Lot
7.	Dumper Washing System	1 No.
8.	Dozer Washing System	1 No

CHAPTER – 6
SCOPE OF SUPPLY & WORKS
ELECTRICAL

6.1 SCOPE OF WORK

The proposed workshop and store facilities at Kumardih-B opencast project of Eastern Coalfields Limited is to be constructed.

The electrical works / equipment included in the scope of this package are listed below:

6.1.1 Workshop and Store

6.1.1.1 Supply, erection and commissioning of indoor sub-station in Excavation workshop premises for catering of power to proposed workshop load (Excavation workshop, E&M workshop and Store Complex), comprising 2 nos. of 6.6/0.415 kV, 315 kVA indoor power transformers, one no. 6.6/0.230 kV(L-L), 100 kVA indoor lighting transformer, 6.6 kV switch board, 415 V Main Power Distribution Board (MPDB), 230 V (L-L) Main Lighting Distribution Board (MLDB), Cable connecting the secondary of the transformers to MPDB and cable for connecting the secondary of the lighting transformer to the MLDB, , Capacitor Banks with APFC Panel, sub-station lighting, sub-station earthing, construction of neutral and earth pits of transformers and cable trenches including Civil works.

6.1.1.2 Supply erection and commissioning of cabling system including cable trays, conduits, cables and cable trenches with Civil works.

6.1.1.3 Supply, erection and commissioning of earthing system including frame earthing, neutral earthing, earthing of cable armoring and junction boxes, bus ducts, poles, metallic stairs and hand rails and other non-current carrying metallic parts, including GI strips, MS rods, GI wires including Civil works.

6.1.1.4 Supply erection and commissioning of illumination system including poles, structures, lighting masts, switch boxes, lighting fixtures, lamps, junction boxes, lighting distribution boards (LDBs) and wiring from switch boxes to fixtures.

6.1.1.5 Supply, erection and commissioning of various types of Power Distribution Boards, switch boxes and power receptacles.

6.1.1.6 Supply, erection and commissioning of protection system against lightning including civil works.

6.1.1.7 The entire execution shall comply with statutory rules, standard codes of installation, safety and maintenance facility.

6.1.1.8 Maintaining the electrical system in operating condition for 48 months in addition to one year of warranty period after handing over, including scheduled maintenance, breakdown maintenance, repair, replacement of spare parts, components, equipment, etc.

6.1.2 Power Reception and Distribution System

- Power supply arrangement up to a DP structure near the proposed substation through two nos. of 6.6 kV single circuit overhead line shall be in the client's scope. Power receiving arrangement from the DP structure to the incomer of the 6.6 kV switch Board through two circuits of cables and isolating devices & Lightning arrestor including all accessories shall be in the scope of the successful bidder.
- Power from the 6.6 kV switch board shall be supplied to two nos. 315 kVA, 6.6/0.415 kV indoor power transformers which shall supply power to one 415 V Main Power Distribution Board (MPDB) through cables for power supply to different areas of the workshop.
- Power from the 6.6 kV VCB panel shall also be supplied to one no. 100 kVA, 6.6/0.23 kV (L-L) indoor lighting transformers which shall supply power to one 230 V (L-L) Main Lighting Distribution Board (MLDB) through cable for catering to the lighting loads of the workshop.
- Power from the MPDB shall be supplied to Power Distribution Boards (PDBs) located in various shops of Excavation workshop and E&M workshop. Two nos. of Capacitor Banks with automatic power factor correction system shall be connected to the MPDB for automatic power factor correction.
- Power from the PDBs shall be supplied to a number of Sub Power Distribution Boards (SPDBs) located at various shop sections. The tentative locations for PDBs and SPDBs envisaged at Excavation workshop, E&M workshop and Store complex are as follows :

PDB No.	**Location**	**Feeding to**
Excavation Workshop		
PDB -1	AC Auxiliary Load	VCBs control
PDB -2	Pump House	Pump House for Fire Hydrant system and Pump House
PDB-4	ETP	SPDBs of ETP, Diesel Filling Station, Dumper Washing Station,

PDB No.	Location	Feeding to
Excavation Workshop		
		Dumper Parking Pavement, Security Post and Dozer Washing Station
PDB-5	HEMM Repair Shop	SPDBs of Dumper Repair shop, Dozer Repair Shop, Erection Yard, Dozer Parking Pavement
E&M Workshop		
PDB –3	E&M Repair Shop	SPDBs of E&M Repair Shop, E&M Store Shed, Canteen, LMV Repair Shop and Security Post
Store Complex		
PDB – 6	Store Office	SPDBs of Store Shed, Store Office & POL Store, Security Post

- The shops, stations and part of workshop having electrical loads those are not mentioned, shall be fed from the nearest PDB and proper provision for additional PDBs if required.
- Power from the SPDBs shall be supplied to individual equipment, switch boxes and power receptacles.
- Power from the MLDBs shall be supplied to a number of Lighting Distribution Boards (LDBs), Feeder Pillars located at various locations in the entire workshop complex (Excavation workshop, E&M workshop and Store complex) including indoor and outdoor.
- Power from the LDBs shall be supplied to switch boxes with modular type switches for supply of power to lighting fixtures.
- Design of the lighting should be such that at any point of the lighting network, Voltage drop should be within 5%.

6.2.1 General Guidance for Supply and Erection & Commissioning

6.2.1.1 The electrical equipment/installations/designs shall comply with the requirements of the following:

a) The Indian Electricity Rules
b) The Indian Electricity Act

c) The Indian Electricity (Supply) Act
d) The Indian Factories Act
e) Tariff Advisory Committee Regulations
f) National Electricity Code
g) National Fire Code (NFPA-850)

6.2.1.2 **Cabling System**

1) The cables shall run in PVC conduits, on cable trays except in the following cases:
   a) Road crossings,
   b) Horizontal laying in the shop floors,
   c) Individual motor starters to respective drives,
   d) Point wiring for light and fan at offices and inside sub-station.
   e) Outdoor cable trenches
2) The cable trays shall run in trenches, sidewalls, vertical columns, building structures, pipe works, cable racks and trestles.
3) The trenches shall be built inside the sub-station building and in outdoor distribution. In outdoor cable shall be laid on steel support in pukka trenches covered with precast RCC slab.
4) The construction of trenches shall meet the requirements mentioned elsewhere in the tender.
5) The bidder shall submit drawings of cable trenches for purchaser's approval.
6) In road crossings, cables shall run through rigid steel pipes of suitable dia, embedded in soil.
7) In horizontal run in the shop floors, cables shall run through rigid steel conduits embedded in the floor.
8) The section of the cable from individual starters to respective drives shall run through flexible steel conduits.
9) The cable trays, fittings and accessories shall meet the requirements mentioned elsewhere in the tender. In case of site fabrication, drawings shall be submitted for purchaser's approval.
10) Cable schedules and connection diagram for the entire cabling work shall be submitted for purchaser's approval, before constructing trenches, and laying of cables on cable trays to check for compatibility and to minimize cost of cables and trays and on consideration of safety and fault location and repair.

6.2.1.3 **Earthing system**

1) Earthing system must comply with the provisions of the Indian Electricity Rule and shall be generally guided by IS: 3043.

2) All electrical equipment shall be earthed by two separate and distinct connections with earth.

3) Neutral point of the transformers shall be earthed by not less than two separate and distinct connections with earth.

4) As far as possible, all earth connections shall be visible for inspection.

5) Earth system shall be so constructed that the testing of the individual earth electrode is possible.

6) Drawings showing the main earth connections and earth electrodes of the entire workshop complex including sub-station shall be submitted for purchaser's approval before commencing the work.

7) No cut out, link or switch other than a linked switch arranged to operate simultaneously on the earthed or earthed neutral conductor and the live conductors shall be inserted in the power system.

6.2.1.4 **Point Wiring**

All the wiring for lights and fan points shall be executed on point wiring basis and this will includes supply erection of wires, conduits, switches, sockets, switch boxes with covers, ceiling roses etc. complete.

Wiring for service connections, 5A/15A power sockets and industrial type power sockets shall be done on running mtr. Basis. Supply erection and commissioning of sockets, boxes etc. shall be considered as separate items. PVC insulated, Copper wire of 660 V grade, single core, shall be used for internal wiring.

6.3 DETAILED SCOPE OF WORK

6.3.1 Workshop and Store Sub-station (Refer Drawing No. HQ: E&M: 301844) comprising the following:

a) 6.6 kV Switchboard Panel – 1 no.

b) 6.6 kV Switchboard Panel at Workshop Sub-station comprising the following:

Sl.no.	Description of Panel	Feeder type	Qty.
1.	6.6 kV Vacuum Circuit Breaker Panel	Incoming Feeder Cubicle	2 nos.
2.	6.6 kV Vacuum Circuit Breaker Panel	Bus Coupler Feeder	1 no.

		Cubicle	
3.	6.6 kV Vacuum Circuit Breaker Panel	Outgoing feeder cubicle for Primary control of 315 kVA transformers	2 nos.
4.	6.6 kV Vacuum Circuit Breaker Panel	Outgoing feeder cubicle for Primary control of 100 kVA Lighting transformers	1 no.
5.	6.6 kV Vacuum Circuit Breaker Panel	Spare feeder Cubicle	1 no.

Incoming and bus coupler panels shall be interlocked so that the coupler breaker shall remain "OFF" when both the incoming breakers will be "ON" and in the event of one of the incoming breaker in "OFF" position, the coupler breaker will be "ON ".

e) 6.6 kV/415V, 315 kVA Distribution Transformers for Supply of Power to LT loads of the Workshop – 2 nos.

f) 6.6 kV/230V(L-L), 3 phase, 100 kVA Lighting Transformers for catering to lighting loads of Workshop and Store – 1 no.

g) Capacitor Bank of required capacity –415 V: 2 nos. at Workshop and Store Substation.

h) 415 V sectionalized Main Power Distribution Board for supply of power to entire LT loads of the workshop comprising the following:

Sl. No.	**Description of MCC Modules**	**Feeder Type**	**Quantity**
1.	415 V, Air Circuit Breaker Cubicle	Incoming Feeder Cubicle	2 nos.
2.	415 V, Air Circuit Breaker Cubicle	Bus Coupler Feeder Cubicle	1 no.
3.	MCCB Cubicle	Outgoing feeder cubicle for control of capacitor Bank.	2 nos.
4.	MCCB Cubicle	Outgoing feeder cubicle for control of 415 PDB at E&M Workshop.	1 no.
5.	415 V, MCCB Cubicle	Outgoing feeder cubicle for power supply to various PDBs/Feeder Pillars.	As required.
6.	415 V, MCCB Cubicle	Spare Feeder	As required.

Incoming and bus coupler Air Circuit Breakers shall be interlocked so that the coupler breaker shall remain "OFF" when both the incoming breakers will be "ON" and in the event of one of the incoming breaker in OFF position, the coupler breaker will be "ON".

i) Entire power distribution system of main workshop including power distribution, sub distribution boards up-to and including individual equipment/machine tools.

j) Workshop Illumination system covering illumination of Sub-station, Indoor illumination of various shops, offices, Lab, canteen, security posts etc. and outdoor illumination of internal roads, parking spaces, washing platforms, open areas, peripheral etc.

k) MLDB in the substation building with required nos. of outgoing feeders for indoor and outdoor illumination.

l) Lightning Protection System for Sub-station and other structures having height of 10m and above.

m) Earthing system of Sub-station, various shops and all the electrical equipment under this scope of work.

n) 110 V, Battery Bank and Charger

o) HT and LT Power, Lighting and Control cabling.

- The rating of equipment indicated in the drawings are minimum and bidders are required to assess the rating of equipment as per system requirement and quote accordingly.
- The capacity of each transformer shall be selected to cater the entire load of workshop in case of failure of power in one section of sectionalized Main PDB.
- Transformer capacity for sub-station mentioned in the drawing is minimum capacity. Bidders shall make their own assessment and shall indicate higher capacity, if required. All the transformers shall be located indoor only.
- All the electrical installations shall be as per Indian Electricity Rules and latest DGMS Regulations. Approval of DGMS, if required shall be obtained by the contractor along with submission of necessary Test certificates / drawings / circuit diagrams etc.

6.4 METERING

6.4.1 Metering at 6.6 KV

6.4.1.1 The 6.6 KV incoming panels shall be provided with following digital meter:

a) Ammeter

b) Voltmeter

c) Power Factor Meter

d) Tri-vector Meter

e) PT with NDR

f) CT with Ammeter shall be provided in 6.6 kV bus-coupler panel.

The outgoing 6.6 kV panels will be provided with Ammeter and kWh indicating meter.

6.4.1.2 Metering at 415V

All the 415 Volt incoming circuit breakers shall be provided with following digital meters.

i) Ammeter

ii) Voltmeter

iii) kWhr meter

All the 415 V outgoing modules of Main PDB controlling load of 22 kW and above shall be provided with Ammeter and Selector switch.

6.5 PROTECTION

6.5.1 Protection at 6.6 KV

All circuit breakers shall have programmable numeric type relays having suitable range. The following protections shall be provided for circuit breakers controlling different type of feeders.

Sl. No.	Type of Feeder	Protection to be provided
1.0	Incomer	Overload, short circuit and earth fault & CBCT operated earth leakage relay.
2.0	Transformer control	Overload, short circuit and earth fault and auxiliary relays for Buchholz, Differential protection if required, Oil and Winding temperature protections.
3.0	Bus coupler	Directional protection.
4.0	Capacitor bank	Overload, short circuit, earth fault, Under voltage, Over voltage & Neutral displacement.
5.0	Outgoing	Overload, short circuit and earth fault.

6.5.2 Protection at 415 V

a) All the 415 V incoming panels shall be provided with over current, short circuit and earth leakage protection.

b) All the 415 V outgoing panels supplying power to PDBs and Main Lighting Distribution Board shall be provided with single phasing protection, Over Current, Short Circuit and Earth Leakage Protection.

6.6 POWER FACTOR IMPROVEMENT

For the purpose of improving power Factor to 0.98 (approx.) lagging and maintaining the same, suitably rated capacitor Banks will be provided at 415 V Main Power Distribution Board as shown in drawing. The capacitor banks will be complete with automatic power factor correction and switching devices which will facilitate for automatic selection and switching ON/OFF of the capacitor banks according to the load connected.

6.7 ILLUMINATION SYSTEM

The design of illumination system including fittings and installation will be aimed at providing proper level of illumination in both indoor and outdoor of Workshop complex with safety and decorative features. LED lamps shall be used for outdoor lighting and also for indoor lighting, according to the nature and requirement of the place.

The following levels of illuminations and type of fittings are envisaged for broad guidance of the bidder. Location-wise illumination levels and type of fixtures has been shown below.

Location	**Minimum Illumination Level (Lux)**	**Types of lights**
Substation, Main PDB / Rear of Panel / Office	100 (H), 50 (V)	LED lamps
Repair Sections/Shops	100 (H), 50 (V)	LED lamps
Washing Station	100 (H)	LED lamps
Dumper Parking	50 (H)	LED lamps
Open Yards/Roads	20 (H)	LED lamps
Administrative building/Offices/Canteen	200 (H)	LED lamps

For illumination system, power shall be fed from the Main LDB to Sub Lighting Distribution Boards and Feeder Pillars located at strategic locations in the workshop. The distribution of power for illumination system shall be made through Lighting Distribution Boards located at strategic places.

Internal illumination of office buildings, substation, canteen, rest house etc. shall be done with decorative LED lighting fixtures of suitable ratings.

Internal illumination of workshop shades shall be done with High bay or medium bay lighting fixtures as per requirement.

The outdoor premises shall be illuminated with the help of sufficient number of 140-150/190-210 W LED lighting fixtures mounted on poles from all sides of the building roof. All the lamps will be placed suitably to achieve uniform level of illumination.

For lighting of the total outdoor area, 4 nos. of 20m high, fixed tower will be placed at suitable locations of the Workshop premises (Excavation workshop, E&M workshop and Store complex). The position of each tower will be decided considering the maximum utilization of each lighting tower. Each tower shall have minimum 8 number of LED Flood lights which shall vary as per the requirement of maintaining minimum illumination level as per IS 3646 part-II in the entire workshop. For load balancing, the lights in each tower will be distributed in three different phases. While deciding the length of the cable, care should be taken, so that the voltage drop remains within prescribed limit i.e. 5%.

6.8 EARTHING SYSTEM

The earthing system shall strictly conform to Indian Electricity Rules 1956 as amended up-to-date and IS-3043 current. Main earthing grid shall be provided around the periphery of proposed workshop substation and different shops. Interconnection of grids of the buildings as well as to earth the electrical equipment in various shops, receptacles etc. has also been envisaged.

Each electrically driven equipment, transformer, 6.6 kV switchboard panel, 415V Main PDB, MLDB, LDBs, PDBs, SPDBs, lighting panels, receptacles, junction boxes and other electrical equipment should be earthed by two separate earthing strips. In addition all the electrically driven equipment will be earthed through the armouring of the connecting cable. Size of earthing strip and electrodes shall be as per requirement of relevant IS. However, the size of main earth bus strip shall not be less than 65 mm x 5 mm whereas that of the connecting earthing strip shall not be less than 25 mm x 5 mm.

Equipment structure, cable tray supports, cable trays etc. shall not be considered as earthing conductors. Metallic sheath, screens/shields and armour of all cables shall be earthed at both the ends at the equipment where the cables are terminated. Suitable earthing clips shall be provided as required.

Cable trays shall be earthed at every 10m intervals. Adequate care shall be taken towards earthing of light-fittings, welding sockets etc.

Separate earth pits for earthing of neutral of transformers and lightning arrestors shall be provided. All joints and connections of earth lead shall be welded/bolted securely.

The resistance to earth as measured shall not exceed 1 ohm. Test pits shall be provided at all interconnecting grid connections. Interconnection with employer's earth grid if any shall be made at least at two points by using test electrodes.

6.9 LIGHTNING PROTECTION

Lightning protection against direct stroke shall be provided for all structures, buildings etc. having a height of 10 m or more. The lighting protection shall conform to IS 2309. Earthing system for lighting protection shall be independent of the earthing system for electrical equipment. It may be noted that South Eastern Coalfields is high lightning prone zone.

6.10 WELDING SOCKETS

For easy maintenance of entire plant welding circuit shall be provided in each shop. In such system, there shall be provision for installation of welding machine (motor/generator set/welding transformer) in each shop including substation building. For supply of power to welding machines, necessary circuit with plug and socket system of suitable capacity at suitable interval and strategic location shall be laid by the bidder. This system shall facilitate connecting of welding lead at any point of plant for welding/repair of steel structures. Welding sockets shall be provided at convenient places such as each shop floor, pump houses, washing station, stores, Substation etc.

6.11 MAINTENANCE AND SAFETY

Suitable provision for maintenance of equipment and safety shall be made. General requirement for maintenance and safety is given elsewhere in this tender.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

LIST OF ELECTRICAL EQUIPMENT, ACCESSORIES AND TESTING EQUIPMENT

A: LIST OF ELECTRICAL EQUIPMENT AND ACCESSORIES

Sl. No	Equipment	Quantity	Location
1.	6.6 kV Switchboard comprising 7 nos. of 6.6 kV Vacuum Circuit Breaker Panels complete with metering and protection system (Refer drawing no. HQ:E&M: 301844 and technical specification)	1 Nos.	Substation
2.	6.6/0.415 kV, 315 kVA Transformer (Refer drawing no. HQ:E&M: 301844 and technical specification)	2 Nos.	Substation
3.	6.6/0.230 V (L-L), 100 kVA Lighting Transformer (Refer drawing no. HQ:E&M: 301844 and technical specification)	1 No.	Substation
4.	415 V sectionalized Main Power Distribution Board (MPDB) at substation comprising of Incomer ACBs, Bus-Coupler ACB and required nos. of outgoing MCCBs including spares. (Refer drawing no. HQ:E&M: 301844 and technical specification)	1 No.	Substation
5.	415 V Power Distribution Boards (PDBs) comprising of Incomer MCCBs and required nos. of outgoing Feeders comprising of MCCBs for power supply to SPDBs located at various sections in a shop/electrically driven equipment in individual shops of Excavation Workshop (Refer technical specification)	lot	Various Shops
6.	415 V Power Distribution Boards (PDBs) comprising of Incomer MCCBs and required nos. of outgoing Feeders comprising of MCCBs for power supply to SPDBs located at various sections in a shop/electrically driven equipment in individual shops of E&M Workshop (Refer technical specification)	lot	Various Shops
7.	415 V Power Distribution Boards (PDBs) comprising of Incomer MCCBs and required nos. of outgoing Feeders comprising of MCCBs for power supply to SPDBs located at various sections in a shop/electrically driven equipment in individual shops of Store Complex (Refer technical specification)	lot	Various Shops
8.	415 V Sub Power Distribution Boards (SPDBs) comprising of Incomer MCCBs and required nos. of outgoing Feeders comprising of MCCBs/MCBs for power supply to electrically	lot	Various Shops

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Sl. No	Equipment	Quantity	Location
	driven equipment in individual shops of Excavation Workshop, E&M Workshop and Store Complex (Refer technical specification)		
9.	415 V Capacitor Bank of suitable capacity with automatic P.F. correction relay at Substation for improvement of Power Factor. (Refer drawing no. HQ:E&M: 301844 and technical specification)	2 Sets.	Substation
10.	110V Lead Acid Battery complete with Battery Charging unit. (Refer technical specification)	1 No.	Substation
11.	**Cables**		
11.1	Power cables		
11.1.1	6.6 kV grade, XLPE, single wire armoured aluminium conductor, of different sizes for supply of power to 6.6 kV switchboard and transformers as per technical specification	Lot	Incomer Cable and Switchboard to Transformers
11.1.2	1.1 kV grade, FRLS, core copper cable of suitable size for connection of Secondary of lighting transformer at 230 V (L-L) to MLDB	As per requirement	Substation to different locations of MLDBs
11.1.3	1.1kV grade, FRLS, armoured aluminium conductor FRLS cables of suitable sizes for feeding the power from MPDB to Excavation Workshop PDBs, E&M Workshop PDB and E&M Workshop PDB to Store Complex as per technical specification	Lot	MPDB to Excavation Workshop PDBs, E&M Workshop PDB and E&M Workshop PDB to Store Complex as per technical specification
11.1.3	1.1kV grade, FRLS, armoured aluminium conductor FRLS cables of different sizes as per technical specification	Lot	LT drives/equipment at different locations of Workshop
11.2	Lighting cables		
11.2.1	650/1100 V grade, PVC insulated, PVC sheathed, single wire armoured, Aluminium conductor, FRLS cables of different sizes as per technical specification	Lot	Indoor and outdoor Illumination of all the Workshop locations
11.3.2	Cable trays/cable racks (separate trays shall be used for power and control cables) & cable trenches etc. as per technical specification	As per requirement	
12	**Illumination system**		
12.1	230 V (L-L) Main Lighting Distribution Board with incoming MCCB and outgoing MCCBs including spares. (Refer drawing no. HQ:E&M: 301844 and technical specification)	1 No	Substation
12.2	Lighting Distribution Boards with incoming and outgoing MCCBs/MCBs as per technical specification	lot	Different location in all the repair shops
13.	**Luminaries**		

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Sl. No	Equipment	Quantity	Location
13.1	LED lamps (Industrial/ decorative/dust tight type as per requirement complete with control gears, accessories etc. as per technical specification	lot	Different location in the workshop and Store as per requirement
13.2	LED lamps (High-bay/Mid-bay type) as per requirement complete with control gears, accessories etc. as per technical specification	lot	
13.3	LED lamps (Flood light/Street light type) as per requirement complete with its accessories as per technical specification	lot	
13.4	Swan neck Street lighting poles (single and double) of suitable height	lot	
13.5	Lighting Tower 20m high mast	4 nos. minimum or as per design requirement	
13.6	Miscellaneous items like junction boxes complete with fuse, terminal block and other necessary accessories, cable glands, lugs, conduits, receptacles etc.	lot	
13.7	Digital clock based arrangement with all accessories and terminal for automatic switching ON/OFF of street lights	Lot	Substation
13	**Welding system**		
13.1	1.1kV grade, PVC insulated and sheathed single layer armoured, FRLS, Aluminium conductor cables for power supply to welding sockets.	Lot	Different location in the Workshop
13.2	Dust proof plug sockets complete with switches, holder set etc. throughout the Workshop.	Lot	
14	**Earthing System**		
14.1	Galvanized earthing strips / wires / conductors for main earthing grid, sub earthing grid of substations, building and structures, earthing of light fittings, welding sockets, and various electrical equipment, Ground electrodes and earthing pits as per technical specification	Lot	Complete in shops and other strategic locations
14.2	Equipment and accessories for Lightning protection system for building and structures having height of 10m and above with separate earth pits.	Lot	Sub-station building, and other structures in the Workshop.
15.	Equipment and accessories for Pressurization	1 Sets	Switchgear room at substation

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CMPDI

Sl. No	Equipment	Quantity	Location
16.	Miscellaneous items such as testing equipment and other safety equipment as per relevant Indian Standard & Indian Electricity Rules. Furniture for substation building.	lot	Substation and other suitable locations
17.	Insulating mats per IS for sub-station, in front of MPDB/MLDB/PDB/SPDBs in Substation and different workshop sheds	lot	Sub-station and in front of PDB/MLDBs/SPDBs in different workshop sheds
18.	Any other equipment specifically not included but necessary for completion of work and efficient operation of plant.	lot	
19	**Miscellaneous Equipment**		
19.1	Aluminium portable telescopic ladders	lot	
19.2	Portable Fire Extinguishers	lot	

CHAPTER - 7

TECHNICAL SPECIFICATION (MECHANICAL)

7.0. GENERAL

The technical specification for Mechanical system as given hereunder may be read in conjunction with relevant scope of work as deliberated in Chapter 5.

SECTION – 7.1

EOT CRANE

7.1.1. Basic Parameters

1.1	Type of Crane	E.O.T. (Double girder)
1.2	Duty of class of crane IS 807 & 3177	Class II, M-5 Medium duty
1.3	Safe working loads in Te	As given in table-1 below
1.4	Whether the crane is to work in an enclosed building or outdoor	Enclosed building
1.5	Operation speeds :	Main hoist- 3 m/min, Aux. hoist- 5 m/min Cross traverse:10 to15m/min Long traverse:15-20 m/min
1.6	Power Supply :	415 V AC 3 Phase, 50Hz.
1.7	Controls :	Pendant (floor operated)
1.8	Ambient temperatures: Maximum Minimum	 50º C 4º C
1.9	Reach of hook	As given in table-1 below

TABLE - 1

Sl. No.	EOT Crane Capacity	Qty.	Span (m)	Run (m)	Lift (m)	Shop	Reference Drawing No.
E1	15/2 te.	1	16 m	36 m	10 m	HEMM Repair Shop	HQ/E&M/301847
E2	5/1 te.	1	14 m	36 m	6 m	E&M Repair Shop	HQ/E&M/301848
E3	5/1 te.	1	11 m	32 m	6 m	Existing Store Complex	HQ/E&M/301850

#Note: The Span, run & lift mentioned for EoT Crane at Existing Store Complex is tentative. The dimensions may vary slightly. The contractor shall visit the site for exact measurements and shall fit the EoT Crane along with all the required accessories as mentioned in this chapter for smooth operation and make good of existing construction.

7.1.2. Constructional Features

The equipment will be of robust construction and manufactured as per up to date engineering practices duly complying with relevant Indian Standard or in its absence with equivalent International Standard.

7.1.3. Compliance with Standards

All components, material and equipment used will comply in general, with relevant Indian / International Standards and in particular to the specifications furnished. Acceptance test will as per relevant standard and will be conducted out by manufacturer and test certificate will be furnished with equipment.

7.1.4. Drums

Drums will be of such size that there will be not more than one layer of rope on the drum when the rope is in its fully wound position and each lead of rope has a minimum of two full turns on the drum when the hook is at its lowest position.

One spare groove for each lead of the wire rope on the drum when the hook is at its highest position. The minimum height of the flanges on the drum ends will be double of rope diameter. The lead angle of the rope will not exceed 5 degree on either side of helix angle of the groove in the drum.

Drum will be made of cast steel conforming to the relevant IS. The diameter or the drum will be minimum of 18 times the diameter of the rope. The end of the rope will be anchored to the drum in such a way that the anchorage is readily accessible. The factor of safety of the rope will be not less than 5.

7.1.5. Sheaves

Sheaves will be machine grooved to a depth of not less than 1.5 times the diameter of rope The grooves will be finished smooth and will be free from surface defects likely to injure the rope The radius of the bottom parts of the groove will be larger than the radius of the rope by not less than 1.5 mm. Sheaves will be provided with guards to retain the ropes in the grooves, if necessary.

7.1.6. Bearings

All running shafts and wheels running as fixed axles or pins will be fitted with suitable size anti-friction bearings. Due allowance will be made for impact and side thrusts and, where necessary, spherical, seating and separate thrust bearings of suitable dimensions will be used. Life of bearings will be minimum of 30,000 working hours.

7.1.7. Couplings

All couplings will be of cast steel and will be designed to suit the maximum torque that may be developed, alignment will be such that solid couplings mate accurately. Flexible couplings will be initially aligned with the same accuracy as solid coupling. Flexible coupling will be fitted between motor shaft, and extension shafts.

7.1.8. Shaft

All shafts will preferably be made of EN-9 as per BS or equivalent steel. Shafts and axles will have ample strength and rigidity and adequate bearing surface for their purposes. They will where necessary, be finished smoothly and, if shouldered, will be provided with fillets of as large radius as possible and/or be tapered to suit.

7.1.9. Gears

All gears will be of cast steel, which may have steel rims secured to cast iron centres. Gearboxes will be so designed that the gears which they enclose will be automatically lubricated. The gear will be readily removable and the boxes will be oil tight as far as is reasonably practicable. They will be of rigid construction fitted with inspection covers and fitting lugs where necessary.

7.1.10. Track Wheels

Track wheels may have cylindrical or tapered (conical) treads, with flanges or any other means as and where necessary to guide the crane effectively and to prevent derailment the wheels will be mounted in such a manner as to facilitate removal and replacement, Track wheels will be of cast steel or will have steel tyres shrunk on and registered with minimum hard ness as obtained earlier. The steel will not contain more than 0.060% either of sulphur or phosphorous. The hardness of the steel will not be less than 250 BHN.

7.1.11. Brakes

Hoisting motion mechanism will be fitted with an electro-hydraulic thruster type brake. The traversing motion mechanism (CT/LT) will be fitted with a brake when the specified speed of traversing speed under full load exceeds 20 m/min. When limit switches are provided in this motion, automatic electro-mechanical brakes will be provided, service brakes, parking brakes, emergency brakes will be provided as per Indian standard. Brake linings will be effectively and permanently secured to the brake shoes during the effective life of the lining, and will be protected from water, grease, oil or other adverse effects.

7.1.12. Lifting Hooks

The hooks used will be of plain shank type hooks. System will comprise single/two sheaves.

7.1.13. Guarding

All gear wheels, pinion and chain drives will be totally enclosed unless such parts are so situated in relation to the structure of the crane as to be as safe as if complete encasement were provided. Effective guards will be provided for revolving shafts and couplings unless every set screw, bolt or key on any revolving shafts is sunk, shrouded or otherwise effectively guarded. Long and cross travel shafts will be guarded throughout their length. The sheaves of hook blocks fitted with two sheaves or less, will be guarded to prevent the trapping of a hand between a sheave and the running rope.

7.1.14. Electrical

- Motor

  The motor will be TEFC, 50 Hz, slip ring induction type of adequate rating, suitable for crane duty, reversible service application having class 'F' insulation.

- Controller

  Each EOT crane shall be operated by pendant push button control from the floor moving along the span of the crane, independent of the trolley. Controller will comply with relevant Indian Standard specification and will be adequately protected to prevent accidental contact with live parts.

- Limit Switches

  The limit switches, after being tripped, will automatically reset themselves within a reasonable distance travelled in the opposite direction. Limit switches will be fitted to prevent, over travelling and over traversing.

- Pendant switch

  The pendant switch shall be capable of withstanding rough handling without being damaged and the cover shall be effectively secured .the weight of the pendant shall be supported independently of the electric cable by means of chain. If the pendant is of metal, it shall be effectively earthed. A chain or hook does not provide an effective earth connection and should not be relied upon for that purposes.

  A means shall be provided to prevent in advertent operation from the floor while maintenance work is being carried out on the crane

- Starter and control panel

  This shall be adequately rated for the operation of the crane. The control panel shall have the following features and confirm to relevant IS specifications.

a) Off-load isolator
b) Circuit breaker with under voltage release and electrical/mechanical inter lock
c) Interlock with the door for the isolator
d) Protections
e) Motor control centre
f) Motor protection relay with over load, earth fault, single phase stall protection and unbalance condition, solid state
g) Cable entry box for incoming and out going entry
h) Enclosure shall be suitable for out door duty, dust/vermin proof and top canopy as per IS-55 enclosure.
i) Space heater shall be provided for motor rating 30 kW and above.

SECTION – 7.2

FIRE FIGHTING SYSTEM

7.2.1. Brief System Description

Well-equipped fire hydrant system shall be provided in the Workshop Complex to protect the workshop and store from fire hazards. The proposed shops/sheds/facilities in the Excavation & E&M workshop including existing Store Complex shall be equipped with adequate no. of fire extinguishers & fire-hydrant system complying with the regulations of the Tariff Advisory Committee (TAC) of India/ National Fire Protection Association (NFPA), USA, Codes.

The various firefighting systems & facilities and the areas protected thereby shall be as under :

i)	High pressure hydrant system	:	The entire premises of "Excavation Workshop and E&M Workshop" along with Existing Store Complex (Drg. No.: HQ/E&M/301846 & HQ/E&M/301850) including all shops, sheds, utility buildings, sub-station, scrap yard, dumper parking space, green land/space for future expansion, etc. shall be covered under the hydrant system.
ii)	Water or bucket type fire extinguisher	:	For normal combustion as per TAC.
iii)	Foam type fire extinguisher	:	For Existing store complex alongwith POL store, Diesel Filling Station, etc as per TAC.
iv)	CO_2 type fire extinguisher	:	For Sub-station, electrical equipments, control boards, etc as per TAC.

- <u>High Pressure Hydrant System</u>

Industrial water shall be used for firefighting application. The water for hydrant system shall be stored in fire water tank. The hydrant system mainly consists of fire water pumps, fire water reservoir, pipe network, hydrant & accessories. The total water requirement of the hydrant system shall be met by suitable capacity pumps in accordance with the stipulations of the Fire Protection Manual of TAC considering the workshop and store as a light hazard category. The pump head shall be so selected that a minimum running pressure of 3.5 kg/cm^2 at a discharge head equivalent to half the aggregate pumping capacity is available at the hydraulically remotest hydrant point and a running pressure of 3.5 kg/cm^2 shall be available at a remote hydrant point. Water from the reservoir shall be pumped by electric motor driven centrifugal

pump of adequate capacity for the hydrant system. One diesel engine driven pump of identical capacity shall be provided as a standby for the electric main pump. The fire pumps shall be suitable for parallel operation.

The hydrant system shall consist of a network of pipes both underground and over-ground which will feed pressurised water obtained from fire water pumps to all the hydrant valves. Pipe network shall be laid throughout the premises of Workshop and Store so as to cover all the areas by closed loops. The hydrant system shall also cover the entire area within the various shops/sheds/offices to handle any internal fire and sufficient number of internal hydrants shall be provided at suitable locations within the shops/sheds/offices. The piping from the Pump House of Excavation Workshop to E&M Workshop & Existing Store Complex shall be laid underground.

The hydrant main shall remain pressurised at a pressure not less than 7 kg/cm^2. In the event of a fire, the hydrants close to the seat of fire shall be opened, causing a drop in water pressure in the hydrant main which will bring the hydrant pump into operation automatically, ensuring steady supply of water to the system. If the main pump fails to start initially, the standby pump will come into operation automatically. However, the pumps can only be stopped manually after ascertaining that the fire is extinguished.

Total number of hydrants required and all the provisions shall be estimated as per TAC recommendations for **"light hazard category"**. A set of two lengths of 15 m hoses, a nozzle and a branch pipe shall be kept in hose boxes adjacent to each hydrant. Proposed locations of hydrants shall be shown in table and drawing. Hose boxes shall be located at strategic places, each covering a group of external hydrants. Each hose house shall have sufficient number of 15 m hoses, a branch pipe and nozzles in accordance with TAC/NFPA regulations. The hydrant system shall be kept pressurised by jockey pump of suitable capacity to make up small system leakage and maintain pressure in hydrant and sprinkler system. Jockey pump shall cut in approximately at 0.35 kg/cm^2 drop and cut out at normal system pressure. Fire pumps shall be arranged to cut in approximately at 1 kg/cm^2 drop and cut out manually at churn pressure.

- Portable Fire Extinguishers

  Various types of portable and mobile fire extinguishers of suitable capacity (like bucket type, foam type and CO_2 type) shall be provided at strategic locations in the shops/sheds/offices of the workshop and store as per regulations of the Tariff Advisory Committee (TAC) of India.

7.2.2. Accessories

All the accessories required for successful and smooth operation of pumping system shall be supplied along with the pumps.

Major accessories are mentioned below:

- Pressure gauges conforming to IS:3624(Current).
- Sluice valves, conforming to IS:14846(Current).
- Non-return valves conforming to relevant IS.
- Foot valves with strainers conforming to IS:4038 (Current).
- Primary fire water tank with necessary accessories i.e. pipes and valves etc.

7.2.3. Pipes and Pipe Fittings

- Pipes

Pipes shall be ISI marked black MS pipe conforming to IS:1239 (Current). Pipes shall be of suitable diameter and threaded at both ends. These shall be painted red for anti corrosion and meet the requirement of firefighting systems as per relevant Indian Standards.

Total requirement - as per system.

- Fittings

The piping system shall have the requisite quantities of the following bends and other fittings.

- 90^0 bends
- 45^0 bends
- Other angular bends.
- Rubber gaskets for above all flanged tees
- Sluice valves

7.2.4. Hydrant Valves

The valves shall be manufactured from stainless steel as per relevant Indian standard specifications. The hydrant valves are fitted with flanged inlet connections for 150 mm dia. pipes and 63 mm female instantaneous outlet connections with blank cap and chain. Hydrant valves shall be of double outlet type. Suitable stuffing boxes shall be provided in the hydrant valve. The distance between two adjacent valves shall not be more than 60 m apart. Additional hydrant valves shall be provided if required, as per system requirement.

Total requirement - As per system requirement.

7.2.5. Fire Hose Cabinet

Hose cabinet will be fabricated from structural steel with glass front door of suitable size. It will be located close to each hydrant valve and will accommodate two lengths

canvass hose of 15 M long each with couplings, branch pipes and nozzle of suitable size and conforming to relevant current IS.

Total requirement - As per system requirement.

7.2.6. Fire Hose

These shall be unlined flax canvas fire fighting delivery hose, 15 metre length; 63 mm (2.5 inch) dia. tested to a bursting pressure as per I.S:4927 (latest). Hose shall be impregnated with antirust chemical for high mildew resistance. These shall be manufactured as per relevant IS and bearing ISI mark on each length. The hose shall be light in weight and suitable for fighting industrial fire. End shall be fitted with 2.5 inch (63 mm) dia. male and female parts of gun metal coupling of standard quality. For each hydrant there shall be two hose pipes of 15 metre length each. Spare shall be provided as per relevant IS.

Total requirement - As per system specifications (a double headed hydrant counted as two).

7.2.7. Branch Pipe and Nozzles

Stainless steel branch pipes with nozzles shall be conforming to relevant standards of fire fighting system. Same shall be suitable for 63 mm dia fire hoses.

Total requirement - As per system requirement.

To fight fires where water cannot be used, other specific equipment are required to be used such as sand buckets, foam type, CO_2 type fire extinguishers etc. These shall be provided as per statutory requirement and TAC regulation. The locations, number provided for each type shall be clearly indicated. Chemicals, which are not permitted, shall not be used.

7.2.8. Fire Buckets

These shall be round bottom, fire bucket made out of 24 gauge M.S. sheet, galvanised after manufacture, standard 9 litres capacity, painted fire red outside with letter 'FIRE' in black and complete with brackets and shall be installed at all the required locations as per requirement.

7.2.9. Water type Fire Extinguisher

IS Specification	:	IS:940 & 50 ltrs. as per IS:3385 latest version.
Capacity	:	9 Ltrs & 50 Ltrs

Construction	:	Manufactured out of M.S.Sheets (CRCA) / Plates conforms to IS:513 (9 ltr.cap) and all are of welded construction.
Cap	:	Gun Metal
Anti Corrosive	:	Body coated with lead & tin alloy Treatment internally and externally by electrolytic deposition process.
Hydraulic Testing	:	Each Body Hydraullically tested at 25kgf/cm2
Charge	:	CO2 Gas filled Cartridge is fitted in each extinguisher & water to be filled upto the marked level site.
Finish	:	Fire red epoxy polyester powder coated/Painted in synthetic enamel fire red color as per IS
Accessories	:	Wall mounting brackets. (50 Ltrs capacity extinguisher is wheel mounted type) hose (optional)
Approval	:	Approved by TAC & certified by ISI.

7.2.10. Foam type Fire Extinguisher

Capacity (Ltr)	**9 Ltr**
Body material	Mild steel sheet
Body sheet thickness (mm)	1.7 to 1.8 mm
Extinguishing agent	water + AFFF
Propelling gas Nitrogen (N2)	15 bar
Discharge time (sec.)	Minimum 13 sec.
Service pressure	15 – 19 bar
Hydraulic test pressure	35 bar
Operating temperature	+5°C to +55° C
Body burst pressure	Minimum 55 bar
Propelling AFFF foam (6% concentrate)	~ 540 ml
Hose length (mm)	Minimum 400 mm
Discharge throw (meter)	2 – 5 mtr
Dimension (OD)mm	~ 175 mm
Fire Rating	3A & 34B

Capacity (Ltr)	**50 Ltr (Trolley mounted)**
Extinguishing agent	water + AFFF
Discharge time (sec)	60 sec.

Range of jet throw (meter)	10 mtr
Hose length (meter)	~3 mtr
Hose bore (mm)	~19 mm
Hydraulic pressure test	30 kgf/cm2
Hydraulic burst test	45 kgf/cm2
Gas cartridge (CO2)	~300 gms
Wheeled carriage	As per standard
Propelling - AFFF foam (6% concentrate)	~3 ltr
Dimension (OD) mm	~300 mm

7.2.11. CO_2 type Fire Extinguisher

Capacity (Kgs)	**6.5 Kg**	**9.0 Kg**	**22.5 Kg**
Extinguishing agent	Liquefied gas(CO2)		
Gas filling ratio	0.667 % per ltrs		
Fire rating	55 B	70 B	89 B
Discharge time (sec.)	10 – 20 sec.	15 – 36 sec.	20 - 60 sec.
Hose length (mtr)	1 mtr	2 mtr	5 mtr
Hose burst pressure	140 kgf/cm2		
Operating temperature	0° C to +55° C		
Dimension (OD)mm	140 mm	140 mm	235 mm
Hydraulic test pressure	250 kgf/cm2		
Wheeled carriage	As per standard		

SECTION – 7.3

PRESSURISED LUBRICATION SYSTEM & COMPRESSED AIR SYSTEM

7.3.1 TECHNICAL SPECIFICATION

The scope of supply includes the supply of equipment mentioned below in clause 7.3.1.1 to clause 7.3.1.5 of this document with brief technical specifications needed for compressed air system and pressurized lubrication system. Compressed air generated in the air compressor shall be routed to various points of the workshop as detailed in clause 7.3.1.2 and reference drawing HQ/E&M/301856. The compressed air shall be used for running the pressurized lubrication, inflation of dumper/LMV tyres, operation of pneumatic tools, cleaning of air filters and other miscellaneous jobs. Tenderers are required to submit the detail technical specifications and system drawings of the above system and all other details with the offer.

7.3.1.1 AIR COMPRESSOR:

a) Description:

02 nos. Screw type air compressor unit consisting of screw type air compressor, air dryer, air filter, air receiver and valves, associated motor, etc as per the following specification for supplying dry and clean compressed air in the HEMM Repair Shop and E&M & LMV Repair Shop for inflation of dumper/auxiliary equipment/ LMV tyres, operation of pressurized lubrication system, pneumatic tools/machines, etc shall be provided.

Basic technical specification of the compressor and air dryer shall be as per table given below:

Description	For HEMM Repair Shed	For E&M & LMV Repair Shop
No. of compressor	1 no.	1 no.
Type	Screw air compressor	Screw air compressor
No. of stages	1 one (or more)	1 one (or more)
Air Delivery (FAD)	140 CFM (Min.)	140 CFM (Min.)
Min. Working Pressure	7.0 Kg/cm^2	7.0 Kg/cm^2
Motor Power	Minimum 22 KW	Minimum 22 KW
Power Supply	415V, 3 phase, 50 Hz	
Air Filter & dryer	Suitable mechanism must be attached with the compressor to deliver dry and clean compressed air of the required quality.	
Noise level	Suitable noise proof enclosure shall be provided to cover the compressor and drier to reduce the noise level. The maximum noise level shall be 85 dB at normal load condition, 1 meter from the compressor unit.	
Air Receiver		
Receiver Air Capacity conforming to IS 2625 or equivalent.	500 Litres (Min.)	500 Litres (Min.)
Quality of Delivered Air	Compressor should deliver compressed air according to ISO-8573-1, having the following parameters.	
Environment Condition	Ambient temperature : 5 ^oC to 50 ^oC Relative humidity : 95 % max. Air quality: Dust laden atmosphere during most part of the year	

7.3.1.2 COMPRESSED AIR PIPELINE

In Excavation workshop, compressed air pipe line of suitable diameter will be drawn from the compressor and distributed throughout the HEMM repair shop. The pipeline shall be routed, such that, compressed air is delivered to at least a point in each of the Dumper & Dozer repair bays and in each sub-assembly repair bays (4+4 outlet points minimum), as indicated in drawing no. HQ/E&M/301856. The compressed air shall also be used for running the pressurized lubrication system as detailed in clause 7.3.1.3 & 7.3.1.4

In E&M workshop, compressed air pipe line of suitable diameter will be drawn from the compressor and distributed throughout the E&M repair shop as well as LMV repair shop (5+4 outlet points minimum) to run the pneumatic tools and tyre pressure filling of light vehicles as indicated in drawing no.HQ/E&M/301856.

The pipeline sizing shall be such that the pressure drop does not exceed 0.1 bar at any of the point of use from that of the compressor end. The pipeline shall be provided with all necessary piping, fittings, isolating and stop valves, filter cum moisture separators, loops fitted condensator, down take pipes extensions,

connections and miscellaneous fittings. The air pipeline shall generally run inside shop at height such that it does not interfere with the movement of man and machine, normally along the structure/ column and shall be clamped on support bracket to be fixed on the column/beam girder etc.

Pipe line of 1" diameter is to be erected directly downwards till 1.0m above floor level. The required bends for 1" Pipe line should be fabricated. The vertical drop line is to be properly supported. All the drop lines and drain lines are to be installed with 1" threaded ball valve. Isolation valves shall be provided where ever required to isolate any required section.

All pipe lines should be fabricated and erected as per general pipe laying standards ensuring proper levelling, straightness. Pipes shall conform to IS: 1239 (Part – I) latest version and shall be of ERW heavy quality. Pipe lines shall be routed and fabricated to ensure minimum pressure drop/line loss. The pipeline should be routed such that it does not interfere with any civil, electrical or crane or dumper movement in the shop floor.

The system shall, be fitted with all safety guard and safety features stipulated by statutory board and other regulatory system in force from time to time and executed as per relevant India/ International standards. Subsequent to the laying of the pipe lines, they are to be painted, hydro tested, installed with tapping points and pressure gauges as mentioned.

7.3.1.3 PNEUMATIC HIGH PRESSURE GREASE PUMP

Two nos. of high pressure air operated grease pump, shall be provided in the HEMM repair shop (one for dozer repair bay and one for dumper repair bays as indicated in drawing no. HQ/E&M/301856), that can be directly mounted on standard oil company drum of 180 to 200Kg capacity using follower plate and drum cover. The grease pump should have free delivery output of 300 to 400 grams per minute at a pressure of 10.5 Kg/Cm^2. A hose reel shall be connected to the delivery side of the unit. The pump will work at ratio of 50:1. Suitable trolley for movement of each of the drum shall also be provided. The tenderer will submit the following details with the offer:

a) Make

b) Model

c) Quantity

d) Working Pressure

e) Delivery Rate

f) Drum capacity

g) Other details, which tenderer want to submit

7.3.1.4 PNEUMATIC OIL PUMP

Two sets comprising of four nos. air operated oil pump in each set, suitable for mounting on standard oil company drum of capacity 180 to 200 liters shall be provided. The four nos. air operated oil pumps shall be used to pump engine oil, hydraulic oil, brake oil and coolant. One set shall be provided in the dumper repair bay and one set in the dozer repair bay. The oil pump should have free delivery output of 13.0 - 15.0 ltrs. per minute at a pressure of 10.5 Kg/cm^2 with one meter long inter-connection oil and air hose, drum cover etc. The pump will work at working ratio of 3.5:1. Compensating vessel will be provided with the equipment at outlet of the unit to reduce any fluctuation in the oil output. Suitable adapter shall be provided to fix the pump to barrel top. Hose reel shall be connected to the delivery side of the pump if needed. Suitable trolley for movement of each of the drum shall also be provided. Tenderer should also submit the following details with the offer:

a) Make of oil pump

b) Model

c) Quantity

d) Working Pressure

e) Delivery Rate

f) Drum capacity

g) Other details, which tenderers want to submit.

7.3.1.5 HOSE REEL

a) Two sets (one in dumper repair bay and one in dozer repair bay) of five nos. Hose reels in each set (four for oil and one for grease) self-winding type hose reel consisting of 15 mtr hose shall be provided.

b) Ratchet and pawl system shall be built-in and shall be able to lock the hose at any desired length or any position. One end of the hose will be fitted with a valve to swivel and trigger control. All joint shall be protected from leakage by cup seals and 'O' rings.

c) Suitable nos. of hose reel supporting stand for holding grease and oil hose reel shall be provided.

d) Each hose reel shall be provided with digital oil dispensers with electronic preset mode facility, totalizer and digital locking facility.

The hose reels shall be as per specification given below:

	OIL	GREASE
Hose Dia – OD x ID (mm)	18 x 12.5 (1/2″)	14 x 6.4 (1/4″)
Outlet Thread	R 1/2″ F/M	R 1/4″ M
Inlet Thread	R 1/2″ F/M	G 1/4″ F/M
Hose Pressure Rating (Kg/cm^2)	100	350
Hose Burst Pressure (Kg/cm^2)	400	1400
Hose Material Type	NBR Synthetic rubber with one steel braid	NBR Synthetic rubber with one high density steel braid

7.3.2 REQUIRED DATA

7.3.2.1 DATA TO BE FURNISHED BY THE TENDERER

Tenderers are required to submit the following along with the offer:

a) A comprehensive pressurised lubrication scheme for the shop.
b) Detailed technical specification and leaflets of equipment supplied with the system, such as compressor, oil pump, grease pump, etc.
c) Schematic diagram of the system.
d) Design calculation.
e) List of Indian/ International standards followed.
f) Other details which tenderers want to submit.

7.3.3 LIST OF EQUIPMENTS

Sl. No.	Item	HEMM Repair Shop	E&M Repair Shop & LMV Repair Shop
1	Screw air compressor along with 500L air receiver (7 Kg/cm2, 140 CFM FAD) alongwith other accessories as indicated in 7.3.1.1	1 set	1 set

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CMPDI

2	Pneumatic Oil pump	8 nos.	-
3	Pneumatic High pressure grease pump	2 nos.	-
4	Hose reel	10 nos.	-
5	Pre-set dispenser	10 nos.	-

SECTION – 7.4
VENTILATION AND AIR CONDITIONING SYSTEM

7.4.1. BRIEF SYSTEM DESCRIPTION

Ventilation system has been provided to reduce the noxious gas emitted during maintenance, repair and testing of HEMM and other mining equipment, welding operation, battery charging, etc. and to bring the working condition of the workshop to the accepted level for efficient performance of all employees. This also includes the design of ventilation scheme for various shops depending on the nature of work. The main shops, sheds and buildings where suitable ventilation scheme is required include:

- All repair shops and store sheds proposed in the Excavation & E&M workshop and existing store complex.
- Dumper & Dozer Washing station
- Sub Station
- Pump house
- All offices associated with major shops and stores, time & security office, security post, canteen. etc.

In accordance with the repair work to be done in various shops and noxious emissions produced, the buildings/ sheds are to be equipped with exhaust arrangement, forced ventilation, cooling arrangement etc. as well as natural ventilation through openings and deflectors. Provision for air conditioning has been provided in various rooms of offices, etc, so as to provide optimum condition for working.

7.4.2. DESIGN CRITERIA

For designing ventilation system, table below shall be followed for number of air changes and type of exhaust system to be adopted.

Sl. No.	Name of shop/shed/building	Ref. Drg. No.	Air change/ hour	Type of Fan	System
1	HEMM Repair Shop	HQ/E&M/301847	12	Powered roof extractor / Axial fan	Exhaust
1A	Sub-Assembly Repair Shops in HEMM Repair Shop	HQ/E&M/301847	12	Axial fan	Exhaust
2	E&M Repair Shop	HQ/E&M/301848	12	Powered roof extractor / Axial fan	Exhaust
3	LMV Repair Shop	HQ/E&M/301849	12	Powered roof extractor / Axial fan	Exhaust
4	Main Store of Existing Store Complex	HQ/E&M/301850	12	Centrifugal, Pressurized Ventilation	Supply
5	POL Store of Existing Store Complex	HQ/E&M/301850	12	Axial fan	Exhaust
6	E&M Store Shed	HQ/E&M/301858	12	Powered roof extractor / Axial fan	Exhaust
7	Dumper Washing Station	HQ/E&M/301853	12	Powered roof extractor / Axial fan	Exhaust
8	Dozer Washing Station	HQ/E&M/301854	12	Powered roof extractor / Axial fan	Exhaust
9	Time & Security Office, Security Post	HQ/E&M/301852	---	Ceiling fan & Cooler	
10	Canteen	HQ/E&M/301852	---	Ceiling fan, Cooler & Exhaust fan	Exhaust
11	Sub-Station	-	20	Centrifugal, Pressurized Ventilation	Supply
12	Pump House	-	10	Axial Fan	Exhaust
13	All offices adjacent to major shop/shed mentioned above	-	---	Ceiling fan, Cooler & Exhaust fan	Exhaust

The rooms where provision for air conditioning has to be given is given in the table below:

Sl No	Shop Description	Ref Drawing No.	Rooms with provision of AC
1	HEMM Repair Shop	HQ/E&M/301847	Shop Incharge Room (01 No.)
			Engineer's Room (01 No.)
2	E&M Repair Shop	HQ/E&M/3017848	Shop Incharge Room (01 No.)
			Engineer's Room (01 No.)
3	Canteen	HQ/E&M/301852	Canteen (04 Nos.)
4	Store Office of Existing Store Complex	HQ/E&M/301852	Store Incharge (01 No.)

In designing ventilation system the following points are to be considered:

- Air changes should be considered as per the above table.
- While calculating air volume for calculation of air changes per hour, in case of sheds with sides open, the total volume of air above the bottom most point of cladding level/ Crane hook level at top position, whichever is lowermost among the two, shall be considered, while in case of sheds with gates, the total volume from the floor level has to be considered. However, for sub-assembly repair section/shop of HEEM Repair shop, the total volume from the floor level has to be considered.
- In case of substation, a minimum positive pressure of 3mm water gauge should be maintained at the outset point.
- At men's level (i.e. 3 m height), the air velocity should be less than 30 m/min. as per IS :3107-1970 (current).
- Effective double door/ air curtain should be provided in sub-station building entry.
- The ventilation fans, roof extractors and motors should be continuous duty for 24 hours a day and 365 days in a year.
- Automatic excessive pressure release system should be provided.
- Arrangement for regulating ducts and grill should be provided.
- The GI ducting of 22 gauge minimum shall be provided for ventilation system (as per IS:655).
- Supply system means filtered water washed and evaporative cooled clean air to be ducted and distributed uniformly. For all supply system, the room temperature to be maintained about 10 to 12^{O}C below room outside wet bulb temperature, when outside temperature exceeds 38^{O}C under a relative humidity condition of 65 % average.
- Exhaust system means the provision of suitable exhaust system in the premises mentioned above, so as to ensure required air exchanges for dilution of noxious agent and to provide a desired level of working condition.
- To increase air mobility, all office rooms, buildings such as canteen, time office, store building etc. where assembly of workmen is expected, sufficient no. of ceiling fans should be installed.

7.4.3. SYSTEM DESCRIPTION

7.4.3.1 Forced Ventilation System

Forced ventilation facilities on the above mentioned premises should be arranged so as to ensure air exchange required for dilution of noxious agent till desired level is achieved. To cope-up with the above requirement following scheme should be

considered.

- Powered Roof Extractor / Axial fan with proper ducting

  Powered roof extractors or combination of powered roof extractor and axial fan with proper ducting (specially in areas where exhaust from HEMM or fumes from welding, gas cutting, etc may occur) shall be provided in the major shops as mentioned in the table above.
- Powerless Roof Extractor.

  Powerless roof extractor shall be provided in the major shops/sheds as mentioned in the table above:
- Forced ventilation by exhaust fan shall be provided in pump houses or elsewhere as mentioned in the table above.

7.4.3.2 Pressurised Ventilation system

It is required to design pressurised ventilation system in the control room of sub-station buildings for climatic control considering 20 air changes per hour with evaporative cooling effect which will keep the room temperature at about 10^0-12^0C below from outside wet bulb temperature, when the dry bulb temperature is above 38^0C under a relative humidity condition of 65% average.

The ambient pressure inside the ventilated space will be maintained at 3mm WG above the atmospheric ambient pressure to arrest inflow of heat and dust from outside atmosphere into the ventilated space.

The entire sub-station building will be enclosed and shall have R.C.C. roofing and double door system/ air curtain at entrance. Ventilation system in above mentioned premises should be so designed and arranged that inside pressure of the premises should be maintained at higher pressure than that of the normal atmospheric pressure of the outside premises. Pressurised ventilation system shall also be considered fpr Main Store of Existing Store Complex.

No direct air, which will be generally contaminated with coal and OB dust and excessive heat (particularly in summer) shall enter this shed/ building. The ventilation system should be so arranged that only dust free cooled filtered air shall enter these premises through necessary ducts properly designed with minimum 22 gauge G.I. sheet.

7.4.3.3 Air Conditioning system

Split type air conditioners of 1.5/2 Te capacity having 5 star BEE rating shall be provided in the various rooms as mentioned in the table above. Entire air conditioned portion of the building shall be provided with false ceiling for energy efficiency and aesthetic look. Sufficient numbers of wall mounted fans shall be provided in the air conditioned rooms of these buildings for air circulation.

Required number of switches, ceiling roses, sockets etc. will be provided. For control of air conditioners MCBs with industrial type plug and sockets shall be provided.

The design and construction of all rooms of sub-station shall be such that it shall be possible to prevent entry of dust and at the same time maintaining the proper temperature inside for proper working of the equipment and the personnel.

Sufficient numbers of ceiling fan, wall fan and exhaust fans of minimum 3 star rating shall be provided wherever required.

7.4.4. TECHNICAL PARAMETER

7.4.4.1 Forced Ventilation

- Axial fans:

  2 to 5HP, 1440 rpm., direct drive, complete with motor and all other necessary accessories with electrical to suit for 415 V,3-Phase, 50 Hz, AC supply. Exact type, capacity and nos. shall be designed by the tenderer.
- Roof Extractors ;

  Exact type, capacity and nos. shall be designed by the Tenderer.
- Ducting ;

  22 Gauge (C.S.751 mm to 1500 mm). Exact type, size and nos. shall be designed by the Tenderer.

7.4.4.2 Pressurised Ventilation

- Centrifugal blower and motor

  a) R.P.M. : To be designed

  b) B.H.P. : To be designed

  c) Drive : V-belts

  d) Standard accessories with each blower.

  One set, V-belt drive arrangement complete with pulleys, belts and belt guard.

  One set common base frame for mounting.

  Blower and motor complete with isolation pads.

  Filters

a) No. of filters : To be designed
b) Size : 610 x 610 x 50 mm/ Standard size
c) Type : Metallic (stainless steel) or HDPE media wire mesh, dry panel type washable, metallic fresh air filter with 90% down to 10/15 microns particles size/ alternate type.
d) Velocity : 190-200 m/ min. (Across filters)/ as per relevant IS

- Air Ducting and Grills

a) Air Velocity : Approx.500 m/min. (across ducting)
b) Air Velocity : 300 to 325 m./min. (across supply air)
c) Sheet metal thickness for ducting: 22 Gauge minimum (as per IS:655).

- Air Washer

a) Quantity : To be designed.
b) Type : Unitary air filtration plant with tank and casing
c) Accessories :

- G.I. Intake louvers
- Spray header
- HDPE spray nozzles
- In-coming pipes and pipe fittings with valves, pads, strainers etc
- Water repellent (Nylon eliminator screen)

- Axial fans : 2 to 5 HP, 1440 rpm, (Nos. to be designed)

Drive : Direct, complete with motor and all other necessary accessories with electrical to suit for 415 V, 3-phase, 50 Hz, AC supply.

7.4.4.3 Air Conditioning

- Type of Air Conditioner : High wall Split AC
- Compressor (Speed Type) : Inverter (Variable Speed)
- Nominal Capacity (TR) : 1.5 / 2.0
- Coil Material : Copper
- Eco-friendly refrigerant : Yes
- BEE Star Rating : 5

SECTION – 7.5
WASHING SYSTEM

7.5.1 Brief system description

7.5.1.1 Dumper washing system

One no. of dumper washing system have been proposed in the tender. The rear dumpers of capacity upto 60T shall be properly cleaned of all muck, coal slurry, leaking lubricants from all over the body, chassis, underground and external surfaces of engines, hydraulic system etc. at this station before they are sent for scheduled maintenance and minor and medium repair. Each system will comprise of the following equipments:

a) Chamber type washing system with minimum 16 nos. of nozzles, so that most of the portion of dumper (especially the under carriage, tyres, etc) are subjected to high pressure water jet. Other than the 16 nos multijet nozzles, provision of two nos. of nozzles with flexible hose for manual washing from both sides shall also be provided. The general arrangement for the multi jet washing system has been shown in HQ/E&M/301855.

b) One no. slurry pump for cleaning the mucks from ramp etc.

7.5.1.2 Dozer/Auxillary equipment washing system

One no of dozer/auxiliary equipment washing system have been proposed in the tender, for washing of auxiliary equipments like dozer, graders, etc. The mining equipment shall be properly cleaned of all muck, coal slurry, leaking lubricants from all over the body, chassis, underground and external surfaces of engines, hydraulic system etc. at this station before they are sent for scheduled maintenance and minor and medium repair.

For the above purpose, the following washing system should be provided:

One no. high pressure water & steam jet cleaning machine : The equipment shall be used for washing of dozers by water including necessary automatic cleaning facilities for the troughs which shall carry mucks to the settling tank.

One no. slurry pump for cleaning the mucks from ramp etc.

7.5.2 Technical Specification

10.5.3.1 Washing Pump for dumper

a) Quantity : 1 No.
b) Type : Single acting triplex reciprocating type
c) Pressure : 1400 PSI
d) Discharge : 15 m3/hr
e) Jet Velocity : 15 m/ sec

The pump of suitable capacity will be supplied along with all accessories and electrical fittings suitable for 3 phase, 50 Hz., 415V, AC supply.

10.5.3.2 High pressure steam and water jet cleaning machine for Dozer/Auxillary equipment

a) Quantity ; 1 No.
b) Pressure : 150 Bar
c) Water Jet : 1760 LPH
d) Steam jet : 880 LPH

10.5.3.3 Trolley Mounted Slurry Pump along with all accessories & electricals

a) Quantity : 2 Nos.
b) Discharge : 20 m3/hr.
c) Head : 30 m

The system shall be complete with all accessories and equipment to meet the duty requirement.

CHAPTER - 8
TECHNICAL SPECIFICATION
CIVIL

8.1. GENERAL

The technical specification for Civil Work as given hereunder may be read in conjunction with relevant scope of work as deliberated in Chapter 4.

8.2. BOUNDARY WALLS AND GATES:

There is provision of boundary walls as shown in the layout drawings. Gates are to be provided at suitable locations as shown in the drawing for entry / exit purpose.

The external boundary walls shall be 2.1 m high above G.L. (formation level after final leveling and dressing) with double horn of angles at 3 meters interval with punched tape concertina coil on top of the wall. The specification of the concertina shall conform to CPWD specifications as approved by Engineer-in-charge. Internal boundary walls shall be 1.5 m high above G.L. (formation level after final leveling and dressing).

The boundary walls as described above shall be RCC framed with plinth beam and filler brickwork. In filled-up soil the columns below plinth shall be suitably designed up to original soil or provided with suitably designed piles or different kind of foundation, if required.

The brickwork of the boundary walls shall be plastered with cement mortar and finished with waterproofing cement paint of approved brand and shade. All the above works shall conform to relevant IS code of practice.

There will be one opening for entry/exit of dumpers and another opening for entry/exit of dozers as shown in the drawing no. HQ/E&M/301846. The widths of such entries/exits have been indicated in the Layout Drawing. It is being clarified that there are some open spaces which have provided for future activities like space provision for dumper parking, space for diesel filling stations. Although, creating facilities in such areas are outside the purview of this contract, Levelling, dressing, clearance of hindrances, and creation of boundary walls with gates for these areas as indicated in the layout drawings are in the scope of the present contract.

Various gates for controlling movement of men and materials in the workshop areas have been shown in the layout drawings. The width of these gates shall be not less than the width of the corresponding roads as shown in the drawing/as functionally required. Wherever required, a small gate of 1.5 m width shall be provided on one side of the vehicular entry gates for the entry of pedestrians.

The pedestrians' gate shall be provided on that side of road where Security Post/Time Office is situated, wherever is there. Adequate gap shall be kept between pedestrian entry gate and vehicular entry gate.

The gates shall be designed properly and shall be mounted on wheels and rails with ball and socket support arrangement. The rails shall be properly anchored on the road/pavement surface and shall be perfectly leveled along its full length. These rails shall be flushed with the road level. In the stretches where these rails for gates are to be laid, there shall not be any camber in the road surface in the cross direction and a mild slope along the axis of road shall be suitably provided so that drainage on the road surface is good enough. At the places, where gates are to be provided, the road level shall be kept higher than levels of the road in other two sides along its longitudinal axis.

8.3. BUILDINGS / SHOPS/ SHEDS:

8.3.1. E&M REPAIR SHOP

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301848
Sl.	**Items**	**Brief Description**
1	Area	As per Drawing.
2	Type of Structure	Steel structure over R.C.C pedestal, external brickwork upto 3m from floor level.
3	Column Encasing	All steel columns which are at the risk of being damaged by moving vehicles are to be encased as protection as per requirement. The depth of encasement should not be less than 3m from floor level. Encasing should be done with M20 grade of concrete and nominal skin reinforcement. Additionally, the encased columns should be jacketed by suitable rail sections placed around the columns vertically.
4	Shop Floor level	As per drawing
5	Shop Height	As per above referred drawing.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301848
Sl.	**Items**	**Brief Description**
6	Type of Roofing	Sloped roof using Steel Truss with proper drainage arrangement
7	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	N/A
8	Walls	
a)	External	Full brickwork using 1:6 cement mortar
b)	Internal	N/A
9	Shelves	N/A
10	Sheeting	
a)	Roof	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
b)	Side	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
c)	Louver	Louvers shall be provided as per drawing. With 0.50 mm. thk. pre-coated galvanized Iron Profile Sheet
d)	Translucent sheet	8% to 12 % of the total sheeting will be UV stabilised fiberglass reinforced plastic sheet. The sheets shall be translucent.
11	Flooring	
a)	Shop Area	Type F3 as detailed afterwards
b)	Walkway	Marked with road marking paints of adequate nos. of coats. Width of walkway shall be as per drawing
12	Frame & Shutter	
a)	Rolling Shutter	Motorized Rolling shutter 80 x 1.25 mm. M.S. laths with 1.25 mm. thick top cover of required width and height
13	Crane Capacity	As per Drawing.
14	Crane Hook bottom level, Rail top level & Eaves level	As per drawing
15	Wall Finishing	
a)	External	Acrylic smooth exterior paint with exterior primer
b)	internal	Oil Bound Distemper over a coat of primer
16	Painting	
a)	Steel work	Synthetic enamel paint over a coat of ready mixed primer
17	Water Supply	

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301848
Sl.	**Items**	**Brief Description**
a)	Pipe	Internal concealed CCPVC pipes & External G.I. pipes exposed on wall
b)	Fittings	All fixtures shall be of CP
18	Drainage and Rainwater	Surface drains where ever required and gutter of adequate size shall be provided to drain off the rainwater.
19	Electrical	
a)	Wiring	As per requirement
b)	Fitting & Fixtures	As per requirement
	Office Building Annexed to the Shop	
1	Area	As per Drawing.
2	Type of Structure	R.C.C. Frame single Storied Structure.
3	Plinth Height	As per drawing
4	Floor Height	3300 MM (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement. No rain water should be allowed to be disposed towards the main shop.
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/Pantry Counter	40/50 MM. thick precast RCC slab(1:2:4), if any.
9	Flooring	
a)	*Rooms*	Vitrified tiles
b)	*Toilet*	Rectified ceramic glazed tiles
c)	*Dado*	In toilet, Ceramic Glazed Tiles upto 2.1m height from floor
d)	*Counter*	Granite top, 600mm high wall tiling
10	Frame & Shutter	
a)	*Doors*	Angle iron frame, 35 MM. thick flush door shutters (both sides decorative) and required fittings.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301848
Sl.	**Items**	**Brief Description**
b)	*Cupboards*	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	*Toilet Doors*	Angle iron frame, 35 MM. thick flush door shutters and required fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	
a)	*POP/Putty*	1 MM. thick putty on Internal & External walls
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*internal*	Oil Bound Distemper over a coat of primer
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Sanitary	
a)	*Pipe*	CPVC pipes
b)	*Fittings*	White vitreous china W.C., Urinals, Sinks & Basins
c)	*Single user toilet*	Nil
	i) Total no. Fixtures	Nil
d)	Multi user toilet	1 nos.
	i) Total no. Fixtures	As per requirement
17	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement

8.3.2. LMV REPAIR SHOP

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301849
Sl.	**Items**	**Brief Description**
1	Area	As per Drawing.
2	Type of Structure	Steel structure over R.C.C pedestal, external brickwork upto 3m from floor level.
3	Column Encasing	All steel columns which are at the risk of being damaged by moving vehicles are to be encased as protection as per requirement. The depth of encasement should not be less than 3m from floor level. Encasing should be done with M20 grade of concrete and nominal skin reinforcement.
4	Shop Floor level	As per drawing
5	Shop Height	As per above referred drawing.
6	Type of Roofing	Sloped roof using Steel Truss with proper drainage arrangement
7	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	N/A
8	Walls	
a)	External	Full brickwork using 1:6 cement mortar
b)	Internal	N/A
9	Shelves	N/A
10	Sheeting	
a)	Roof	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
b)	Side	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
c)	Louver	Louvers shall be provided as per drawing. With 0.50 mm. thk. pre-coated galvanized Iron Profile Sheet
d)	Translucent sheet	8% to 12 % of the total sheeting will be UV stabilised fiberglass reinforced plastic sheet. The sheets shall be translucent.
11	Flooring	
a)	Shop Area	Type F4 as detailed afterwards.
b)	Walkway	Marked with road marking paints of adequate nos. of coats. Width of walkway shall be as per drawing
12	Frame & Shutter	
a)	Rolling Shutter	N/A
13	Crane Capacity	N/A

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301849
Sl.	**Items**	**Brief Description**
14	Crane Hook bottom level, Rail top level & Eaves level	N/A
15	Wall Finishing	
a)	External	Acrylic smooth exterior paint with exterior primer
b)	Internal	Oil Bound Distemper over a coat of primer
16	Painting	
a)	Steel work	Synthetic enamel paint over a coat of ready mixed primer
17	Water Supply	
a)	Pipe	N/A
b)	Fittings	N/A
18	Drainage and Rainwater	Surface drains where ever required and gutter of adequate size shall be provided to drain off the rainwater.
19	Electrical	
a)	Wiring	As per requirement
b)	Fitting & Fixtures	As per requirement

8.3.3. E&M STORE SHED

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301858
Sl.	**Items**	**Brief Description**
1	Area	As per Drawing.
2	Type of Structure	Steel structure over R.C.C pedestal, external brickwork upto 3m from floor level.
3	Column Encasing	All steel columns which are at the risk of being damaged by moving vehicles are to be encased as protection as per requirement. The depth of encasement should not be less than 3m from floor level. Encasing should be done with M20 grade of concrete and nominal skin reinforcement. Additionally, the encased columns should be jacketed by suitable rail sections placed around the columns vertically.
4	Shop Floor level	As per drawing
5	Shop Height	As per above referred drawing.
6	Type of Roofing	Sloped roof using Steel Truss with proper drainage arrangement

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301858
Sl.	**Items**	**Brief Description**
7	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	N/A
8	Walls	
a)	External	Full brickwork using 1:6 cement mortar
b)	Internal	N/A
9	Shelves	N/A
10	Sheeting	
a)	Roof	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
b)	Side	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
c)	Louver	Louvers shall be provided as per drawing. With 0.50 mm. thk. pre-coated galvanized Iron Profile Sheet
d)	Translucent sheet	8% to 12 % of the total sheeting will be UV stabilised fiberglass reinforced plastic sheet. The sheets shall be translucent.
11	Flooring	
a)	Store Shed	Type F3 as detailed afterwards
b)	Walkway	N/A
12	Frame & Shutter	
a)	Rolling Shutter	Motorized Rolling shutter 80 x 1.25 mm. M.S. laths with 1.25 mm. thick top cover of required width and height
13	Crane Capacity	N/A
14	Crane Hook bottom level, Rail top level & Eaves level	N/A
15	Wall Finishing	
a)	External	Acrylic smooth exterior paint with exterior primer
b)	internal	Oil Bound Distemper over a coat of primer
16	Painting	
a)	Steel work	Synthetic enamel paint over a coat of ready mixed primer
17	Water Supply	
a)	Pipe	N/A
b)	Fittings	N/A

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301858
Sl.	**Items**	**Brief Description**
18	Drainage and Rainwater	Surface drains where ever required and gutter of adequate size shall be provided to drain off the rainwater.
19	Electrical	
a)	Wiring	As per requirement
b)	Fitting & Fixtures	As per requirement

8.3.4. HEMM REPAIR SHOP

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301847
Sl.	**Items**	**Brief Description**
1	Area	As per Drawing.
2	Type of Structure	Steel structure over R.C.C pedestal, external brickwork upto 3m from floor level.
3	Column Encasing	External steel columns on the HEMM entry side are to be encased so as to protect them from being damaged by moving dumpers /dozers as per requirement. The height of encasement should not be less than 3m from floor level. Encasing should be done with M20 grade of concrete and nominal skin reinforcement. Additionally, the encased columns should be jacketed by suitable rail sections placed around the columns vertically.
4	Shop Floor level	As per drawing
5	Shop Height	As per above referred drawing.
6	Type of Roofing	Sloped roof using Steel Truss with proper drainage arrangement.
7	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
8	Walls	
a)	External	Full brickwork using 1:6 cement mortar
b)	Internal	Full brickwork using 1:6 cement mortar upto 3m height. Wire mesh partitions are to be provided at locations as shown in the drawing which shall have 1m. high full brickwork using 1:6 cement mortar. Above it, the partitions shall have 1.2m high G.I. chain link fabric fencing of required width in mesh size 50x50 mm made of G.I.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301847
Sl.	**Items**	**Brief Description**
		wire of dia 4 mm. with M.S. post of required size and spacing.
9	Shelves	N/A
10	Sheeting	
a)	Roof	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
b)	Side	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
c)	Louver	Louvers shall be provided as per drawing. With 0.50 mm. thk. pre-coated galvanized Iron Profile Sheet
d)	Translucent sheet	8% to 12 % of the total sheeting will be UV stabilised fiberglass reinforced plastic sheet. The sheets shall be translucent.
11	Flooring	
a)	Dumper Movement Area	Type F1 as detailed afterwards.
b)	Walkway	Marked with road marking paints of adequate nos. of coats. Width of walkway shall be as per drawing
c)	Dozer Movement Area	Type F2 as detailed afterwards
d)	Walkway	Marked with road marking paints of adequate nos. of coats. Width of walkway shall be as per drawing
e)	Repair Section	Type F3 as detailed afterwards.
12	Frame & Shutter	
a)	Rolling Shutter	N/A
13	Crane Capacity	As per Drawing.
14	Crane Hook bottom level, Rail top level & Eaves level	As per drawing
15	Wall Finishing	
a)	External	Acrylic smooth exterior paint with exterior primer
b)	internal	Oil Bound Distemper over a coat of primer
16	Painting	
a)	Steel work	Synthetic enamel paint over a coat of ready mixed primer

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301847
Sl.	**Items**	**Brief Description**
17	Water Supply	
a)	Pipe	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	Fittings	All fixtures shall be of CP
18	Drainage and Rainwater	Surface drains where ever required and gutter of adequate size shall be provided to drain off the rainwater.
19	Electrical	
a)	Wiring	As per requirement
b)	Fitting & Fixtures	As per requirement
Sub Assembly Repair Shops adjoining HEMM workshop		
1	Area	As per Drawing.
2	Type of Structure	R.C.C. Frame Single Storied Structure.
3	Shop Floor level	As per drawing
4	Shop Height	As per above referred drawing.
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement. No rain water should be allowed to be disposed towards the main shop.
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	External	Full brickwork using 1:6 cement mortar
b)	Internal	Full brickwork using 1:6 cement mortar upto 1m height. Above it, the partitions shall have Full height G.I. chain link fabric fencing of required width in mesh size 50x50 mm made of G.I. wire of dia 4 mm. with M.S. post of required size and spacing.
		Wire mesh partitions are to be provided at locations as shown in the drawing which shall have 1m. high full brickwork using 1:6 cement mortar. Above it, the partitions shall have 1.2m high G.I. chain link fabric fencing of required width in mesh size 50x50 mm made of G.I. wire of dia 4 mm. with M.S. post of required size and spacing.
8	Shelves	As required
9	Flooring	Type F3 as detailed afterwards.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301847
Sl.	**Items**	**Brief Description**
10	Frame & Shutter	
a)	*Doors*	G.I. chain link fabric fencing of required width in mesh size 50x50 mm made of G.I. wire of dia 4 mm. with M.S. frame and required fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	
a)	*POP/Putty*	1 MM. thick putty on Internal & External walls
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*internal*	Oil Bound Distemper over a coat of primer
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement
Office Building Annexed to the Shop		
1	Area	As per Drawing.
2	Type of Structure	R.C.C. Frame Single Storied Structure.
3	Plinth Height	As per drawing
4	Floor Height	3300 MM (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement. No rain water should be allowed to be disposed towards the main shop.
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301847
Sl.	**Items**	**Brief Description**
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/Pantry Counter	40/50 MM. thick precast RCC slab(1:2:4), if any.
9	Flooring	
a)	*Rooms*	Vitrified tiles
b)	*Toilet*	Rectified ceramic glazed tiles
c)	*Dado*	In toilet, Ceramic Glazed Tiles upto 2.1m height from floor
d)	*Counter*	Granite top, 600mm high wall tiling
10	Frame & Shutter	
a)	*Doors*	Angle iron frame, 35 MM. thick flush door shutters (both sides decorative) and required fittings.
b)	*Cupboards*	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	*Toilet Doors*	Angle iron frame, 35 MM. thick flush door shutters and required fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	
a)	*POP/Putty*	1 MM. thick putty on Internal & External walls
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*internal*	Oil Bound Distemper over a coat of primer
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Sanitary	

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301847
Sl.	**Items**	**Brief Description**
a)	*Pipe*	CPVC pipes
b)	*Fittings*	White vitreous china W.C., Urinals, Sinks & Basins
c)	*Single user toilet*	Nil
	i)Total no. Fixtures	Nil
d)	Multi user toilet	1 nos.
	i)Total no. Fixtures	As per requirement
17	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement

8.3.5. DUMPER WASHING STATION

The tentative location of dumper washing station and general arrangement is shown in drawing no. HQ/E&M/301846 & HQ/E&M/301853. The sizes and specifications of the dumper washing stations would be as per functional and structural requirement. A Tool room of size as per layout drawing and appropriate specifications is to be provided near dumper washing station as per requirement.

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301853
Sl.	**Items**	**Brief Description**
Dumper Washing station		
1	Area	As per above referred drawing.
2	Type of Structure	Steel structure over R.C.C pedestal, external brickwork upto 6m from floor level on three sides.
3	Column Encasing	Steel columns to be encased so as to protect them from being hit by moving dumper as per requirement. The height of encasement should not be less than 6m from floor level. Encasing should be done with M20 grade of concrete and nominal skin reinforcement. Additionally, the encased columns should be protected by suitable vertical rail sections placed around the columns which are more liable to be hit by the moving vehicle.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301853
Sl.	**Items**	**Brief Description**
4	Shop Floor level	600 MM from Adjacent Finished Ground Level
5	Shop Height	As per above referred drawing.
6	Type of Roofing	Sloped roof using Steel Truss with proper drainage arrangement.
7	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
8	Walls	
a)	External	Full brickwork using 1:6 cement mortar
b)	Internal	N/A
9	Shelves	N/A
10	Sheeting	
a)	Roof	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
b)	Side	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
c)	Louver	Louvers shall be provided as per drawing/ requirement. With 0.50 mm. thk. pre-coated galvanized Iron Profile Sheet
d)	Translucent sheet	8% to 12 % of the total sheeting will be UV stabilised fiberglass reinforced plastic sheet. The sheets shall be translucent.
11	Flooring	
a)	Shop Area	Type F1 as detailed afterwards.
b)	Walkway /Platform	Width of walkway shall be as per drawing/requirement. Structural steel platforms at the height of the body of dumper will be provided for maintenance purposes.
12	Frame & Shutter	
a)	Rolling Shutter	N/A
13	Crane Capacity	N/A
14	Crane Bracket Height	N/A
15	Wall Finishing	
a)	External	Snowcem
b)	internal	White wash
16	Painting	

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301853
Sl.	**Items**	**Brief Description**
a)	Steel work	Synthetic enamel paint over a coat of ready mixed primer
17	Water Supply	
a)	Pipe	The pipe line provided for washing and other purposes shall be connected with the pump installed in the pump house with valve arrangement so that water can be pumped into the pipe line as and when required. Pipes of adequate sizes as determined by detailed engineering computation and in terms of relevant BIS code of practices etc. complete with fittings, valves, scales, jointing materials, saddles & supports etc. shall be provided.
b)	Fittings	As applicable
18	Drainage and Rainwater	Proper drainage arrangement shall be made to collect the effluent and transfer to collection sump and then it shall flow into the ETP for further treatment. Surface drains where ever required and gutter of adequate size shall be provided to drain off the rainwater.
19	Electrical	
a)	Wiring	As per requirement
b)	Fitting & Fixtures	As per requirement
Tool room adjacent to Washing Station		
1	Area	As per above referred drawing.
2	Type of Structure	R.C.C. Frame Structure.
3	Plinth Height	600 MM from Adjacent Finished Ground Level
4	Floor Height	3000 MM (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement. No rain water should be allowed to be disposed towards the main shop
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301853
Sl.	**Items**	**Brief Description**
8	Shelves/Pantry Counter	40/50 MM. thick precast RCC slab(1:2:4)
9	Flooring	
a)	Rooms	Type F3 as detailed afterwards.
b)	Toilet	N/A
c)	Dado	N/A
d)	Counter	N/A
10	Frame & Shutter	
a)	Doors	Angle iron frame, 35 MM. thick flush door shutters (one side decorative) and required fittings.
b)	Cupboards	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	Toilet Doors	Angle iron frame, 35 MM. thick flush door shutters (inside 1mm PVC (foam sheet) and required fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings,
12	Wall Finishing	
a)	External	Snowcem
b)	internal	White wash
16	Painting	
a)	wood work	Synthetic enamel paint over a coat of ready mixed primer
b)	Steel work	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	Pipe	Internal concealed PVC pipes & External G.I. pipes exposed on wall
b)	Fittings	All fixtures shall be of CP
16	Electrical	
a)	Wiring	Concealed Wiring
b)	Fitting & Fixtures	As per requirement

8.3.6. DOZER WASHING STATION

The tentative location of dozer washing station and general arrangement is shown in drawing no. HQ/E&M/301846 & HQ/E&M/301854. The sizes and specifications of the dozer washing stations would be as per functional and structural requirement. A Tool room of size as per layout drawing and appropriate specifications is to be provided near dumper washing station as per requirement.

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301854
Sl.	**Items**	**Brief Description**
Dozer Washing station		
1	Area	As per above referred drawing.
2	Type of Structure	Steel structure over R.C.C pedestal, external brickwork upto 6m from floor level on three sides.
3	Column Encasing	Steel columns to be encased so as to protect them from being hit by moving dumper as per requirement. The height of encasement should not be less than 6m from floor level. Encasing should be done with M20 grade of concrete and nominal skin reinforcement. Additionally, the encased columns should be protected by suitable vertical rail sections placed around the columns which are more liable to be hit by the moving vehicle.
4	Shop Floor level	600 MM from Adjacent Finished Ground Level
5	Shop Height	As per above referred drawing.
6	Type of Roofing	Sloped roof using Steel Truss with proper drainage arrangement.
7	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
8	Walls	
a)	External	Full brickwork using 1:6 cement mortar
b)	Internal	N/A
9	Shelves	N/A
10	Sheeting	
a)	Roof	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet
b)	Side	0.50 mm. thk. pre-coated Galvanized Iron Profile Sheet

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301854
Sl.	**Items**	**Brief Description**
c)	Louver	Louvers shall be provided as per drawing/ requirement. With 0.50 mm. thk. pre-coated galvanized Iron Profile Sheet
d)	Translucent sheet	8% to 12 % of the total sheeting will be UV stabilised fiberglass reinforced plastic sheet. The sheets shall be translucent.
11	Flooring	
a)	Shop Area	Type F2 as detailed afterwards.
b)	Walkway /Platform	Width of walkway shall be as per drawing/requirement. Structural steel platforms at the height of the body of dumper will be provided for maintenance purposes.
12	Frame & Shutter	
a)	Rolling Shutter	N/A
13	Crane Capacity	N/A
14	Crane Bracket Height	N/A
15	Wall Finishing	
a)	External	Snowcem
b)	internal	White wash
16	Painting	
a)	Steel work	Synthetic enamel paint over a coat of ready mixed primer
17	Water Supply	
a)	Pipe	The pipe line provided for washing and other purposes shall be connected with the pump installed in the pump house with valve arrangement so that water can be pumped into the pipe line as and when required. Pipes of adequate sizes as determined by detailed engineering computation and in terms of relevant BIS code of practices etc. complete with fittings, valves, scales, jointing materials, saddles & supports etc. shall be provided.
b)	Fittings	As applicable
18	Drainage and Rainwater	Proper drainage arrangement shall be made to collect the effluent and transfer to collection sump and then it shall flow into the ETP for further treatment. Surface drains where ever required and gutter of adequate size shall be provided to drain

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301854
Sl.	**Items**	**Brief Description**
		off the rainwater.
19	Electrical	
a)	Wiring	As per requirement
b)	Fitting & Fixtures	As per requirement
Tool room adjacent to Washing Station		
1	Area	As per above referred drawing.
2	Type of Structure	R.C.C. Frame Structure.
3	Plinth Height	600 MM from Adjacent Finished Ground Level
4	Floor Height	3000 MM (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement. No rain water should be allowed to be disposed towards the main shop
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/Pantry Counter	40/50 MM. thick precast RCC slab(1:2:4)
9	Flooring	
a)	Rooms	Type F3 as detailed afterwards.
b)	Toilet	N/A
c)	Dado	N/A
d)	Counter	N/A
10	Frame & Shutter	
a)	Doors	Angle iron frame, 35 MM. thick flush door shutters (one side decorative) and required fittings.
b)	Cupboards	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	Toilet Doors	Angle iron frame, 35 MM. thick flush door shutters (inside 1mm PVC (foam sheet) and required fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301854
Sl.	Items	Brief Description
		fittings,
12	Wall Finishing	
a)	External	Snowcem
b)	internal	White wash
16	Painting	
a)	wood work	Synthetic enamel paint over a coat of ready mixed primer
b)	Steel work	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	Pipe	Internal concealed PVC pipes & External G.I. pipes exposed on wall
b)	Fittings	All fixtures shall be of CP
16	Electrical	
a)	Wiring	Concealed Wiring
b)	Fitting & Fixtures	As per requirement

8.3.7. TIME & SECURITY OFFICE

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	Items	Brief Description
1	Area	As per Drawing.
2	Type of Structure	R.C.C. Frame Structure.
3	Plinth Height	As per drawing
4	Floor Height	3300 MM (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement and adequate provisions for installation, operation & maintenance of solar panels
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	**Items**	**Brief Description**
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/ Counter	40/50 MM. thick precast RCC slab(1:2:4)
9	Flooring	
a)	*Rooms*	Vitrified tiles
b)	*Toilet*	Rectified ceramic glazed tiles
c)	*Dado*	In toilet and First Aid Room, Ceramic Glazed Tiles upto 2.1m height from floor
d)	*Counter*	Granite top, 600mm high wall tiling
10	Frame & Shutter	
a)	*Doors*	Angle iron frame, 35 MM. thick flush door shutters (both sides decorative) and required fittings.
b)	*Cupboards*	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	*Toilet Doors*	Angle iron frame, 35 MM. thick flush door shutters and required fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	
a)	*POP/Putty*	1 MM. thick putty on Internal & External walls
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*Internal*	Oil Bound Distemper over a coat of primer
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Sanitary	
a)	*Pipe*	CPVC pipes
b)	*Fittings*	White vitreous china W.C., Urinals, Sinks & Basins

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	**Items**	**Brief Description**
c)	*Single user toilet*	1 no.
	i) Total no. Fixtures	As per requirement
d)	Multi user toilet	NIL
	i) Total no. Fixtures	N/A
17	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement

8.3.8. CANTEEN

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	**Items**	**Brief Description**
1	Area	As per Drawing.
2	Type of Structure	R.C.C. Frame Structure.
3	Plinth Height	As per drawing
4	Floor Height	3300 MM (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/ Counter	40/50 MM. thick precast RCC slab(1:2:4)
9	Flooring	
a)	*Rooms*	Vitrified tiles
b)	*Toilet*	Rectified ceramic glazed tiles
c)	*Dado*	In toilet, kitchen, pantry, wash, kitchen washing Ceramic Glazed Tiles upto 2.1m height from floor
d)	*Counter*	Granite top, 600mm high wall tiling
10	Frame & Shutter	

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	**Items**	**Brief Description**
a)	*Doors*	Angle iron frame, 35 MM. thick flush door shutters (both sides decorative) and required fittings. Main entrance shall be provided with partly fixed and partly openable aluminum glazed door.
b)	*Cupboards*	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	*Toilet Doors*	Angle iron frame, 35 MM. thick flush door shutters and required fittings. In the baths 1mm. PVC foam sheet on all side of the shutters shall be provided.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	
a)	*POP/Putty*	1 MM. thick putty on Internal & External walls
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*Internal*	Oil Bound Distemper over a coat of primer
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept. Underdeck insulation shall be provided for incorporation of centralized air conditioning system.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Sanitary	
a)	*Pipe*	CPVC pipes
b)	*Fittings*	White vitreous china W.C., Urinals, Sinks & Basins
c)	*Single user toilet*	nil
	i) Total no. Fixtures	n/a
d)	Multi user toilet	1 nos.
	i) Total no. Fixtures	As required

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	**Items**	**Brief Description**
17	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement
c)	*Exhaust Fan*	Required no. of Exhaust fans of approx. 500 mm. sweep shall be provided in the kitchen.

8.3.9. SECURITY POST

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	**Items**	**Brief Description**
1	Area	As per Drawing.
2	Type of Structure	R.C.C. Frame Structure.
3	Plinth Height	As per drawing
4	Floor Height	3000 MM (Floor to roof)
5	Type of Roofing	RCC sloped Roof with proper drainage arrangement.
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/ Counter	40/50 MM. thick precast RCC slab(1:2:4)
9	Flooring	
a)	*Rooms*	Vitrified tiles
b)	*Toilet*	Rectified ceramic glazed tiles
c)	*Dado*	In toilet, Ceramic Glazed Tiles upto 2.1m height from floor
d)	*Counter*	Granite top, 600mm high wall tiling
10	Frame & Shutter	
a)	*Doors*	Angle iron frame, 35 MM. thick flush door shutters (both sides decorative) and required fittings.
b)	*Cupboards*	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	*Toilet Doors*	Angle iron frame, 35 MM. thick flush door shutters and required

Ref. Drawing No.		HQ/E&M/301846, HQ/E&M/301852
Sl.	**Items**	**Brief Description**
		fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	
a)	*POP/Putty*	1 MM. thick putty on Internal & External walls
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*Internal*	Oil Bound Distemper over a coat of primer
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Sanitary	
a)	*Pipe*	CPVC pipes
b)	*Fittings*	White vitreous china W.C., Urinals, Sinks & Basins
c)	*Single user toilet*	1 no.
	i) Total no. Fixtures	As per requirement
d)	Multi user toilet	N/A
	i) Total no. Fixtures	N/A
17	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement

8.3.10. PUMP HOUSE BUILDING, PUMP ROOMS IN WASHING STATIONS

Tentative location along with minimum dimensions for pump house at the workshop have been shown in the layout drawing. Depending on location and site factors, tenderer will decide final location, number of pump house buildings, area etc. Pump house shall have adequate floor area to house required no. of pumps (working plus standby) and their allied control panels etc. Pump house shall be located close to storage reservoir/s, main sump. Plinth

protection and all other civil works shall be provided by the tenderer, as per requirement, for completion of work in all respects. Pumps and motors shall have suitable foundation for static and dynamic conditions. Minimum 1m wide movement space all around the pump installation area is to be maintained. A mono rail of required capacity depending upon pumps to be installed shall be provided in pump house for lifting and carriage of pump/motor during repair & maintenance. Pumps shall be installed on well-designed pedestals.

Ref. Drawing No.		**HQ/E&M/301846**
Sl.	**Items**	**Brief Description**
1	Area	As per REQUIREMENT
2	Type of Structure	R.C.C. Frame Structure.
3	Plinth Height	As per drawing
4	Floor Height	3000 MM (minimum) (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement.
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/ Counter	40/50 MM. thick precast RCC slab (1:2:4) if provided
9	Flooring	
a)	*Rooms*	Quartzite Hardener flooring with appropriate sub-grade
b)	*Toilet*	NA
c)	*Dado*	NA
d)	*Counter*	NA
10	Frame & Shutter	
a)	*Doors*	Angle iron frame, 35 MM. thick flush door shutters (both sides decorative) and required fittings/collapsible steel doors as per requirement
b)	*Cupboards*	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings if provided
c)	*Toilet Doors*	NA
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	

Ref. Drawing No.		HQ/E&M/301846
Sl.	**Items**	**Brief Description**
a)	*POP/Putty*	Nil
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*Internal*	Water proofing cement paint
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Sanitary	
a)	*Pipe*	CPVC pipes
b)	*Fittings*	NA
c)	*Single user toilet*	nil
	i) Total no. Fixtures	n/a
d)	Multi user toilet	Nil
	i) Total no. Fixtures	NA
17	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement

8.3.11. SERVICE WALK-WAY & LADDERS FOR DIFFERENT CRANE GIRDERS AND GANTRY GIRDERS:

Service walk-way and Ladders for Crane Girder/Gantry Girders shall be provided as per requirement/specifications of the manufacturer.

8.3.12. BATTERY ROOMS/ CAPACITOR ROOMS:

Battery rooms and/or capacitor rooms shall be provided as per requirement. The structure and finishes shall be as that of the parent building. Exhaust fans conforming to relevant IS (latest edition) of approx. 500 mm sweep shall be provided in all the battery rooms. The walls shall have acid proof tiles of approved make and shade up to window sill level and remaining areas shall be finished with plaster and acid proof

painting. 2/3 tier racks shall be provided as per requirement finished with acid proof tile flooring over it. Provision of water supply shall also be made in the battery room. The floor of the battery room shall be acid proof tiles as per functional requirement.

8.3.13. SUBSTATION BUILDING

A space has been reserved for substation including building as shown in drawing no. HQ/E&M/301846. The minimum size of the substation area along with building has been provided in the drawing. The required facilities including transformers are to be accommodated in the substation building. One no. monorail of suitable capacity shall be provided in the transformer room. Necessary cable trenches shall be provided.

Ref. Drawing No.		HQ/E&M/301846
Sl.	**Items**	**Brief Description**
1	Area	As per requirement
2	Type of Structure	R.C.C. Frame Structure.
3	Plinth Height	750 MM for switch gear house and 250 mm for transformer house from Adjacent Finished Ground Level
4	Floor Height	4500 MM (Floor to roof)
5	Type of Roofing	RCC Flat Roof with proper drainage arrangement and adequate provisions for installation, operation & maintenance of solar panels
6	Plastering	
a)	*Rough side*	15 MM. Thick using 1:6 cement mortar
b)	*Smooth side*	12 MM. Thick using 1:6 cement mortar
c)	*Ceiling*	6 MM. Thick using 1:4 cement mortar
7	Walls	
a)	*External*	As per statutory and functional requirement but not less than Full brickwork using 1:6 cement mortar
b)	*Internal*	Half brickwork using 1:4 cement mortar
8	Shelves/ Counter	40/50 MM. thick precast RCC slab(1:2:4) if provided
9	Flooring	
a)	Rooms	PVC flooring in Control Room and vitrified tile in other areas, Battery Room and/or Capacitor Bank rooms shall have flooring as per Clause 8.2.15
b)	*Toilet*	Rectified ceramic glazed tiles
c)	*Dado*	In toilet, Ceramic Glazed Tiles upto 2.1m height from floor
d)	*Counter*	Granite top, 600mm high wall tiling

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CMPDI

Ref. Drawing No.		HQ/E&M/301846
Sl.	**Items**	**Brief Description**
10	Frame & Shutter	
a)	*Doors*	Angle iron frame, 35 MM. thick flush door shutters (both sides decorative) and required fittings and/or Rolling shutters as per requirement
b)	*Cupboards*	Angle iron frame, 25 MM. thick flush door shutters (one side decorative) and required fittings.
c)	*Toilet Doors*	Angle iron frame, 35 MM. thick flush door shutters and required fittings.
11	Windows	2 or 3 track Aluminum frame with 4 MM. thick glass & required fittings, M.S. Grill
12	Wall Finishing	
a)	*POP/Putty*	1 MM. thick putty on Internal & External walls
b)	*External*	Acrylic smooth exterior paint with exterior primer
c)	*Internal*	Oil Bound Distemper over a coat of primer
13	Painting	
a)	*Wood work*	Synthetic enamel paint over a coat of ready mixed primer
b)	*Steel work*	Synthetic enamel paint over a coat of ready mixed primer
14	Roof Treatment	Roof shall have minimum gradient of 1:100. Appropriate water proofing admixtures to be added with concrete. Provision of Gola, adequate rain water down comer to be kept.
15	Water Supply	
a)	*Pipe*	Internal concealed CPVC pipes & External G.I. pipes exposed on wall
b)	*Fittings*	All fixtures shall be of CP
16	Sanitary	
a)	*Pipe*	CPVC pipes
b)	*Fittings*	White vitreous china W.C., Urinals, Sinks & Basins
c)	*Single user toilet*	nil
	i) Total no. Fixtures	n/a
d)	Multi user toilet	1 nos.
	i) Total no. Fixtures	As per requirement
17	Electrical	
a)	*Wiring*	Concealed Wiring
b)	*Fitting & Fixtures*	As per requirement

8.4. **OTHER FACILITIES LIKE OPEN PARKING, PLINTH PROTECTION, GARLAND DRAIN & ETP**

8.4.1. Open parking for Dumper & other HEMM:

Open Parking shall be provided as per drawing nos.: HQ/E&M/301846. Flooring shall be as detailed hereinafter marked with road marking paints of adequate nos. of coats.

8.4.2. PLINTH PROTECTION & GARLAND DRAINS:

600 mm wide plinth protection "with bricks laid on edge in cement mortar 1:6 (1 cement : 6 fine sand) with 12 mm thick bed of cement mortar (1:6) over 75 mm bed of dry brick aggregate 40 mm nominal size rammed, consolidated and grouted with fine sand and top finished with cement plaster (1:4) and neat cement punning" shall be provided around all the buildings/sheds along with garland drains of adequate size "constructed with bed concrete (1:4:8), brickwork in cement mortar (1:6) and finished with cement plaster (1:4) and neat cement punning" running adjacent to the plinth protection.

8.4.3. EFFLUENT TREATMENT PLANT :

The industrial effluent from workshop area after collection from floor washing, dust suppression etc. shall be collected and conveyed through a separate sewerage system into the proposed effluent treatment plant (ETP). All the necessary sewerage and pumping arrangement for collection and conveyance of industrial effluent from the proposed workshop into ETP is covered in the scope of this tender.

Industrial effluent from the entire workshop shall be disposed of to the proposed ETP, suitably located which is in the scope of the work of this NIT. The location of the ETP needs to be based on functional requirement & site condition. The ETP has to be designed from Laboratory Test Results on samples collected from existing workshops or from adjacent workshops as directed by the Project authorities. The ETP design shall be in accordance with the provisions of CPHEEO Manuals and other relevant environmental stipulations/ statutory/Normative guidelines. The ETP shall have sumps, oil & grease treatment facility, clarifloculation / settling arrangement, treated effluent reservoir, recirculation arrangement for different uses like washing , gardening, dust suppression etc., alternate disposal arrangement in the natural features etc. as per functional requirement and direction of EIC.

8.5. SCRAP YARD, ERECTION YARD:

The location and size of these yards will be as per drawing no: HQ/E&M/301846.

STOPPERS:

To restrict movement of multi-axle vehicles within the workshop complex, road stoppers as indicated in the layout drawing are to be provided. These shall be RCC posts, at about 1.5m c/c with suitable openings to allow only two–wheeler vehicular movement as indicated in the Layout drawing. The other features are to be as per design and functional requirements. This specification of stoppers shall hold for all the stoppers as indicated in the layout drawing.

8.6. Flooring

8.6.1. TYPE-F1: FOR 60 Te DUMPER REPAIR SHOP

Under this category total flooring area shall be as per drawing no. HQ/E&M/301846 and shall be as per actual design but the specification shall not be less than the following:

i) Well prepared and well compacted sub-grade.

ii) Sand filling of designed thickness with proper compaction.

iii) Appropriate thickness as per design requirements (compacted and finished thickness, Minimum 350 mm) of graded stone aggregate (size range 53 mm to 0.075 mm) to wet mix macadam (WMM) specification.

iv) Dry lean cement concrete sub-base of designed thickness over a prepared sub-grade with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ration not exceeding 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not be less than 10Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.

v) Minimum 200 mm thick Design mix cement concrete of M40 grade of concrete and reinforcement as per design on both faces both ways with expansion joints (along with dowel bars arrangement) etc. complete. The reinforcement of pavement shall be with welded wire fabric mesh made as per IS: 1566 and steel conforming to Fe-480.

The cement concrete road will be dowel jointed pavement over a prepared sub base with minimum cement @ 400 kg per cum, fine and coarse aggregate of 25 mm nominal size conforming to IS:383 in appropriate proportions as per approved & specified design criteria, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion

and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing, complete all as per direction of Engineer-in-charge.

In some cases of flooring within shops, there may be practical problems in using paver machines due to space restrictions. In those situations, other means may be allowed by the EIC in writing if requested by the contractor giving proper justification.

v) 52 mm thick cement concrete flooring with concrete hardener topping.

8.6.2. TYPE-F2: FOR DOZER SHOPS

The specification of this type of flooring shall be as per actual design but not less than the following:

i) 450 mm thick sand & stone dust/spalls filling over well prepared and well compacted sub-grade.

ii) Appropriate thickness as per design requirements (compacted and finished thickness) stone metal water bound macadam with hard quality crushed stone aggregates of appropriate grade. The loose crushed stone aggregate of required thickness shall be laid and rolled by a suitable capacity vibro-roller as per above mentioned standards till required compacted thickness is reached for each layer.

iii) PCC (1:4:8) of required thickness (minimum thickness of 75 mm) as per requirements over the WBM

iv) Granite stone blocks laid in ironite mortar (1:4) with 20 mm thick joints. Size of granite blocks shall be 200 mm x 100 mm x 100 mm and shall be laid with face of 200 mm x 100 mm up and in herring bone bond.

8.6.3. TYPE-F3: FOR OTHER REPAIR SHOPS / E&M STORE SHED

The specification of this type of flooring shall be as per actual design but not less than the following:

i) Well prepared and well compacted sub-grade.

ii) Sand filling of designed thickness with proper compaction.

iii) Appropriate thickness as per design requirements (compacted and finished thickness, Minimum 300 mm) of graded stone aggregate (size range 53 mm to 0.075 mm) to wet mix macadam (WMM) specification. The item inclusions will be as per clause. 8.5.1 sub-para (iii).

iv) Dry lean cement concrete sub-base of designed thickness. The Dry lean cement concrete will be provided as per clause no. 8.5.1, sub-para (iv)

v) Minimum 200 mm thick Design mix cement concrete of M25 grade of concrete and reinforcement as per design on both faces both ways with expansion joints (along with dowel bars arrangement) etc. complete. The reinforcement of pavement shall be with welded wire fabric mesh made as per IS: 1566 and steel conforming to Fe-480.
The Design mix cement concrete will be provided as per clause no. 8.5.1, sub-para (iv)
vi) 52 mm thick cement concrete flooring with concrete hardener topping,

NOTE - At certain places machine foundations also shall have to be provided and top of machine foundations shall also be finished similar to the floors of the building where they are located. Wherever machines like Lathe, Press, Drilling machines etc. shall be installed, cable trenches shall be constructed with following specifications:
i) P.C.C. in foundation bed of suitable size.
ii) Brick walls in brick work (1:6) with cement plaster in foundation of suitable size.
iii) Pre-cast R.C.C. slab covers of suitable sizes and required strength.
The length of these trenches may be assessed from the drawings whereas the internal sizes will vary on number of cables to be laid in these trenches. For bidding purpose tenderers may assess on their own and these trenches will be within the Scope of Work, however, the execution shall be done on the basis of mutual discussions.

8.6.4. TYPE-F4: FOR CAR/LMV PARKING

Location for various facilities such as car parking, garages, scooter sheds, cycle sheds, LMV parking, fire tender sheds etc. as per scope of this NIT for which the flooring shall be provided may be seen in Drawing No HQ/E&M/301846 & HQ/E&M/301852. Category of pavement shall be as per the specifications not less than the following:
i) Well prepared and compacted sub-grade.
ii) Adequately thick sand filling with proper compaction.
iii) Graded stone boulder as sub-base of appropriate thickness as per design requirements (rolled compacted and finished thickness) including blinding of interstices with stone dust/spalls and sand and finally watered and re-rolled.
iv) 200 mm thick R.C.C. with M25 grade and double layer reinforcement with welded wire fabric mesh at designed spacing with screed finish on top with appropriate slope for drainage in panels and provision of expansion joints etc. complete

8.6 ROADS AND PAVEMENTS

8.6.1 ROADS

In all, there shall be three categories of roads in the proposed workshop. All the roads & pavements within the boundary of workshop complex, as shown in the layout drawing is within the scope of this contract. The description of the four types of roads is given below. The first category shall be Dumper road, provided at places where dumpers of 60T capacity are required to ply. The second category shall be Dozer road, provided at places where dozers of 410 HP capacity are required to ply. The third category of road shall be LMV road, provided at places where all types of vehicles except HEMMs shall be plying. The width of the roads as shown in the drawing, are indicative and is inclusive of drains. Minor adjustments in the width can be made as per site conditions and functional requirement. If for any reason, there is major deviation, prior approval from the company is to be taken. Wherever required, traffic islands are to be provided at places such as road junctions etc. Dividers for all roads to be provided wherever required.

8.6.1.1 DUMPER ROAD (FOR 60T DUMPERS) TYPE-I

This category of roads shall be provided at places where loaded dumpers of 60 Te capacity are required to ply as shown in drawing no. HQ/E&M/301846. The scope of work includes Dumper roads inside the boundary wall of the proposed workshop as shown in drawing no. HQ/E&M/301846. Generally empty dumpers are required to ply on these roads, but sometimes loaded dumpers may also ply on this road. The detailed dimensions and axle loads for different type of dumpers are shown in drawing no. HQ/E&M/301857. All relevant IRC/CPWD/NBO/IS/MOST specifications shall be followed.

The stone boulders and aggregates for road works shall be of approved hard variety only and from locally available quarry.

i) Well prepared and well compacted sub-grade.

ii) Sand filling of designed thickness with proper compaction.

iii) Appropriate thickness as per design requirements (compacted and finished thickness, Minimum 350 mm) of graded stone aggregate (size range 53 mm to 0.075 mm) to wet mix macadam (WMM) specification.

iv) Dry lean cement concrete sub-base of designed thickness over a prepared sub-grade with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ration not exceeding 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not be less than 10Mpa at 7 days, mixed in a batching

plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tonnes vibratory roller, finishing and curing.

v) Minimum 200 mm thick Design mix cement concrete of M40 grade of concrete and reinforcement as per design on both faces both ways with expansion joints (along with dowel bars arrangement) etc. complete. The reinforcement of pavement shall be with welded wire fabric mesh made as per IS: 1566 and steel conforming to Fe-480. The cement concrete road will be dowel jointed pavement over a prepared sub base with minimum cement @ 400 kg per cum, fine and coarse aggregate of 25 mm nominal size conforming to IS:383 in appropriate proportions as per approved & specified design criteria, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing, complete all as per direction of Engineer-in-charge.

8.6.1.2 DOZER ROAD TYPE-II

The second category of roads shall be provided at places where dozers are required to ply as shown in drawing nos. HQ/E&M/301846. The scope of work includes Dozer roads inside the boundary wall o as shown in drawing no. HQ/E&M/301846.

This category of roads shall have to be properly designed with specifications not less than the following:

i) 450 mm thick sand & stone dust/spalls filling over well prepared and well compacted sub-grade.

ii) Appropriate thickness as per design requirements (compacted and finished thickness) stone metal water bound macadam with hard quality crushed stone aggregates of appropriate grade. The loose crushed stone aggregate of required thickness shall be laid and rolled by a suitable capacity vibro-roller as per above mentioned standards till required compacted thickness is reached for each layer.

iii) P.C.C. (1:4:8) of required thickness (minimum thickness of 75 mm) as per requirements over the WBM.

iv) Granite stone blocks laid in ironite mortar (1:4) with 20 mm thick joints. Size of granite blocks shall be 200 mm x 100 mm x 100 mm and shall be laid with face of 200 mm x 100 mm up and in herring bone bond.

8.6.1.3 LMV ROAD TYPE-III

The third category of road shall be provided in the areas as shown in drawing nos. HQ/E&M/301846 and on these roads ordinary vehicles such as jeeps, cars, 20 te capacity trucks and rubber tyre mounted mobile cranes will ply. These roads shall have flexible pavement and tenderers are required to provide the road as per actual design but not less than the following:

i) Well prepared and well compacted sub-grade.

ii) Adequately thick sand filling with proper compaction.

iii) Graded stone boulder as sub-base of appropriate thickness as per design requirements (rolled compacted and finished thickness) including blinding of interstices with stone dust/spalls and sand and finally watered and re-rolled.

iv) 200 mm thick R.C.C. with M25 grade and double layer reinforcement with welded wire fabric mesh at designed spacing with screed finish on top with appropriate slope for drainage in panels and provision of expansion joints etc. complete.

8.6.2 PAVEMENTS

Pavements shall be provided mainly for open area parking, open area storage yards, Open service grounds, approaches of buildings and shops. Pavements to be provided in the whole complex shall be as per Drawing Nos.: HQ/E&M/301846. All relevant IRC/CPWD/NBO/IS specifications shall be followed.

Type – P1	:	Parking and movement of 60 T dumpers
Type – P2	:	Parking and movement of dozers/ Crawler Mounted Vehicles
Type – P3	:	LMV open parking / Cycle stand/ Visitor's parking
Type – P4	:	Heavy duty open area storage yards and Light duty open area storage yards

Note: The spaces between the roads/pavements and various facilities should have specifications similar to their approach roads/pavements.

8.6.2.1 PAVEMENT TYPE-P1: PARKING SPACE FOR 60T DUMPER & OTHER HEMM

Location details may be seen in Drawing No. HQ/E&M/301846. The pavement under this category shall have specifications similar to 60 Tonne dumper road as indicated before.

8.6.2.2 PAVEMENT TYPE-P2: PARKING SPACE FOR DOZER/ CRAWLER MOUNTED VEHICLES, HARD STAND IN E&M WORKSHOP

Location details may be seen in Drawing No. HQ/E&M/301846. The pavement under this category shall have specifications similar to dozer road as indicated before.

8.6.2.3 PAVEMENT TYPE-P3: LMV OPEN PARKING/ VISITOR'S PARKING

Location for various facilities such as car parking, garages, scooter sheds, cycle sheds, LMV parking, fire tender sheds for which Pavement Type P3 shall be provided may be seen in Drawing Nos HQ/E&M/301846. Category of pavement shall be as per the specifications not less than the following:

i) Well prepared and compacted sub-grade.

ii) Adequately thick sand filling with proper compaction.

iii) Graded stone boulder as sub-base of appropriate thickness as per design requirements (rolled compacted and finished thickness) including blinding of interstices with stone dust/spalls and sand and finally watered and re-rolled.

vi) 200 mm thick R.C.C. with M25 grade and double layer reinforcement with welded wire fabric mesh at designed spacing with screed finish on top with appropriate slope for drainage in panels and provision of expansion joints etc. complete.

8.6.2.4 PAVEMENT TYPE – P4: OPEN AREA STORAGE YARDS (HEAVY DUTY & LIGHT DUTY)

Location details of the Heavy duty storage yards like The Store yard, Scrap Yard, parking for cranes, Hard Pavement for Oil and Lubricants etc. may be seen in layout drawings. Location details for Light Duty storage yards like space for used tyres etc. for different types of dumpers etc. may be seen in Drawing No. HQ/E&M/301846. Pavement under this category shall have following not less than the following:

i) Well prepared and compacted sub-grade.

ii) Sand filling of designed thickness with proper compaction.

iii) Appropriate thickness as per design requirements (compacted and finished thickness, Minimum 300 mm) of graded stone aggregate (size range 53 mm to 0.075 mm) to wet mix macadam (WMM) specification. The item inclusions will be as per clause. 8.5.1 sub-para (iii).

iv) Dry lean cement concrete sub-base of designed thickness. The Dry lean cement concrete will be provided as per clause no 8.5.1, sub-para (iv)

v) Minimum 200 mm thick Design mix cement concrete of M25 grade of concrete and reinforcement as per design on both faces both ways with expansion joints (along with dowel bars arrangement) etc. complete. The reinforcement of pavement shall be with welded wire fabric mesh made as per IS: 1566 and steel conforming to Fe-480.

The Design mix cement concrete will be provided as per clause no. 8.5.1, sub-para (v)

vi) 52 mm thick cement concrete flooring with concrete hardener topping,

8.7 CABLE TRENCHES/CABLE DUCTS

Cable trenches and cable ducts shall be provided in the plant as per Part-IV (Electrical) of varying specifications as per relevant I.S. The trenches in general open area shall be in the earthen pits with sand and bricks as under layer with pre-cast concrete slab coverage for cable at suitable depths. For crossing of cables under roads and pavements, they shall be laid in R.C.C. pipes at suitable depths. The cables being laid in shop areas, inside the buildings below floors shall be laid in trenches made of P.C.C. or R.C.C. base concrete, brick walls plastered and finished properly and R.C.C. covers of suitable designs. Within these trenches, if necessary, M.S. angle iron racks shall be provided as per requirement, as approved.

In case of cables being laid in the shops over the working areas, the cables shall be placed in cable trays suitably designed and supported from the structures made of M.S. angles channels and plates.

8.8 ROOFING, CEILING & ROOF DRAINAGE

In cases of main stores, where the whole building shall have pressurized air ventilation to prevent dust entry inside the building, appropriate ceiling may have to be provided. Even the roofing and ceiling including side cladding shall be designed on the basis of minimum design losses in pressure due to leakages etc. for this building separately. Wherever Air conditioning needs to be provided, false ceiling has to be provided and fixed with 15 mm thick densified regular edged eco-friendly light weight calcium silicate false ceiling tiles of approved texture, make and quality.

8.9 UNDERGROUND SUMPS & OVERHEAD TANK

These shall be of minimum M30 grade RCC and shall be provided as per relevant IS Codes/ manuals.

CHAPTER - 9
TECHNICAL SPECIFICATION
ELECTRICAL

9.1 GENERAL INFORMATION

9.1.1 The supply and installation of electrical equipment specified herein are required for both indoor and outdoor.

9.1.2 The successful tenderer shall furnish all, but not limited to, equipment, materials and accessories and services specified herein to complete this work. The work shall have to be completed and operative in all details. Any item of work or material which may not have been specifically mentioned but incidental to or necessary for complete installations and operation shall be provided by the Bidder without any additional charge to the purchaser.

9.1.3 The successful tenderer shall supply and/or erect the addition or modification as will be agreed upon in writing after mutual discussion.

9.1.4 The equipment to be furnished under this specification shall be packaged for shipment so as to meet the space and weight limitations to transport facilities, right up to destination.

9.2 STANDARDS

9.2.1 The equipment and materials to be furnished shall be designed, manufactured and tested in accordance with the latest revisions of the Indian Standards (IS). Where Indian standards are not available International standards like British Standards (BS), ISO, DIN, JIS or Other standards and International Electro-Technical Commission (IEC) publications unless otherwise stated, which ensures performance equivalent or superior to Indian standard shall be followed.

9.2.2 The equipment conforming to any other national standard which ensures equivalent quality is also acceptable. In such cases the tenderers shall clearly indicate the standards adopted and furnish a copy of the English Version of the Standard along with the tender.

9.2.3 The equipment covered under these specifications shall comply with all the latest applicable statutory rules, regulations, acts and safety codes which may be in force during the period of execution and which are related with design, construction and operation of equipment in the locality where the equipment is to be installed.

9.2.4 The electrical installation shall meet the requirement of Indian Electricity Act 1910

and Indian Electricity Rules, 1956 as amended up-to-date, Mines Rules and Regulations (latest revision) and also the applicable section of the latest revision of the relevant IS code of practice.

9.2.5 Nothing in these specifications shall be construed as to relieve the supplier of the responsibility for correctness of the design and construction of the equipment. All the standards being followed shall be listed out in the bid. Where any foreign standard is being followed, the copy of the same shall be provided with the bid.

9.2.6 Wherever service conditions and requirements laid down in these specifications differ from applicable standards, the conditions specified herein shall prevail.

9.2.7 Distribution Transformers up to and including 200 kVA, LED Light fixtures, Ceiling Fans, Air Conditioners etc. shall bear minimum 3 star BEE labeling, whereas, LT motors shall be of EFF2 type for ratings specified by BEE.

9.2.8 In addition, any relevant regulations applicable to the work shall be followed. In case of any discrepancy, the decision of purchaser will be final.

9.3 **SERVICE CONDITIONS**

Ambient air temperature	:	5^{o}C to 50^{0}C
Altitude	:	Maximum up to 1000 M above MSL.
Relative Humidity	:	Approximately 97 %.
Pollution degree	:	Degree 4 as per IS: 13947 (Part I) (i.e. the pollution generates persistent conductivity caused by conductive dust)

9.4 INSPECTION

The manufacturer shall carry out a comprehensive inspection and testing program during manufacture for all bought out items and also workmanship during this stage. The manufacturer shall submit the inspection program at least four weeks prior to the purchaser.

The manufacturer shall carry out all standard routine tests in accordance with relevant IS. The manufacturer shall also carry out type tests in accordance with relevant IS on one piece of one rating. While the routine tests shall be carried out at manufacturer's works under prior information to purchaser, the type test certificates from reputed test houses shall be submitted for purchaser's approval giving details of each test and evaluation of test data.

Tests which are common to both type and routine tests may be covered under routine test in the presence of purchaser's representative, if required.

9.5 TEST CERTIFICATE

The equipment covered under these specifications shall be Type tested in accordance with relevant codes. The bidder shall supply at the time of execution the routine test certificates from the manufacturer indicating the type of tests conducted and the test results in accordance with relevant codes.

9.6 OPERATING CONDITIONS

Nominal system Voltage	415 V (± 10%)	6.6 kV (± 10%)
Supply Frequency	50 Hz (±3%)	50 Hz (±3%)
Highest Fault Level (for 3 secs.)	31 MVA	250 MVA
Fault Current	43.1 kA	21.9 kA
System earthing	Solid earthed	Restricted earthed

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

LIST OF SPECIFICATIONS

Sl. No.	Item Description
	Technical Specification-General Information
SP/E-01	6.6 kV Off-Load Isolator with DO fuse
SP/E-02	6.6 kV indoor metal enclosed Vacuum Circuit Breaker
SP/E-03	6.6 kV Switchboard
SP/E-04	315 kVA, 6.6 kV/415 V Indoor Transformers
SP/E-05	100 kVA, 6.6/230 V(L-L) Lighting Transformers
SP/E-06	415 V Main Power Distribution Board (MPDB)
SP/E-07	415V Power Distribution Boards (PDBs)
SP/E-08	415V Sub Power Distribution Boards (SPDBs)
SP/E-09	Capacitor Banks
SP/E-10	Earthing and Lightning Protection System
SP/E-11	Main Lighting Distribution Board (MLDB), Lighting Distribution Boards (LDB) & Feeder Pillars
SP/E-12	230V (L-L) Lighting Distribution Boards
SP/E-13	Switchboards for Lighting Circuits
SP/E-14	Lamp Fixtures
SP/E-15	415V power Receptacles
SP/E-16	Cables
SP/E-17	Accessories for cabling
SP/E-18	Lead Acid Battery with Charger
SP/E-19	Steel Tubular Poles for Lighting
SP/E-20	Masts for Lighting
SP/E-21	Miscellaneous Items

Specification No. SP/E-01

1.0 SPECIFICATION FOR 6.6 kV OFF LOAD ISOLATOR WITH D.O. FUSE

1.1 SCOPE

This specification covers requirements for 6.6 kV, Off Load Isolator with D.O. Fuse suitable for outdoor application.

The 6.6 kV, Off Load Isolator shall comply with the latest revision of IS: 9921 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 1.2.

1.2 OTHER RELEVANT STANDARDS

The other relevant Indian standards are as under:

IS : 3043 :Code of practices for earthing.

IS : 11353 :Guide for uniform system of marking and identification of conductors and apparatus terminals.

IS : 5350 (Part 3) :Dimensions for outdoor porcelain post insulators.

IS : 13134 :Guide for selection of Insulators in respect of pollution conditions.

IS : 2486 :Insulator fittings for overhead power lines with a nominal voltage greater than 1000 volts.

IS : 2099 :Bushings for alternating voltages above 1000 volts.

1.3 DESIGN CRITERIA

The 6.6 kV, Off Load Isolator with D.O fuse shall be suitable for 6600V (-10% to +10%), 3-phase, 50 Hz (-3% to +3%) power supply. The isolator shall be designed for an operating temperature of 70^0C.

All similar components shall be interchangeable and shall be of same type and rating for easy maintenance and low spare inventory.

The rated current carrying capacity has been specified in Annexure-I at the rated voltage and frequency and the Isolator shall carry rated current continuously while complying with this specification. The breaking and making capacity of the Isolator shall be as specified in Annexure-I.

1.4 **CONSTRUCTIONAL FEATURES**

1) The isolator shall be single pole, two post single break type per phase mounted on a base of fabricated section. The contact arm shall be divided in two parts, one carrying the male contact the other carrying female contacts. The isolator shall be manually gang operated with drop out fuse and with padlocking arrangement.
2) The isolator shall be supplied with suitable type cable termination to receive 6.6 kV armoured cables.
3) The isolator shall be supplied with HRC type D.O. fuse of suitable rating.
4) The isolator shall be suitably earthed with GI strip through suitable sized GI strip.
5) The blades of the isolators shall be high conductivity copper/ copper alloy heavily tinned.

1.5 **PERFORMANCE**

Electrical Features

The isolator shall ensure:

a) Continuous operation at rated current at specified ambient conditions.
b) Continuous operation within variation for voltage between ±10% and frequency variation between ±3 % and combined voltage and frequency variation of 10%.
c) The isolator shall have to withstand apparent short circuit current of 21.9 KA (rms) for 3 second.

ANNEXURE - I

TECHNICAL PARAMETERS FOR 6.6 KV, OFF LOAD ISOLATOR WITH D.O. FUSE

Nominal System Voltage	- 6.6 kV
Highest System voltage	- 7.2 kV
Rated Current	- As required
Operation	- Manual, off load, air break gang operated outdoor
Mounting	- Pole mounted
Type	- Single break
No. of phases per set	- Three
Contacts	- Shall be high conductivity copper/ copper alloy heavily tinned, leaf spring load contacts.
Reference standard	- IS: 9921
Accessories	i) Base channel of hot dipped galvanized iron ii) Operating down rod with complete mechanism iii) Operating handle, mounting base, pad lock system iv) Square rod of phase gang operation v) HRC Fuse with fuse links of suitable rating conforming to IS:9385. vi) Post insulators conforming to IS: 5350.
Location	-Outdoor on DP/Four pole structure after the lightning arrester near workshop substation.

Specification No. SP/E-02

SPECIFICATION FOR 6.6 KV INDOOR METAL ENCLOSED VACUUM CIRCUIT BREAKER

1.0 SCOPE

This specification covers requirements for 6600V Metal enclosed Vacuum Circuit Breaker panel suitable for indoor application.

The circuit breaker shall comply with the latest revision of IS: 13118 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 2.0.

2.0 OTHER RELEVANT STANDARDS

The other relevant Indian standards are as under:

IS : 2705 : Current transformers.

IS : 3156 : Voltage transformers.

IS : 3043 : Code of practices for earthing.

IS : 6875 : Control switches (switching devices for control and auxiliary circuits including contactor relays) for voltages up-to and including 1000 V AC.

IS : 10118 : Code of practice for selection, installation and maintenance of Switchgear and Control-gear.

IS : 11353 : Guide for uniform system of marking and identification of conductors and apparatus terminals.

IS : 12021 : Specification of Control transformers for switch gear and control gear for voltages not exceeding 1000 V A.C.

IS : 3427 : HT indoor switchgear and control-gear.

3.0 DESIGN CRITERIA

The Circuit Breaker shall be suitable for 6600V (± 10%), 3-phase, 50 Hz (±3%) power supply.

All similar components shall be interchangeable and shall be of same type and rating for easy maintenance and low spare inventory.

The rated current carrying capacity shall be as specified in annexure-I at the rated voltage and frequency and the circuit breaker shall carry rated current continuously while complying with this specification. The breaking and making capacity of the circuit breaker shall be as specified in annexure-I.

4.0 **CONSTRUCTIONAL DETAILS/GENERAL TECHNICAL REQUIREMENTS**

4.1 The unit shall comprise of the panel, Vacuum Circuit Breaker unit (VCB).

4.2 **Panel**

(i) The panels shall conform to IS: 3427. The detailed specification of panel has been furnished in specification no. SP/E-04.

(ii) The panels shall be of unitized construction having separate compartments for the circuit breaker, bus bars, CT, PT and separate chamber for protective relays, metering and indicating instruments. The panels shall be extensible to form a multi-panel Switchboard.

(iii) The panels shall be fabricated from sheet steel of minimum thickness 2.5 mm for load bearing members, 2 mm for front metering doors and 1.6 mm for side covers, rear doors and partition sheets.

(iv) The panels shall have a separate cable box/ cable gland for outgoing cables.

(v) An earth bus of continuous type shall earth all metallic non-current carrying parts in the panels and the VCB and contactor units.

(vi) The panels shall be suitable for ready installation on embedded MS channels flushed with the floor or for direct installation on a leveled floor through grouting holes.

(vii) The panel shall be dust and vermin proof with no access to ingress of moisture with IP 4X protection.

4.3 **The Vacuum Circuit Breaker unit**

(i) The Breaker unit shall have proper isolation and shall be of horizontal DRAW OUT construction.

(ii) The Breaker unit shall have two main components:

a) The trolley assembly

b) The cradle assembly

I. The trolley assembly made of steel plates shall be mounted on wheels.

I.1 The trolley assembly shall be provided with:

a) The pole assembly

b) The operating mechanism

I.1.1 The pole assembly component of the trolley assembly shall consist of:

a) The interrupter units

b) The top terminals for interrupter units, separated by fire retardant type barriers.

c) The contacts of the breaker shall be silver plated copper or silver plated copper-chromium.

I.1.2 The operating mechanism shall consist of:

a) Solenoid operating mechanism

b) Control devices

I.1.3 The solenoid mechanism operating on the electro-magnetic principle with a trip free link mechanism.

I.1.4 There shall be a heavy duty plug-in type earth contact which shall make before the insertion of trolley assembly and break after the withdrawal of the same.

II.1 The cradle assembly shall consist of:

a) Copper terminals to receive the breaker contact.

b) Rails to guide the trolley assembly.

c) Insulated safety shutter mechanism to make the shutter operation fully automatic depending on circuit breaker position.

4.4 **Operation of the Breaker**

The breaker shall be electrically operated locally.

The necessary indicating devices for ON/OFF/TRIP indication and operation counter shall be provided.

Terminal blocks for control cables shall also be provided for interfacing with other breakers if required. The closing shall be electrical.

4.5 **Duty Cycle**

The duty cycle is O - 3 min - CO - 3 min - CO.

5.0 **PERFORMANCE**

5.1 The design of the circuit breakers and accessories shall be in accordance with the latest IS and shall be such as to facilitate Inspection, clearing, repairs, maintenance and operation and shall ensure safety operations under situation of sudden variations

of loads and voltages as may be required under local operating conditions.

5.2 **Electrical Features**

` The breaker shall ensure:

a) Continuous operation at rated current at specified ambient conditions.

b) Continuous operation within variation for voltage between ±10%, and frequency variation between ±3 % and combined voltage and frequency variation of 10%.

c) Temperature rise limited to the values given in IS: 13118 for test condition.

d) The insulation levels shall conform to the values given in IS: 13118.

e) Circuit breaker shall have to withstand apparent short circuit current of 21.9 kA (rms) for 6.6 kV for at least 3 second.

5.3 **Mechanical Features**

a) The breaker shall be able to withstand the thermal and electromagnetic stress arising out of fault level of 250 MVA.

b) The trolley assembly shall have three distinct positions- SERVICE/TEST/ISOLATED WITH INDICATIONS.

c) Earthing of all metallic parts of trolley and cradle must be ensured in ISOLATED position.

d) Operation of the breaker shall be interlocked mechanically and electrically with the safety shutter.

6.0 **PROTECTIONS AND INTERLOCKS**

6.1(i) All circuit breakers shall have programmable numeric type relays having suitable range. The following protections shall be provided for circuit breakers controlling different type of feeders.

Sl. No.	Type of Feeder	Protection to be provided
1	Incomer	Overload, short circuit and earth fault & CBCT operated earth leakage relay.
2	Transformer control	Overload, short circuit and earth fault and auxiliary relays for Buchholz, Differential protection, Oil and Winding temperature protections.

Sl. No.	Type of Feeder	Protection to be provided
3	Bus coupler	Directional protection.
4	Capacitor bank	Overload, short circuit, earth fault, Under voltage, Over voltage & Neutral displacement.
5	Outgoing	Overload, short circuit and earth fault.

ii. Sufficient number of NO + NC auxiliary contacts shall be provided for the protections and interlock.

iii. Necessary mechanical and electrical interlocking shall be provided among associated breakers for safe operation of the system.

7.0 METERING & MIMIC FACILITY

7.1 Following indications shall be provided:

a) ON/OFF/TRIP

b) Indication (Alarm/Lamp) on TRIP with reset button

7.2 Digital power meter shall be provided for measuring the following parameters with all breakers except couplers:

a) Voltage

b) Current

c) P.F.

d) Frequency.

e) Energy consumption and maximum demand.

7.3 Suitable class of Current Transformer and Potential Transformer shall be provided.

8.0 NAME PLATE

The name plates of the circuit breaker and its operating device shall have suitable marking as under:

Manufacturer

Type designation and serial number

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Rated voltage

Rated frequency

Rated normal current

Short circuit withstand capacity

Rated short circuit breaking current

Rated supply voltage of closing and opening devices

Rated supply frequency of closing and opening devices

Operating duty

Supply voltage of auxiliary circuits

Supply frequency of auxiliary circuits

Weights

Rated operating sequence

Year of manufacture

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE - I

TECHNICAL PARAMETERS OF 6.6 kV INDOOR VCB

1	Installation	:	Indoor Panel
2	Number of Poles	:	3
3	Service Voltage	:	6600 V (-10% to 10%)
4	Rated current (A)	:	As per requirement
5	Frequency	:	50 Hz (-3% to 3%)
6	Symmetrical breaking capacity	:	250 MVA
7	Short time current for 3 Second	:	21.9 kA (rms)
8	Operating Mechanism	:	Motor operated spring charged. Trip free mechanism along-with ON/OFF/TRIP Indication.
8.1	Manual/Electrically operated	:	Manual and Electrical with closing and shunt trip coil.
9	Tripping arrangement	:	AC shunt trip mechanism.
10	Rated Insulation Level :		
	a) One minute power frequency with stand voltage	:	20 kV for 6.6 kV (RMS)
	b) Impulse withstand test voltage with standard full wave	:	40 kV for 6.6 kV (Peak)
11	Indications	:	ON, OFF, TRIP, LOCKOUT, CONTROL SUPPLY, SPRING CHARGED.
12	Terminal arrangement	:	
12.1	Incoming	:	Suitable for armoured cable/ Duct
12.2	Outgoing	:	Suitable for armoured cable
13	Control supply	:	110 V DC.
14	Control wiring	:	1.5 mm^2, 660 V, PVC, Copper conductor

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

			2.5 mm^2, 660 V, PVC, Copper conductor for C.T. secondary connection.
15	Current Transformer	:	Of adequate class for measuring and protection with suitable secondary current.
16	Use of breaker as	:	Incomer/Coupler/Transformer control/ Outgoing/ Spare

Specification No. SP/E-03

SPECIFICATION FOR 6.6 kV SWITCH BOARD

1.0 SCOPE

1.1 This specification covers the requirements for 6.6 kV switch board incorporating vacuum circuit breakers.

1.2 The boards shall comply with the latest version of IS 8623 & IEC 439-1 except where modified or extended by this specification and with the relevant parts of standards mentioned in clause 2.0.

2.0 OTHER RELEVANT STANDARDS

The other relevant standards applicable are as under:

IS : 13118	General requirements for circuit breakers for voltages above 1000V
IS :13947	LV switch gear and control gear
IS :10118	Code of practice for selection, installation and maintenance of switchgear and control gear
IS :4237	General Requirements for Switchgear and Control gear for voltages not exceeding 1000 V.
IS :6875	Switches and push-buttons
IS :13703	LV fuses for voltages not exceeding 1000 V AC
IS :12021	Specification of control transformers
IS :2705	Current Transformers
IS :3156	Voltage Transformers
IS :11353	Guide for uniform system of marking and identification of conductors and apparatus terminals
IS :2147	Degree of protection provided by enclosures for low voltage switchgear and Control gear
IS :3043	Code of practice for earthing
IS :6005	Code of practice of phosphating iron and steel.
S :3202	Code of practice for climate proofing of electrical equipment
IS :2629	Hot dip galvanizing
IS :5082	Wrought Aluminium and Aluminium alloys for electrical purposes
IS :722	A C Electricity Meters
IS :1248	Electrical Indicating instruments
IS :3231	Electrical relays for power system protection
IS :5	Colors for ready-mixed paints and enamels.

IS :1554 PVC insulated cables for working voltages up to and including 1100V

IS :2551 Danger Notice Plates

IE Rules 1956

3.0 **DESIGN**

3.1 **Electrical**

The board shall be designed to ensure the following:

(i) Continuous operation at rated capacity at service condition mentioned before

(ii) Capacity to withstand fault level mentioned before

(iii) Capacity to withstand power frequency voltage mentioned in annexure I

3.2 **Mechanical**

The board shall be designed to ensure the following:

(i) Ready interchangeability of components

(ii) Easy accessibility to components for inspection & maintenance.

4.0 **CONSTRUCTION**

4.1 The board shall comprise single front panel / panels metal enclosed, dust & vermin proof floor mounted, free standing type. The panels shall be fabricated from sheet steel of minimum thickness 2.5 mm for load bearing members, 2 mm for front metering doors and 1.6 mm for side covers, rear doors and partition sheets. Stiffeners shall be provided wherever necessary. The thickness of gland plates shall not be less than 3.0 mm for hot/cold rolled steel sheets and not less than 4.0 mm for non-magnetic material.

4.2 The panels shall be provided with a degree of protection IP 4X. All cutouts shall be provided with synthetic rubber gaskets.

4.3 The panels shall be of uniform height.

4.4 The board shall be easily extendable on both sides by the addition of panels after removing the end covers.

4.6 A panel incorporating a breaker or an isolator or a changeover contactor or a control transformer shall meet the following requirements:

a) Epoxy coated busbars of required section shall be provided in all panels mounted on stable & strong supports to withstand thermal and electromagnetic forces during fault

conditions.

b) Epoxy resin insulated PT & CT shall be provided in a breaker panel suitably mounted with detachable devices for withdrawal or plugging in.

c) Epoxy resin insulated control transformers shall be provided in a control power supply panel suitably mounted with detachable devices for withdrawal or plugging in.

d) Draw-out type vacuum circuit breakers of required current rating and rupturing capacity shall be provided in a breaker panel. The breaker shall be mounted on a withdraw-able truck with three positions; "SERVICE", "TEST" & "ISOLATED".

e) Fixed type vacuum contactors shall be provided in a changeover panel of required load breaking capacity duly tested at a reputed test house.

f) Fixed type load break switch shall be provided in an isolator panel of required load breaking capacity duly tested at a reputed test house.

g) Fixed type auxiliary contactors shall be provided in a breaker panel for relays, interlocks, change over contactors and remote / local operation.

h) Safety shutters with pad locking arrangement shall be provided in a breaker panel such that it automatically closes the bus spout apertures whenever the truck is withdrawn.

i) Mechanical interlocks shall be provided in a breaker panel to prevent racking of the breaker into the SERVICE position from ISOLATED/TEST position with the breaker closed or the spring charged.

j) Mechanical interlocks shall be provided in a breaker panel to prevent its withdrawal from the SERVICE position to ISOLATED/TEST position without tripping the breaker.

k) Mechanical interlocks shall be provided in a breaker panel to prevent closing of the breaker in any intermediate position.

l) Draw-out handle provided in a breaker panel shall not be insertible without tripping the breaker.

m) Definite minimum time inverse current induction over load relay, instantaneous short circuit relay and earth leakage relay with auxiliary contacts shall be provided in a breaker panel along with 110 V DC control supply.

o) All components in a panel shall be neatly arranged and easily accessible for operation and maintenance.

p) In all panels a galvanized steel earth bus shall be provided at the bottom welded/

bolted to its framework and breaker earthing contact bar.

q) In all panels the earth bus shall have sufficient cross section to carry the short time fault current to earth, without exceeding the allowable temperature rise.

r) In all panels suitable arrangements shall be made at each end of the earth bus for bolting to earthing conductors. The earth bus shall project out of the panel ends and shall have predrilled holes for this connection. All joint splices to earth bus shall be made through at-least two bolts and taps by proper lug and bolts connection.

s) In all panels all non-current carrying metal work of the panel shall be effectively bonded to the earth bus. Electrical conductivity of the whole breaker enclosure framework and truck shall be maintained even after painting.

t) In a breaker panel the truck and breaker frames shall get earthed while being inserted in the panel and positive earthing of the breaker frame shall be maintained in all positions, i.e. SERVICE & ISOLATED, as well as the throughout the intermediate travel.

x) In all panels the instruments shall be compensated for temperature errors and factory calibrated to directly read the primary quantities. Means shall be provided for zero adjustment without removing or dismantling the instruments.

z) In a breaker panel the push buttons shall be of spring return, push-to-actuate type. In a breaker panel the push buttons shall have required number of normally open and normally closed contact.

The color of the buttons shall be as under:

Green for breaker CLOSE command

Red for breaker OPEN command

Black for all annunciation functions, overload, reset commands

All push buttons in a breaker panel shall be located in such a way that Red push buttons are always to the left of Green push-buttons.

4.7 **INDICATING LAMPS**

a) In the breaker panels LED indicating lamps shall be provided. The lamps shall have escutcheon plates marked with its function wherever necessary.

b) The LED indicators shall be of following colors,

Red for breaker CLOSE

Green for breaker OPEN

White for AUTO TRIP

Blue for all healthy conditions (e.g. control supply, and also for "SPRING CHARGED")

Amber for all Alarm Conditions (e.g. overload). Also for "SERVICE" and "TEST" position indications.

4.8 **INTERNAL WIRING**

a) The board shall be supplied completely wired internally.

b) The auxiliary wiring shall be carried out with 650 V grade, single core, stranded copper conductor, color coded, and PVC insulated wires. Conductor size shall be 1.5 mm^2 (min.) for control circuit wiring and 2.5 mm^2 (min.) for CT circuits.

c) Extra flexible wires shall be used for wiring to devices mounted on moving parts such as hinged doors. The wire bunches from the panel inside to the doors shall be properly sleeved or taped.

d) All internal wiring terminations shall be made with solder less crimping type tinned copper lugs which shall firmly grip the conductor or an equally secured method. Similar lugs shall also be provided at both ends of component to component wiring. Insulating sleeves shall be provided over the exposed parts of lugs to the extent possible.

e) Engraved core identification ferrules marked to correspond with panel wiring diagram shall be fitted at both ends of each wire. The ferrule shall be of self-locking type. The wire identification marking shall be in accordance with relevant code. Red Ferrules shall be provided on trip circuit wiring.

4.9 **CONTROL TERMINAL BLOCKS**

a) Control terminal blocks shall be of 650 Volts grade, rated for 10 Amps and in one piece moulding. It shall be complete with insulating barriers, clip-on type terminals and identification strips. Marking on terminal strip shall correspond to the terminal numbering on wiring diagrams. It shall have insulating material of Melanine conforming to relevant code.

b) Terminal blocks for PT & CT secondary leads shall be provided with test links and isolating facilities. CT secondary leads shall be provided with short circuit and earthing facilities.

c) In all panels at least 10% spare terminals for external connections shall be provided and these spare terminals shall be uniformly distributed on all terminal blocks.

d) The terminal blocks shall be suitable for terminating on each side two (2) nos. stranded copper conductors of size up to 2.5 mm^2 each.

e) All terminals shall be numbered for identification and grouped according to the function. Engraved white-in-black labels shall be provided on the terminal blocks.

f) Wherever duplication of a terminal block is necessary it shall be achieved by solid bonding links.

g) The terminal blocks shall be arranged with at least 100 mm clearance between two sets of terminal blocks. The minimum clearance between the first row of terminal blocks and the associated cable gland plate shall be 250 mm.

4.10 **NAME PLATES AND LABELS**

a) The panel shall be provided with prominent, engraved identification plates.

b) The name plates shall be of non-rusting metal with white non graved letterings on black back grounds. Inscriptions shall be subject to purchaser's approval.

c) Suitable stenciled paint mark shall be provided in-side the panel for identification of all equipment in addition to the plastic sticker labels, if provided. The labels shall bear the device number as indicated in the approved module wiring drawing.

d) Caution plate with the inscription "WARNING LIVE TERMINALS" shall be provided at all joints where the terminals are likely to remain live and isolation is possible only at remote end.

4.11 **PAINTING**

The sheet steel work shall be pre-treated, in tanks, in accordance with relevant code. Finishing paint on panels shall be in accordance with relevant code. The inner surface of the panels shall be glossy white. The finishing paint thickness shall not be less than 50 microns. All hardware shall be nickel chromium plated or zinc passivated.

4.12 **GASKETS**

The gaskets wherever specified shall be of good quality synthetic rubber with good ageing, compression and oil resistant characteristic suitable for panel application.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE I

TECHNICAL INFORMATION

Sl No	Item	Details
1	Applicable Standard	IS 8623 for panel & IS 13118 for VCBs
2	No of panels	As per requirement
3	Enclosure	Single Front
4	Protection of Enclosure	IP 4X
5	Location	Indoor
6	Rated voltage	6.6 kV
7	Rated current	As per requirement
8	Rated control voltage	110V DC
9	Bus Bar system	Copper
10	Bus Bar rating	As per Requirement
11	Short time rating	21.9 kA for 6.6 kV for 3 Sec
14	Power frequency withstand voltage	20 kV for 6.6 kV for 1 min 3 kV for 1 min for Relays , Timers , Transformers
15	Impulse withstand voltage	40 kV for 6.6 kV
16	Duty of breakers	O-3min-CO-3min
17	Duty of auxiliary contactors	AC 1
18	Type of control transformer	Dry type of adequate rating
19	Cabling	Cable chamber
20	Cable entry	Bottom/Top
21	Cabling for control circuits	AC control-1.5 mm^2 , 660 V PVC, Black ,Copper CT secondary-2.5 mm^2 660V PVC, Red, Copper Earthing-1.5 mm^2 , 660 V PVC, Grey, Copper Wire indication -Self-locking , PVC Ferrules

Specification No. SP/E-04

SPECIFICATION FOR 315 kVA, 6.6 kV/415 V OIL IMMERSED POWER TRANSFORMERS

1.0 SCOPE

1.1 This specification covers requirements for indoor type power transformers, 2 nos. of 315 kVA for Substation of proposed workshop, protected by primary circuit breaker and fitted with gas & oil relay, alarm, temperature indicator, tap changer and marshalling box and suitable for indoor application.

The transformers shall comply with the latest revisions of IS: 2026 and IEC: 76 except where modified or extended by the provisions of this specification and with the relevant parts of standards mentioned in para 2.0.

2.0 OTHER RELEVANT STANDARDS

The other relevant standards applicable are as under :

IS : 10561 : Application guide for power transformers.
IS : 10028 : Code of practice for selection, installation and maintenance of transformers.
IS : 1866 : Code of practice for maintenance and supervision of mineral insulating oil.
IS : 2099 : Bushing for alternating voltages above 1000 V.
IS : 3639 : Fittings and accessories for power transformers.
IS : 8603 : Dimensions for porcelain transformer bushings for use in heavily polluted atmosphere (12 KV-36 KV class).
IS : 335 : New insulating oil for transformers.
IS : 3637 : Gas operated relays.
IS : 3638 : Application guide for gas operated relays.
IS : 6600 : Guide for loading of oil immersed transformers.
IS : 2165 : Insulation co-ordination.
IS : 2705 : Current transformers.
IS : 1248 : Direct acting indicating analogue electrical measuring instruments.
IS : 3043 : Code of practice for earthing.
IS : 2147 : Degree of protection provided by enclosures for low voltage switchgear and control gear.
IS : 1271 : Thermal evaluation and classification of electrical insulation.
IS : 1554 : PVC insulated (heavy duty) electric cables - 1100V. (Part -I)
IS : 7404 : Paper covered copper conductors
IS : 5 : Color for ready mix paints.

3.0 DESIGN FEATURES

3.1 The design of the transformers and accessories shall be in accordance with the latest standard practice and shall be such as to facilitate inspection, cleaning, repairs, maintenance and operation and shall ensure safety operations under situation of sudden variations of loads and voltages as may be required under local operating conditions.

3.2 Electrical Features

The electrical features shall ensure the following :

a) Continuous operation at rated kVA provided service conditions does not exceed the values given in para 2.1.6.
b) Continuous operation at rated kVA within $\pm$ 10 percent variation (combined) of voltage and frequency.
c) Continuous operation at rated kVA at each of the tap voltages
d) Over loading of units as indicated in IS : 6600 .
e) Temperature rise limited to the following values :

Cooling	Oil	Winding
ONAN	45^0C	55^0C

f) The insulation levels shall be uniform and conform to the following values:

Nominal system voltage	Highest system voltage	Rated lightning impulse withstand voltage.	Power frequency voltage 1 minute
kV rms	kV rms	kV peak	kV rms
6.6	7.2	40	20

3.3 **Mechanical Features**

a) The transformer shall be able to withstand the electro-dynamic stress due to terminal short circuit of the LV side assuming the HV side fed from an infinite bus. The short circuit withstand duration shall be minimum of 3 sec.

b) The transformer shall be so designed as to minimize any undue noise and vibration.

3.4 **CONSTRUCTIONAL DETAILS**

3.4.1 **CORE**

a) The transformer core shall be made as per relevant IS. Lifting eyes and lugs shall be provided on the limbs and coils assembly. Preferably no bolt shall be used in the cores. Clamping shall be done externally to the limb.

b) Cores and windings shall be capable of withstanding shocks during transport, installation & service and adequate provision shall be made to prevent movement of core and winding relative to tank during these conditions.

3.4.2 **TANKS**

a) Tanks shall be of welded construction and fabricated from boiler steel plates.

b) Tanks stiffeners shall be provided for general rigidity and these shall be designed to prevent retention of water.

c) The tanks shall be designed to withstand:
   i) Mechanical shocks during transportation
   ii) Vacuum filling of oil
   iii) Short circuit force

d) Suitable guides shall be provided in the tank for positioning the core and coil assembly.

e) Each tank shall be provided with
   i) Lifting lugs suitable for lifting the complete transformer
   ii) A minimum of four jacking pads to be raised or lowered using hydraulic or screw jacks.

3.4.3 **TANK COVER**

a) At least two adequately sized inspection covers one at each end of the tank shall be provided for easy access to bushings and earth connection. The inspection covers shall have suitable lifting arrangement.

b) The tank covers shall be fitted with thermometer pockets (in the position of maximum oil temperature) for bulbs of oil and winding temperature indicators. It shall be possible to remove these bulbs without lowering the oil in the tank.

c) Bushings, inspection covers, thermometer pockets etc. shall be designed to prevent ingress of water into or leakage of oil from the tank.

d) All bolted connections shall be fitted with weather proof hot oil resistant neoprene gasket in between for complete oil tightness. If gasket is compressible metallic stop shall be provided to prevent over compression.

3.4.4 **MOUNTING ARRANGEMENT**

a) The transformers shall be provided with two nos. bi-directional skids and pulling eyes integral with the tank body for fixing the transformer tank on base frame.

b) These skids shall be such that the bottom of the tank is at a sufficient height above base frame for cleaning purposes. The transformer shall be provided with uni/bi-directional, flat/flanged rollers of suitable size.

3.4.5 **CONSERVATOR TANK**

a) The conservator tank shall have adequate capacity to accommodate oil preservation system and volumetric expansion of the total cold oil volume in the transformer and radiators for a change in temperature from minimum ambient air temperature of 5^0C to 50^0C.

b) The conservator shall be bolted into position so that it can be removed for cleaning purposes.

c) The conservator tank shall be fitted with a silica-gel filter breather.

d) The conservator shall be fitted with magnetic oil level gauge with two independent low level electrically insulated alarm and trip contacts. The oil level at 30^OC shall be marked on the gauge.

3.4.6 **PRESSURE RELIEF DEVICE**

a) The transformers shall be provided with the single diaphragm type of explosion vent and a pressure relief device of spring loaded type.

b) An equalizer pipe shall be connected to explosion vent from the conservator.

c) The pressure relief device shall be of sufficient size for rapid release of any pressure that may be generated in the tank. The device shall operate at a static pressure less than the hydraulic test pressure of transformer tank. Means shall be provided to prevent ingress of rain water. An extension pipe fitted above the device shall direct the major flow of ejected oil downwards and permit its removal without disturbing the device.

3.4.7 **BUCHHOLTZ RELAY (Wherever applicable)**

A double float type Buchholz relay conforming to IS: 3637 shall be provided. All gas evolved in the transformer shall collect in this relay. The relay shall be provided with a test cock suitable for a flexible pipe connection for checking its operation. A copper tube shall be connected from the gas collector to a valve located about 1200 mm above ground level to facilitate sampling with the transformer in service. The device shall be provided with two potential free contacts, one for alarms on gas accumulation and the other for tripping on rise of pressure.

3.4.8 **Explosion vent**

i) The transformers shall be provided with the single diaphragm type of explosion vent with air release device.

ii) An equalizer pipe shall be connected to explosion vent from the conservator.

3.4.9 **TEMPERATURE INDICATOR**

a) **Oil Temperature indicator (OTI)**

The transformer shall be provided with a 150 mm dial type thermometer for top oil temperature indication. The thermometer shall have adjustable, potential free alarm and trip contacts, maximum reading pointer and resetting device and shall be mounted in the marshalling box. A temperature sensing element suitably located in a pocket in the top oil shall be furnished. This shall be connected to the OTI by means of capacity tubing. Accuracy class of OTI shall be 2^0C or better. The OTI shall have full scale deflection of at least 240^0C and shall have linear graduation to read every 2^0C.

b) **Winding Temperature Indicator (WTI)**

A device for measuring the hot spot temperature of the winding shall be provided. The accuracy class of winding temperature indicator shall be $\pm$ 2^0C or better. It shall comprise the following:

i) Temperature sensing element
ii) Image coil and bushing current transformer
iii) Auxiliary CTs if required to match the image coil, shall be furnished and mounted in the marshalling box.
iv) 150 mm local indicating instrument with max. reading pointer mounted in marshalling box. It shall have two adjustable potential free contacts, one for winding temp. high alarm and one for trip, in addition to the contacts required for control of cooling equipment.

v) Automatic ambient temperature. Compensation
vi) All contacts shall be adjustable on a scale and suitable for connection in 240V circuit. These shall be accessible on removal of the cover.
vii) The WTI shall have a full scale deflection of at least 240^0C and shall have linear graduations to read every 2^0C.

3.5 **WINDING**

a) The conductors shall be of electrolytic grade copper.

b) All windings shall be fully insulated.

c) The insulation of transformer windings and connections shall be as per relevant IS.

d) The maximum fault level to which the transformers may be subjected is 250 MVA for 6.6 kV.

e) All bus bars and leads shall be adequately supported in insulated cleats or frames from the clamping structure.

f) The studs, set screws or bolts provided for securing cleats or frames shall be effectively locked.

g) Bus bars and leads shall be supported throughout their length to ensure they will not move under normal service or transport or be forced from the prescribed position during any short circuit.

3.6 **INSULATION MATERIALS**

a) Class 'A' insulating materials specified in IS: 1271 or latest version shall be used.

b) **Insulating Oil**

i) The insulating oil supplied with the transformer shall conform to the requirements of IS: 335. No inhibitors shall be used in the oil.

ii) The oil for the transformer shall conform to the requirements of IS: 1866.

iii) Ten percent (10%) extra oil shall be supplied for topping up, in non-returnable sealed containers suitable for outdoor storage.

3.7 **Earthing terminal**

Two numbers suitable earthing terminals shall be provided at positions close to the two diagonally opposite bottom corners of tank. Two earthing terminals shall also be provided on marshalling box and any other equipment mounted separately.

3.8 **OIL PRESERVATION SYSTEM**

a) The transformers shall be provided with conservator preservation system. The top of the conservator shall be fitted with a silica gel filter breather. It shall be so designed that:
i) Passage of air is through dust filter and silica gel
ii) Silica gel is isolated from atmosphere by an oil seal

b) The Transformers shall be provided with diaphragm sealing type oil preservation system. The rubber diaphragm shall be suitably sized to accommodate total change in the oil volume from minimum ambient temperature (5^0C) to 110^0 C. The diaphragm shall withstand full vacuum intake.

3.9 **Terminal arrangement**

a) **Porcelain Bushing**

i) The minimum clearances in air between the phases and between the phase and earth potential of the porcelain bushings shall be in accordance with IS : 2026 - part V, 1994.

ii) Bushing terminals shall be provided with suitable terminal connectors of approved type and size for XLPE cables as specified in the annexure.

iii) All transformer bushings shall be of solid porcelain with rain sheds conforming to IS:8603.

iv) The removal of bushing shall be possible without disturbing the current transformers, secondary terminals and connectors or pipe work.

b) **Cable Boxes and Disconnecting Chambers**

i) Wherever cable connections are specified, suitable air insulated type cable boxes of sufficient sizes shall be provided to accommodate cable termination. Cable boxes shall be designed and installed such that it shall be possible to move away the transformer without disturbing the cable termination leaving the cable box on external supports. The support for the cable box shall be of galvanized iron.

ii) Cable boxes shall have terminal connectors of adequate size and bolt holes to receive cable lugs.

iii) The transformer cable box shall be provided with two numbers earthing terminals.

iv) All necessary cable terminating accessories such as supporting brackets, power cable lugs, hard ware etc. shall be provided by the bidder.

v) Cable boxes shall have removable top cover and ample clearance shall be provided to enable either transformer or each cable to be subjected separately to high voltage test.

vi) Cable boxes shall have degree of protection of IP-52 as per IS: 2147.

c) **Bus Duct termination**

In case, bus duct termination, a flanged throat or equivalent connection shall be provided for termination of bus duct enclosure. This shall be of segregated phase type. Necessary flexible connections between the bushing terminals and bus bars shall be provided by the bidder. Pads for terminating flexible connection on the bushings shall also be provided by the bidder.

3.10 **Terminal marking**

The terminal marking and their physical position shall be in accordance with IS: 2026.

3.11 **Termination Arrangement for Neutrals**

a) The transformer shall be solidly earthed at the secondary neutral.

b) The neutral terminal brought on to a separate neutral bushing shall be connected to associated neutral grounding pit by a neutral grounding resistor.

3.12 **Off load tap change switch**

a) The tap change switch shall be three phase, hand operated, for simultaneous switching of similar taps on the three phases by operating an-external handle.

b) Arrangement shall be made for securing and pad locking the tap changer in each of the working positions, and it shall not be possible for setting or padlocking in any intermediate position. An indicating device shall be provided to show tap in use.

c) The cranking device for manual operation shall be removable and suitable for operation by a man standing on ground level. The mechanism shall be complete with the following:

i) Mechanical operation indicator.

ii) Mechanical tap position indicator which shall be clearly visible from the transformer.

iii) Mechanical stops to prevent over cranking of the mechanism beyond extreme tap position.

iv) The manual operating mechanism shall be labeled to show the direction of operation for raising the secondary voltage and vice versa.

v) A warning plate, indicating "The switch shall be operated only when the transformer has been de-energized", shall be fitted.

3.13 **Radiator**

The radiators shall be detachable type, mounted on the tank. Each radiator shall be provided with the following:

a) A drain valve at the bottom

b) An air release plug at the top

c) Shut off valve at each point of connection to the tank. The location and configuration of radiators shall be subject to purchaser's approval.

3.14 **Marshalling box**

a) A sheet steel weather, vermin and dust proof marshalling box shall be provided with each transformer to accommodate:
   i) Temperature indicators
   ii) Terminal blocks for incoming and outgoing cables

b) The sheet steel used shall be at least 2.0 mm thick. The box shall be free standing floor mounted type and have a sloping roof. The degree of protection shall be IP 53 in accordance with IS: 2147

c) All cables shall enter the kiosk from the bottom and the gland plate shall not be less than 450 mm from the base of the box. The gland plate and the associated compartment shall be sealed in suitable manner to prevent the ingress of moisture, rodents, insects etc. from the cable trench. Gland plates, cable lugs, cable glands, etc. shall be provided and installed by the bidder.

d) The marshalling box shall be supplied with space heater and cubicle lighting with ON-OFF switches and associated fuses.

e) The gland plate shall be made into two detachable halves, for facilitating termination of incoming and outgoing cables separately.

3.15 **Painting**

The transformer shall be painted with oil and weather resistant non fading paint as per IS : 5. Primary paint shall be as per IS : 104 and intermediate and final coats of paint shall be as per IS : 2932.

3.16 **Bolts and nuts**

All bolts and nuts exposed to weather shall be of hot dip galvanized or cadmium plate or zinc passivated steel. All bolts, nuts and washers in contact with non ferrous part which carry current shall be of phosphor bronze.

3.17 **Control wiring**

a) All controls, alarms, indicating and relaying devices provided with the transformer shall be wired by the bidder up to the terminal blocks inside the marshalling box. The bidder shall supply and install the required 1100 V grade heavy duty PVC insulated, steel wire armoured, PVC sheathed, multi core cables with copper conductors conforming to IS : 1554. The cables shall be properly supported.

b) All devices and terminal blocks within the marshalling box shall be clearly identified by symbols corresponding to those used on applicable schematic or wiring diagrams.

c) Not more than two (2) wires shall be connected to one terminal. At least 20% spare terminals shall be provided. Each terminal shall be suitable for connecting two numbers of stranded copper conductor from each side.

d) Terminal blocks for CT secondary shall have shorting facility.

3.18 **Fittings**

The following fittings shall be provided with all the transformers:

a) Rating and diagram plate.
b) Terminal marking plate
c) Two earthing terminals
d) Lifting lugs
e) Jacking lugs
f) Drain valve with plug 50mm.
g) Dehydrating breather
h) Buchholtz relay with alarm and trip contacts with one shut off valve on conservator side - 50 mm.
i) Plain oil level indicator with minimum marking.
j) Magnetic oil level indicator with two electrical contacts, one for alarm and other for tripping.
k) Thermometer pocket
l) Marshalling box
m) Off load tap changing switch
n) Oil filling hole with cover
o) Conservator
p) Air release device and explosion vent.

q) Oil temperature indicator with one electrical contact for alarm.
r) Winding temperature indicator with one electrical contact for trip and additional contact for switching on cooler fans.
s) Skids and pulling eyes on both sides
t) Rollers -Flanged bi-directional 1435 mm.
u) Bushings with metal parts and gaskets
v) Filter valve at the top of the transformer tank
w) Inspection cover

3.19 **PERFORMANCE**

a) **Operating Conditions**

i) The transformers shall be capable of being loaded in accordance with IS :6600 up-to load of 150%. There shall be no limitation imposed by bushings, tap changer etc.

ii) The transformers shall be capable of being operated continuously without danger on any tapping at the rated KVA with voltage variation of ± 10% corresponding to the voltage of the tapping.

b) **Fault Conditions**

i) Transformers shall accept, without injurious heating, combined voltage and frequency fluctuations which produce on over condition of 120% for one (1) minute. Bidder shall indicate 150% over voltage.

ii) Noise level when energised at normal voltage and frequency with all auxiliary equipment running shall not exceed, when measured under standard conditions, the value specified in NEMA standard publication TR-1.

c) **Impedance**

The impedance on principal tapping shall be guaranteed to be as indicated in Annexure - I.

4.0 **Soak Pit :**

Soak pit for drainage of transformer oil in case of fire is required as per IS. Accordingly in addition to conventional drainage valve a solenoid valve shall be provided.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE - I

TECHNICAL PARAMETERS 315 KVA TRANSFORMERS

1	Rated Capacity	:	315 kVA
2	Type of transformer	:	Core type oil immersed
3	Number of phases	:	3
4	Frequency	:	50 Hz ± 3%
5	Location	:	Indoor
6	Type of cooling	:	ONAN
7	Type of oil	:	Mineral oil
8	Rated capacity at the main tappings	:	Rated kVA as at Sl. No.1
9	Rated Voltage		
	HV Winding	:	6600 Volts ± 10%
	LV Winding	:	415 Volts ± 10%
10	Highest system voltage		
	HV Winding	:	7200 Volts
	LV Winding	:	460 Volts
11	Impedance voltage at rated current	:	As per IS
12	Method of system earthing		
	HV Winding	:	Nil
	LV Winding	:	Solid
13	Rated Insulation level		
	One minute power frequency withstand voltage	:	20 kV rms for 6.6 kV
	Switching impulse withstand test voltage with standard full wave for windings 1/50 microseconds.	:	40 kV peak for 6.6kV
	Lightning withstand test voltage with standard full wave for winding for 1.2/50 microseconds.	:	40 kV peak for 6.6kV
14	Connection symbol	:	DYn11
15	Earthing of neutral terminals	:	Required for LV windings
16	Tap changer type	:	Off circuit
17	Tappings	:	± 2.5%, ± 5%, ± 7.5%, ± 10%
18	Terminal Arrangement		
	a) HV side	:	Cable box to suit armoured cable/ Bushing
	b) LV side	:	Cable box to suit armoured cable / Bare bushing for flexible connection through flange mounted on tank for bus duct

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**

CMPDI

19	a) Temperature rise (over Ambient) in Oil	:	$45^{o}C$
	b) Temperature rise (over Ambient) in Winding	:	$55^{o}C$
20	Type of Winding	:	Double wound copper
21	Auxiliary supply voltage for alarm & relay	:	240 V AC
22	Standard applicable for transformer	:	IS : 2026 (Current)
23	Standard applicable for oil used	:	IS : 335 (Current)

Specification No. SP/E-05

SPECIFICATION FOR OIL IMMERSED 100 kVA, 6.6kV/230 V (L-L)

LIGHTING TRANSFORMERS

1.0 SCOPE

This specification covers the requirements for indoor type lighting transformer protected by Vacuum Circuit Breaker and fitted with tap changer. The voltage ratio and kVA rating of the transformer has been specified in Annexure-I.

The transformers shall comply with the latest revisions of IS: 2026 and IEC: 76 except where modified or extended by the provisions of this specification and with the relevant parts of standards mentioned in para 2.0.

2.0 OTHER RELEVANT STANDARDS

The other relevant standards that are applicable are as under:

IS : 10561 : Application guide for power transformers.
IS : 10028 : Code of practice for selection, installation and maintenance of transformers.
IS : 1866 : Code of practice for maintenance and supervision of mineral insulating oil.
IS : 2099 : Bushing for alternating voltages above 1000 V.
IS : 3639 : Fittings and accessories for power transformers.
IS : 335 : New insulating oil for transformers.
IIS : 6600 : Guide for loading of oil immersed transformers.
IS : 2165 : Insulation Co-ordination.
IS : 2071 : Method of Impulse voltage testing.
IS : 3043 : Code of practice for earthing.
IS : 1271 : Thermal evaluation and classification of electrical insulation.
IS : 1554 : PVC insulated (heavy duty) electric cables - 1100V. (Part -I)
IS : 7404 : Paper covered copper conductors
IS : 5 : Color for ready mix paints.

3.0 DESIGN FEATURES

3.1 The design of the transformers and accessories shall be in accordance with the latest standard practice and shall be such as to facilitate inspection, cleaning, repairs, maintenance and operation and shall ensure safety operations under situation of sudden variations of loads and voltages as may be required under local operating

conditions.

3.2 **Electrical Features**

The electrical features shall ensure the following:

a) Continuous operation at rated kVA provided service conditions does not exceed the values given in para 2.1.6.

b) Continuous operation at rated kVA within ± 10 percent variation (combined) of voltage and frequency.

c) Continuous operation at rated kVA at each of the tap voltages

d) Over loading of units as indicated in IS : 6600

e) Temperature rise limited to the following values :

Cooling	**Oil**	**Winding**
ONAN	45^0C	55^0C

f) The insulation levels shall be uniform and conform to the following values:

Nominal system voltage **(kV rms)**	Highest system voltage **(kV rms)**	Rated lightning impulse withstand voltage. **(kV peak)**	Power frequency voltage 1 minute **(kV rms)**
6.6	7.2	40	20

3.3 **Mechanical Features**

a) The transformer shall be able to withstand the electro-dynamic stress due to terminal short circuit of the LV side assuming the HV side fed from an infinite bus. The short circuit withstand duration shall be minimum of 3 sec.

b) The transformer shall be so designed as to minimize any undue noise and vibration.

3.4 **CONSTRUCTIONAL DETAILS**

3.4.1 **CORE**

a) The transformer core shall be made as per relevant IS. Lifting eyes and lugs shall be provided on the limbs and coils assembly. Preferably no bolt shall be used in the cores. Clamping shall be done externally to the limb.

b) Cores and windings shall be capable of withstanding shocks during transport, installation & service and adequate provision shall be made to prevent movement of core and winding relative to tank during these conditions.

3.4.2 **TANKS**

a) Tanks shall be of welded construction and fabricated from boiler steel plates.

b) Tanks stiffeners shall be provided for general rigidity and these shall be designed to prevent retention of water.

c) The tanks shall be designed to withstand:

i) Mechanical shocks during transportation

ii) Vacuum filling of oil

iii) Short circuit force

d) Suitable guides shall be provided in the tank for positioning the core and coil assembly.

e) Each tank shall be provided with

i) Lifting lugs suitable for lifting the complete transformer

ii) A minimum of four jacking pads to be raised or lowered using hydraulic or screw jacks.

3.4.3 **TANK COVER**

a) At least two adequately sized inspection covers one at each end of the tank shall be provided for easy access to bushings and earth connection. The inspection covers shall have suitable lifting arrangement.

b) The tank covers shall be fitted with thermometer pockets (in the position of maximum oil temperature) for bulbs of oil and winding temperature indicators. It shall be possible to remove these bulbs without lowering the oil in the tank.

c) Bushings, inspection covers, thermometer pockets etc. shall be designed to prevent ingress of water into or leakage of oil from the tank.

d) All bolted connections shall be fitted with weather proof hot oil resistant neoprene gasket in between for complete oil tightness. If gasket is compressible metallic stop shall be provided to prevent over compression.

3.4.4 **MOUNTING ARRANGEMENT**

a) The transformers shall be provided with two nos. bi-directional skids and pulling eyes integral with the tank body for fixing the transformer tank on base frame.

b) These skids shall be such that the bottom of the tank is at a sufficient height above base frame for cleaning purposes. The transformer shall be provided with

uni/bi-directional, flat/flanged rollers of suitable size.

3.4.5 **CONSERVATOR TANK**

a) The conservator tank shall have adequate capacity to accommodate oil preservation system and volumetric expansion of the total cold oil volume in the transformer and radiators for a change in temperature from minimum ambient air temperature of 5^0C to 50^0C.

b) The conservator shall be bolted into position so that it can be removed for cleaning purposes.

c) The conservator tank shall be fitted with a silica-gel filter breather.

d) The conservator shall be fitted with magnetic oil level gauge with two independent low level electrically insulated alarm and trip contacts. The oil level at 30^{O}C shall be marked on the gauge.

3.4.6 **PRESSURE RELIEF DEVICE**

a) The transformers shall be provided with the single diaphragm type of explosion vent and a pressure relief device of spring loaded type.

b) An equalizer pipe shall be connected to explosion vent from the conservator.

c) The pressure relief device shall be of sufficient size for rapid release of any pressure that may be generated in the tank. The device shall operate at a static pressure less than the hydraulic test pressure of transformer tank. Means shall be provided to prevent ingress of rain water. An extension pipe fitted above the device shall direct the major flow of ejected oil downwards and permit its removal without disturbing the device.

3.4.7 **BUCHHOLTZ RELAY**

A double float type Buchholz relay conforming to IS: 3637 shall be provided. All gas evolved in the transformer shall collect in this relay. The relay shall be provided with a test cock suitable for a flexible pipe connection for checking its operation. A copper tube shall be connected from the gas collector to a valve located about 1200 mm above ground level to facilitate sampling with the transformer in service. The device shall be provided with two potential free contacts, one for alarms on gas accumulation and the other for tripping on rise of pressure.

3.4.8 **Explosion vent**

i) The transformers shall be provided with the single diaphragm type of explosion vent

with air release device.

ii) An equalizer pipe shall be connected to explosion vent from the conservator.

3.4.9 **TEMPERATURE INDICATOR (If Applicable)**

a) **Oil Temperature indicator (OTI)**

The transformer shall be provided with a 150 mm dial type thermometer for top oil temperature indication. The thermometer shall have adjustable, potential free alarm and trip contacts, maximum reading pointer and resetting device and shall be mounted in the marshalling box. A temperature sensing element suitably located in a pocket in the top oil shall be furnished. This shall be connected to the OTI by means of capacity tubing. Accuracy class of OTI shall be 2^0C or better. The OTI shall have full scale deflection of at least 240^0C and shall have linear graduation to read every 2^0C.

b) **Winding Temperature Indicator (WTI)**

A device for measuring the hot spot temperature of the winding shall be provided. The accuracy class of winding temperature indicator shall be $\pm$ 2^0C or better. It shall comprise the following:

i) Temperature sensing element

ii) Image coil and bushing current transformer

iii) Auxiliary CTs if required to match the image coil, shall be furnished and mounted in the marshalling box.

iv) 150 mm local indicating instrument with max. reading pointer mounted in marshalling box. It shall have two adjustable potential free contacts, one for winding temp. high alarm and one for trip, in addition to the contacts required for control of cooling equipment.

v) Automatic ambient temperature. Compensation

vi) All contacts shall be adjustable on a scale and suitable for connection in 240V circuit. These shall be accessible on removal of the cover.

vii) The WTI shall have a full scale deflection of at least 240^0C and shall have linear graduations to read every 2^0C.

3.5 **WINDING**

a) The conductors shall be of electrolytic grade copper.

b) All windings shall be fully insulated.

c) The insulation of transformer windings and connections shall be as per relevant IS.

d) The maximum fault level to which the transformers may be subjected is 250 MVA for 6.6 kV.

e) All bus bars and leads shall be adequately supported in insulated cleats or frames from the clamping structure.

f) The studs, set screws or bolts provided for securing cleats or frames shall be effectively locked.

g) Bus bars and leads shall be supported throughout their length to ensure they will not move under normal service or transport or be forced from the prescribed position during any short circuit.

3.6 **INSULATION MATERIALS**

a) Class 'A' insulating materials specified in IS: 1271 or latest version shall be used.

b) **Insulating Oil**

i) The insulating oil supplied with the transformer shall conform to the requirements of IS: 335. No inhibitors shall be used in the oil.

ii) The oil for the transformer shall conform to the requirements of IS: 1866.

iii) Ten percent (10%) extra oil shall be supplied for topping up, in non returnable sealed containers suitable for outdoor storage.

3.7 **Earthing terminal**

Two numbers suitable earthing terminals shall be provided at positions close to the two diagonally opposite bottom corners of tank. Two earthing terminals shall also be provided on marshalling box and any other equipment mounted separately.

3.8 **OIL PRESERVATION SYSTEM**

a) The transformers shall be provided with conservator preservation system. The top of the conservator shall be fitted with a silica gel filter breather. It shall be so designed that:

i) Passage of air is through dust filter and silica gel

ii) Silica gel is isolated from atmosphere by an oil seal

b) The Transformers shall be provided with diaphragm sealing type oil preservation system. The rubber diaphragm shall be suitably sized to accommodate total change in the oil volume from minimum ambient temperature (5^0C) to 110^0 C. The diaphragm

shall withstand full vacuum intake.

3.9 **Terminal arrangement**

a) **Porcelain Bushing**

i) The minimum clearances in air between the phases and between the phase and earth potential of the porcelain bushings shall be in accordance with IS : 2026 - part V, 1994.

ii) Bushing terminals shall be provided with suitable terminal connectors of approved type and size for XLPE Cables as specified in the annexure.

iii) All transformer bushings shall be of solid porcelain with rain sheds conforming to IS:8603.

i) The removal of bushing shall be possible without disturbing the current transformers, secondary terminals and connectors or pipe work.

b) **Cable Boxes and Disconnecting Chambers**

i) Wherever cable connections are specified, suitable air insulated type cable boxes of sufficient sizes shall be provided to accommodate cable termination. Cable boxes shall be designed and installed such that it shall be possible to move away the transformer without disturbing the cable termination leaving the cable box on external supports. The support for the cable box shall be of galvanized iron.

ii) Cable boxes shall have terminal connectors of adequate size and bolt holes to receive cable lugs.

iii) The transformer cable box shall be provided with two numbers earthing terminals.

iv) All necessary cable terminating accessories such as supporting brackets, power cable lugs, hard ware etc. shall be provided by the bidder.

v) Cable boxes shall have removable top cover and ample clearance shall be provided to enable either transformer or each cable to be subjected separately to high voltage test.

vi) Cable boxes shall have degree of protection of IP-52 as per IS: 2147.

c) **Bus Duct termination**

In case, bus duct termination, a flanged throat or equivalent connection shall be provided for termination of bus duct enclosure. This shall be of segregated phase type. Necessary flexible connections between the bushing terminals and bus bars shall be provided by the bidder. Pads for terminating flexible connection on the

bushings shall also be provided by the bidder.

3.10 **Terminal marking**

The terminal marking and their physical position shall be in accordance with IS: 2026.

3.11 **Off load tap change switch**

a) The tap change switch shall be three phase, hand operated, for simultaneous switching of similar taps on the three phases by operating an-external handle.

b) Arrangement shall be made for securing and pad locking the tap changer in each of the working positions, and it shall not be possible for setting or padlocking in any intermediate position. An indicating device shall be provided to show tap in use.

c) The cranking device for manual operation shall be removable and suitable for operation by a man standing on ground level. The mechanism shall be complete with the following:

i) Mechanical operation indicator.

ii) Mechanical tap position indicator which shall be clearly visible from the transformer.

iii) Mechanical stops to prevent over cranking of the mechanism beyond extreme tap position.

iv) The manual operating mechanism shall be labeled to show the direction of operation for raising the secondary voltage and vice versa.

vii) A warning plate, indicating "The switch shall be operated only when the transformer has been de-energized", shall be fitted.

3.12 **Radiator**

The radiators shall be detachable type, mounted on the tank. Each radiator shall be provided with the following:

a) A drain valve at the bottom

b) An air release plug at the top

c) Shut off valve at each point of connection to the tank. The location and configuration of radiators shall be subject to purchaser’s approval.

3.13 **Marshalling box**

a) A sheet steel weather, vermin and dust proof marshalling box shall be provided with the transformer to accommodate:

i) Temperature indicators

ii) Terminal blocks for incoming and outgoing cables

b) The sheet steel used shall be at least 2.0 mm thick. The box shall be free standing floor mounted type and have a sloping roof. The degree of protection shall be IP 53 in accordance with IS: 2147

c) All cables shall enter the kiosk from the bottom. The gland plate and the associated compartment shall be sealed in suitable manner to prevent the ingress of moisture, rodents, insects etc. from the cable trench. Gland plates, cable lugs, cable glands, etc. shall be provided and installed by the bidder.

e) The gland plate shall be made into two detachable halves, for facilitating termination of incoming and outgoing cables separately.

3.14 **Painting**

The transformer shall be painted with oil and weather resistant non fading paint as per IS : 5. Primary paint shall be as per IS : 104 and intermediate and final coats of paint shall be as per IS : 2932.

3.15 **Bolts and nuts**

All bolts and nuts exposed to weather shall be of hot dip galvanized or cadmium plate or zinc passivated steel. All bolts, nuts and washers in contact with non-ferrous part which carry current shall be of phosphor bronze.

3.16 **Control wiring**

a) All controls, alarms, indicating and relaying devices provided with the transformer shall be wired by the bidder up to the terminal blocks inside the marshalling box. The bidder shall supply and install the required 1100 V grade heavy duty PVC insulated, steel wire armoured, PVC sheathed, multi core cables with copper conductors conforming to IS : 1554. The cables shall be properly supported.

b) All devices and terminal blocks within the marshalling box shall be clearly identified by symbols corresponding to those used on applicable schematic or wiring diagrams.

c) Not more than two (2) wires shall be connected to one terminal. At least 20% spare terminals shall be provided. Each terminal shall be suitable for connecting two numbers of stranded copper conductor from each side.

d) Terminal blocks for CT secondary shall have shorting facility.

3.17 **Fittings**

The following fittings shall be provided with all the transformers:

a) Rating and diagram plate.

b) Terminal marking plate

c) Two earthing terminals

d) Lifting lugs

e) Jacking lugs

f) Drain valve with plug 50mm.

g) Dehydrating breather

h) Plain oil level indicator with minimum marking.

i) Magnetic oil level indicator with two electrical contacts, one for alarm and other for tripping.

j) Thermometer pocket

k) Marshalling box

l) Off load tap changing switch

m) Oil filling hole with cover

n) Conservator

o) Air release device and explosion vent.

p) Oil temperature indicator with one electrical contact for alarm.

q) Winding temperature indicator with one electrical contact for trip and additional contact for switching on cooler fans.

r) Skids and pulling eyes on both sides

s) Rollers -Flanged

t) Bushings with metal parts and gaskets

u) Filter valve at the top of the transformer tank

v) Inspection cover

3.18 **PERFORMANCE**

a) **Operating Conditions**

i) The transformers shall be capable of being loaded in accordance with IS :6600 up-to load of 150%. There shall be no limitation imposed by bushings, tap changer etc.

ii) The transformers shall be capable of being operated continuously without danger on any tapping at the rated KVA with voltage variation of ± 10% corresponding to the voltage of the tapping.

b) **Fault Conditions**

i) Transformers shall accept, without injurious heating, combined voltage and frequency fluctuations which produce on over condition of 120% for one (1) minute. Bidder shall indicate 150% over voltage.

ii) Noise level when energised at normal voltage and frequency with all auxiliary equipment running shall not exceed, when measured under standard conditions, the value specified in NEMA standard publication TR-1.

c) **Impedance**

The impedance on principal tapping shall be guaranteed to be as indicated in Annexure - I.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE - I

TECHNICAL PARAMETERS OF TRANSFORMERS

100 kVA, 6.6 kV/230 V (L-L)

1	Rated Capacity	: 100 kVA
2	Type of transformer	: Core type oil immersed
3	Number of phases	: 3
4	Frequency	: 50 Hz ± 3%
5	Location	: Indoor
6	Type of cooling	: ONAN
7	Type of oil	: Mineral oil
8	Rated capacity at the main tappings	: Rated kVA as at sl no.1
9	Rated Voltage	
	HV Winding	: 6600 Volts ± 10%
	LV Winding	: 230 Volts (L-L) ± 10%
10	Highest system voltage	
	HV Winding	: 7200 Volts
	LV Winding	: 250 Volts
11	Impedance voltage at rated current	: As per IS
12	Method of system earthing	
	HV Winding	: Nil
	LV Winding	: Unearthed
13	Rated Insulation level	
13.1	One minute power frequency withstand voltage	: 20 kV rms for 6.6 kV
13.2	Switching impulse withstand test voltage with standard full wave for windings for 1/50 microseconds.	: 40 kV peak for 6.6kV
13.3	Lightning withstand test voltage with	: 40 kV peak for 6.6kV

	standard full wave for winding for 1.2/50 microseconds.	
14	Tap changer type	: Off circuit
15	Tapping percentages	: ± 2.5, ± 5 , ± 7.5%, ± 10 % (9 steps)
16	Terminal Arrangement	
	a) HV side	: Cable box to suit armoured cable
	b) LV side	: Cable box to suit armoured cable / Bare bushing for flexible connection through flange mounted on tank for bus duct
17	a) Temperature rise (over Ambient) in Oil	: 45^0C
	b) Temperature rise (over Ambient) in Winding	: 55^0C
18	Type of Winding	: Double wound Copper
19	Standard applicable for transformer	: IS : 2026 (Current)
20	Standard applicable for oil used	: IS : 335 (Current)

Specification NO.SP/E-06

SPECIFICATION FOR 415 V MAIN POWER DISTRIBUTION BOARD (MPDB)

1.0 SCOPE

1.1 This specification covers requirements for 415V MPDB, metal enclosed, dust and vermin proof conforming to the latest revision of IS: 8623-1993 & IEC 439-1 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 2.0. The switchboard shall be suitable for indoor application with provision for future extension

2.0 OTHER RELEVANT STANDARDS

The other relevant standards applicable are as under:

IS :13947	LV switch gear and control gear
IS :10118	Code of practice for selection, installation and maintenance of switchgear and control-gear
IS :4237	General requirements for Switchgear and Control gear for voltages not exceeding 1000 V.
IS :6875	Switches and push-buttons
IS :13703	LV fuses for voltages not exceeding 1000 V AC
IS :12021	Specification of control transformers
IS :2705	Current Transformers
IS :3156	Voltage Transformers
IS :11353	Guide for uniform system of marking and identification of conductors and apparatus terminals
IS :2147	Degree of protection provided by enclosures for low voltage switchgear and Control gear
IS :3043	Code of practice for earthing
IS :6005	Code of practice of phosphating iron and steel.
IS :3202	Code of practice for climate proofing of electrical equipment
IS :2629	Hot dip galvanising
IS :5082	Wrought Aluminium and Aluminium alloys for electrical purposes
IS :722	A C Electricity Meters
IS :1248	Electrical Indicating instruments
IS :3231	Electrical relays for power system protection
IS :5	Colors for ready-mixed paints and enamels.

IS :1554 PVC insulated cables for working voltages up-to and including 1100V

IS :2551 Danger Notice Plates

IS :8544 AC motor starters of voltage not exceeding 1000 volts

IS :8686 Static Relays

IE Rules 1956

3.0 **CONSTRUCTIONAL DETAILS OF MPDB**

3.01 The Main Power Distribution Board (MPDB) shall be of metal enclosed, indoor, floor-mounted, single front, free-standing type, modular standard vertical sections, extendible on either side.

3.02 All switchboard frames and load bearing members shall be fabricated using suitable mild steel structural sections or pressed and shaped cold-rolled sheet steel of thickness not less than 2.0 mm. Frames shall be enclosed in cold-rolled sheet steel of thickness not less than 1.6 mm. Doors and covers shall also be of cold rolled sheet steel of thickness not less than 1.6 mm. Stiffeners shall be provided wherever necessary. The gland plate thickness shall be 3.0 mm (minimum) for hot/cold rolled sheet steel and 4.0 mm (minimum) for non-magnetic material.

3.03 All panel edges and cover/door edges shall be reinforced against distortion by rolling, bending or by the addition of welded reinforcement members. The top covers of the panels should be designed such that they do not permanently bulge/bend by the weight of maintenance personnel working on it.

3.04 The complete structures shall be rigid, self-supporting, free from flaws, twists and bends. All cutouts shall be true in shape and devoid of sharp edges.

3.05 All switchboards shall be of dust-proof and vermin-proof construction and shall be provided with a degree of protection of IP 52 as per IS:2147. However, the busbar chambers having a degree of protection of IP 42 are also acceptable where continuous busbar rating is 1600 A and above. Provision shall be made in all compartments for providing IP 52 degree of protection, when circuit-breaker or module trolley has been removed. All cutouts shall be provided with synthetic rubber gaskets. The switchboards which are meant for outdoor duty shall be provided with degree of protection of IP 54 as per IS:2147.

3.06 Provision of louvers on switchboards would not be preferred. However, louvers backed with metal screen are acceptable on the busbar chambers where continuous busbar rating is 1600 A and above.

3.07 The switchboard shall be of uniform height.

3.08 Switchboard shall be extendable on both sides by the addition of vertical sections after removing the end covers.

3.09 Switchboard shall be supplied with base frames made of structural steel sections along-with all necessary mounting hardware.

3.10 All switchboard shall be divided into distinct vertical sections (panels), each comprising of the following compartments.

a) **Busbar Compartment**

A completely enclosed bus bar compartment shall be provided for the horizontal and vertical busbars. Bolted covers shall be provided for access to horizontal and vertical busbars and all joints for repair and maintenance which shall be feasible without disturbing any feeder compartment. Auxiliary and power busbars shall be in separate compartments.

b) **Switchgear/feeder Compartment**

All equipment associated with incomer or outgoing feeder shall be housed in a separate compartment of the vertical section. The compartment shall be sheet steel enclosed on all sides with the withdraw-able units in position or removed. Insulating sheet at rear of the compartment is also acceptable. The front of the compartment shall be provided with the hinged single leaf door with captive screws for positive closure.

c) **Cable Compartment or Cable Alley**

A full-height vertical cable alley of required width shall be provided for power and control cables. Cable terminations located in cable alley shall be suitably shrouded to prevent accidental contact by falling of tools etc. For distribution boards, the partition between the feeder compartment and cable alley made of FRP sheet shall be provided. Cable alley door shall be hinged.

d) **Control Compartment**

A separate compartment shall be provided for relays and other control devices associated with a circuit breaker.

3.11 Sheet steel barriers shall be provided between two adjacent vertical panels running to the full height of the switchboard, except for the horizontal busbar compartment.

3.12 After isolation of power and control circuit connections it shall be possible to safely carryout maintenance in a compartment with the busbar and adjacent circuit live. Necessary shrouding arrangement shall be provided for this purpose. Wherever two

breaker compartments are provided in the same vertical section, insulating barriers and shrouds shall be provided in the rear cable compartment to avoid accidental touch with the live parts of one circuit when working on the other circuit.

3.13 415 V MPDBs shall be of single-front construction. All single-front switchboards shall be provided with single-leaf, hinged or bolted covers at the rear. The switchboard shall be provided with "DANGER" labels.

3.14 All 415 V circuit breaker modules shall be of draw-out type having distinct 'Service' and 'Test' positions. For modules of size more than half the panel height, double guides shall be provided for smooth removal or insertion of module.

3.15 Each switchboard shall be provided with undrilled, removable type gland plate which shall cover the entire cable alley. Sufficient cable glanding space shall be provided. The gland plate shall preferably be provided in two distinct parts for the ease of terminating additional cables in future. The gland plate shall be provided with gasket to ensure enclosure protection.

3.16 **Clearances**

The clearance and dimensions of all electrical component inside the module/ switchboard shall be as per relevant IS. All connections from the busbars up-to switch/fuses shall be fully shrouded/insulated and securely bolted to minimise the risk of phase to phase and phase to earth short circuits.

4.0 **POWER BUSBARS AND INSULATORS**

4.01 The MPDB shall be provided with three phase and neutral busbars.

4.02 All busbars and jumper connections shall be of high conductivity copper of adequate size.

4.03 The cross-section of the busbars shall be uniform throughout the length of switchboard and shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents. Neutral busbar short circuit strength shall be same as main busbars.

4.04 All busbars shall be adequately supported by suitable non-hygroscopic insulators. Separate supports shall be provided, for each phase and neutral busbar. The busbar insulators shall be supported on the main structure.

4.05 The overlap of the busbars at each joint surface shall be such that the length of overlap shall be equal to or greater than the width of the busbar. All copper to aluminium joints shall be provided with suitable bi-metallic washers.

4.06 All busbars shall be color coded as per IS : 375.

4.07 The neutral bus in MPDB shall be connected to earth bus at two points by separate vertical droppers which shall be insulated from MPDB enclosure. The neutral bus shall not be earthed in all the other boards in which incomers are not from transformers.

5.0 **EARTH BUS AND EARTHING**

5.01 A galvanized steel earth bus shall be provided at the bottom of each panel and shall extend throughout the length of each switchboard. It shall be welded/bolted to the framework of each panel and breaker earthing contact bar. Vertical earth bus shall be provided in each vertical section which shall in turn be bolted/welded to main horizontal earth bus.

5.02 The earth bus shall have sufficient cross section to carry the momentary short circuit and short time fault current to earth, without exceeding the allowable temperature rise.

5.03 Suitable arrangements shall be provided at each end of the horizontal earth bus for bolting to earthing conductors. The horizontal earth bus shall project out of the switchboard ends and shall have predrilled holes for this connection. All joint splices to earth bus shall be made through at-least two bolts and taps by proper lug and bolts connection.

5.04 All non-current carrying metal work of the switchboard shall be effectively bonded to the earth bus. Electrical conductivity of the whole switchgear enclosure framework and truck shall be maintained even after painting.

5.05 All metallic cases of relays, instruments and other panel-mounted equipment shall be connected to earth by independent stranded copper wire of size not less than 2.5 sq. mm. All the equipment mounted on the door shall be earthed through flexible wire/braids. Insulation color code of earthing wires shall be green. Earthing wires shall be connected to terminals with suitable clamp connectors, soldering is not acceptable. Looping of earth connections which would result in loss of earth connections to other devices, when a device is removed, is not acceptable.

5.06 VT and CT secondary neutral point earthing shall be at one place only, i.e., on the terminal block. Such earthing shall be made through links so that earthing of one secondary circuit shall be removed without disturbing the earthing of other circuit.

5.07 All hinged doors having potential carrying equipment mounted on it shall be earthed by flexible wire/braid. For doors not having potential carrying equipment mounted on

it, earth continuity through scraping hinges/hinge pins of proven design may also be acceptable. The Bidder shall establish earth continuity at site also.

6.0 **AIR CIRCUIT BREAKERS (ACB)**

6.01 Circuit breakers shall be four pole, air break, horizontal draw-out type, and shall have fault making and breaking capacities. The operating duty shall be O-3 min-CO-3 min-CO.

6.02 Circuit breakers along-with its operating mechanism shall be provided with suitable arrangement for easy withdrawal.

6.03 There shall be "SERVICE", "TEST" and "ISOLATED" positions for the breakers. Locking facilities shall be provided so as to prevent movement of the circuit breaker from the "SERVICE", "TEST" or "ISOLATED" position. It shall be possible to close the door in "TEST" position.

6.04 All circuit breakers shall have short circuit releases and shunt trip coil irrespective of the type of operating mechanism.

6.05 All circuit breakers shall be provided with sufficient nos. of NO" and NC" potential free auxiliary contacts. These contacts shall be in addition to those required for internal mechanism of the breaker and should be directly operated from breaker operating mechanism.

6.06 Suitable mechanical indications shall be provided on all circuit breakers to show "OPEN", "CLOSE", "SERVICE", "TEST" and "SPRING CHARGED" positions.

6.07 All circuit breakers shall be provided with the following interlocks:

i) Movement of a circuit breaker between "SERVICE" and "TEST" position shall not be possible unless it is in open position.

ii) Closing of a circuit breaker shall not be possible unless it is in "SERVICE" position, "TEST" position or in "ISOLATED" position.

iii) Circuit-breaker cubicles shall be provided with safety shutters operated automatically by the movement of the circuit breaker carriage to cover the stationary isolated contacts when the breaker is withdrawn.

iv) A breaker of particular rating shall be prevented from insertion in a cubicle of a different rating.

v) Circuit breakers shall be provided with coded key/electrical interlocking devices.

6.08 Circuit breaker shall be provided with electrical anti-pumping and trip free feature even if mechanical anti-pumping feature is provided.

6.09 Mechanical tripping shall be possible by means of front mounted Red trip push button. In case of electrically operated breakers these push buttons shall be shrouded to prevent accidental operation.

6.10 Means shall be provided to slowly close the circuit breaker in "ISOLATED", if required, for inspection and setting of contacts.

6.11 Complete shrouding/segregation shall be provided between incoming and outgoing bus links of breakers.

6.12 Circuit breaker shall be provided with following mechanism:

6.12.1 **Power Operated Mechanism**

i) Power operated mechanism shall be provided with a universal motor suitable for operation on 110V AC Control supply, with voltage variation from 85% to 110% rated voltage. Motor insulation shall be class "E" or better.

ii) The mechanism shall be such that as long as power is available to the motor, a continuous sequence of closing and opening operations shall be possible. After failure of power supply at least one open-close-open operation shall be possible.

iii) Provision shall be made for emergency manual charging and as soon as this manual charging handle is coupled, the motor shall automatically get mechanically decoupled.

iv) All circuit breakers shall be provided with closing and trip coils. The closing coil shall operate correctly at all values of voltage between 85% to 110% of rated control voltage. The trip coil shall operate satisfactorily at all values of voltage between 70% to 110% of rated control voltage.

v) Provision for mechanical closing of the breaker only in "TEST" and "ISOLATED" positions shall be made.

7.0 **AIR BREAK SWITCHES (Wherever applicable)**

7.1 Air break switches shall be of heavy duty, single throw, group operated, load break, fault make type when associated with fuses and complying with IS:4064. All switches for motor circuits shall be of utilisation category AC-23 with 1NO+1NC auxiliary contact which shall be wired to the control circuit as shown in the schematic drawings. All switches for other outgoing feeders shall be of utilisation category AC-22.

7.2 The main switches shall be operable from outside the module door. The switch handle

shall clearly indicate the position of switch. Switch operating handles shall be provided with padlocking facilities to lock them in "OFF" position. However, incomer switches of switchboards shall be provided with padlocking facility in both "ON" and "OFF" positions.

7.3 Interlocks shall be provided such that the cubicle door will not open when the switch is in closed position and the switch will close only when the door is closed.

7.4 Switches and fuses for AC control supply and heater supply wherever required, shall be mounted inside the cubicles.

7.5 Even for a single feeder, TPN switch, fuse-bases and cable/link connections between switch/fuse and vertical busbars for all the three phases shall be provided so that changing from single phase feeder to three phase feeder is possible without any modification other than inserting fuses at site.

8.0 **CONTROL AND SELECTOR SWITCHES**

8.1 Control and Selector switches shall be of rotary type, with escutcheon plates clearly marked to show the function and positions. The switches shall be suitable for mounting on panel front.

8.2 Circuit breaker control switches shall have three positions and shall be spring return to "NEUTRAL" from "CLOSE" and "TRIP" positions and shall have pistol grip handles. The control switch shall have at least two (2) contacts closing in 'Close' position, and two (2) contacts closing in 'Trip' position.

8.3 Circuit breaker selector switches for motor feeders (where applicable) shall have three stay put positions. They shall have at least three contacts for each of the three positions Circuit breaker selector switches for other feeders shall have two stay put positions with two contacts for each of the two positions.

8.4 Contacts of the switches shall be spring assisted.

9.0 **CONTACTORS (Wherever applicable)**

9.1 Motor starter contactors shall be of air break, electro-magnetic type rated for uninterrupted duty as per IS :2959.

9.2 Contactors shall be double-break, non-gravity type and their main contacts shall be silver faced.

9.3 Direct-on-line contactors shall be of utilisation category AC3. Reversing starters shall comprise of Forward and Reverse contactors mechanically and electrically interlocked with each other. These contactors shall be of utilization category AC4.

9.4 The number of normally open (NO) and normally closed (NC) auxiliary contacts of a contactor shall be as per requirement shown in the respective module drawings. It shall, however, be not less than 2 NO+2NC.

9.5 Operating coil of contactors shall be of 110 V AC unless otherwise specified elsewhere. The contactor shall operate satisfactorily between 85% to 110 % of the rated voltage. The contactor shall not drop out at 70% of the rated voltage but shall definitely drop out at 20% of the rated voltage.

10.0 **FUSES (Wherever applicable)**

10.1 All fuses shall be of HRC cartridge fuse link type. Fuses for AC circuits shall be rated for 80 KA rms (prospective) breaking capacity at 415 V AC.

10.2 Fuse shall have visible operation indicators. Insulating barriers shall be provided between individual power fuses.

10.3 Fuse shall be mounted on insulated fuse carrier which is mounted on fuse bases. Wherever it is not possible to mount fuses on carriers, fuses shall be directly mounted on plug - in type of bases. In such cases one set of insulated fuse pulling handles shall be supplied with each switchboard.

10.4 Fuse ratings shall be selected by the Bidder for various feeders.

10.5 The Neutral links shall be mounted on fuse carriers which shall be mounted on fuse bases.

11.0 **INSTRUMENT TRANSFORMERS**

11.1 All current and voltage transformers shall be completely encapsulated cast resin insulated type suitable for continuous operation at the temperature prevailing inside the switchgear enclosure, when the switchboard is operating at its rated condition and the specified ambient temperature. The class of insulation shall be 'E' or better.

11.2 All instrument transformers shall be able to withstand the thermal and mechanical stresses resulting from the maximum r.m.s short circuit breaking and peak making current ratings of the associated switchgear.

11.3 All instrument transformers shall have clear indelible polarity markings. All secondary terminals shall be wired to separate terminals on an accessible terminal block where star point formation and earthing shall be done.

11.4 Current transformers may be single core type. All voltage transformers shall be single phase type.

11.5 The bus VTs shall be housed in separate compartment. All VTs shall have readily

accessible HRC current limiting fuses on both primary and secondary sides.

11.6 All CTs shall be provided with supports independent of busbar/ busbar supports.

11.7 The metering CTs shall be of Class 1 accuracy and adequate VA burden. The Protection CTs shall be of 5P10 accuracy class with adequate burden.

12.0 **RELAYS & TIMERS**

12.1 All relays and timers in protective circuits shall be flush mounted on panel front with connections from the inside. They shall have transparent, dust tight covers removable from the front. All protective relays shall have a draw-out construction for easy replacement from the front. They shall either have built in test facilities or shall be provided with necessary test blocks and test switches located immediately below each relay.

12.2 All AC relays shall be suitable for operation at 50 Hz with 110 Volt VT secondary and 1A or 5A CT secondary.

12.3 Protective relays, auxiliary relays and timers shall be provided with hand reset operation indicators.

12.4 All releases in circuit breakers shall conform to IS:13947.

13.0 **INDICATING INSTRUMENTS**

13.1 All meters shall be of flush mounted on panel front and shall have an accuracy class of 2.0 or better. The covers and cases of instruments and meters shall provide a dust and vermin proof construction.

13.2 Ammeters provided for motor feeders shall have a suitable scale.

14.0 **PUSH BUTTONS**

14.1 Push buttons shall be of spring return, push-to-actuate type. Their contacts shall be rated to make, continuously carry and break 10 A at 110 V AC.

14.2 All push buttons shall have one normally open and one normally closed contact unless specified otherwise. The contact faces shall be of silver alloy.

14.3 All push buttons shall be provided with integral escutcheon plates marked with its function.

14.4 The colour of the button shall be as follows :

Green for breaker CLOSE, commands.

Red for breaker OPEN, commands

Black for all annunciation functions, overload, reset and miscellaneous commands including reversal

14.5 All emergency push buttons shall have mushroom knobs.

15.0 **INDICATING LAMPS**

15.1 Indicating lamps shall be of the panel mounting, LED type. The lamps shall have escutcheon plates marked with its function wherever necessary.

15.2 Lamps shall have the following colors.

Red for breaker CLOSE

Green for breaker OPEN

White for breaker TRIP

Blue for all healthy conditions (e.g. CONTROL SUPPLY ON, and also for "SPRING CHARGED")

Amber for all Alarm Conditions (e.g. overload). Also for "SERVICE" and "TEST" position indications.

16.0 **SPACE HEATER**

16.1 Space heaters shall be provided in the switchboards wherever the manufacturer considers them necessary and recommends their provision for preventing harmful moisture condensation.

16.2 The space heaters shall be suitable for continuous operation on 240 V AC, 50 Hz, single phase supply and shall be automatically controlled by thermostats. Necessary switches and fuses shall also be provided.

16.3 The circuit for each panel and motor space heater should have an isolating switch, HRC fuse and isolating link. In addition, the space heater circuit of each panel shall also have a thermostat of suitable rating.

17.0 **INTERNAL WIRING**

17.1 All switchboards shall be supplied completely wired internally up-to the terminals ready to receive external cables.

17.2 All inter-cubicle and inter-panel wiring and connections between panels of same switchboard including all bus wiring for AC supplies shall be provided.

17.3 All auxiliary wiring shall be carried out with 650 V grade, single core, stranded copper conductor, color coded, PVC insulated wires. Conductor size shall be 1.5 mm^2 (min.)

for control circuit wiring and 2.5 mm^2 (min.) for CT and space heater circuits.

17.4 Engraved core identification ferrules marked to correspond with panel wiring diagram shall be fitted at both ends of each wire. The ferrule shall be of self locking type. The wire identification marking shall be in accordance with IS: 375.

17.5 Wiring for equipment, which are to be supplied by the Purchaser/Other Contractor and for which the Contractor has to provide mounting arrangement in his panels, shall also be provided by the Contractor, upto the terminal blocks.

17.6 If the busbar and the connecting cables are of different materials, bimetallic lugs will be used.

18.0 **CONTROL TERMINAL BLOCKS**

18.1 Control terminal blocks shall be of 650 Volts grade, rated for 10 Amps and in one piece moulding. It shall be complete with insulating barriers, clip-on type terminals and identification strips. Marking on terminal strip shall correspond to the terminal numbering on wiring diagrams. It shall have insulating material conforming to relevant code.

18.2 Terminal blocks for CT & VT secondary leads shall be provided with test links and isolating facilities. CT secondary leads shall be provided with short circuit and earthing facilities.

18.3 In all circuit breaker panels at least 10% spare terminals for external connections shall be provided and these spare terminals shall be uniformly distributed on all terminal blocks.

18.4 All terminal blocks shall be suitable for terminating on each side two (2) nos. stranded copper conductors of size up-to 2.5 mm^2 each.

18.5 All terminals shall be numbered for identification and grouped according to the function. Engraved white-in-black labels shall be provided on the terminal blocks.

18.6 Terminal blocks shall be arranged with at-least 100 mm clearance between two sets of terminal blocks. The minimum clearance between the first row of terminal blocks and the associated cable gland plate shall be 250 mm.

19.0 **POWER CABLE TERMINATION**

19.1 Cable termination compartment and arrangement for power cables shall be suitable for heavy duty, 1.1 KV grade, stranded aluminium conductor, PVC/XLPE insulated, armoured and PVC sheathed cables. All necessary cable terminating accessories such as supporting clamps and brackets, power cable lugs, hardware etc. shall be

provided by the Bidder to suit the cable sizes.

19.2 All power cable terminals shall be of stud type and the power cable lugs shall be of tinned copper solder less crimping ring type conforming to IS: 8309. All lugs shall be insulated/sleeved.

20.0 **NAME PLATES AND LABELS**

i) The MPDB shall be provided with prominent, engraved identification plates. The module identification plate shall clearly indicate the feeder number and feeder designation as indicated elsewhere.

ii) The name plates shall be of non-rusting metal with white non graved letterings on black back grounds. Inscriptions and lettering sizes shall be subject to purchaser's approval.

iii) Suitable stenciled paint mark shall be provided in-side the panel /module for identification of all equipment in addition to the plastic sticker labels, if provided. The labels shall be positioned so as to be clearly visible. The labels shall bear the device number as indicated in the approved module wiring drawing.

iv) Caution plate with the inscription "WARNING LIVE TERMINALS" shall be provided at all joints where the terminals are likely to remain live and isolation is possible only at remote end.

21.0 **PAINTING**

The sheet steel work shall be pre-treated, in tanks, in accordance with relevant code. Finishing paint on panels shall be shade 692 (smoke grey) in accordance with relevant code. The inner surface of the panels shall be glossy white. All hardware shall be nickel chromium plated or zinc passivated.

22.0 **GASKETS**

The gaskets wherever specified shall be of good quality synthetic rubber with good ageing, compression and oil resistant characteristic suitable for panel application.

23.0 **PERFORMANCE**

23.1 **PROTECTION & CO-ORDINATION**

It shall be the responsibility of the Bidder to fully co-ordinate the overload and short circuit tripping of the circuit breakers with the upstream and downstream circuit breakers, to provide satisfactory discrimination. Further the various equipment supplied shall meet the requirements of Type C class of Co-ordination as per IEC 292.

24.0 **PROTECTION, INDICATION & METERING**

Feeder wise requirement of switchgear, protection, indication and metering are as under:

Sl. No	Type of Feeder	Type of switchgear	Protection to be provided	Indication	Metering
1	Incomer	Air Circuit Breaker	Overload, short circuit and earth fault & CBCT operated earth leakage relay.	On, off, trip, spring charged, test, service position, control supply healthy.	Ammeter, Voltmeter, Energy meter, PF meter
		MCCB	Overload, short circuit, earth fault.	On/OFF/TRIP	Ammeter, Voltmeter
2	Bus coupler	Air Circuit Breaker	Overload, short circuit, earth fault	ON/OFF/TRIP	
3	Capacitor bank	Air Circuit Breaker / MCCB	Overload, short circuit, earth fault, Under voltage, Over voltage & Neutral displacement.	On, Off, Trip	Ammeter
4	Other Outgoing Feeders	SFU	Short Circuit	On, Off	
		MCCB	Overload, short circuit and earth fault.	On, Off	

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE I

TECHNICAL SPECIFICATION FOR 415 V DRAWOUT TYPE

AIR CIRCUIT BREAKERS AND SWITCH-BOARD (MPDB)

1	Installation	:	Indoor
2	Number of Poles	:	4
3	Service Voltage	:	415 V (±10%)
4	Rated current (A)	:	As required
6	Frequency	:	50 Hz (± 3%)
7	Symmetrical breaking capacity	:	50 kA(rms)
8	Short time current for 1 Second	:	50 kA(rms)
9	Operating duty	:	P_2
10	Operating Mechanism	:	Motorized stored energy operating/Manual stored energy operating. Trip free mechanism alongwith indications as mentioned in Clause 24.0.
10.1	Manual/Electrically operated	:	Manual and Electrical
10.2	Voltage	:	110V, AC for coils & 110V, AC for motors.
11	Tripping arrangement	:	AC shunt trip mechanism.
12	Bus bar material	:	Aluminium Elect. grade
13	Protections to be provided	:	As mentioned in Clause 24.0
14	Cable termination	:	
14.1	Incoming	:	Type : BUS DUCT Conductor : Aluminium

15	**Switch board**		
15.1	Installation	:	Indoor
15.2	Applicable Standard	:	IS 8623
15.3	Enclosure	:	Single front, IP 52/42
15.4	Rated voltage	:	415 V
15.5	Bus bar system	:	TPN
a)	Horizontal bus bar	:	Copper (As required)
b)	Vertical bus bar	:	Copper (As required)
c)	Short time rating (min)	:	50 kA rms for 1 second
d)	Withstand voltage (min)	:	2500 V - Main circuit, 1500 V - Control circuit
15.7	Main circuit wiring	:	In cable chamber
16	Power supply arrangement to Switchboard	:	Bus duct
17	Control wiring	:	660 V, PVC, Copper, 2.5 mm^2
18	Minimum size of earth bus bar	:	Copper (As required)
19	Metering Arrangement	:	Ammeter, Voltmeter, Energy meter, PF meter for ACBs Ammeter, Voltmeter for MCCBs
20	Cable entry	:	Bottom
21	Safety	:	Safety shutters for ACB & truck (non-withdrawal facility while in service) and shrouding of MCCB terminals to eliminate risk of shock to maintenance personnel.

Specification NO.SP/E-07

SPECIFICATION FOR 415 V POWER DISTRIBUTION BOARDS (PDB)

1.0 **SCOPE**

1.1 This specification covers requirements for 415V PDB, metal enclosed, dust and vermin proof conforming to the latest revision of IS: 8623-1993 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 2.0. The switchboard shall be suitable for indoor application with provision for future extension

1.2 The 415 V power from this switchboard in the substation will be drawn up to the main PDB in a shop, placed suitably. Outgoings of this main PDB will feed different Sub PDB (SPDB) in that respective shop. For example, the main PDB of 100T DRS, will be located in the Hydraulic Repair Section, through 2 no. of cable feeders. This PDB will feed 3 No. SPDB, one for the load of welding and structural second one for Electric and Machinery Section and third one for the remaining loads. The SPDB will be located suitably and may feed more than one section of the shop. It may have one or two incomer according to the load and location of the shop. Depending on the magnitude of the load and location of the shop, one or more shop may be fed through the same feeder from the substation. The total Load of the workshop may be fed through suitable number of PDB located strategically across the workshop. An indicative location and number of PDBs have been mentioned elsewhere in this document.

The incomers and bus coupler in the PDB shall be 4-pole MCCB of required rating. The outgoing of main PDB and incoming of SPDB in different shops are proposed with MCCB. The outgoings of different SPDBs will have MCCB/ MCB as required. All these switches will be of TPN properties. The cable feeder to feed these PDB and SPDB will be 3.5 Core, XLPE Insulated armored cable with Al. conductor of required rating. The selection of cable should consider the prescribed Voltage drop as per IEC. The individual load in any shop will be fed from the respective switch provided in the SPDB. The scope of this tender work is up to fixing of the switch in a particular switch board. Drawing of the cable from the switch to individual machine is not in the scope of this tender.

2.0 **OTHER RELEVANT STANDARDS**

The other relevant Indian standards are as under:

IS : 3043 :Code of practices for earthing.

IS : 4237 : General requirements for switchgear and control gears for voltages not exceeding 1000V AC.

IS : 2551 : Danger Notice Plates

IS : 5082 : Wrought Aluminium Alloys for electrical purpose

IS : 6005 : Code of practice of phosphating iron and steel

IS : 3202 : Code of practice for climate proofing of electrical equipment

IS : 2147 : Degree of protection provided by industrial enclosures

IS : 5 : Colors for ready mixed paints and enamels.

3.0 **DESIGN CRITERIA**

The boards shall operate on 415V (± 10%), 3 phase, 4 wire, 50 Hz (±3%) power supply. Fault withstand capacity shall not be less than P_2 category (50 kA) for one second.

The boards shall have power frequency withstand voltage of 2500V. All similar components shall be interchangeable and shall be of same type and rating for maintenance and low spare inventory.

4.0 **CONSTRUCTIONAL FEATURES**

4.1 The boards shall be made of sheet steel enclosures, 1.6 mm thick.

4.2 Degree of protection of the enclosure shall be IP 52/42 for outdoor/indoor with coats of paints conforming to IS: 5.

4.3 The bus bars shall be TPN, Aluminium with suitable ratings. The bus bars shall be mounted on non-hygroscopic, anti-tracking, flame retardant, self-extinguishing insulators. The bus bars shall be PVC sleeved.

4.4 The earth bus bar shall be 90 mm^2 Al.

4.5 A safety interlock device between incoming switchgear units and the doors (of the boards) shall ensure opening of the doors only when units are off. Likewise switching on of the switchgear units shall be possible only when the doors are closed.

4.6 The handles of the switch fuse units, ON, OFF switches of the MCCBs shall be protruded type. The ACB, MCCBs, Switch fuse units, Bus bars, Cable terminations shall be in separate compartments within the board.

4.7 The cable terminations on the MCCBs shall be shrouded to prevent access to the live parts.

4.8 The board shall have a display of Danger Notice and supply shall be made with

front rubber mat.

4.9 The PDBs shall have incoming ACBs of suitable rating and outgoing feeders comprising of suitably rated MCCBs.

ANNEXURE - I

TECHNICAL SPECIFICATION FOR 415 V PDBs

1	Installation	:	Indoor
2	Enclosure	:	Single front, IP 52
3	Rated voltage	:	415 V
4	Bus bar	:	TPN (Aluminium)
5	Horizontal bus bar rating	:	As required
6	Vertical bus bar rating	:	As required
7	Short time rating	:	50 kA rms for 1 second
8	Withstand voltage	:	2500 V, 50 Hz, 1 min.
9	Cable termination	:	Cable chamber
10	Cable types	:	Three half core PVCSWA/XLPE (Al.) conductor
11	Cable entry	:	Bottom
12	Size of earth bus	:	90 mm^2 Aluminium
13	Metering Arrangement	:	Ammeter with selector switch on incomers only.
14	Safety interlock	:	As mentioned in Para 4.5 above.
15	Finish	:	Two coats of primer and one coat of final paint as per IS : 5.

Specification NO.SP/E-08

SPECIFICATION FOR 415 V SUB-POWER DISTRIBUTION BOARDS (SPDBs)

1.0 SCOPE

1.1 This specification covers requirements for 415V SPDB, metal enclosed, dust and vermin proof conforming to the latest revision of IS: 8623-1993 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 2.0. The switchboard shall be suitable for indoor application with provision for future extension.

1.2 A number of SPDBs have been envisaged at different locations in the workshop like substation and repair shops to supply the loads in the entire workshop complex other than lighting.

1.3 The Sub-Power Distribution Boards (SPDBs) shall receive power from PDBs through 1.1 kV, 3.5 core, XLPE Aluminium cables. Each SPDB shall consist of incoming MCCB (TPN) and outgoing MCB/MCCB (TPN) of suitable rating.

1.4 Location of SPDB to feed individual machines shown in the drawing is a typical arrangement for reference only and will be finalized after fixing the machine layout in the shop. For small loads, 5kW or less will be fed through 16A TPN/ SPN MCB. For this purpose, sufficient no. of 16A TPN/SPN Power points have been provided in each shop. These power points will get 415/230V power supply from the 12 way MCB Distribution board placed suitably in different locations in the shops. All load below 1.0 kW is considered as single phase.

2.0 OTHER RELEVANT STANDARDS

The other relevant Indian standards are as under:

IS : 3043: Code of practices for earthing.

IS : 4237 : General requirements for switchgear and control gears for voltages not exceeding 1000V AC.

IS : 2551 : Danger Notice Plates

IS : 5082 : Wrought Aluminium Alloys for electrical purpose

IS : 6005 : Code of practice of phosphating iron and steel

IS : 3202 : Code of practice for climate proofing of electrical equipment

IS : 2147 : Degree of protection provided by industrial enclosures

IS : 5 : Colours for ready mixed paints and enamels.

3.0 **DESIGN CRITERIA**

The board shall operate on a 415V (± 10%), 3 phase, 4 wire, 50 Hz (± 3%) power supply. Fault withstand capacity shall not be less than 50 kA for one second.

The board shall have power frequency withstand voltage of 2500V. All similar components shall be interchangeable and shall be of same type and rating for maintenance and low spare inventory.

4.0 **CONSTRUCTIONAL FEATURES**

4.1 The board shall be made of sheet steel enclosures, 1.6 mm thick.

4.2 Degree of protection of the enclosure shall be IP 52/42 for outdoor/ indoor with coats of paints conforming to IS: 5.

4.3 The bus bars shall be TPN, Aluminium and of required rating. The bus bars shall be mounted on non-hygroscopic, anti-tracking, flame retardant, self-extinguishing insulators. The bus bars shall be PVC insulated. The bus bar system should incorporate integral single piece bar and coupling links to avoid chances of hot spot developing as is possible with bolted construction of bus bar and links. The bus bars should be shrouded against accidental contact. Two conduit entry plates at the top and the bottom should facilitate drilling of holes at site to suit individual requirements.

4.4 The earthing of the board shall be done by external GI strips 25mm x 6mm.

4.5 A safety interlock device between incoming MCCB, outgoing MCCB/MCBs and the doors (of the boards) shall ensure opening of the doors only when the switches are off.

Likewise switching on of the breaker units shall be possible only when the doors are closed.

4.6 The switches of the MCCB/MCBs units shall be protruded type.

4.7 The board shall have a display of Danger Notice.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE - I

TECHNICAL SPECIFICATION FOR 415 V SPDB

1	Installation	:	Indoor
2	Enclosure	:	Single front, IP 52/42 for outdoor/indoor
3	Rated voltage	:	415 V
4	Bus bar	:	TPN (Aluminium)
5	Rated current of incoming MCCBs	:	Same as the outgoing MCCBs of PDBs of respective shops
6	Bus bar rating	:	As required
7	Short time rating	:	50 kA rms for 1 second
8	Withstand voltage	:	2500 V, 50 Hz, 1 min.
9	Cable termination	:	In Incoming MCCB unit
10	Cable types	:	Three half core PVCSWA/XLPE (Al.) conductor
11	Cable entry	:	Bottom/Top
12	Earthing	:	GI strip 25mm x 5 mm.
13	Safety interlock	:	As mentioned in Para 4.5 above.
14	Finish	:	Two coats of primer and one coat of final paint as per IS : 5.

Specification NO.SP/E-09

SPECIFICATION FOR CAPACITOR BANKS

1.0 SCOPE

1.1 This specification covers requirements for 415 V shunt capacitor banks suitable for indoor installation. The capacitor banks shall be connected to Main Distribution Board and installed in workshop substation.

1.2 The capacitor banks shall comply with the latest version of IS: 2834 and IEC-831-1 & 831-2 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 2.0.

2.0 OTHER RELEVANT STANDARDS

The other relevant Indian Standards are as under:

IS : 12672 Internal fuses and internal over pressure disconnectors for shunt capacitors

IS : 9046 A.C. contactors of voltages above 1000 V up to and including 11000V

IS : 13118 General requirements for circuit breakers for voltages above 1000V

IS : 9920 Switches and switch isolators for voltages above 1000 V

IS : 13947 L.V. switch gear and control gear (Part 4 section 1- contactors)

IS : 13947 L.V. switch gear and control gear (Part 3 - switches)

IS : 13947 L.V. switch gear and control gear (Part 2 - circuit breakers)

IS : 9402 High voltage fuses for the external protection of shunt capacitors

IS : 13703 L.V. Fuses for voltages not exceeding 1000V A.C.

IS : 3043 Code of practice for earthing

3.0 DESIGN

The capacitor units shall be designed for the following:

(a) Watt losses not more than 0.5 kW per kVAr

(b) Temperature withstand category of 55^0 C

(c) Output (kVAr) tolerance not exceeding 10 %

(d) Capacitor - fuse co-ordination to reduce risk of tank rupture

(e) Use of bio degradable eco-friendly dielectric compound

(f) Switching life not less than 60,000 operations

4.0 CONSTRUCTION

4.1 The basic units shall be made of suitable material for better heat dissipation and lower

operating temperature.

4.2 The basic units shall be insulated for power frequency withstand voltages.

4.3 Each unit shall be supplied in a suitable container.

4.4 Each element of capacitor unit shall have its own built in special fuse. In case of fault in an element, the over voltage on the remaining elements shall not exceed 10%. Internal discharge resistance shall be provided to limit the residual voltage to less than 50 volt as per relevant standard.

4.5 The capacitor banks shall be designed to withstand electro-dynamic and thermal stresses caused by transient over currents during switching.

5.0 **PERFORMANCE**

5.1 The Capacitor Banks shall be grouped in different kVAr rating, which shall be switched ON/OFF as required according to load connected. For this purpose capacitor kVAr shall be subdivided into a number of regulating stages.

6.0 **APFC Panel**

The APFC Panel shall be dust tight vermin proof sheet metal enclosed cubicle suitable for floor mounting. The regulating stages of required Capacitor Banks shall be switched ON/OFF by means of suitable relay to ensure the system power factor to 0.98 lagging. To eliminate unduly frequent switching when peak load of short duration occur a time delay relay shall be incorporated for stage to stage switching.

All internal wiring for control sensing instruments, relays etc. shall be done with 650V grade, PVC insulated copper conductor of size not less than 2.5 mm^2. The capacitor bank shall be rated for continuous operation and shall be suitable for indoor installation.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE – I

TECHNICAL SPECIFICATION

1.	Applicable Standard	:	IS : 2834
2.	System	:	415 V, 3 phase 50 Hz solid earthed system
3.	Location	:	Substation
4.	No. of phases	:	Three
5.	Connection	:	Star/Delta
6.	Output kVAr	:	As required
7.	Insulation level	:	As per relevant IS
8.	Overload	:	1.3 times rated current continuously
9.	Losses	:	Less or equal to 0.5 W/ kVAr
10.	Output tolerance	:	10 % (Max)
11.	Inrush Current	:	Not exceeding 100 times rated current
12.	Peripherals to be supplied	:	Discharge resistors, HRC Fuse, Racks, Isolators
13.	Accessories (Optional)	:	Control Panel with Automatic P.F. Correction relay
14.	Discharge device	:	Discharge Resistor

Specification NO.SP/E-10

SPECIFICATION FOR EARTHING & LIGHTNING PROTECTION SYSTEM

1.0 **SCOPE**

1.1 This specification covers the requirements for earthing system.

1.2 Earthing system shall be in strict accordance with IS: 3043 and Indian Electricity Rules/Acts.

2.0 **SYSTEM DESCRIPTION**

2.1 The earthing system shall consist of earth pits and earthing conductors located in sub-station & proposed Workshop.

2.2 Independent pits shall be provided for earthing of transformer neutrals and down conductors of lightning masts. Inter connected pits shall be provided for frame earthing of all equipments and cable trays/ladders, metallic conduits, steel tubular poles, trusses & structures over which cables run.

3.0 **CONSTRUCTION**

The primary requirements of the earthing system are as follows:

3.1 Neutral of a transformer shall be effectively connected to an independent earth pit by suitable GI flat.

3.2 Down conductor of a lightning mast shall be effectively connected to an independent earth pit by suitable GI flat.

Frame work of equipment shall be effectively connected to nearest pit by two separate GI flats or a combination of GI flats & wires of the sizes mentioned below:

Equipment	Earth conductor buried in earth	Earth conductor above ground level & in built up trenches
a) Main earth grid	Not applicable	65 x 8 mm GI flat
b) All H.T. Equipment	Not applicable	50 x 6 mm GI flat
c) 415 V/230 V Switch boards	Not applicable	40 x 5 mm GI flat
d) LT motors above 125 kW	Not applicable	50 x 6 mm GI flat
31 kW to 125 kW	Not applicable	25 x 8 mm GI flat
1 kW to 30 kW	Not applicable	25 x 6 mm GI flat

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

Equipment	Earth conductor buried in earth	Earth conductor above ground level & in built up trenches
Fractional Horse Power	Not applicable	6 SWG GI wire
e)Columns, structures, cable trays, bus duct enclosures, steel tubular poles & Towers	Not applicable	25 x 8 mm GI flat
f) Crane gantries and other non-current carrying metal parts	Not applicable	25 x 6 mm GI flat

3.4 Each earth pit shall have GI pipe electrode not smaller than 40 mm dia. The buried length of the electrode shall not be less than 2.5 meters. Each electrode shall be buried vertically in an earth pit of minimum 300 mm x 300 mm area and 3 meters depth preferably by using homogenous mixture of bentonite clay and soil in the ratio of 1:3. The distance between two earth pits shall be maintained at least double the length of the electrode pipe and earth pits shall be constructed away from drains.

3.5 All conductors for earthing shall be made of Galvanised Iron (GI).

3.6 The grids inter connecting the pits shall have an area not less than 300 Sq mm and be buried at a depth not exceeding 600 mm below the soil. Back filling shall be placed in layers of 150 mm. Earthing conductors embedded in the concrete floor of the building shall have approximately 50 mm concrete cover.

3.7 Each pit shall be provided with a cast iron top cover for inspection & identification.

3.8 Metallic frame of all electrical equipment shall be earthed by two separate and distinct connections to earthing system each of 100% capacity. Crane rails, metal pipes and conduits shall be effectively earthed at two points.

3.9 Each continuous laid out lengths of cable tray shall be earthed at minimum two places by GI flats to the earthing system, the distance between earthing points shall not exceed 30 metre. Different sections of cable trays shall be connected by low resistance connecting links.

3.10 Neutral connections and metallic conduits/pipes shall not be used for the equipment earthing. Lightning protection system down conductors shall not be connected to other earthing conductors above the ground level.

3.11 Connections between earth leads and equipment shall normally be of bolted type.

3.12 A minimum earth coverage of 300 mm shall be provided between earth conductor and the bottom of trench/foundation/underground pipes at crossing. Earthing conductors crossing the road can be installed in hume pipes. Wherever earthing conductor crosses on runs at less than 300 mm distance along metallic structures such as air, water, pipe lines, steel reinforcement in concrete, it shall be bonded to the same.

3.13 Earthing conductors along their run on columns, walls, etc. shall be supported by suitable welding/cleating at interval of 1000 mm and 750 mm respectively.

3.14 **LIGHTNING PROTECTION SYSTEM**

Lightning protection system shall be in strict accordance with IS:2309.

3.14.1 Lightning spike/arrestor shall be provided on any structure having height 10 metre or more. The height of the spike/arrestor above its fixing point on the structure shall be 2 metre. The spacing between two adjacent spike/arrestor shall not be less than 20 metre.

3.14.2 Lightning conductor shall be of 25 x 6 mm GI strip when used above ground level. It shall be connected through test link with earth electrode/earthing system.

3.14.4 a) Down conductor shall not be connected to other earthing conductors above ground level. The size of down conductor shall not be lower than 25 X 6 mm. Each down conductor shall be effectively connected to independent earthing pit.

b) Each down conductor shall be provided with a test link at 1000 mm above ground level for testing.

c) All joints in the down conductors shall be bolted and welded.

d) Down conductors shall be cleated on outer side of building wall, at 750 mm interval or welded to outside building columns at 1000 mm interval.

e) Lightning conductor on roof shall not be directly cleated on surface. Supporting blocks of PCC/insulating material shall be used for conductor fixing.

3.14.5 a) All metallic structures within a vicinity of two meters of the conductors shall be bonded to conductors of lighting protection system.

b) The lightning protection system shall not be through cables, conduits and metal enclosures of electrical equipment.

c) Lightning conductors shall not pass through or run inside GI Conduits.

Testing link shall be made of galvanised iron of size 25 x 6 mm.

Specification NO.SP/E-11

SPECIFICATION FOR MAIN LIGHTING DISTRIBUTION BOARD (MLDB)

1.0 SCOPE

This specification covers requirements for 230V(L-L) MLDBs, LDBs, Feeder Pillars, metal enclosed, dust and vermin proof to be installed in substations, shops, outdoor locations conforming to the latest revision of IS:8623-1993 except where modified or extended by the provision of this specification.

2.0 OTHER RELEVANT STANDARDS

The other relevant Indian standards are as under:

IS : 3043 : Code of practices for earthing.
IS : 4237 : General requirements for switchgear and control gears for voltages not exceeding 1000V AC.
IS : 12021 : Specification of Control transformers for switchgear and control gears for voltages not exceeding 1000 V AC
IS : 722 : A.C electricity meters.
IS : 1248 : Direct acting indicating analogue elect measuring instruments
IS : 2551 : Danger Notice Plates
IS : 5082 : Wrought Aluminium Alloys for electrical purpose
IS : 6005 : Code of practice of phosphating iron and steel
IS : 3202 : Code of practice for climate proofing of electrical equipment
IS : 2147 : Degree of protection provided by industrial enclosures
IS : 5 : Colours for ready mixed paints and enamels.

3.0 DESIGN CRITERIA

The boards shall operate on a 230V (L-L) (±10, 3 phase, 3 wire, 50 Hz (-3% to 3%) power supply. Fault withstand capacity shall not be less than 10 kA for one second.

The boards shall have power frequency withstand voltage of 3000V. All similar components shall be interchangeable and shall be of same type and rating for maintenance and low spare inventory.

4.0 CONSTRUCTIONAL FEATURES

4.1 The boards shall consist of two modular sections, extendible on either side. Each section shall be made of sheet steel enclosures on steel frames. The thickness of steel sheets shall be 2 mm for load bearing sections and 1.6 mm for non-load bearing sections.

4.2 Degree of protection of the enclosure shall be IP 52/42 for outdoor/indoor with coats of paints conforming to IS: 5.

4.4 The bus bars shall be TP/DP, Aluminium and of adequate current rating for horizontal and vertical bus. The bus bars shall be mounted on non-hygroscopic, anti-tracking, flame retardant, self-extinguishing insulators. The bus bars shall be PVC insulated (sleeved).

4.5 The cable termination shall be suitable for PVC SWA cable. All the cable entries shall preferably be from bottom.

4.6 The specification for MCCB, MCB, Switch fuse units etc. are given in subsequent clauses in this specification.

4.7 The board shall have a mechanical safety door interlock device to prevent opening of the door if the switches are ON. Similarly, it shall be ensured that the switch cannot be switched ON unless the door is closed. There shall also be padlocking arrangement for the door to prevent unauthorized access.

4.8 The MCCBs, Horizontal bus bars, extended chambers and the MCBs shall be housed in separate compartments.

4.9 ON/OFF switches of the MCCBs and MCBs and knobs of Ammeters and Voltmeters shall be protruded for operation without opening the doors.

4.10 The incoming feeders shall be provided with Ammeters and Voltmeter with selector switches (for MLDBs only).

4.11 The boards shall have a display of Danger Notice and supply shall be made with front rubber mat.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE - I

TECHNICAL SPECIFICATION FOR 230 V (L-L) MLDB

1	Installation	:	Indoor for MLDB/Outdoor for Feeder Pillar
2	Enclosure	:	Single front, IP 52/42 for outdoor /indoor
3	Rated voltage	:	230 V(L-L)
4	Bus bar	:	TP/DP (Aluminium)
5	Horizontal bus bar rating	:	Adequate Rating not less than current rating of Incoming MCCB / MCB
6	Vertical bus bar rating	:	Adequate Rating
7	Short time rating	:	10 kA rms for 1 second
8	Withstand voltage	:	3000 V, 50 Hz, 1 min.
9	Cable termination	:	Cable Gland
10	Cable types	:	Three core PVCSWA (Al.) conductor
11	Cable entry	:	Bottom
12	Metering Arrangement	:	Ammeter and Voltmeter with selector switch on incomer (for MLDB only).
13	Indication	:	LED Phase Indicator

5.0 SPECIFICATION FOR MOULDED CASE CIRCUIT BREAKERS

5.1 SCOPE

This specification covers requirements for Moulded Case Circuit Breakers suitable for installation in switchboards (MLDB / LDB/Feeder Pillar).

The Moulded case circuit breakers shall comply with the latest revision of IS: 13947(Part I) and IEC: Publication 947 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 5.2.

5.2 OTHER RELEVANT STANDARDS

The other relevant Indian standards are as under:

IS : 3072	:	Code of practice for installation and maintenance of switchgear.
IS : 4237	:	General requirements for switchgear and control gears for voltages not exceeding 1000V AC.
IS : 10118	:	Code of practice for selection, installation and maintenance of Switchgear and Control gear.
IS : 11353	:	Guide for uniform system of marking and identification of conductors and apparatus terminals.

5.3` DESIGN CRITERIA

The Moulded Case Circuit Breakers shall operate on a 230V (L-L) (± 10%), 3 phase, 50 Hz (-3% to +3%) power supply. Fault withstand capacity shall not be less than 25 kA.

All similar components shall be interchangeable and shall be of same type and rating for easy maintenance and low spare inventory.

The rated carrying capacity shall be sufficient at the rated voltage and frequency and the circuit breaker shall carry this current continuously while complying with this specification.

5.4 CONSTRUCTIONAL FEATURES

1) The Circuit breakers shall be three pole, moulded case air break type.

2) The circuit breaker shall have tripping mechanism for over load and short circuit irrespective of the type of operating mechanism. In addition, provision shall be made for manual tripping of the breaker. The breakers shall be fixed type.

3) Circuit Breaker shall be provided with anti-pumping and trip free feature.

4) Tripping shall be possible by means of front mounted "OFF" switch. Making of the breaker shall be possible by means of "ON" switch.

5) Suitable indications shall be provided on circuit breaker to show "ON", "OFF", conditions.

6) The following protection (release type) shall be provided:

a) Ambient temperature compensated thermal overload trip with adjustable settings.

b) Magnetic Short circuit trip.

5.5 **PERFORMANCE**

1) The temperature rise of parts of the equipment like terminals, accessible parts, main circuit, windings of coils and electromagnets etc. measured during the test carried out in accordance with IS: 13947 (Part I) shall not exceed temperature rise limits specified in the said standard.

2) The dielectric property of the equipment, clearances and minimum creepage distance shall conform to IS: 13947 (Part I).

3) The equipment shall be capable of making and breaking load and overload currents without failure under the conditions stated in the relevant product standard for the required utilisation category.

4) The equipment shall be capable of withstanding thermal and electromagnetic stress from short circuit currents during current making, current carrying in the closed position and during current interruptions.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE - IA

TECHNICAL SPECIFICATION FOR MOULDED CASE CIRCUIT BREAKERs

1	Installation	:	Switch board
2	Number of Poles	:	3
3	Service Voltage	:	230V (L-L) (± 10%)
4	Rated current (A)	:	As Required
5	Making capacity	:	25 kA (peak)
6	Frequency	:	50 Hz (±3%)
7	Operating Mechanism	:	Manual Trip free
8	Tripping arrangement	:	Thermal overload and Short circuit electromagnetic release.
9	Protections to be provided	:	i) Short circuit ii) Overload
10	Cable Terminal	:	Suitable for PVCSWA with Aluminium conductor. Totally shrouded to avoid risk of electric shock to operating personnel.
11	Execution	:	Fixed

6.0 SPECIFICATION FOR MINIATURE CIRCUIT BREAKERS

6.1 SCOPE

This specification covers requirements for Miniature Circuit Breakers suitable for installation in switchboards (MLDBs/LDBs/Feeder Pillars).

The Miniature circuit breakers shall comply with the latest revision of IS: 8828-1993 except where modified or extended by the provision of this specification and with the relevant parts of standards mentioned in clause 6.2.

6.2 OTHER RELEVANT STANDARDS

The other relevant Indian standards are as under:

IS : 3072 : Code of practice for Installation and Maintenance of switchgear.

IS : 4237 : General requirements for switchgear and controlgears for voltages not exceeding 1000V AC.

IS : 10118 : Code of practice for selection, installation and maintenance of Switchgear and Controlgear.

IS : 11353 : Guide for uniform system of marking and identification of conductors and apparatus terminals.

6.3 DESIGN CRITERIA

The breakers shall operate on a 230V (L-L) (± 10%), 2/3 phase, 50 Hz (-3% to 3%) power supply. Fault withstand capacity shall not be less than 9 kA for one second.

The rated carrying capacity shall be as specified in Annexure IB at the rated voltage and frequency and the breaker shall carry this current continuously while complying with this specification.

6.4 CONSTRUCTIONAL FEATURES

i) The circuit breaker shall have current limiting devices with an inverse time delayed thermal trip device and an un-delayed magnetic trip device to take care of steady overload and short circuit faults respectively. The breakers should be suitable for switching/ protection of lighting circuits.

ii) The technical data for Circuit breakers are given in Annexure-IB.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE IB

TECHNICAL SPECIFICATION FOR

MINIATURE CIRCUIT BREAKERS

1	Application	: Switch board
2	Number of poles	: 2 / 3
3	Rated Current	: As Required
4	Breaking capacity	: 9 kA
5	System voltage	: 230V (L-L) (±10%)
6	Frequency	: 50 Hz (±3%)
7	Enclosure of the breakers	: Moulded self-extinguishing thermoset plastic.
8	Dolly (Switching lever)	: Can be locked in either OFF or ON position.
9	Fixing	: Snap fitting
10	Cable Terminal	: Suitable for PVCSWA with Aluminium conductor. Totally shrouded to avoid risk of electric shock to operating personnel.
11	Operating mechanism	: Manual Trip Free
12	Tripping Arrangement	: Magnetic Short Circuit Release. Thermal Overload Release.

Specification No. SP/E-12

SPECIFICATION FOR 230V (L-L) LIGHTING DISTRIBUTION BOARD/ FEEDER PILLARS

1.0 **SCOPE**

This specification covers requirements for 230V (L-L) Miniature and/or Residual Current Circuit Breaker suitable for installation in a switchboard (LDB).

The Miniature-Residual Current circuit breaker shall comply with the latest revision of IS: 8828 and the associated switch board shall conform to IS: 8623 with the relevant parts of standards mentioned in clause 2.0 except where modified or extended by the provision of this specification.

2.0 **OTHER RELEVANT STANDARDS**

The other relevant Indian standards are as under:

IS : 3043 : Code of practices for earthing.

IS : 4237 : General requirements for switchgear and control gears for voltages not exceeding 1000V AC.

IS : 10118 : Code of practice for selection, installation and maintenance of Switchgear and Control gear.

IS : 11353 : Guide for uniform system of marking and identification of conductors and apparatus terminals.

IS : 8588 : Thermostatic bimetals

3.0 **CONSTRUCTION**

3.1 **General**

The miniature circuit breakers shall be suitable for mounting in 4 ways/8 ways/ 12 ways/16 ways distribution boards with IP-42 protection.

3.2 **Enclosure**

The enclosure shall be manufactured from at least 2 mm thick steel sheets in aesthetically appealing powder coated finish. The boards are to confirm to the requirement of IS: 8623 for factory built assemblies.

3.3 **Bus bar system**

The bus bar system should incorporate integral single piece bar and coupling links to avoid chances of hot spot developing as is possible with bolted construction of bus bar and links. The bus bar system should accept double pole and single pole circuit breakers in any combination of these. The bus bars should be shrouded against

accidental contact. The circuit breakers should be arranged in two horizontal or vertical banks with switch levers operating in vertical or horizontal planes for on-off switching. The mounting of breakers should be quick snap and easy removal type without disturbing the other breakers. It should be capable of being connected to at least cable sizes of 25 mm^2 for phase conductors and 16 mm^2 for neutral conductors. Two conduit entry plates at the top and the bottom should facilitate drilling of holes at site to suit individual requirements.

3.4 **Miniature/Residual Current Circuit Breakers and Distribution Boards**

3.4.1 These breakers shall be current limiting devices with an inverse time delayed thermal trip device and an un-delayed magnetic trip device to take care of steady overload and short circuit and earth leakage faults respectively. The breakers shall be suitable for switching/control/protection/regulation of lighting, control and motor circuits.

3.4.2 The circuit breakers should also be suitable for protection/control/switching of single phase, 230 Volt motors.

3.4.3 The technical data for Circuit breakers are given in Annexure-IA.

3.4.4 The technical data for Distribution Boards are given in Annexure-IB.

ANNEXURE - IA

TECHNICAL SPECIFICATION FOR

MINIATURE /RESIDUAL CURRENT CIRCUIT BREAKERS

1	Applicable standard	:	IS 8828
2	Number of poles	:	2 for incoming MCB and RCCB if any. 2 for outgoing MCB.
3	Rated Current	:	As Required
4	Breaking capacity	:	9 kA
5	Rated voltage	:	230 V for DP
6	Frequency	:	50 Hz
7	Enclosure of the breakers	:	Moulded self extinguishing thermo set plastic.
8	Dolly (Switching lever)	:	Can be locked in either Off or On position
9	Auxiliary contact poles (for control circuits, if any)	:	230V 5A, A.C. (Optional).
10	Fixing	:	Snap fitting
11	Terminals	:	25 mm^2 conductors for phase and 16 mm^2 for neutral.
12	Mechanical service life	:	Not less than 20,000 operations.
13	Electrical endurance at rated load	:	Not less than 20,000 operations.
14	Climate resistance to conform requirements	:	IEC - 68/2

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE - IB

TECHNICAL SPECIFICATION FOR

DISTRIBUTION BOARDS

1	Applicable Standard	:	IS : 8623
2	Bus current carrying capacity	:	Suitable with DP
3	Enclosure	:	2 mm thick CRCA sheets.
4	No. of outgoings	:	As Required
5	No. of incoming	:	1 No.
6	Mounting	:	Channel mounted / Flush top cover.
7	Cable entry	:	Top / Bottom cable entry conduits.
8	Protection	:	IP 42 (Metallic double door) degree of protection.
9	Finishing	:	Powder coated finish.
10	Locking	:	Pad locking facility.
11	Bus bar	:	Shrouded type integral single piece bus bar.
12	Arrangement of breakers	:	Vertical/Horizontal arrays.

Specification No. SP/E-13

SPECIFICATION FOR SWITCH BOARDS FOR LIGHTING CIRCUITS

1.0 **SCOPE:**

This covers requirements for switch boards for tube light & fan circuits.

2.0 **CODES:**

The applicable codes are as under:

IS : 1293	3-Pin, plug and socket outlets
IS : 3954	Switches for domestic and similar purposes
IS : 694	PVC unarmoured 660 V grade cable
IS : 5133	Boxes for enclosure of electrical accessories - Steel and cast iron boxes
IS : 9224	Low voltage fuses

3.0 **CONSTRUNCTION:**

3.1 **Switch Boards**

i) The switch boards shall be made of 1.6 mm thick, MS sheet with decorative bakelite cover. The switch boards shall be provided with earthing terminal, mounting holes and screws, specified number of conduit knock outs on both sides etc. The switch boards shall be suitable for surface mounting. The switchboards shall mount double pole MCBs and sockets.

ii) The switches shall be Double pole MCBs, quick make quick break suitable for operation on 230 V AC supply.

iii) The sockets shall be of 5 pin type 5/15 A, 230 V AC socket with 15 A switch.

iv) The switch boards shall be adequately sized to accommodate switches/fan regulators/sockets. All switch boards mounted items shall be fully wired by 660 V grade PVC insulated flexible Copper wire.

v) All in-coming and out-going wires shall be suitable for loop in loop out of 4 Sq. mm stranded Aluminium wire and tap off of 1.5 mm^2 copper wire.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE I

TECHNICAL INFORMATION

1.	Rated Voltage	:	230 V
2.	No of 5A Double pole MCBs	:	As required
3.	No of 5/15A , 3/5 pin socket with 16A MCBs		As required
4.	No. of fan regulators (electronic)	:	As required
5.	Rewirable fuse 5A with base	:	As required
6.	Top cover	:	Decorative Bakelite
7.	Switch board	:	1.6 mm thick MS sheet
8.	Internal wiring	:	with 660 V grade by 1.5 Sq mm Copper cable
9.	Mounting	:	Flush/projected
10.	Earthing	:	Two terminals shall be provided for earthing by 8 SWG GI Wire

Specification No. SP/E-14

SPECIFICATION FOR LED LAMP & LUMINAIRE

1.1 The scope of work includes design, development, manufacturing, testing, supply, installation and commissioning of energy efficient luminaire complete with all accessories, LED lamps with suitable current control driver circuit including mounting arrangement for recessed type & ceiling mounting arrangements for indoor lighting and pole/mast mounted for outdoor lighting. The luminaire shall be suitable for rugged service under the operational and environmental conditions encountered during service. Each type of luminaire shall be supplied with associated driver circuit compatible with LEDs in all respect as required including complete optics.

1.2 The illumination system shall be designed such that the outdoor and indoor areas remain illuminated properly to achieve safety and operational efficiency and convenience. The levels of outdoor and indoor illumination shall be as specified in relevant IS.

1.3 Wherever service conditions and requirements laid down in these specifications differ from applicable standards, the conditions specified herein shall prevail.

2 REFERRED STANDARDS

IS: 513	:	Cold-rolled low carbon steel sheets and strips
IEC 60529	:	Classification of degree of protections provided by enclosures.
EN 55015, CISPR15	:	Limits and methods of measurement of radio disturbance characteristic of electrical lighting and similar equipment.
IEC 62031	:	LED modules for general lighting-Safety requirements
EN 61547	:	Equipment for general lighting purposes – EMC immunity requirement.
EN 60929	:	Performance, AC supplied electronics ballast for tubular fluorescent lamps performance requirement.
IEC 60598-2-1	:	Fixed general purpose luminaries
IEC 60598-1	:	Luminaires - General requirement and tests
IEC 61000-3-2	:	Electro Magnetic compatibility (EMC) -Limits for Harmonic current emission - (equipment input current ≤ 16 Amps. per phase.
IEC 60068-2-38	:	Environmental Testing :Test Z- AD: composite temperature/humidity cyclic test
IEC 61347-2-13	:	Lamp control gear : particular requirements for DC or AC supplied electronic control gear for LED modules.
IS 10322	:	Specification for the luminaries
IS 4905	:	Method for random sampling
LM 79	:	LED luminaire photometry measurement.

LM 80	:	Lumen Maintenance
IEC 62384	:	DC or AC supplied electronic control gear for LED modules performance requirements
IEC/PAS 62612	:	Self-ballasted LED lamps for general lighting services- Performance requirements

2.1 **OTHER RELEVANT STANDARDS**

The following Indian Standards applicable are as under:

IS:16101: 2012	:	General Lighting - LEDs and LED modules – Terms and Definitions
IS:16102 (Part 1): 2012	:	Self- Ballasted LED Lamps for General Lighting Services Part 1 Safety Requirements
IS:16102(Part 2) : 2012	:	Self-Ballasted LED Lamps for General Lighting Services Part 2 Performance Requirements
IS:16103(Part 1): 2012	:	Led Modules for General Lighting Part 1Safety Requirements
IS:16103(Part 2): 2012	:	Led Modules for General Lighting Part 2 Performance Requirements
IS:15885(Part2/Sec13): 2012	:	Safety of Lamp Control Gear Part 2 Particular Requirements Section 13 d.c. or a.c. Supplied Electronic Controlgear for Led Modules
IS: 16104: 2012	:	d.c. or a.c. Supplied Electronic Control Gearfor LED Modules - Performance Requirements
IS: 16105: 2012	:	Method of Measurement of Lumen Maintenance of Solid State Light (LED) Sources
IS: 16106: 2012	:	Method of Electrical and Photometric Measurements of Solid-State Lighting (LED) Products
IS: 16107 Part 1:2012	:	Luminaires Performance Part 1 General Requirements
IS: 16107-1:2012	:	Luminaires Performance Part 2 Particular Requirements Section 1 LED Luminaire
IS: 16108: 2012	:	Photo biological Safety of Lamps and Lamp System

3 CONSTRUCTIONAL DETAILS/GENERAL TECHNICAL REQUIREMENTS

3.1 All lighting fixtures shall be Pressure Die Cast Aluminum housing with corrosion resistant polyester powder coating & safety as per IS 10322 and shall have mounting bracket with aiming & locking facilities. Power Factor of the fixtures shall be not less than 0.95.

3.2 Housing, if not used as a heat sink shall be made of at least 0.8 mm thick sheet Steel conforming to IS: 513 (Grade O)/CRCA polyester powder coated of at least 60 microns) and high U.V. & corrosion resistance. Heat sink used should be aluminum extrusion having high conductivity preferably to grade 6061 alloy or better having thermal conductivity of at least 170-180 W/m.K or Aluminium die cast having high conductivity preferably ADC 12 or LM 24. Efforts shall be made to keep the overall outer dimensions as minimum as possible.

All luminaires shall be provided with toughened glass of min. 0.8 mm thickness of sufficient strength and high efficiency (90%) prismatic diffuser under the LED chamber to protect the LED and luminaries and shall not show yellowness during luminaire life time.

3.3 Suitable number of LED lamps shall be used in the luminaires.

3.4 Suitable reflector / lenses may also be provided to increase the illumination uniformity and distribution.

3.5 Bidder will be solely responsible for testing and performance of the luminaries after installation and shall also ensure the specified and uniform illumination and comfort level on the work desk/ floor/area.

3.6 Design of the thermal management shall be done in such a way that it shall not affect the properties of the diffuser.

3.7 In outdoor area lighting, totally enclosed dust and vermin proof luminaries (IP 65) with LED lamps shall be used. The junction boxes shall be as per IS: 2148 with IP 65 enclosures.

3.8 All wiring for indoor illumination shall be of concealed type with PVC conduit.

3.9 Sizes of cables will be selected based on continuous current ratings with derating factors and a maximum of 3% voltage drop.

4 TECHNICAL SPECIFICATIONS

4.1 This specification covers requirement for fixtures of LED lamps in various applications.

4.2 The luminary casing/housing shall be of Stainless steel SS304 grade or aluminum having high conductivity preferably grade 5000 or similar to high conductivity heat sink material.

4.3 High power and high lumen efficient LEDs suitable for following features shall be used:

a. The efficiency of the LED lamps at 85^0C junction temperature shall be more than 85%.

b. The working life of the lamp at junction temperature of 85^0C at rated current shall be more than 50,000 working hours of accumulative operation and shall be suitable for continuous operation of 24 hours per day.

c. Adequate heat sink with proper thermal management shall be provided.

d. Colour temperature of the proposed white colour LED shall be 5700k (nominal CCT) and the color variation should be in the range of 5500- 7000K.

e. Minimum view angle of the LED shall not be less than 120^0.

f. The output of LED shall be more than 100 lumen per watt at minimal operating current and shall ensure guaranteed operation life of 50,000 burning hours with controlled junction temperature of 85^0 C.

g. Power factor of complete fitting shall be more than 0.9 at full load 230V (L-L).

h. Thermal management shall be in such a way that LED soldering point temperature shall not go beyond 75^0C.

i. Input frequency range shall be between 50 Hz ± 3%.

j. The LED luminaire shall be free of glare.

k. Color rendering index CRI >=75

4.4 LED DRIVER specification used for street/flood light shall be as follows:

a. Input voltage Range within 180V rms to 270V rms

b. Operating input voltage 230V (L-L).

c. No load power consumption ≤ 500mW

d. Output voltage 105V DC±3%

e. Output voltage ripple should be within 3%

f. Output over voltage protection 125V DC

g. Power factor 0.95

h. Full Load Efficiency ≥ 85%

i. THD <10 %

j. Hot swapping

k. Load regulation ±5%

l. Current waveform should meet EN 61000-3-2

m. Maximum Temperature rise <= 30ºC @ 45ºC Temp. with safety margin of 10ºC

n. The driver should comply to CISPR 15 for limits and methods of measurement of Radio Disturbance characteristics.

o. The equipment should comply to IEC 61547 for EMC immunity requirements.

p. The control gear should be compliant to IEC 61347-2-13, IEC 62031 and IEC 62384 as per the requirements

1.5.5 The equipment should be compliant to IEC 60598-1, IEC 62031and IEC/PAS 62612 depending on the type of luminaire. The equipment should be compliant to IEC 60598-1, IEC 62031and IEC/PAS 62612 depending on the type of luminaire.

5 TECHNICAL REQUIREMENTS

5.1 The electronic components used shall be as follows:-

a)IC (Integrated circuit) shall be of industrial grade or above.

b)Metallic film / Paper/Polyester Capacitor shall be rated for a temperature of at least 105ºC.

c)The resistors shall be preferably made of metal film of adequate rating. The actual rating versus loading shall be by a factor of 3.

d)The conformal coating used on PCBs must be cleared and transparent and shall not affect colour code of electronic components or the product code of the company.

e)The construction of PCBs and the assembly for components for PCBs should be as per relevant Indian /international standards.

f) The electronics covered for this equipment shall pass all the tests covered under relevant Indian / International standards specification.

g)The connecting wires used inside the luminaries, shall be low smoke halogen free, fire retardant e-beam cable and fuse protection shall be provided in input side.

h)For outdoor fixtures, Care shall be taken in the design that there is no water stagnation anywhere. The entire housing shall be dust and water proof having IP65 or above protection and the light shall pass driving rain test/jet water test.

i) The LED Module(s), Driver gear, etc. shall be designed in such a way so that temperature of heat sink shall not exceed 30ºC above the ambient temperature.

j) All the material used in the luminaries shall be halogen free and fire retardant confirming to UL94.

k)The LED Luminaries shall have an input connector which shall be made of fire retardant material & its construction shall be water proof

l) Each LED should have necessary lens /reflector for better distribution of light at surface.

m) The heavy components shall be properly fixed. The solder connection shall be with good finish.

n)The electronics covered for this equipment shall pass all the tests called for in the specification.

5.2 Care shall be taken in the design that there is no water stagnation anywhere. The entire housing for indoor type fittings shall be dust and water proof having at least IP20 protection as per IEC 60529.

5.3 Luminaire shall be such that the glare from individual LED is restricted and shall not cause inconvenience to the people. The Diffuser should be used in the luminaire to restrict the glare of LEDs.

5.4 In-Built protection of the luminary shall be as follows:

a) Surge Protection – 4 kV

b) Over Voltage Protection – 280 V

c) Short Circuit Protection – Constant current limit mode.

d) Over temperature protection – Auto shut off.

5.5 Optics of the luminary shall comprise of secondary lens array for optimizing roadway photometric distribution.

5.6 High /Low voltage cut-off shall be provided.

5.7 The whole luminaire shall be eco-friendly green technology based i.e. mercury free. No UV and IR radiations shall be produced.

5.8 Access of driver for maintenance shall be provided at the top/side of the luminaire fixture.

5.9 The LED Module(s), Driver gear, etc. shall be designed in such a way so that temperature rise of heat sink should not increase more than 20^0C even after 48 hrs. of continuous operation.

5.10 All fasteners shall be of stainless steel.

5.11 Any material, component or accessory not specifically stated in this specification but necessary for trouble free operation shall deemed to be included.

6 TYPE OF FIXTURES

6.1 Flood light fixtures

a)The reflector shall be made of Pressure Die Cast Aluminum housing with corrosion resistant polyester powder coating & safety as per IS 10322.

b)The fixture shall have mounting bracket with aiming & locking facilities.

c)The fixture shall have good thermal management system provided with suitable large surface area with fins to dissipate the heat to ambient air and block any accumulation of dust / water.

d)The fixture shall be suitable for LED lamps of required Wattage.

e)The cable entry gland shall be fitted to the lamp holder housing

f) A graduated disc shall be provided to enable adjustment in the spinning angle of the fixture after mounting the fixture on a bracket.

6.2 High bay/Medium bay fixtures for LED lamps.

a)The reflector shall be made of cast aluminium anodised and electrochemically treated for brightness to give a concentrated light distribution.

b)The control gear shall comprise ballasts, p.f. correction capacitors, ignitor. The control gear shall be housed adjacent to lamp holder housing. The lamp holder housing shall have radial cooling fins for efficient heat dissipation.

c)A cable gland shall be provided on the side of the canopy.

d)The fixture shall be suspended by means of a suspension hook in the top of the canopy. No chain suspension is acceptable.

e)The fixture shall be suitable for LED lamps.

6.3 **High bay/Medium bay fixtures for emergency lighting in shops**

a) The reflector shall be made of cast aluminium anodized and electrochemically treated for brightness.

b) The fixture shall be suitable for LED lamps

c) The cable entry shall be on the side of the canopy

d) The fixture shall be suspended by means of a suspension hook in the top of the canopy. No chain suspension is acceptable.

6.4 **Street light fixtures**

a)The reflector shall be made of Pressure Die Cast Aluminum housing with corrosion resistant polyester powder coating & safety as per IS 10322.

b)The cable entry shall be from the side.

c)A locking device shall be provided to prevent unauthorised opening of the fixture.

d)The fixture shall be suitable for mounting 30 Watt /50 Watt/120 Watt/ 200 Watt/ 300 Watt LED lamps.

6.5 **Mast top flood light fixtures for LED lamps**

a)The reflector shall be made of Pressure Die Cast Aluminum housing with corrosion resistant polyester powder coating & safety as per IS 10322.

b)The aluminium frame-work shall carry the LED lamp & control gear components like ballasts and starters.

c)The p.f. correction capacitor & the HRC fuses shall be housed in a separate box below the framework for easy replacement.

d)The aluminium frame-work shall be fixed to a G.I. pipe

e) The G.I. pipe shall be suitable for mounting on a mast 12 m long.

6.6 **Office or other indoor Lighting**

a)Surface mountable LED panel Light of 18 W/ 24 W/ 30 W or any other suitable wattage may be used for office, canteen, corridor, toilets, guard posts etc buildings.

b)LED batten light of suitable wattage may be used for other applications such as Car/Scooter parking, guard post etc.

6.7 **Emergency lighting**

18 W LED lamps shall be used for emergency lighting in offices/canteen/guard post etc.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE-I

TECHNICAL SPECIFICATION OF LED LIGHTING

1.	Supply Source	:	230 V (L-L)
2.	IP Protection	:	Luminary, Optical & Control Gear compartment with IP65 or more for Outdoor and IP20 or more for Indoor.
3.	LED Array Wattage (Rated Wattage)	:	30 W (±5%)/50 W (±5%)/120 W (±5%)/200 W (±5%) and as per requirement
4.	Luminaire Efficacy	:	≥100 (lumens/watt)
5.	Total System Wattage (Luminary Wattage)	:	≤ (Rated Wattage + 10% of Rated Wattage)
6.	Frequency	:	50 ± 3% Hz
7.	System Power Efficiency	:	≥ 85%
8.	Driver Efficiency	:	≥ 85%
9.	Ballast	:	Electronic type with PF>0.95
10.	Operating Temperature Range	:	- 10ºC to + 60ºC
11.	Operating Humidity	:	10% to 90% RH
12.	Colour Temperature	:	5500- 7000K.
13.	Control Gear	:	Prewired with PVC insulated Copper wiring up –to terminal block.
14.	Power Factor	:	Greater than 0.95
15.	Colour Rendering Index	:	Minimum CRI of 75
16.	Total Harmonic Distortion (THD)	:	< 10 % maximum
17.	Jn. Temperature of LED at 25^0C	:	≤ 65^0C
18.	Heat Sink temperature rise above ambient	:	≤ 30^0C
19.	Thermal Management of LED	:	Good thermal management system should be provided and LED must be mounting on Heat sink conductive aluminium with suitable large area surface by means of fins to dissipate the heat to ambient air.
20.	Internal surge Protection against lightning or any other electrical surge	:	At least Up to 5KV
21.	Control Circuit	:	Compatible with LED
22.	System Components	:	All printed circuit board must be MCPCB
23.	Electrical connector	:	Lead wire of required length for connection
24.	Life Expectancy	:	Above 50,000 burning hours 70% lumens
25.	Luminary Housing		i) Pressure Die Cast Aluminum housing with corrosion resistant polyester powder coating & safety as per IS 10322. ii) Should have mounting bracket with mounting angle adjustment facility & aiming & locking facilities. iii) Suitable large surface area with fins to dissipate the heat to ambient air and block any accumulation of dust / water.

Specification No. SP/E-15

SPECIFICATION FOR 415 V POWER RECEPTACLES

1.0 SCOPE

1.1 This specification covers the requirements for 415 V power receptacles incorporating switches, sockets and plugs.

1.2 The receptacles shall comply with the latest version of IS 8623 except where modified or extended by this specification and with the relevant parts of standards mentioned in clause 2.0.

2.0 OTHER RELEVANT STANDARDS

2.1 The other relevant standards applicable are as under:

IS :6875	Switches and push-buttons
IS :13703	LV fuses for voltages not exceeding 1000 V AC
IS :2147	Degree of protection provided by enclosures for low voltage switchgear and control gear
IS :3043	Code of practice for earthing
IS :2629	Hot dip galvanising
IS :5082	Wrought Aluminium and Aluminium alloys for electrical purposes
IS :1248	Electrical Indicating instruments
IS :5	Colours for ready-mixed paints and enamels.
IS :1554	PVC insulated cables for working voltages upto and including 1100V
IS :2551	Danger Notice Plates
IE Rules	1956

3.0 DESIGN

3.1 Electrical

The receptacle shall be designed to ensure continuous operation at rated capacity at service condition and fault withstand capacity of 9 kA.

3.2 Mechanical

The receptacle shall be designed to ensure ready interchangeability of components and easy accessibility to components for inspection & maintenance.

4.0 CONSTRUCTION

4.1 The receptacle shall comprise single front panel, metal enclosed, dust & vermin proof floor mounted and free standing type. The frame shall be fabricated from suitable mild steel sheets of thickness not less than 2.0 mm. The frames shall be covered by

cold-rolled steel sheets of thickness not less than 1.6 mm. Doors and covers shall also be of cold rolled sheets of thickness not less than 1.6 mm.

4.2 The panels shall be provided with a degree of protection IP 55.

4.3 The panel shall be supplied with base frames made of mild steel section along with all necessary mounting hardware required for welding down the base frame to the foundation/steel insert plates. The base frame height shall be such that floor finishing (50 mm thick) after erection of the board does not obstruct the movement of doors, covers withdrawable modules etc.

4.4 The panel doors shall open by at least 90 degree.

4.5 The ON/OFF switches in a receptacle shall be rotary type, heavy duty, double break, AC 23 category, suitable for AC supply.

4.6 Plug and socket shall be of shrouded die cast Aluminium. Sockets shall be provided with lid safety cover.

4.7 Robust mechanical inter-lock shall be provided such that the switch can be put ON only when the plug is fully engaged. Plug can be withdrawn only when the switch is in OFF position. Additional inter-lock should be provided such that covers can be opened only when the switch is in off position.

4.8 Wiring inside the receptacles shall be carried out with 1100 V grade PVC insulated stranded Aluminium conductor.

4.9 Terminal block in the receptacles shall be of 1100 V grade, clip on stud type, moulded in Melamine, suitable for terminating specified cable size. All the terminals shall be shrouded.

4.10 Receptacles shall include switches, sockets & plugs mentioned as under: 230V, 20A, SP, 2 Pin

415V, 20A, TP, 3 Pin

415V, 63A, TPN, 5 Pin

4.11 Galvanized steel earth bus shall be provided at the bottom welded / bolted to the bottom of a panel.

4.12 Suitable arrangement shall be made at each end of the earth bus for bolting to earthing conductors. All joint splices to earth bus shall be made through at least two bolts and taps by proper lug and bolts connection.

4.13 All non-current carrying metal work in a panel shall be effectively bonded to the earth

bus.

4.14 **Name plates and labels**

a) The receptacle shall be provided with prominent, engraved identification plates.

b) The name plates shall be of non-rusting metal with white non graved letterings on black back grounds. Inscriptions shall be subject to purchaser's approval.

c) Caution plate with the inscription "WARNING LIVE TERMINALS" shall be provided on the front face of a receptacle. .

4.15 **Painting**

The sheet steel work shall be pretreated in accordance with relevant code. Finishing paint on panels shall be shade 692 (smoke grey) in accordance with relevant code. The inner surface of the panels shall be glossy white. All hardware shall be nickel chromium plated or zinc passivated.

Specification NO.SP/E-16

SPECIFICATION FOR CABLES

1.0 SPECIFICATION FOR XLPE INSULATED HT CABLES

1.1 SCOPE

1.1.1 This specification covers requirements for 6.6 kV grade XLPE insulated Aluminium conductor HT cables.

1.1.2 The cable shall comply with the latest version of IS:7098 except where modified or extended by this specification and with the relevant parts of standards mentioned in clause 1.2.

1.2 CODES

The other relevant standards applicable are as under :

IS : 10418	Specification of drums for electric cables
IS : 8130	Conductors for insulated electric cables and flexible cords
IS : 3975	Specification for mild steel wires, strips and tapes
IS : 10462	Fictitious calculation method for determination of dimensions of protective covering of cables. Part I elastomeric and thermoplastic insulated cables
IS : 2	Rules for rounding off values
IS : 10810	Method of test for cables (Part 0 to Part 63)
IS : 1885	Electrotechnical vacabulary part 32, cables, conductors and accessories
IS : 4905	Methods for random sampling.

1.3 CONSTRUCTION

1.3.1 **Material**

(a) The conductor shall be Alumunium wires and the insulation used shall be Cross Linked Poly Ethylene compound.

(b) The outer sheath, fillers and inner sheath shall have FRLS property

(c) Armouring shall be Galvanised round steel wire. Galvanised steel wires shall comply with the requirements of relevant Code. A binder tape on the armour shall be provided.

1.3.2 **Constructional features**

The conductor shall be of stranded construction complying with class 2 of relevant

code. A protective barrier shall be provided between the conductor and the insulation and this shall be compatible with the insulating material and the operating temperature of 90^0C.

The conductor with protective barrier shall be provided with XLPE insulation applied by extrusion. Cables rated 6.6 kV shall be provided with conductor screening and insulation screening.

The average thickness of insulation shall be as per relevant IS.

Core identification shall be made by numerals (1,2,3) either by applying numbered strips or by printing on the cores.

Armouring shall be provided over the inner sheath.

The nominal diameter of round armour wire shall be as per relevant IS.

The colour of the outer sheath shall be black. The thickness of outer sheath shall be as per relevant IS.

2.0 SPECIFICATION FOR 660/1100 V GRADE PVC ARMOURED CABLE

2.1 SCOPE

2.1.1 This specification covers requirements for 660 V/1.1 kV grade PVC insulated (Heavy duty) armoured Aluminium conductor electric cables.

2.1.2 The cable shall comply with the latest version of IS:1554 (Part 1) except where modified or extended by this specification and with the relevant parts of standards mentioned in clause 2.2.

2.2 CODES

The other relevant standards applicable are as under:

IS : 10418 : Specification of drums for electric cables
IS : 8130 : Conductors for insulated electric cables and flexible cords
IS : 3975 : Specification for mild steel wires, strips and tapes
IS : 5831 : PVC insulation for armouring cables and sheath of electric cables
IS : 10462 : Fictitious calculation method for determination of dimensions of protective covering of cables. Part I elastomeric and thermoplastic insulated cables
IS : 2 : Rules for rounding off values
IS : 10810 : Method of test for cables (Part 0 to Part 63)

IS : 1885 : Electro technical vocabulary part 32, cables, conductors and accessories

IS : 4905 : Methods for random sampling.

2.3 **CONSTRUCTION**

2.3.1 **Material**

(a) The conductor shall be Alumunium wires conforming to relevant codes and the insulation used shall be Poly Vinyl Chloride (PVC) compound conforming to the requirements of Type A and Type C compound conforming to relevant codes.

(b) The outer sheath, fillers and inner sheath shall have FRLS property.

(c) Armouring shall be Galvanised round steel wire. Galvanised steel wires shall comply with the requirements of relevant Code. A binder tape on the armour shall be provided.

2.3.2 **Constructional features**

The conductor shall be of stranded construction complying with class 2 of relevant codes. A protective barrier shall be provided between the conductor and the insulation and this shall be compatible with the insulating material and the operating temperature of 70^0C.

The conductor with protective barrier shall be provided with PVC insulation applied by extrusion.

The average thickness of insulation shall be as per relevant IS.

Armouring shall be provided over the inner sheath.

The armour of the cables shall consist of galvanized round steel wires. The nominal diameter of round armour wire shall be as per relevant IS.

3.0 SPECIFICATION FOR 660 /1100 V GRADE UNARMOURED CABLE

3.1 **SCOPE**

3.1.1 This specification covers requirements for 660 V/1.1 kV grade PVC insulated unarmoured Aluminium conductor electric cables for power supply to light & fan circuits.

3.1.2 The cable shall comply with the latest version of IS: 14449 except where modified or extended by this specification and with the relevant parts of standards mentioned in clause 3.2.

3.2 **CODE**

The other relevant standards applicable are as under:

IS: 3961 Recommended current ratings for PVC insulated cables
IS: 5831 PVC insulation and sheath of electric cables
IS: 8130 Conductors for insulated electric cables and flexible cables
IS: 10810 Methods of tests for cables

3.3 **CONSTRUCTION**

3.3.1 **Material**

(a) The conductor shall be stranded Alumunium wires conforming to relevant codes and the insulation used shall be Poly Vinyl Chloride (PVC) compound conforming to the requirements of Type A compound conforming to relevant codes.

(b) The fillers and sheath shall have FRLS property

3.3.2 **Conductor**

(a) The construction of the conductors shall be for fixed wiring and the conductor shall be of stranded construction.

(b) The conductor shall be provided with PVC insulation applied by extrusion.

(c) The sheath shall be applied by extrusion. It shall be applied over the laid up cores fitting closely and shall have FRLS property. It shall be possible to remove the sheath without damage to the sheath. The colour of the sheath shall be Black.

4.0 SPECIFICATION FOR 660/1100 V GRADE CONTROL CABLE

4.1 **SCOPE**

4.1.1 This specification covers requirements for 660 V/1.1 kV grade PVC insulated armoured copper conductor control cables.

4.1.2 The cable shall comply with the latest version of IS: 1554 (Part 1) except where modified or extended by this specification and with the relevant parts of standards mentioned in clause 4.2.

4.2 **CODES**

The other relevant standards applicable are as under:

IS : 10418 : Specification of drums for electric cables
IS : 8130 : Conductors for insulated electric cables and flexible cords
IS : 3975 : Specification for mild steel wires, strips and tapes
IS : 5831 : PVC insulation for armouring cables and sheath of electric cables

IS : 10462 : Fictitious calculation method for determination of dimensions of protective covering of cables. Part I elastomeric and thermoplastic insulated cables

IS : 2 : Rules for rounding off values

IS : 10810 : Method of test for cables (Part 0 to Part 63)

IS : 1885 : Electrotechnical vacabulary part 32, cables, conductors and accessories

IS : 4905 : Methods for random sampling.

4.3 **CONSTRUCTION**

4.3.1 **Material**

(a) The conductor shall be Copper wires conforming to relevant codes and the insulation used shall be Poly Vinyl Chloride (PVC) compound conforming to the requirements of Type A and Type C compound conforming to relevant codes.

(b) The outer sheath, fillers and inner sheath shall have FRLS property

(c) Armouring shall be Galvanised round steel wire. Galvanised steel wires shall comply with the requirements of relevant Code. A binder tape on the armour shall be provided.

4.3.2 **Constructional features**

The conductor shall be of stranded construction complying with class 2 of relevant codes. A protective barrier shall be provided between the conductor and the insulation and this shall be compatible with the insulating material and the operating temperature of 70^0C.

The conductor with protective barrier shall be provided with PVC insulation applied by extrusion.

The average thickness of insulation shall be as per relevant IS.

Armouring shall be provided over the inner sheath.

The armour of the cables shall consist of galvanized round steel wires. The nominal diameter of round armour wire shall be as per relevant IS.

5.0 **FLEXIBLE TRAILING CABLES**

Flexible Trailing cables shall be 6.6 kV / 1.1 kV grades, shall have annealed tinned stranded copper conductor, EPR insulated, EPR inner sheathed, FRLS, GI wire braid armoured and CSP outer sheathed cables conforming to IS: 14494.

6.0 **SPECIAL CABLES**

Special cables shall be provided including but not limited to the following:

a) Temperature detectors from HT motors to the selector switches,

b) Temperature detectors to associated electronic enclosure, etc.

These cables shall be heavy duty Fire Retarding Low Smoke and self-extinguishing, colour coded, shielded, armoured copper conductor 650/1100 volts grade coaxial screwed compensating mineral insulated etc.

7.0 **PERFORMANCE**

The cables shall carry the rated current for the type of installation and ambient temperature in accordance with the relevant Code. The cable shall also be able to withstand the fault level in accordance with the relevant Code.

ANNEXURE I

TECHNICAL INFORMATION FOR XLPE INSULATED HT CABLES

Applicable Code	- IS 7098
Cable Code	- A2XFY/2XFY
Voltage Grade	- 6.6 KV
Conductor Size	- As required
No. of Cores	- Three

TECHNICAL INFORMATION FOR 660/1100 V GRADE PVC ARMOURED CABLE

Applicable Code	- IS 1554 (Part-1)
Cable Code	- AYFY
Voltage Grade	- 660/1100 V
Conductor Size	- As required
No. of Cores	- 2 / 3 / 3.5 / 4

TECHNICAL INFORMATION 660 /1100 V GRADE UNARMOURED CABLE

Applicable Code	- IS 694
Cable Code	- AYY
Voltage Grade	- 660/1100 V
Conductor Size	- As required
No. of Cores	- Two/Three/Four

TECHNICAL INFORMATION FOR 660/1100 V GRADE CONTROL CABLE

Applicable Code	- IS 1554 (Part-1)
Cable Code	- YWY/YFY
Voltage Grade	- 660/1100 V
Conductor Size	- 1.5 mm^2 (for internal wiring) / 2.5 mm^2 (for external connections)
No. of Cores	- As required

Specification No. SP/E-17

SPECIFICATION FOR ACCESSORIES OF CABLING

1.0 SCOPE

1.1 This covers requirements for accessories of cabling work like cable trays, cable ladders, PVC & Steel conduits and fittings, support systems.

2.0 CODE

The applicable codes are as under:

IS	732	Code of practice for electrical wiring
IS	513	Cold rolled low carbon steel and strips.
IS	1079	Hot rolled carbon steel and strips.
IS	9537	Conduits for electrical installation.
IS	2667	Fittings for rigid steel conduits for electrical wiring.
IS	8309	Compression type tubular terminal ends for Aluminium conductors of insulated cables .
IS	2629	Recommended practice for hot dip galvanizing.
IS	2633	Methods for testing uniformity of coating of Zinc coated articles.
IS	1367	Technical supply conditions for threaded steel fasteners.
IS	1663	Method for tensile testing of steel sheet & strip of thickness 0.5 mm to 3 mm.

3.0 CONSTRUCTION

3.1 **Cable trays, fittings and accessories**

i) In RCC trenches, the cable trays shall be of cantilever construction, with one or multi tiers complete with matching fittings (like elbows, bends, reducers, tees, crosses, etc.), accessories (like side coupler plates etc.) and hardware (like bolts, nuts, springs, washers, etc.) as may be required. In vertical sections the trays shall be of ladder construction with one or multi tiers complete with matching fittings (like elbows, bends, reducers, tees, crosses etc.), accessories (like side coupler plates etc.) and hardware (like bolts, nuts, springs, washers, etc.) as may be required.

ii) Cable trays, fittings and accessories shall be fabricated out of rolled Mild Steel sheets free from flaws such as laminations, rolling marks, pitting etc. conforming to relevant codes. Minimum thickness of Mild Steel sheets used for fabrication of cable trays and fittings shall be 2mm. The thickness of side coupler plates shall be minimum 3 mm. These shall be hot dip galvanized.

iii) Cable trays in the RCC trenches shall be of standard width 250 mm and of standard lengths 2.5 metre. Cable ladders shall be of widths varying between 150 to 250 mm and of standard lengths 2.5 metre.

iv) Each size and type of cable tray / ladder of 2.5 metre length and 250 mm width simply supported at the ends and uniformly loaded @ 76 kg. per metre shall not have deflection at the mid span exceeding 7 mm.

3.2 **Support System for Trays and Cables**

The support system shall be fabricated from standard structural steel members. The cable trays and support system shall be painted after installation with one coat of red lead primer, one coat of oil primer followed by two finishing coats of Aluminium paint.

3.3 **Conduits, Fittings and Accessories**

Conduits offered shall be rigid steel & PVC complete with fittings and accessories (like bends, check nuts, sockets etc.). The size of the conduit shall be selected on the basis of maximum 40% fill factor and in accordance with relevant code .

i) **Rigid Steel Conduits**

Rigid steel conduits conforming to relevant codes shall be threaded on both sides and suitable for mechanical stresses. Conduits shall be smooth at inside and outside. Conduits shall be plugged by PVC caps at the ends for storage and transportation. Outer surface of conduit shall be hot dip galvanized and shall have high protection against corrosive and polluting substances. Inner surface of a conduit shall be protected against corrosion and polluting substances by hot dip galvanising. Fittings and accessories shall also be hot dip galvanised.

ii) **Junction / Joint Boxes & power recepctecles circuits**

Junction Box/cable joint boxes with IP:55 degree of protection, shall comprise a case and a detachable cover or hinged doors constructed out of cold rolled steel sheet of minimum thickness 2 mm. Top of the boxes shall be arranged to slope towards rear of the box. Gland plate shall be 3 mm thick sheet steel with neoprene/synthetic rubber gaskets. All junction boxes shall be suitable for mounting on walls, columns & structures. The boxes shall include brackets, bolts, nuts, screws, glands, lugs, earthing stud required for erection. Terminal blocks in side a junction box shall be of 660 volts grade. It shall be complete with insulating barriers, clip-on-type terminal numbering for wiring diagrams & arranged to facilitate easy termination. Twenty percent spare terminals shall be provided in each terminal block.

iii) **Cabling Accessories:**

a) **Cable Glands :**

Cable glands shall be single compression type suitable for the voltage grade of cables and as per relevant codes. The glands shall be of robust construction capable of clamping cable and cable armour firmly. All washers and hardware shall be made of brass with nickel chrome plating. Rubber components shall be of neoprene.

b) **Cable Lugs :**

Cable lugs shall be tinned copper solder or crimping type suitable for the voltage grade of cables suitable for Aluminium conductor cables and copper conductor control cables.

c) **Galvanising**

Galvanising of steel components and accessories shall conform to relevant codes. The amount of zinc deposit over threaded portion of bolts, nuts, screws and washers shall be as per relevant codes.

d) **Painting**

Cable supports and cable trays mounting structures and all other non galvanized parts shall be brushed before giving one coat of red lead primer, one coat of oil primer followed by two finishing coats of Aluminium paint.

Specification No. SP/E-18

SPECIFICATION FOR LEAD ACID BATTERY

1.0 **SCOPE** :

This specification covers requirement for procuring, commissioning and performance testing of lead acid battery for control, indication, alarm and protection circuit for 6.6 kV switchboards located in Substation in the Workshop.

2.0 **STANDARDS TO BE FOLLOWED:**

2.1 The Battery shall be designed to comply with all applicable provision of current Indian standards.

2.2 The battery shall comply with all the latest applicable statutory rules, regulations, acts and safety codes which may be in force during the period of execution and which are related with design, construction and operation of equipment in the locality where the equipment is to be installed.

The application acts and statutory regulations are as under :

a) Fire Insurance Regulation

b) Tariff Advisory committee Regulations

c) The Indian Electricity Act.

d) Indian Electricity rules

e) National Fire Code

f) DGMS Regulations

3.0 **BATTERY**

3.1 One bank of 110 volts battery unit for Substation has been envisaged. One bank of 110 V Battery unit along with associated charging unit comprising of transformer, rectifier etc. shall be provided for control, indication, alarm and protection circuit for 6.6 kV switchboard located in the Substation.

3.2 The D.C. voltage shall be obtained from 415V, three phase, 4 wire, 50 Hz, AC supply after necessary rectification by the battery charger.

3.3 The battery charger shall have dual provision of :

i) Boost charging the battery

ii) Float charging the battery and supply the full DC load.

3.4 The battery shall be floating on the DC bus during the normal operation. The battery shall supply the DC power during emergency operation i.e. during failure of AC input power to the battery charger for at least one hour. The battery shall be of suitable rating to meet the requirement. The scope of design, supply and installation also includes a suitable DC Distribution Board along with necessary wiring, metering and protection arrangements.

3.5 The unit shall also conform to the following specifications:

1 Set	:	110 Volts lead acid stationary battery, each consisting of tubular sealed cells (each of 2 volts) in hard rubber boxes complete with tubular positive plate, pasted negative plates, lids, vent plug, acid level indicating floats, separators, bolts and nuts, cell insulators, inter cell connectors etc.
Capacity	:	150 AH when discharged in 10 hrs. to 1.85 volts per cell at 27^0C.
Trickle charge rate:		Minimum 75 mA to maximum 300 mA to keep the cell at 2.25 to 2.30 volts.
1 set	:	Connectors for the above battery.
1 lot	:	Sufficient quantity of sulphuric acid for the first filling including spare acid 1.190 Sp. gr. at 27^0C suitably packed.
1 set	:	Suitable battery stands made of good quality teak wood finished with three coats of black anti-sulphuric paint and complete with cell number plates and fixing nails.

3.6 The battery shall be maintenance free and complete with all accessories like hydrometer, cell testing voltmeter, thermometer (glass type) with gravity correction chart, spanner, glass funnel, Rubber siphon, Rubber Apron and gloves etc.

Note No. #1 **Attachment:Tender Document Vol-II 29122021.pdf**
CMPDI

ANNEXURE I

TECHNICAL PARAMETERS

a) Service	:	Indoor
b) No. required	:	1 Set having 55 nos. x 2 Volts for Sub-station
c) Number of phases :	:	Three phase
d) Frequency	:	50 Hz
e) Input supply	:	415V
f) Voltage variation in input supply	:	± 10%
g) Frequency variation	:	± 3%
h) Output nominal voltage	:	110V
i) Voltage regulation at output	:	±2%
j) Ripple without battery	:	± 4% RMS
k) Time required completing charging a discharged battery	:	8/10 Hours
l) Ambient temperature	:	50^0C
m) Relative humidity	:	100%
n) Cooling	:	Natural

Specification No. SP/E-19

SPECIFICATION FOR STEEL TUBULAR POLES FOR LIGHTING

1.0 **SCOPE**

1.1 This specification covers requirements for swaged type steel tubular poles for outdoor lighting.

1.2 The poles shall comply with the requirements of IS: 2713 except where modified or extended by this specification and with the relevant part or standards mentioned in clause 2.0.

2.0 **OTHER RELEVANT STANDARDS**

The other relevant standards applicable are as under:

IS:209 - Specification of Zinc

IS :2633 - Method of testing weight, thickness, and uniformity of coating on hard dipped, galvanising articles.

IS : 728 - Method on determination of weight, thickness and uniformity of coating on galvanised articles other than wires & sheets.

IS : 1573 - Specification for zinc plating

IS :5 - Colour for ready mixed paints and enamels.

3.0 **CONSTRUCTION**

3.1 The tubular poles shall consist of 3 or 4 sections of dimensions conforming to the relevant standard.

3.2 The thickness of the steel sheets shall conform to the relevant standards.

3.3 The section shall be hard dip galvanised in accordance with the relevant standards.

3.4 The section shall be applied with 2 coats of primer and one coat of final paint in accordance with the relevant standards.

3.5 In case of swan neck pole, top section shall be curved in accordance with the requirement. The lamp fixture shall freely fit in with the coupler. For other type of poles, the lamp fixture mounted on a bracket clamped on the pole at a height of not less than 7 m from the road surface and projecting at least 1.3 m into the road from the centre of the pole.

3.6 The lower most section shall be provided with a base plate having holes for firm fixation in the foundation. The height of the pole shall be 9 m.

The bidder/supplier shall submit the dimensioned drawings for different sections for approval by Purchaser before fabrication.

Specification No. SP/E-20

SPECIFICATION FOR MASTS FOR LIGHTING

1.0 **SCOPE**

This specification covers requirements for high masts for outdoor lighting with street light/flood light fixtures.

2.0 **CONSTRUCTION**

The mast shall comprise the following components:

2.1 The mast shall comprise sections of suitable length. Each section shall be made of steel complying with I.S. 226 of appropriate grade, polygonal section, telescopic jointed and fillet welded with the exception of site joints. The welding shall be in accordance with B.S. 5135. Each section shall include one telescopic and welded joint which provides diaphragm stiffness to maintain the structural strength during delivery and in service. The whole mast shall be continuously tapered. A door shall be provided at the base of the mast to permit clear access to winch assembly and power supply sockets. The door shall be weather resistant with a heavy duty lock. The base flange of welded construction shall provide full strength to the mast assembly. The mast shall be delivered to site in sections and joined with sleeve joints. No welded or bolted joints shall be allowed.

2.2 The foundation shall be provided by anchor plates with high tensile bolts.

2.3 The entire mast section shall be hot dip galvanized in accordance with I.S. 2629. Each section shall be given two coats of primer and one coat of final paint in accordance with shade 631 of I.S. 5.

2.4 For installation and maintenance of the top luminaries assembly a winch shall be provided at the base of the mast. The winch shall be completely self-sustaining without the need for brakes, springs, or clutches which require adjustment. The winch shall have one or more drums corresponding to number of steel ropes required for suspension of the top luminaries assembly. The drums shall be suitably grooved ensuring tidy rope lay and smooth return of the rope for each lay. At least 4 turns of rope shall remain on a drum when the top luminary assembly is fully lowered.

The winch shall be manually operable and also by power tools incorporating two speed reversible 230 volt single phase 50 Hz AC/DC universal motor coupled by a gear assembly of adequate ratio. The driving spindle shall be positively locked when not in use by a suitable automatic means. The winch shall be self-lubricated by an oil

bath. The capacity, the operating speed and the recommended lubricant shall be clearly marked on each winch with an indelible label. Each winch shall be supplied in waterproof enclosure.

2.5 Separate pulleys shall be mounted on a chassis integral with a sleeve which slips over the top of the mast axially and in azimuth. The pulleys made of non-corrodible material and run on self-lubricating bearings with stainless steel spindles shall take on steel wire ropes and electric cables on suitable grooves. Suitable guides and stops shall be provided for the steel wire ropes for correct guiding of the luminary assembly. The pulley assembly along with chassis shall be hot dip galvanized in accordance with relevant code aforesaid. The assembly shall be supplied in a weatherproof enclosure.

2.6 Suitable steel wire ropes of the stainless type shall be provided.

2.7 Stainless steel stud of diameter not less than 12 mm shall be attached to the mast structure at a convenient point within the base compartment to provide an earthing point.

2.8 The luminary assembly shall consist of radial steel conduits for cables supplying power to fixtures. The assembly shall have fixing arms and plates for mounting junction boxes. Junction boxes in two separable halves shall provide supply of power to different fixtures. The assembly shall be provided with buffer arrangements to prevent damage to the mast finish.

2.9 Multicore flexible power cables shall be terminated on metal cased plug and sockets in the base compartment of the mast. At the mast head cables shall be connected to the weather proof junction box aforesaid with nylon glands.

2.10 Extension leads of multicore cables shall be provided with plug and socket to enable the fixtures to be tested when in the lower most position using base compartment socket supply.

2.11 Mast shall be delivered in multiple sections of effective length of 10 m (max.) The masts upto 20m height shall be delivered in two sections and 30 m masts shall be supplied in three sections.

2.12 The luminaire assembly shall comprise of the following :

a) High mast light fixtures with aluminium body, integral control gear, lamp holder and variable optic reflector. The fixture shall be of IP 54 construction and suitable for mounting Metal Halide lamps.

b) Flood light fixture with aluminium body, integral control gear, lamp holder and cradle with fixture adjuster. The unit shall be of IP 54 construction and suitable for mounting Metal halide lamps.

Specification No. SP/E-21

SPECIFICATION FOR MISCELLANEOUS ITEMS

The following general requirements shall be applicable to all the miscellaneous items furnished under these specifications.

1.0 Pressurisation

The Sub-station buildings (2 nos.) in proposed Workshops shall be pressurised from inside to prevent dust entry. MDB and Switchgear rooms of substation shall be pressurised with conditioning of inlet air (no. of air changes not less than 15) and humidity shall be controlled to ensure proper working of equipment and operating personnel inside the room. Requisite number of exhaust fans and ceiling fans shall be provided in rooms to ensure proper working conditions for equipment and personnel in the rooms in case of failure of pressurisation and air conditioning equipment.

2.0 Metal Enclosed Non-segregated Phase Bus Duct

2.1 Metal enclosed non-segregated phase bus duct assemblies shall be supplied for incoming connection from the transformers to MPDB.

The enclosure shall be made of aluminium alloy. The section of the bus duct shall be rectangular. The enclosure sheet thickness shall not be less than 3 mm.

The entire duct shall be designed for dust, vermin and weatherproof construction. A suitable aluminium sheet hood shall be provided to cover all outdoor bus duct enclosure joints to facilitate additional protection against rainwater ingress. Bus duct enclosure in the indoor portion shall have a degree of protection not less than IP-52 and that in the outdoor portion shall have a protection not less than IP-55 accordance with IS 2147.

Flexible expansion joints for the enclosure shall be provided wherever necessary.

Enclosures shall be provided with flanged ends with drilling dimensions to suit the flanges at the switchgear and transformer terminals. The flanges shall be provided with gaskets, nuts, bolts, etc.

Suitable inspection covers shall be provided for periodic inspection of insulators. Handles shall be provided on inspection covers to facilitate lifting.

Synthetic/neoprene gasket shall be provided so as to satisfy the operating conditions imposed by temperature, weathering, durability etc. Flange gasket shall be provided at the equipment terminal connections.

Bus duct enclosure shall be connected to station earth grid at both ends.

Necessary earthing arrangement as applicable shall be provided with clamps to receive station earthing bus. All accessories and hardware required for the earthing arrangement shall be provided by the bidder. Suitably rated GI earth strip shall run all along the bus duct and shall be bolted to each section of bus duct enclosure at least at two places.

2.2 **Busbar**

The material of the conductor shall be aluminium. The busbar shall be rated in accordance with the service conditions and the rated continuous and short time current ratings as specified.

Busbar shall be adequately supported on insulator to withstand dynamic stresses due to short circuit current specified, without permanent deformation. Bidder shall furnish calculations establishing adequacy of busbar for specified current rating during detailed design.

All busbar joints and bus tap joints shall be either silver faced or thoroughly cleaned at the joints. Plain and spring washers shall be provided to ensure good contacts at the joints and clamps.

Flexible connections for terminations at transformer bushing and switchgear shall also be included in the bidder's scope of supply.

Expansion joints made of aluminium strips shall be provided, wherever felt necessary.

All the joints shall be tested for temperature rise to establish the adequacy of design. The maximum temperature rise at the joints when carrying rated current shall not exceed 55^{o}C with silver plated joints and 40^{o}C with all other type of joints, over an outside ambient 50^{o}C.

The material of the busbar clamps shall be aluminium alloy. Suitable aluminium spacers shall be provided, wherever necessary.

All bolts, nuts and lock washers used in the bus assembly shall be of high tensile steel, plated for corrosion resistance.

Busbar support insulators shall be made of non-hygroscopic, non-combustible, track resistant and high strength type porcelain or polyester fiber glass mounted material and shall be suitable to withstand the dynamic stress due to specified short circuit currents.

Facility shall be provided for supporting the indoor bus duct from ceiling, floors or beams. The outdoor bus ducts shall be supported from the floor by T-shaped steel structures.

2.3 **Bus Duct space Heaters**

Space heaters shall be provided in the bus ducts, wherever considered necessary for preventing harmful moisture condensation.

The space heaters shall be suitable for continuous operation on 240V AC, 50 Hz, single phase supply, and shall be automatically controlled by thermostats.

3.0 **FIRE FIGHTING SYSTEM:**

The switch-gear rooms in the sub-station and all strategic points shall be provided with firefighting equipment of the following class:

Class B (Foam type) : IS : 933
Class A (Soda Acid) : IS : 934
Class BC (Dry Powder) : IS : 933

The equipment shall be portable, wall and trolley mounted with refilling and recharging facility from time to time.

4.0 **MISCELLANEOUS:**

4.1 **Painting:**

All electrical equipment should be painted as per relevant code in accordance with respective manufacturer's standard practice.

4.2 **Standards:**

The electrical equipment included in this tender shall comply with relevant IS specifications and IS code of practice. In the absence of IS, BS, any other standard of repute shall be followed.

4.3 **Tests:**

The offer shall include all test certificates as required by ISS and Indian Electricity Rules.

4.4 **Completeness of Offer:**

The details given in the write-up/specifications (including drawings) in respect of electrical system/equipment are indicative, not exhaustive. The electrical system/equipment shall co-ordinate with mechanical system/equipment of the plant.

If any electrical component or equipment with associated wiring is considered necessary and desirable as per Indian Electricity Rules amended up to date read with various circulars issued by the Director General of Mines Safety, Dhanbad, or if the same is considered necessary and desirable to comply with the up-to-date engineering

practices or with various Indian codes of Practices issued by the I.S.I. New Delhi from time to time the same shall be deemed to be a requirement of this tender specifications and same should be consequently included in the offer not-with-standing the fact that such requirements are not clearly or specifically indicated in these specifications along with the associated drawings.

All the equipment attachments, required for the execution of works as per scope of work as envisaged in the document shall be designed, fabricated erected and maintained for efficient and satisfactory performance, and the bidder shall be solely responsible for the same and the same shall be deemed to be within the scope of the offer/work whether specifically mentioned or not in these documents and the bidder shall not be eligible for any extra claim on this issue.

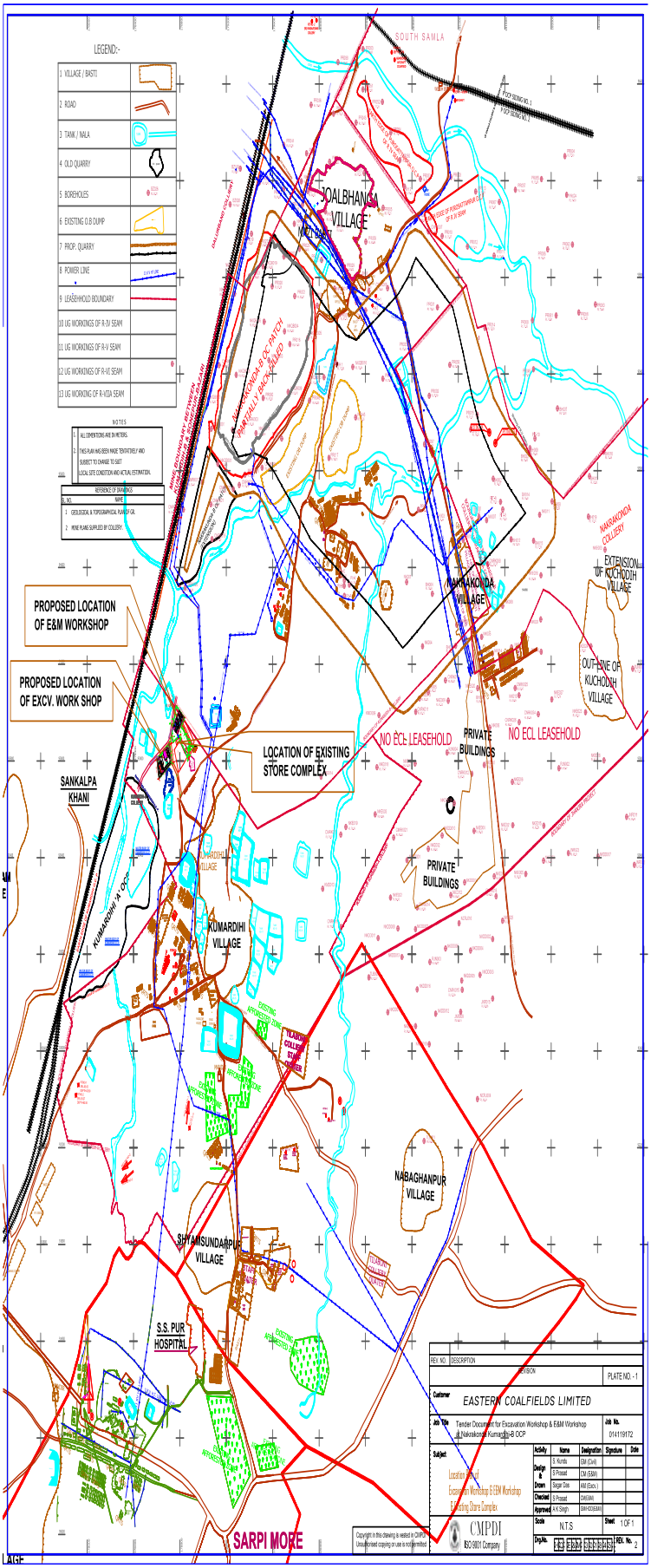
CHAPTER – 10

DRAWINGS

PLATE NO.	DRAWING NO.	DESCRIPTION OF DRAWINGS
1	HQ/E&M/301845	Location Plan of Excavation Workshop & E&M Workshop & Existing Store Complex
2	HQ/E&M/301846	General layout of Excavation Workshop & E&M Workshop
3	HQ/E&M/301847	HEMM Repair Shop (Plan, Elevation & Section)
4	HQ/E&M/301848	E&M Repair Shop (Plan, Elevation & Section)
5	HQ/E&M/301849	LMV Repair Shop (Plan, Elevation & Section)
6	HQ/E&M/301850	Existing Store Complex (Plan, Elevation & Section)
7	HQ/E&M/301852	Service Buildings (Plan, Elevation & Section)
8	HQ/E&M/301853	Dumper Washing Station (Plan, Elevation & Section)
9	HQ/E&M/301854	Dozer Washing Station (Plan, Elevation & Section)
10	HQ/E&M/301855	General arrangement of Dumper Washing System
11	HQ/E&M/301856	General arrangement of Compressed air & Pressurised Lubrication System
12	HQ/E&M/301857	Dimensional details of Rear Dumper
13	HQ/E&M/301858	E&M Store Shed (Plan, Elevation & Section)
14	HQ/E&M/301844	Single Line Diagram of Power Supply arrangement of Workshop Sub-Station.

Note No. #1

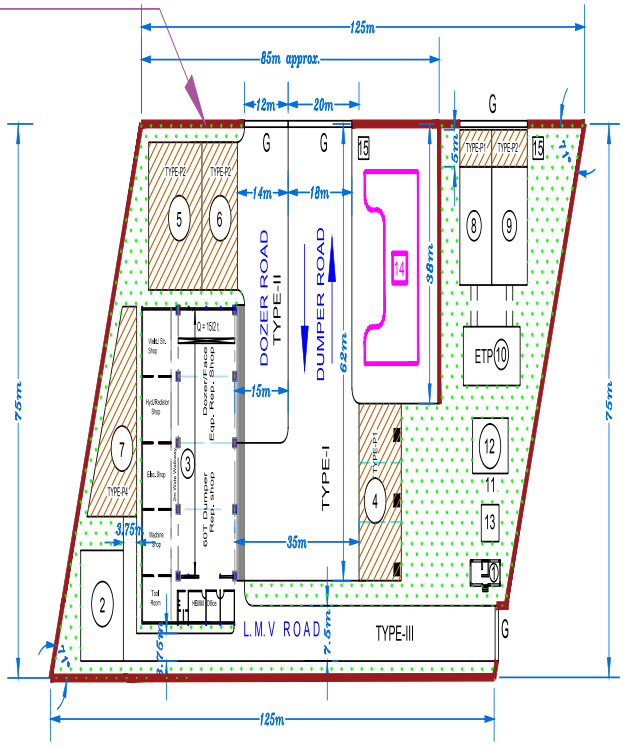
Attachment:Tender Document Vol-II 29122021.pdf



Note No. #1

Attachment:Tender Document Vol-II 29122021.pdf

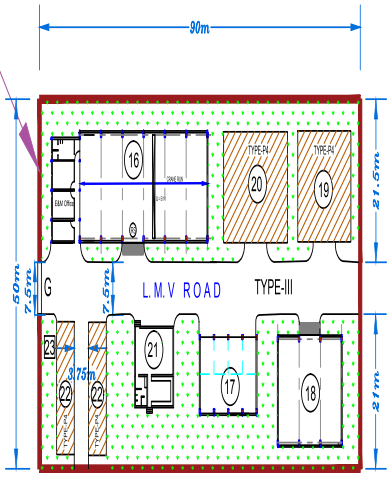
EXCAVATION WORKSHOP



LEGEND

Sl. No.	DESCRIPTION	AREA (m x m)
I.	EXCAVATION WORKSHOP	
1	Time & Security Office	3.5 x 8.5
2	Sub-Station	12 x 15
3	HEMM Repair Shop with Office	26 x 42
4	Dumper Parking Pavement	12 x 24
5	Erection Yard	15 x 20
6	Dozer Parking Pavement	10 x 20
7	Scrap Yard	225 m2
8	Dumper Washing Station	9 x 16
9	Dozer Washing Station	10 x 12
10	Effluent Treatment Plant	As reqd.
11	Underground Sump	200 Cum.
12	Overhead Tank (OHT)	25 Cum.
13	Pump House	as reqd.
14	Space for Diesel Filling Station	25 x 35
15	Security Post	2(3 x 3)
II	E&M WORKSHOP	
16	E&M Repair Shop	14 x 44
17	LMV Repair Shop	16 x 10
18	E&M Store Shed	14 x 18
19	Scrap yard	15 x 15
20	Hard Stand	15 x 18
21	Canteen	11 x 11
22	LMV/Scooter Parking Space	2(5 x 18)
23	Security Post	3 x 3

E&M WORKSHOP



III.	*STORE COMPLEX-Civil construction of sheds - Not in Scope of NIT*	
24	Existing Store Complex	At Plate. 6
#Note: However, Ventilation, Fire-fighting system, EoT Crane & Electrical Part of Existing store complex are in the scope of this NIT		
14	Diesel Filling Station - Not in scope of NIT	-

N

S.NO.	SYMBOL	ABBREVIATIONS
1.		RAMP
2.		PAVEMENT
3.	G	GATE
4.		GREEN LAND

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE MENTIONED.
2. SIZES, CAPACITIES SHALL BE GUIDED BY FUNCTIONAL / STATUTORY REQUIREMENTS. MINIMUM REQUIREMENT HAS BEEN INDICATED IN THIS DRAWING
3. WHEREVER FUNCTIONALLY REQUIRED UNDERGROUND SUMPS OF SUITABLE CAPACITY SHALL BE PROVIDED

REV. NO. | DESCRIPTION | REVISION | PLATE NO. - 2

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda Kumardhi-B OCP | Job No. 014119172

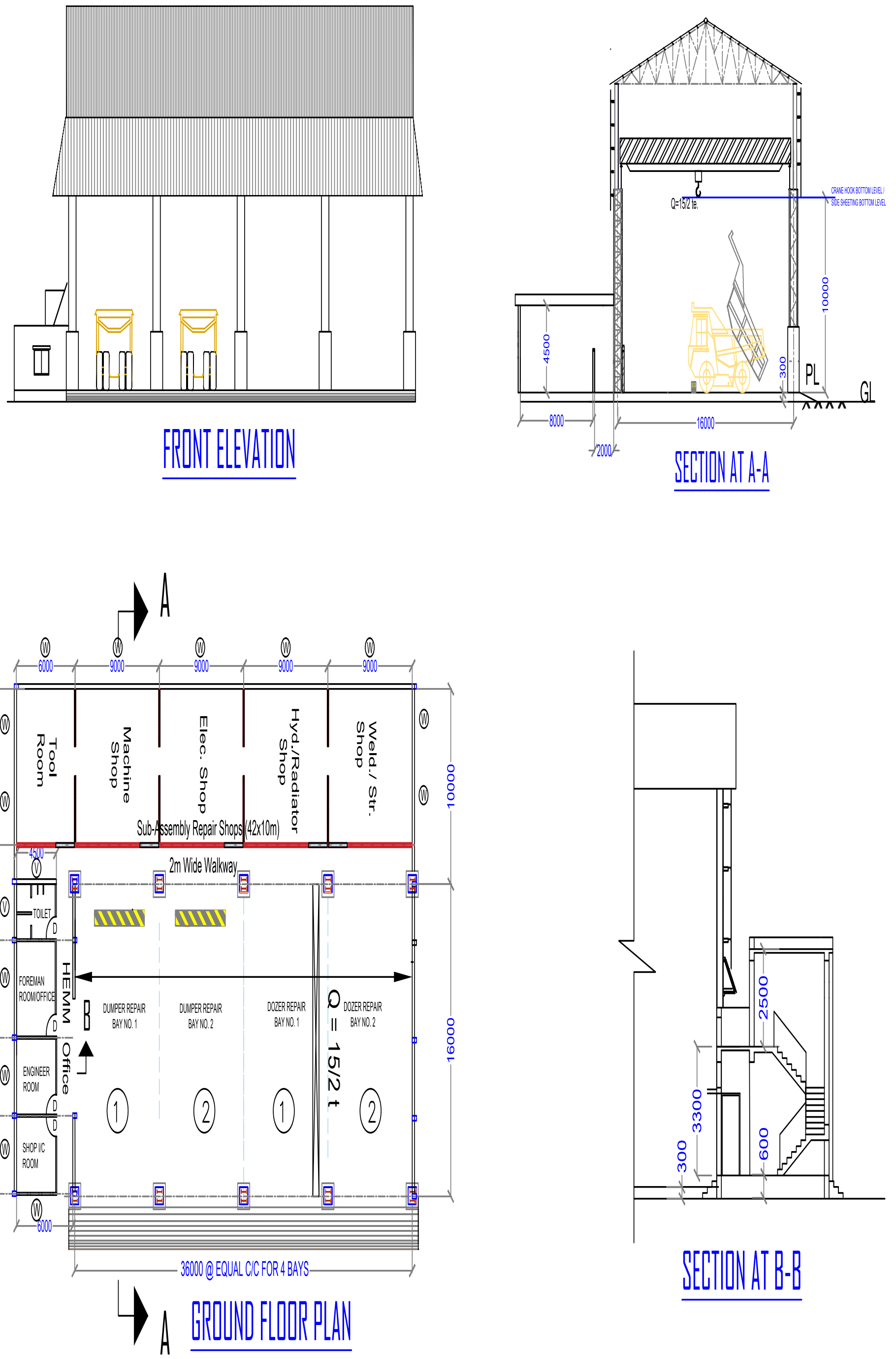
Subject: General Layout of Excavation Workshop & E&M Workshop

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S.Prasad	DM (E&M)		
	Sagar Das	AM (Exca.)		
Checked	S.Prasad	DM(E&M)		
Approved	A.K.Singh	SM-HOD(E&M)		

Scale: N.T.S | Sheet: 1 OF 1

CMPDI ISO 9001 Company | Drg.No. HQ-E&M-301-18-B | REV. No. 3

Note No. #1 Attachment:Tender Document Vol-II 29122021.pdf



NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. SHOP FLOOR LEVEL IS MINIMUM 300 MM ABOVE FINISHED GROUND LEVEL.
3. RAMPS FOR VEHICULAR MOVEMENT SHALL BE PROVIDED WITH A MINIMUM SLOPE OF 1V : 8H.
4. EXTERNAL BRICK WALLS WITH RCC BEAM AND COLUMN SHALL BE PROVIDED UPTO MINIMUM 3M. HEIGHT AS INDICATED IN DRAWING.
5. LOUVERS AND SIDE SHEETING SHALL BE PROVIDED ABOVE BRICK WALL AS PER REQUIREMENT ACCORDING TO HEIGHT OF BUILDING. TRANSLUCENT SHEETING SHALL BE ADEQUATELY PROVIDED.
6. DOORS AND WINDOWS ARE TO BE PROVIDED AS PER REQUIREMENT.
7. THIS IS AN INDICATIVE DRAWING TO CLARIFY FUNCTIONAL REQUIREMENTS.
8. EXPANSION JOINT IS TO BE PROVIDED AS NECESSARY.
9. THE SIZES/DIMENSIONS INDICATED IN THIS DRAWING DEPICT THE MINIMUM REQUIREMENTS. ACTUAL SIZES/DIMENSIONS WILL DEPEND ON SITE LAYOUT, FUNCTIONAL AND OTHER REQUIREMENTS SUBJECT TO DUE APPROVAL OF THE CUSTOMER.

REV. NO.	DESCRIPTION

PLATE NO. - 3

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP

Job No.: 014119172

Subject: HEMM REPAIR SHOP (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Excv.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM/HOD(E&M)		

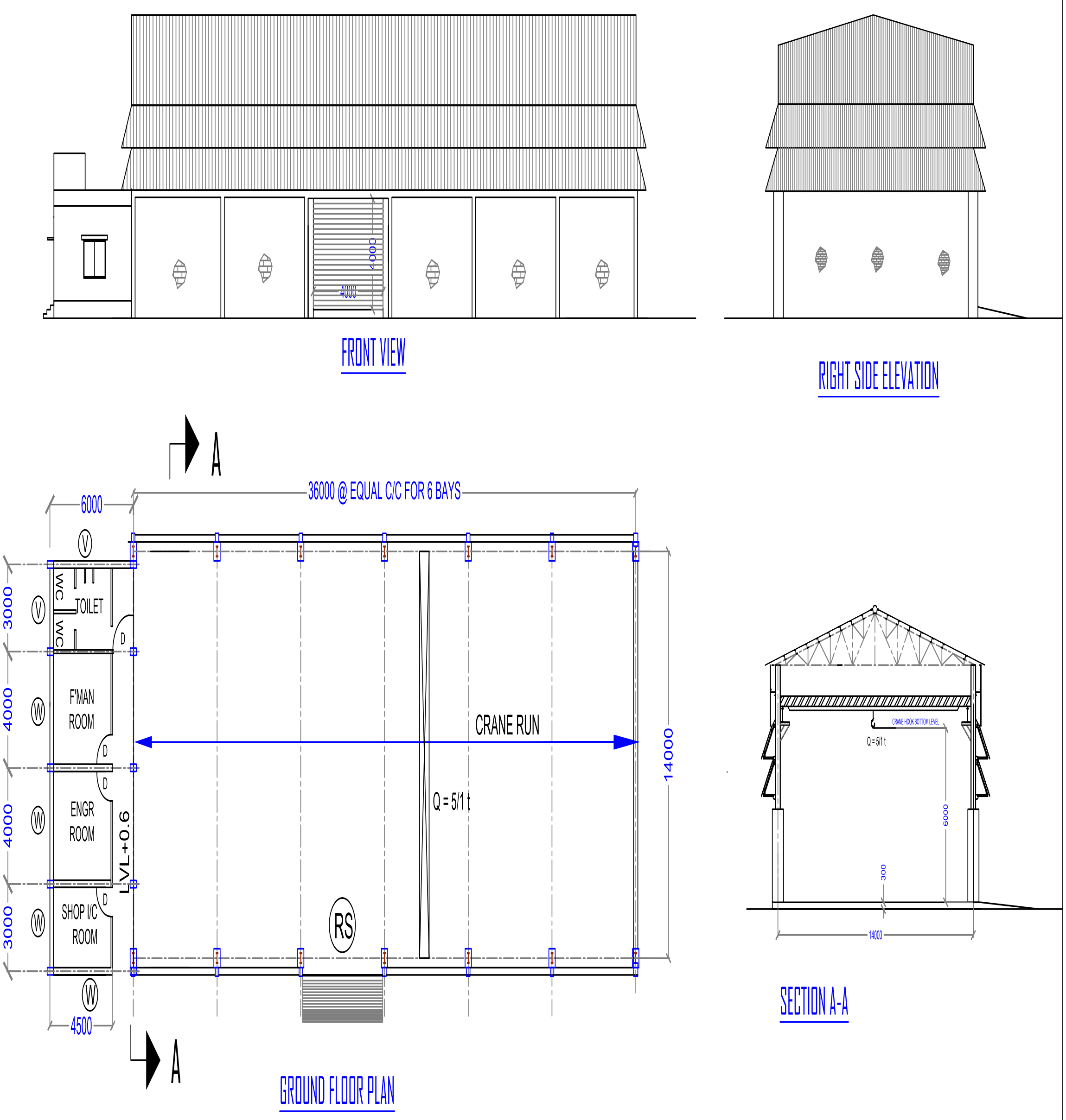
Scale: N.T.S | Sheet: 1 OF 1

Drg.No. HQ E&M 301847 | REV. No. 1

CMPDI ISO 9001 Company

REFERENCE DRAWINGS

DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store



NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. SHOP FLOOR LEVEL IS MINIMUM 300 MM ABOVE FINISHED GROUND LEVEL.
3. RAMPS FOR VEHICULAR MOVEMENT SHALL BE PROVIDED WITH A MINIMUM SLOPE OF 1V : 8H.
4. EXTERNAL BRICK WALLS WITH RCC BEAM AND COLUMN SHALL BE PROVIDED UPTO MINIMUM 3M. HEIGHT AS INDICATED IN DRAWING.
5. LOUVERS AND SIDE SHEETING SHALL BE PROVIDED ABOVE BRICK WALL AS PER REQUIREMENT ACCORDING TO HEIGHT OF BUILDING. TRANSLUCENT SHEETING SHALL BE ADEQUATELY PROVIDED.
6. DOORS AND WINDOWS ARE TO BE PROVIDED AS PER REQUIREMENT.
7. THIS IS AN INDICATIVE DRAWING TO CLARIFY FUNCTIONAL REQUIREMENTS.
8. EXPANSION JOINT IS TO BE PROVIDED AS NECESSARY.
9. THE SIZES/DIMENSIONS INDICATED IN THIS DRAWING DEPICT THE MINIMUM REQUIREMENTS. ACTUAL SIZES/DIMENSIONS WILL DEPEND ON SITE LAYOUT, FUNCTIONAL AND OTHER REQUIREMENTS SUBJECT TO DUE APPROVAL OF THE CUSTOMER.

REV. NO.	DESCRIPTION

PLATE NO. - 4

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP

Job No. 014119172

Subject: E&M REPAIR SHOP (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Excv.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM/HOD(E&M)		

CMPDI ISO 9001 Company

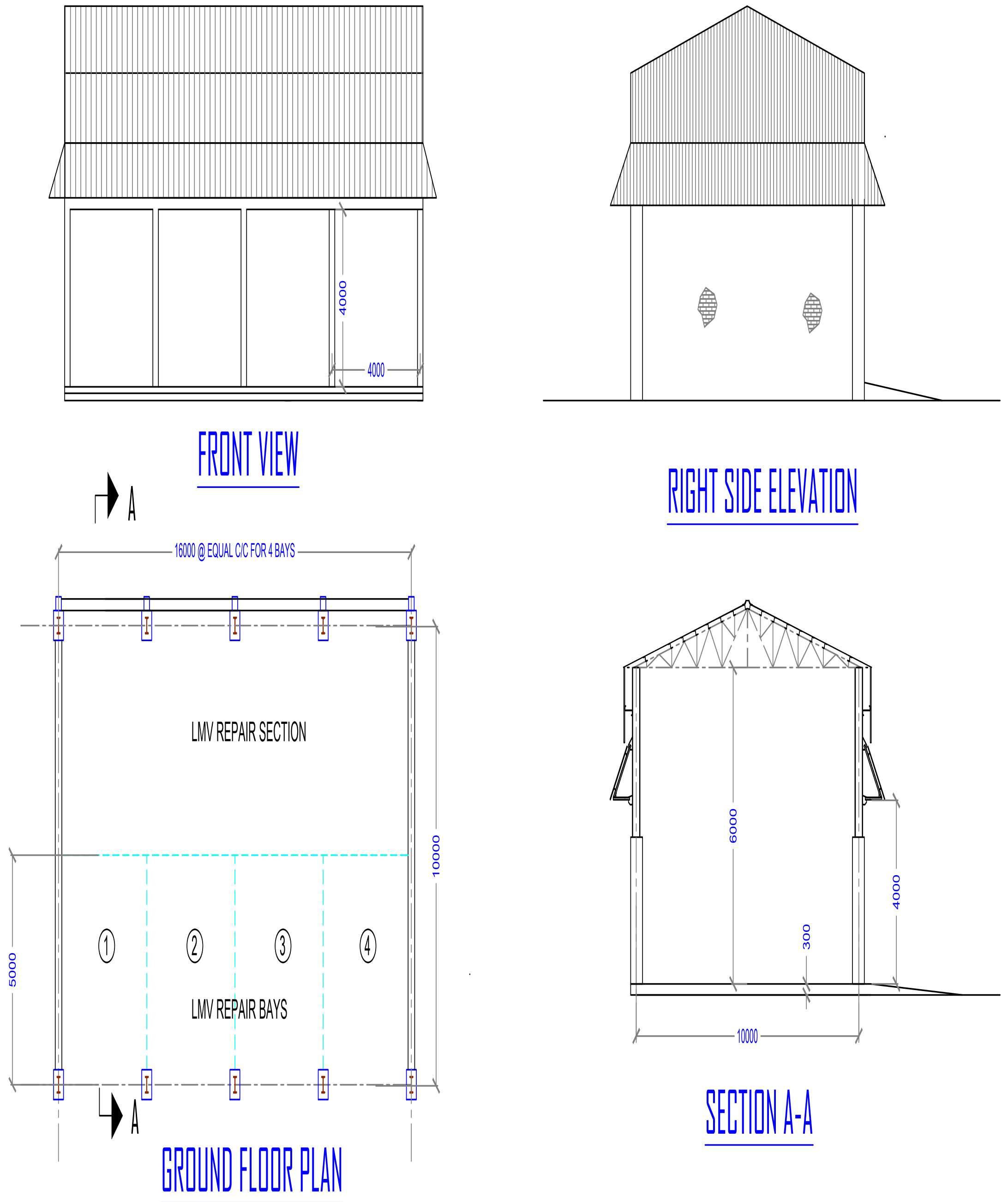
Scale: N.T.S | Sheet: 1 OF 1

Drg.No. HQ E&M 301848 | REV. No. 1

REFERENCE DRAWINGS

DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

Note No. #1 Attachment:Tender Document Vol-II 29122021.pdf



NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. SHOP FLOOR LEVEL IS MINIMUM 300 MM ABOVE FINISHED GROUND LEVEL.
3. RAMPS FOR VEHICULAR MOVEMENT SHALL BE PROVIDED WITH A MINIMUM SLOPE OF 1V : 8H.
4. EXTERNAL BRICK WALLS WITH RCC BEAM AND COLUMN SHALL BE PROVIDED UPTO MINIMUM 3M. HEIGHT AS INDICATED IN DRAWING.
5. LOUVERS AND SIDE SHEETING SHALL BE PROVIDED ABOVE BRICK WALL AS PER REQUIREMENT ACCORDING TO HEIGHT OF BUILDING. TRANSLUCENT SHEETING SHALL BE ADEQUATELY PROVIDED.
6. DOORS AND WINDOWS ARE TO BE PROVIDED AS PER REQUIREMENT.
7. THIS IS AN INDICATIVE DRAWING TO CLARIFY FUNCTIONAL REQUIREMENTS.
8. EXPANSION JOINT IS TO BE PROVIDED AS NECESSARY.
9. THE SIZES/DIMENSIONS INDICATED IN THIS DRAWING DEPICT THE MINIMUM REQUIREMENTS. ACTUAL SIZES/DIMENSIONS WILL DEPEND ON SITE LAYOUT, FUNCTIONAL AND OTHER REQUIREMENTS SUBJECT TO DUE APPROVAL OF THE CUSTOMER.

REFERENCE DRAWINGS	
DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

REV. NO.	DESCRIPTION

PLATE NO. - 5

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP

Job No. 014119172

Subject: LMV REPAIR SHOP (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Excv.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM/HOD(E&M)		

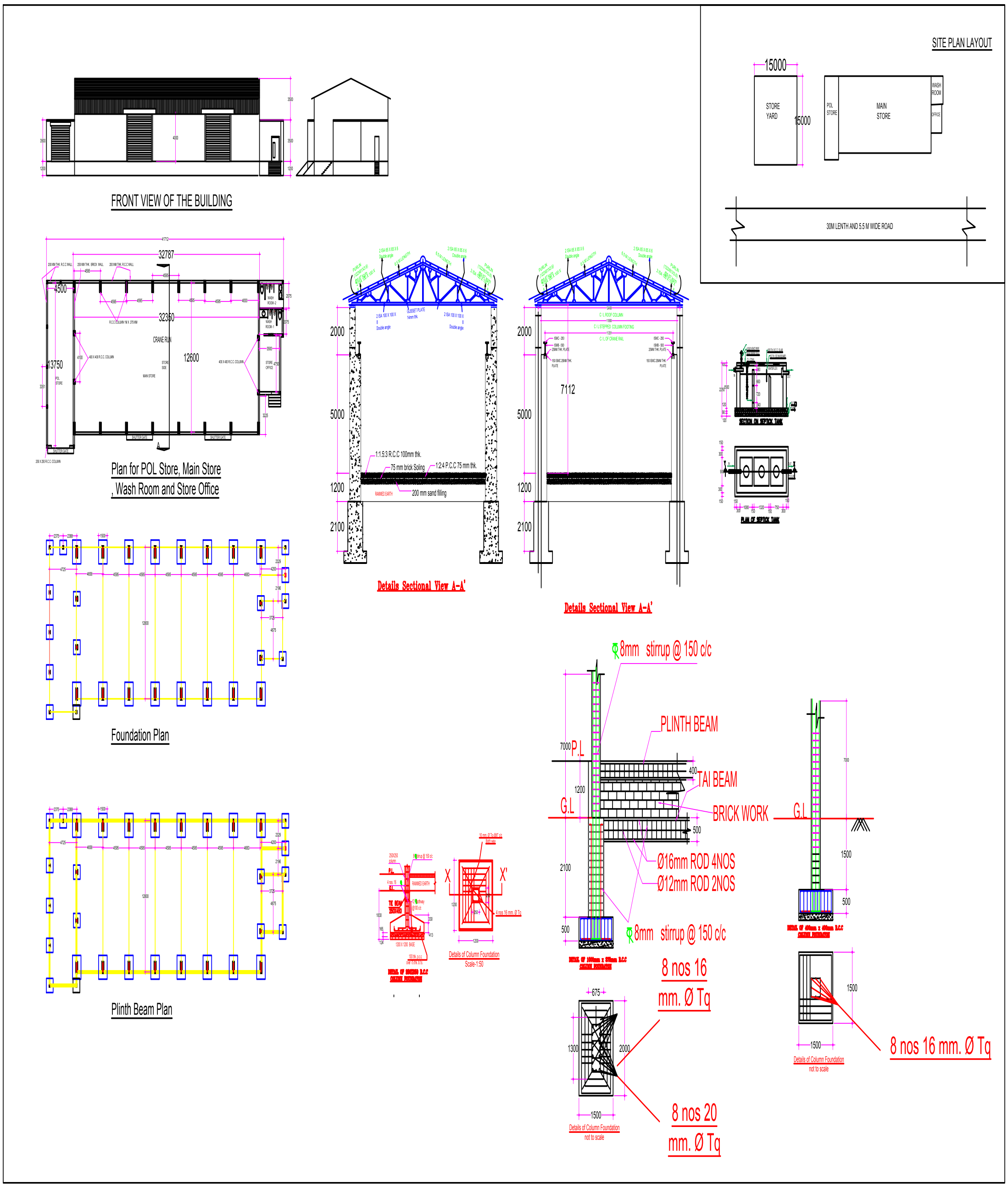
CMPDI ISO 9001 Company

Scale: N.T.S | Sheet: 1 OF 1

Drg.No. HQ E&M 301849 | REV. No. 1

Note No. #1

Attachment:Tender Document Vol-II 29122021.pdf



Symbols	Description
	Scope in NIT - Ventilation System, Fire Fighting System, Electrical System and EoT Crane of capacity 5/1T (Span 11.25 m, run = 32 m, 6 m height approx.) in the Existing Store Complex.

REV. NO.	DESCRIPTION

PLATE NO. - 6

Customer EASTERN COALFIELDS LIMITED

Job Title Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP

Job No. 014119172

Subject EXISTING STORE COMPLEX (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Excv.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM/HOD(E&M)		

REFERENCE DRAWINGS

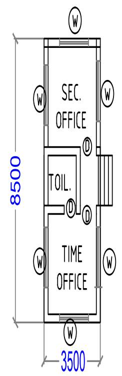
DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

CMPDI ISO 9001 Company

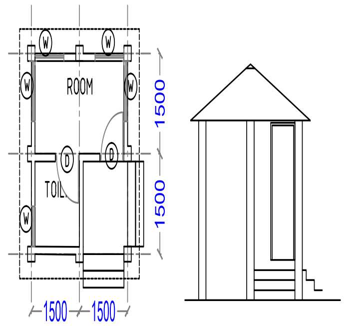
Scale N.T.S **Sheet** 1 OF 1

Drg.No. HQ E&M 301850 **REV. No.** 1

Note No. #1 Attachment:Tender Document Vol-II 29122021.pdf

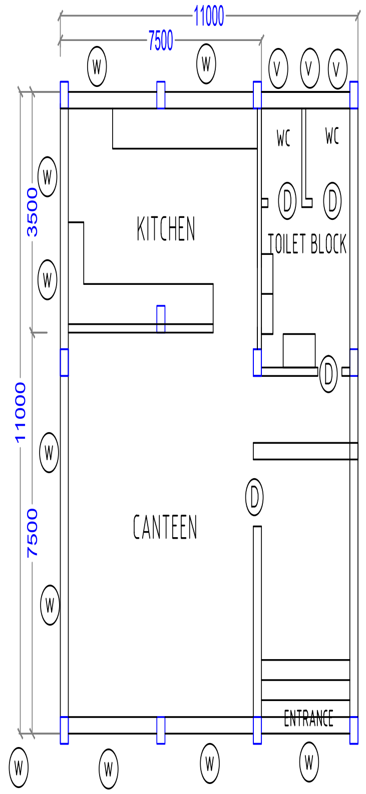


GROUND FLOOR PLAN
TIME & SECURITY OFFICE



GROUND FLOOR PLAN FRONT ELEVATION

SECURITY POST



GROUND FLOOR PLAN
CANTEEN

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. PLINTH LEVEL IS MINIMUM 600 MM ABOVE FINISHED GROUND LEVEL.
3. DOORS AND WINDOWS ARE TO BE PROVIDED AS PER REQUIREMENT.
4. THIS IS AN INDICATIVE DRAWING TO CLARIFY FUNCTIONAL REQUIREMENTS.
5. EXPANSION JOINT IS TO BE PROVIDED AS NECESSARY.
6. THE SIZES/DIMENSIONS INDICATED IN THIS DRAWING DEPICT THE MINIMUM REQUIREMENTS. ACTUAL SIZES/DIMENSIONS WILL DEPEND ON SITE LAYOUT, FUNCTIONAL AND OTHER REQUIREMENTS SUBJECT TO DUE APPROVAL OF THE CUSTOMER.

REV. NO.	DESCRIPTION

REVISION — PLATE NO. - 7

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP — Job No. 014119172

Subject: SERVICE BUILDINGS (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Excv.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM/HOD(E&M)		

CMPDI ISO 9001 Company

Scale: N.T.S — Sheet: 1 OF 1

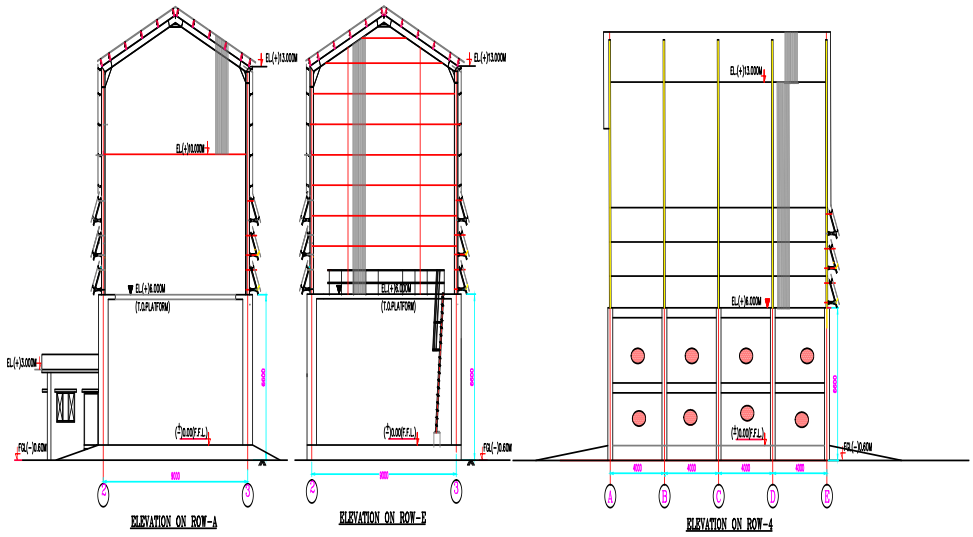
Drg.No. HQ E&M 301852 — REV. No. 1

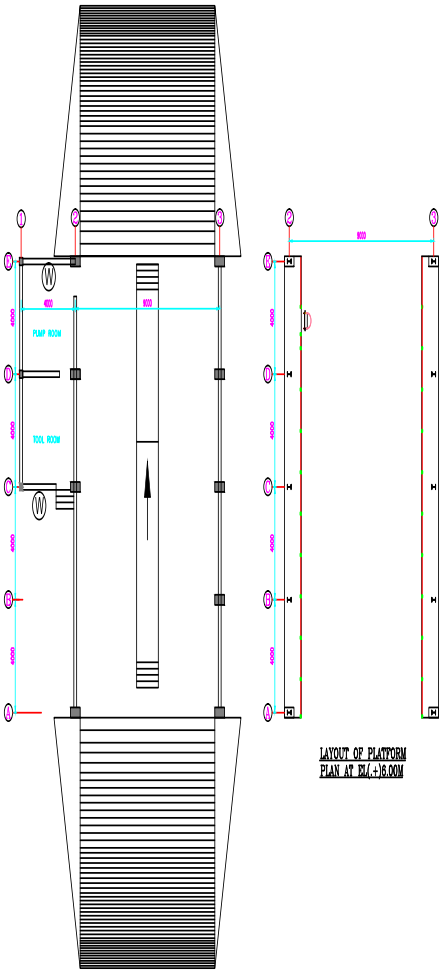
REFERENCE DRAWINGS

DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

Note No. #1

Attachment:Tender Document Vol-II 29122021.pdf





NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. SHOP FLOOR LEVEL IS ABOVE 600 MM FROM FINISHED GROUND LEVEL.
3. RAMPS FOR VEHICULAR MOVEMENT SHALL BE PROVIDED WITH A MINIMUM SLOPE OF 1V : 8H.
4. EXTERNAL BRICK WALLS WITH RCC BEAM AND COLUMN SHALL BE PROVIDED UPTO 6M. HEIGHT AS INDICATED IN DRAWING.
5. LOUVERS AND SIDE SHEETING SHALL BE PROVIDED ABOVE BRICK WALL AS PER REQUIREMENT ACCORDING TO HEIGHT OF BUILDING. TRANSLUCENT SHEETING SHALL BE ADEQUATELY PROVIDED.
6. DOORS AND WINDOWS ARE TO BE PROVIDED AS PER REQUIREMENT.
7. THIS IS AN INDICATIVE DRAWING TO CLARIFY FUNCTIONAL REQUIREMENTS.
8. EXPANSION JOINT IS TO BE PROVIDED AS NECESSARY.
9. THE ROOM DIMENSIONS SHOWN IS MINIMUM WHICH IS TO BE PROVIDED.

REV. NO.	DESCRIPTION

REVISION

PLATE NO. - 8

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP

Job No. 01411972

Subject: DUMPER WASHING STATION (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Electr.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM(HOD)(E&M)		

REFERENCE DRAWINGS	
DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

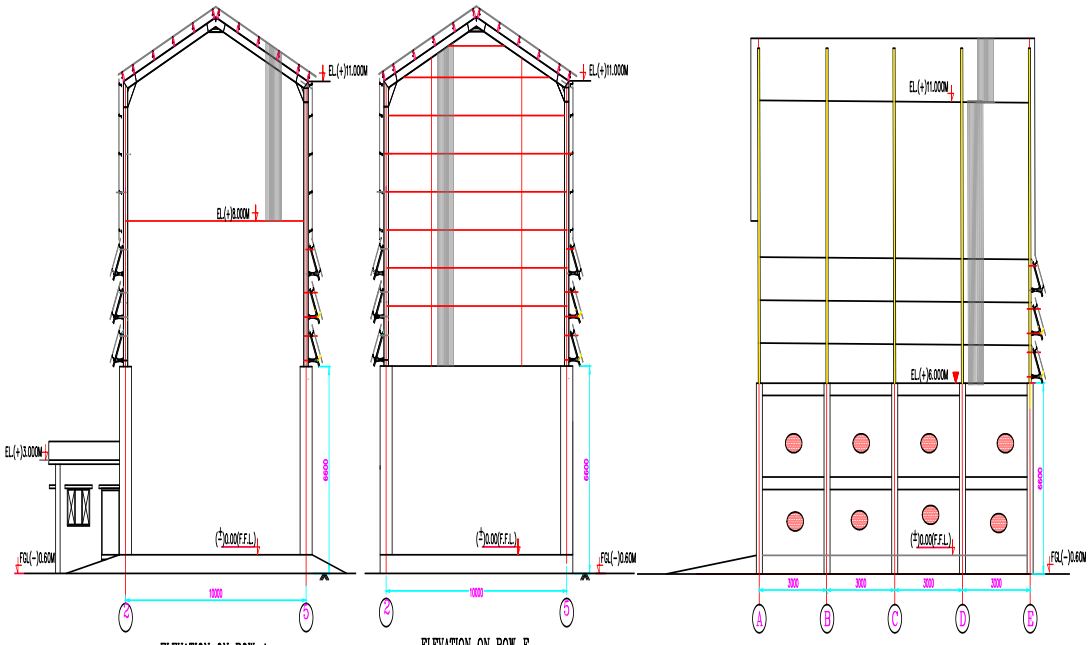
CMPDI
ISO 9001 Company

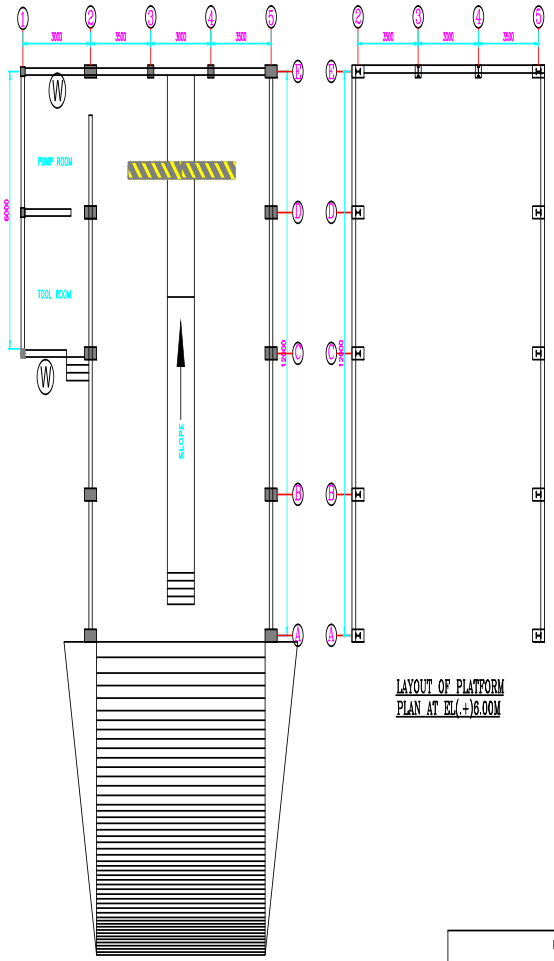
Scale: N.T.S

Sheet: 1 OF 1

Drg.No. HQ E&M 301853 REV. No. 1

Note No. #1 Attachment:Tender Document Vol-II 29122021.pdf





NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. SHOP FLOOR LEVEL IS ABOVE 600 MM FROM FINISHED GROUND LEVEL.
3. RAMPS FOR VEHICULAR MOVEMENT SHALL BE PROVIDED WITH A MINIMUM SLOPE OF 1V : 8H.
4. EXTERNAL BRICK WALLS WITH RCC BEAM AND COLUMN SHALL BE PROVIDED UPTO 6M. HEIGHT AS INDICATED IN DRAWING.
5. LOUVERS AND SIDE SHEETING SHALL BE PROVIDED ABOVE BRICK WALL AS PER REQUIREMENT ACCORDING TO HEIGHT OF BUILDING. TRANSLUCENT SHEETING SHALL BE ADEQUATELY PROVIDED.
6. DOORS AND WINDOWS ARE TO BE PROVIDED AS PER REQUIREMENT.
7. THIS IS AN INDICATIVE DRAWING TO CLARIFY FUNCTIONAL REQUIREMENTS.
8. EXPANSION JOINT IS TO BE PROVIDED AS NECESSARY.
9. THE ROOM DIMENSIONS SHOWN IS MINIMUM WHICH IS TO BE PROVIDED.

REV. NO.	DESCRIPTION
	REVISION

PLATE NO. - 9

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP

Job No. 01411972

Subject: DOZER WASHING STATION (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Electr.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM(HOD)(E&M)		

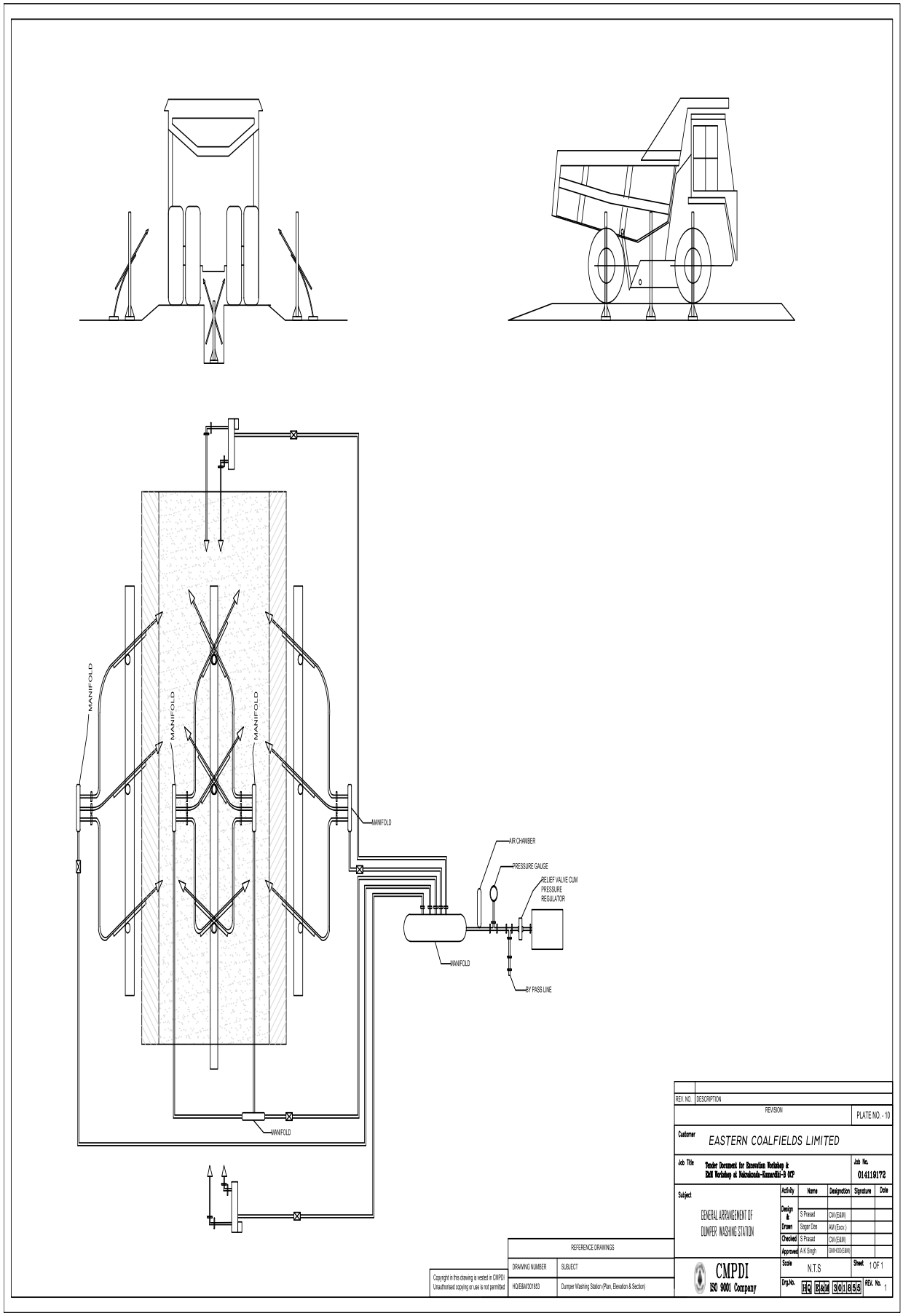
Scale: N.T.S Sheet 1 OF 1

Drg.No. HQ E&M 301 B54 REV. No. 1

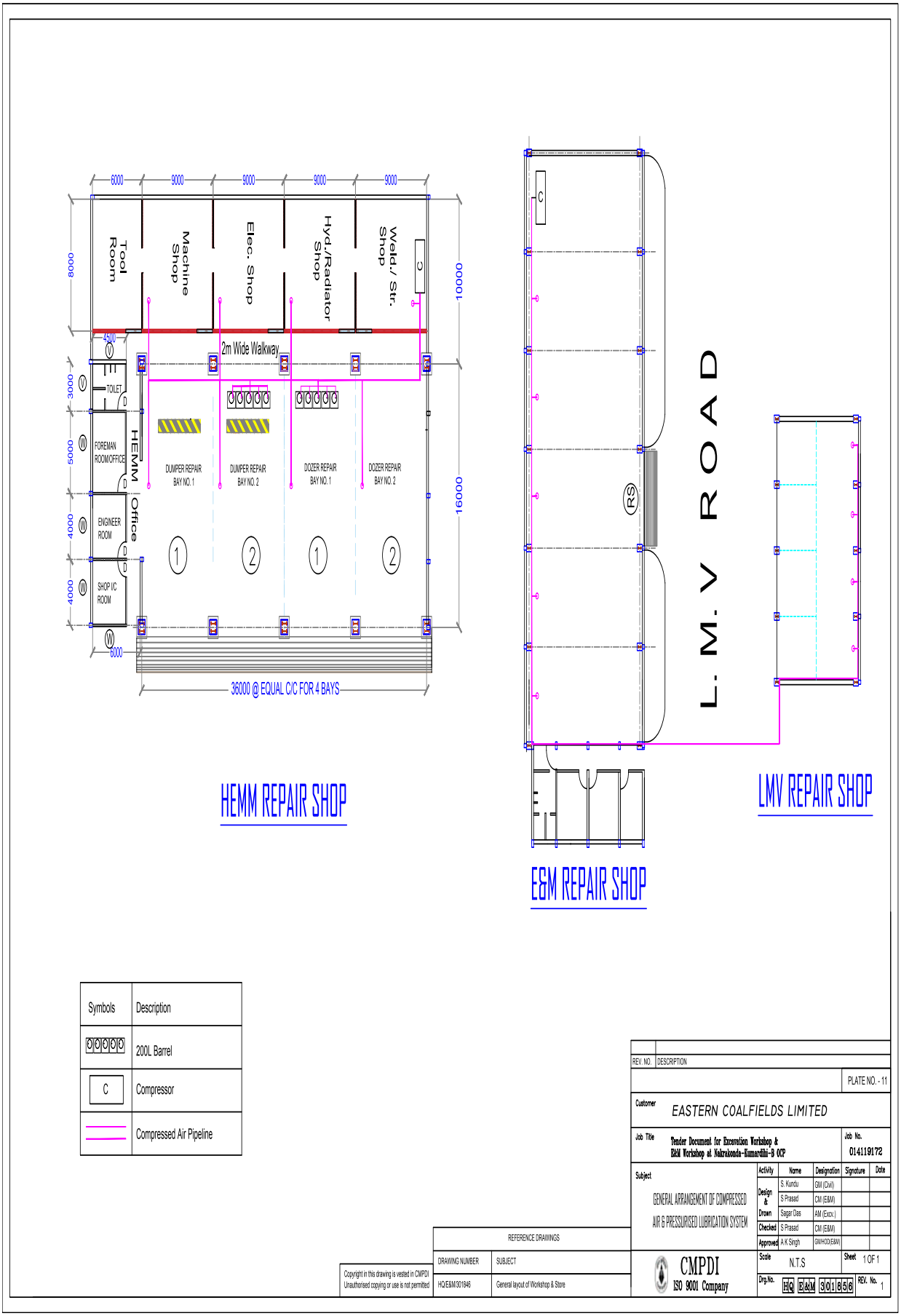
CMPDI ISO 9001 Company

REFERENCE DRAWINGS	
DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

Note No. #1 Attachment:Tender Document Vol-II 29122021.pdf



Note No. #1 Attachment:Tender Document Vol-II 29122021.pdf



Symbols	Description
	200L Barrel
C	Compressor
	Compressed Air Pipeline

REV. NO.	DESCRIPTION

PLATE NO. - 11

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardhubi-B OCP

Job No. 014119172

Subject: GENERAL ARRANGEMENT OF COMPRESSED AIR & PRESSURISED LUBRICATION SYSTEM

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Excv.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM-HOD(E&M)		

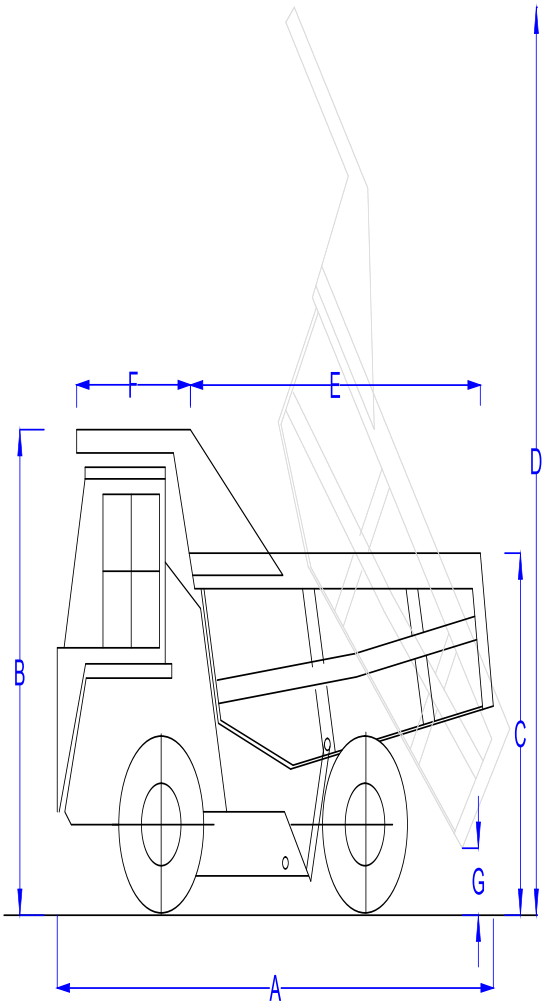
REFERENCE DRAWINGS	
DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

CMPDI ISO 9001 Company

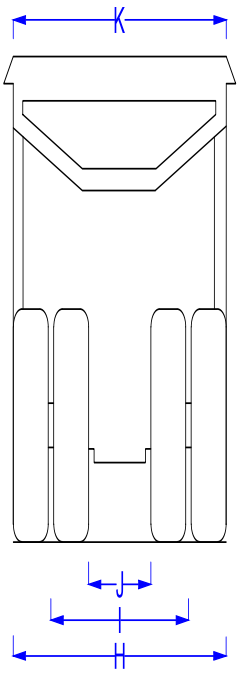
Scale: N.T.S Sheet: 1 OF 1

Drg.No. HQ E&M 301856 REV. No. -1

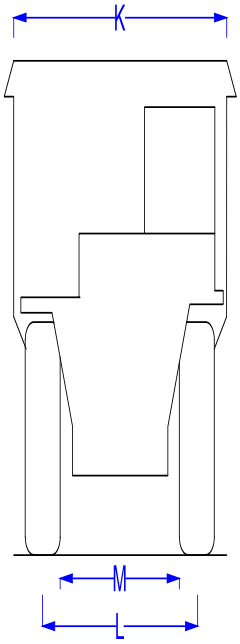
Note No. #1 Attachment:Tender Document Vol-II 29122021.pdf



SIDE VIEW



BACK VIEW



FRONT VIEW

WEIGHT DISTRIBUTION IN KG.				
SL. NO	FRONT AXLE		DRIVE AXLE	
	EMPTY	LOADED	EMPTY	LOADED
1	16400	31900	17800	67780

SL. NO	DUMPER CAPACITY	DIMENSIONS IN M												
		A	B	C	D	E	F	G	H	I	J	K	L	M
1	60 Te.	8.81	4.40	3.60	8.29	6.45	2.26	0.56	4.59	3.08		4.17	3.51	

REV. NO. DESCRIPTION

REVISION

PLATE NO. - 12

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & EME Workshop at Rajmahal-Kumardih-B OCP

Job No. 01411972

Subject: DIMENSIONAL DETAILS OF REAR DUMPER

Activity	Name	Designation	Signature	Date
Design &	S Prasad	CM (E&M)		
Drawn	Sagar Das	AM (Elect.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM(HOD,E&M)		

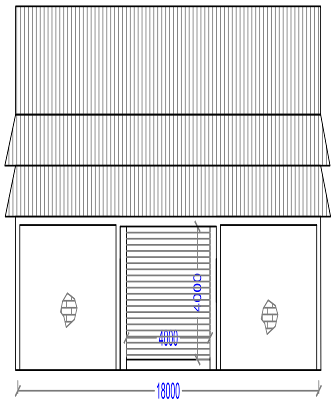
CMPDI ISO 9001 Company

Scale: N.T.S Sheet: 1 OF 1

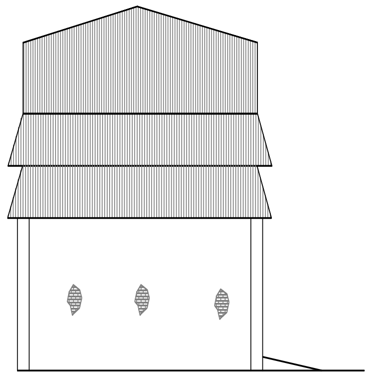
Drg.No. HQ E&M 301857 REV. No. 1

Note No. #1

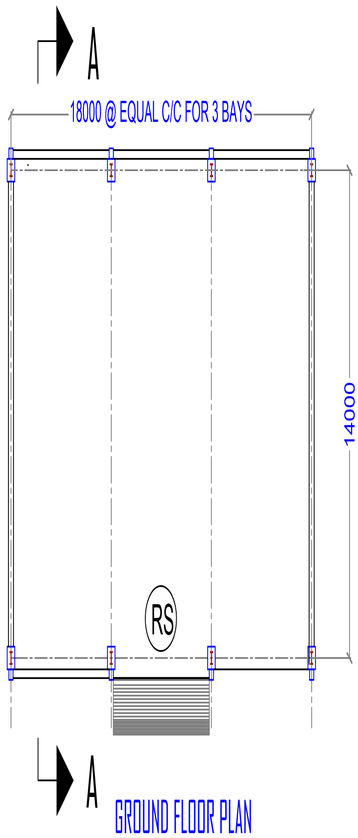
Attachment:Tender Document Vol-II 29122021.pdf



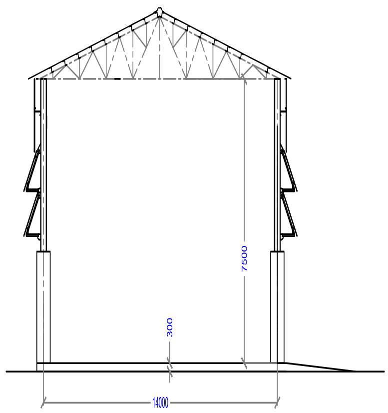
FRONT VIEW



RIGHT SIDE ELEVATION



GROUND FLOOR PLAN



SECTION A-A

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. SHOP FLOOR LEVEL IS MINIMUM 300 MM ABOVE FINISHED GROUND LEVEL.
3. RAMPS FOR VEHICULAR MOVEMENT SHALL BE PROVIDED WITH A MINIMUM SLOPE OF 1V : 8H.
4. EXTERNAL BRICK WALLS WITH RCC BEAM AND COLUMN SHALL BE PROVIDED UPTO MINIMUM 3M. HEIGHT AS INDICATED IN DRAWING.
5. LOUVERS AND SIDE SHEETING SHALL BE PROVIDED ABOVE BRICK WALL AS PER REQUIREMENT ACCORDING TO HEIGHT OF BUILDING. TRANSLUCENT SHEETING SHALL BE ADEQUATELY PROVIDED.
6. DOORS AND WINDOWS ARE TO BE PROVIDED AS PER REQUIREMENT.
7. THIS IS AN INDICATIVE DRAWING TO CLARIFY FUNCTIONAL REQUIREMENTS.
8. EXPANSION JOINT IS TO BE PROVIDED AS NECESSARY.
9. THE SIZES/DIMENSIONS INDICATED IN THIS DRAWING DEPICT THE MINIMUM REQUIREMENTS. ACTUAL SIZES/DIMENSIONS WILL DEPEND ON SITE LAYOUT, FUNCTIONAL AND OTHER REQUIREMENTS SUBJECT TO DUE APPROVAL OF THE CUSTOMER.

REFERENCE DRAWINGS

DRAWING NUMBER	SUBJECT
HQ/E&M/301846	General layout of Workshop & Store

REV. NO.	DESCRIPTION

PLATE NO. - 13

Customer: EASTERN COALFIELDS LIMITED

Job Title: Tender Document for Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OCP

Job No. 014119172

Subject: E&M STORE SHED (PLAN, ELEVATION & SECTION)

Activity	Name	Designation	Signature	Date
Design & Drawn	S. Kundu	GM (Civil)		
	S Prasad	CM (E&M)		
	Sagar Das	AM (Excv.)		
Checked	S Prasad	CM (E&M)		
Approved	A K Singh	GM/HOD(E&M)		

CMPDI
ISO 9001 Company

Scale: N.T.S

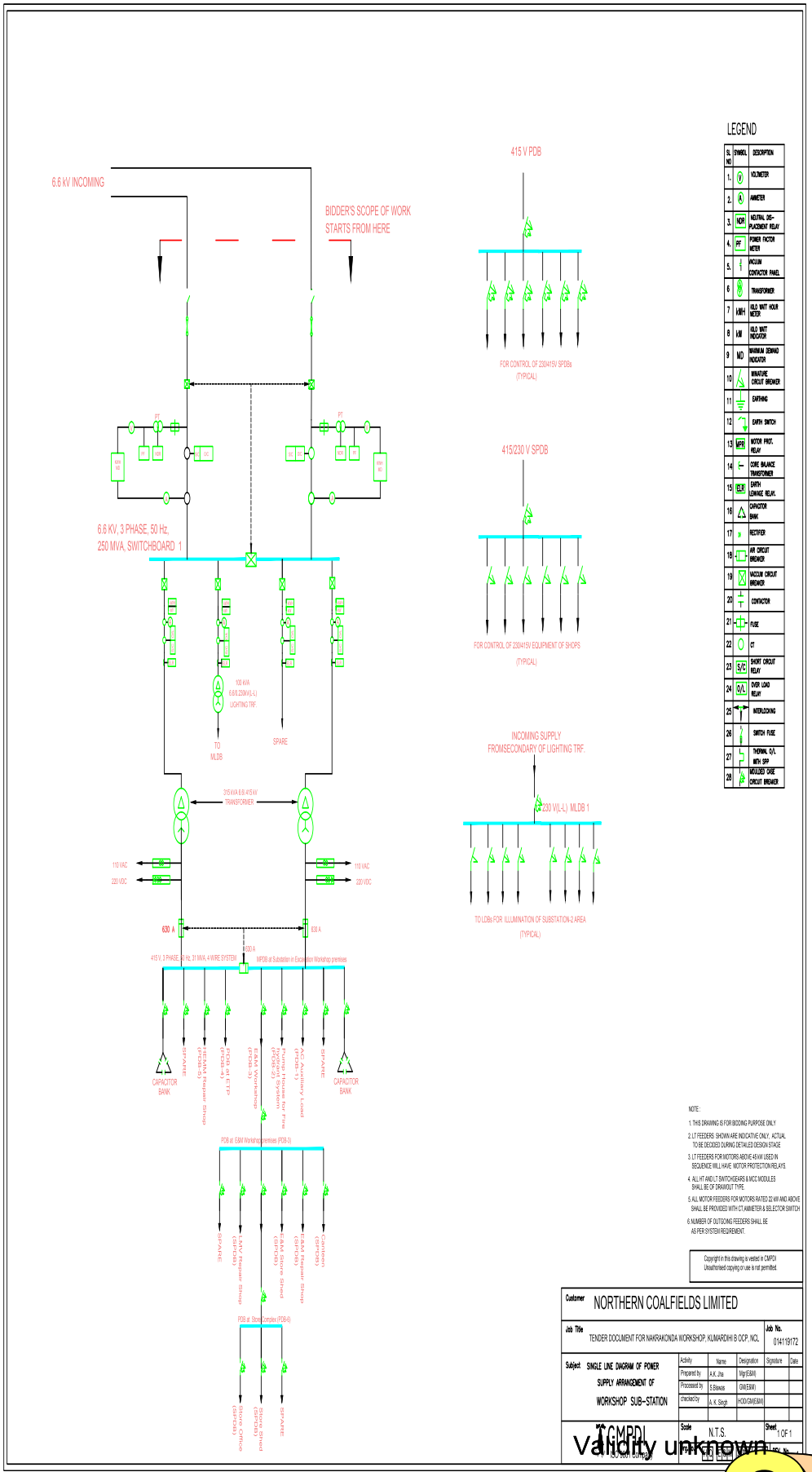
Sheet 1 OF 1

Drg.No. HQ E&M 301858

REV. No. 1

Note No. #1

Attachment:Tender Document Vol-II 29122021.pdf



ईस्टर्न कोलफील्ड्स लिमिटेड
अध्यक्ष-सह-प्रबंध निदेशक का कार्यालय
सांकतोड़िया, पत्रालय- डिसेरगढ़,
जिला- बर्द्धमान, पश्चिम बंगाल-713333
सिविल अभियांत्रिक बिभाग
सी.आइ.एन-U10101WB1975GOI030295
वेबसाइट – www.easterncoal.gov.in

EASTERN COALFIELDS LIMITED
Office of the Chairman-cum-Managing Director
Sanctoria, P.O.: Dishergarh,
Dist.: Burdwan, West Bengal-713333
Civil Engineering Department
CIN-U10101WB1975GOI030295
Website – www.easterncoal.gov.in

e-TENDER DOCUMENT ON PRE-ENGINEERED TURNKEY EXECUTION FOR

"Design, engineering, construction and commissioning of Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OC Project, Bankola Area, ECL on turnkey basis and Maintenance of the plant and machinery for five years"

EASTERN COALFIELDS LIMITED

VOLUME-I

e-TENDER NOTICE, CONDITIONS OF CONTRACT, MISC. FORMAT, TEXT & TECHNICAL SPCIFICATIONS WITH TENDER DRAWINGS

INDEX

SECTION-1

e-TENDER NOTICE

ईस्टर्न कोलफील्ड्स लिमिटेड
अध्यक्ष-सह-प्रबंध निदेशक का कार्यालय
सांकतोड़िया, पत्रालय- डिसेरगढ़,
जिला- बर्द्धमान, पश्चिम बंगाल-713333
सिविल अभियांत्रिक बिभाग
सी.आइ.एन-U10101WB1975GOI030295
वेबसाइट – www.easterncoal.gov.in

EASTERN COALFIELDS LIMITED
Office of the Chairman-cum-Managing Director
Sanctoria, P.O.: Dishergarh,
Dist.: Burdwan, West Bengal-713333
Civil Engineering Department
CIN-U10101WB1975GOI030295
Website – www.easterncoal.gov.in

NIT No.: ECL/HQ/GM(C)/e-Tender/23-24/ **Date:**
Tender id no:

NOTICE INVITING TENDER

1. Tenders are invited on-line on the website https://coalindiatenders.nic.in from the eligible Bidders having Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced upto the chain of trust to the Root Certificate of CCA, for the following work(s):

Description of work	Estimated Cost of Work (Without GST) (In Rs.)	GST on the Estimated Cost of Work (In Rs.)	Total Cost of the Work including GST (In Rs.)	Earnest Money (In Rs.)	Period of Completion (In days)
"Design, engineering, construction and commissioning of Excavation Workshop & E&M Workshop at Nakrakonda-Kumardihi-B OC Project, Bankola Area, ECL on turnkey basis and Maintenance of the plant and machinery for five years.	**2119.23 Lakhs**	**381.46 Lakhs**	**2500.69 Lakhs**	**6.26 lakhs**	**Total contract period: 2365 days (540 days + 1825 days)** **a) Construction of Plant including trial run, PGT & Commissioning: 540 days** **b) Comprehensive Maintenance Period: 1825 days**

The details of the tender will be mirrored in the Central Public Procurement Portal http://eprocure.gov.in of Govt. of India.

The job is non-divisible in nature.

2. Time Schedule of Tender:

Sl. No	Particulars	Date	Time (Hours)
a.	Tender e-Publication date		

b.	Document download start date		
c.	Document download end date		
d.	Bid Submission start date		
e.	Bid submission end date		
f.	Start date for seeking Clarification on-line		
g.	Last date for seeking Clarification on-line		
h.	Date of Pre-bid meeting (if any)		
i.	Technical Bid (Cover I) opening date		
j.	Price Bid (Cover II) opening date ***(Tentative)***		

*Note:

i. If number of bids received online is found to be less than three, then last date of submission of Bid and Technical Bid Opening date will be automatically extended for a period of Four days ending at 17:00 hrs. The auto extension shall work on the basis of number of bids received only. In case of holiday, the due date of opening will be extended to next working day.
ii. This extension will be also applicable in case of receipt of zero bid.
iii. Bidders will have right to modify / withdraw their bids during extended period of submission of bids.
iv. After extension, as stated above the tender shall be opened irrespective of available No. of bids on the extended date of opening of tender.
v. If the above extended date falls on Holiday i.e. a non-working day as defined in the e-procurement portal, then the same is to be re-scheduled to the next working day.
vi. The validity period of the tender should be decided based on the final end date of submission of bids.
vii. The Employer reserves the right to issue corrigendum/addendum and it shall be binding on part of the Bidders.

3. Earnest Money Deposit (EMD):

Rs 6.26 lakhs (1.25 % of the annualized value of estimated cost/ estimated cost whichever is less, rounded off to next hundred rupees subject to maximum of Rs.50 Lakhs.) as Earnest Money/ Bid Security.

3.1 The Bidder will have to make the payment of EMD through online mode only. In Online mode the Bidder can make payment of EMD either through net-banking from designated Bank/s or through NEFT/ RTGS from any scheduled Bank.

Net-Banking: In case of payment through net-banking the money will be immediately transferred to designated Account.

NEFT/ RTGS: In case of payment through NEFT/ RTGS the Bidder will have to make payment as per the Challans generated by system on e-

Procurement portal before submission of bid. The EMD payment through NEFT/ RTGS mode should be made well ahead of time to ensure that the EMD amount is transferred to account before bid submission.

3.2 Bidder will be allowed to submit his/her bid only when the EMD is successfully received in designated account and the information flows from Bank to e-Procurement system.

3.3 In case of exemption of EMD, the scanned copy of document (attested by notary public) in support of exemption will have to be uploaded by the bidder during bid submission. However, this option is to be enabled only in those cases where the exemption of EMD to some bidders is allowed as per NIT.

In online payment of EMD, if the payment is made by the Bidder within the last date & time of bid submission but not received by the Company within the specified period due to any reason then the bid will not be accepted. However, the EMD will be refunded back to the Bidder.

NOTE 1: After successful payment of EMD either through Net Banking or NEFT/RTGS, bidder is advised to log on to https://coalindiatenders.nic.in and click on "**Payment Verification Button**" to check the transaction status of EMD.

NOTE 2: Bidder is advised **not to pay EMD through IMPS mode** as such payments are not acceptable for submission of bid by the system.

NOTE 3: In case of payment of EMD through NEFT/RTGS mode, bidder needs to pay the EMD from the scheduled bank by visiting their branch.

EMD Exemption: Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) will be exempt from the payment of earnest money **(applicable only for Services nature of tenders) (Not Applicable for this tender).**

4. Pre-Bid Meeting:

The pre-bid meeting shall be held in the office of General Manager(C)/HOD, ECL/Tender Inviting Authority on the scheduled date & time, as specified in the NIT. Prospective bidders may also participate in Pre-Bid meeting on the scheduled date and time as specified in NIT through Video Conference.VC link for the Pre-bid meeting is as under:

https://railtel.webex.com/railtel/j.php?MTID=m8e58d683434671f4c5bec6d1b6bafd2c

The purpose of the pre-bid meeting is to clarify the issues and to answer the questions on any matter that may be raised at that stage. Non-attendance at the pre-bid meeting will not be a cause for disqualification of bidder and it shall be presumed that the bidder does not require any clarification. If a Pre-bid meeting is held then the minutes of the Pre-Bid meeting shall be uploaded on the Portal, which can be viewed by all interested bidders.

5. Clarification of Bid:

The Bidder may seek clarification on-line within the specified period. However, the management will clarify as far as possible the relevant queries.

6. On-line user portal agreement:

The Bidders have to accept the on-line user portal agreement, which contains the acceptance of all the Terms and Conditions of NIT and tender document, undertakings and the e-Procurement system through https://coalindiatenders.nic.in in order to become an eligible Bidder. This will be a part of the Agreement.

7. Eligible Bidders:

7.1 The Invitation for Bid(s) is open to all Bidders including an individual, proprietorship firm, partnership firm, company registered under Companies Act, any legal entity or JV/Consortium. The bidders shall be eligible to participate only if they fulfill the qualifying criteria laid down separately hereinafter.

7.2 A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the Works shall not be eligible to Bid.

7.3 Joint Venture (JV)/Consortium: Two or three companies/ contractors may jointly undertake contract/contracts. Each entity will be jointly and severally responsible for completing the task as per the contract (applicable for bids with estimated cost above Rs. 5 crores).

JV/Consortium Details: -

Name of all partners of a JV/Consortium (Not more than 3)
1. Lead partner
2. Partner
3. Partner

NOTES: JV/Consortium must comply the following requirements:

i) Following are the minimum qualification requirements for JV/Consortium:

a) The qualifying criteria parameter e.g. experience of the individual partners of the JV/CONSORTIUM will be as deliberated under cl.8(A) of NIT towards fulfillment of qualification criteria related to experience.
b) The qualifying criteria parameter e.g. financial resources (turnover and working capital) of the individual partners of the JV/CONSORTIUM. will be added together, for the relevant period, and the total criteria should not be less than as deliberated under cl.8(B) & 8(C) of NIT towards fulfillment of qualification criteria related to financial turnover. However, the required Working Capital shall be met by individual JV/CONSORTIUM partners as spelt out in the relevant clause.

ii) The formation of JV/Consortium or change in the JV/Consortium character/

partners after submission of the bid and any change in the bidding regarding JV/Consortium /will not be permitted.

iii) The bid, and in case of a successful bid- the agreement, shall be signed so as to legally bind all partners jointly and severally and any bid shall be submitted with a copy of the JV/Consortium Agreement providing the joint and several liabilities with respect to the contract.

iv) The pre-qualification of a JV/Consortium does not necessarily pre-qualify any of its partners individually or as a partner in any other JV/Consortium or association. In case of dissolution of a JV/Consortium, each one of the constituent firms may pre-qualify if they meet all the pre-qualification requirements, subject to written approval of the employer.

v) The bid submission must include documentary evidence to the relationship between JV/Consortium partners in the form of JV/CONSORTIUM Agreement to legally bind all partners jointly and severally for the proposed agreement which should set out the principles for the constitution, operation, responsibilities regarding work and financial arrangements, participation (percentage share in the total) and liabilities (joint and several) in respect of each and all of the firms in the JV/Consortium. Such JV/CONSORTIUM Agreement must evidence the commitment of the parties to bid for the facilities applied for (if pre-qualified) and to execute the contract for the facilities if their bid is successful.

vi) One of the partners shall be nominated for being In-Charge of the contract and shall be designated as Lead Partner. This authorization shall be evidenced by submitting with the bid a Power of Attorney signed by legally authorized signatories of all the partners.

vii) The JV/CONSORTIUM Agreement must provide that the Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the JV/Consortium and the entire execution of the contract shall be done with active participation of the Lead Partner.

viii) The contract agreement should be signed by each JV/Consortium Partners. Subsequent declarations/letters/documents shall be signed by lead partner authorized to sign on behalf of the JV/CONSORTIUM or authorized signatory on behalf of JV/CONSORTIUM.

ix) The bid should be signed by the DSC holder submitting the bid.

x) An entity can be a partner in only one JV/Consortium. Bid submitted by JV/Consortium including the same entity as partner will be rejected.

xi) The JV/CONSORTIUM agreement may specify the share of each individual partner for the purpose of execution of this contract. This is required to fulfill eligibility criteria and also for the purpose of apportioning the value of the contract to that extent to individual partner for subsequent submission in other bids if he intends to do so for the purpose of the qualification in that

Bid.

xii) The earnest money / bids security bank guarantee can be submitted by the JV/Consortium or one or more partners of the JV/Consortium.

xiii) The JV/CONSORTIUM agreement must specifically state that it is valid for the project for which bidding is done. If JV/CONSORTIUM breaks up midway before award of work and during bid validity period bid will be rejected.

If JV/CONSORTIUM breaks up midway before award of work and during bid validity/after award of work/during pendency of contract, in addition to normal penalties as per provision of bid document, all the partners of the JV/CONSORTIUM shall be debarred from participating in future bids for a minimum period of 12 months.

xiv) JV/CONSORTIUM agreement shall be registered in accordance with law so as to be legally valid and binding on the members before making any payment.

xv) JV/CONSORTIUM shall open a bank account in the name of JV/CONSORTIUM and all payments due to the JV/CONSORTIUM shall be credited by employer to that account only. To facilitate statutory deductions all statutory documents like PAN/GSTIN, etc. in the name of the JV/Consortium shall be submitted by JV/CONSORTIUM before making any payment.

7.4 Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) issued by Govt. of India as amended from time to time shall be applicable. The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.

7.5 No sub-letting of the work as a whole by the contractor is permissible. Prior permission is required to be taken from the principle employer for engagement of sub-contractors.

8. Eligibility Criteria to qualify for the award of contract and data/supporting documents to be uploaded online.

7.1 Eligibility criteria to qualify for award of the contract –

A. Work Experience:

The intending tenderer must have in its name experience of having successfully completed similar works during **last 7 (Seven) years** ending last day of month previous to the one in which bid applications are invited i.e., e-publication date on procurement portal should be any of the following.

i) Three similar completed works each costing not less than the amount equal to 20% of the estimated cost put to tender.

Or

ii) Two similar completed works each costing not less than the amount equal to 25% of the estimated cost put to tender.

Or

iii) One similar completed work costing not less than the amount equal to 40% of the estimated cost put to tender.

Definition of Similar Work:

Definition of Similar Work: - Design, Supply, Installation, Construction and Commissioning of any of the following systems:

"Workshop building / Industrial Structure / material handling plant / dockyard / washeries / sports complex with steel structures / industrial workshop / power plants"

Completion of works means completion of works by undertaking entire responsibility from design, Supply, Installation, Construction and Commissioning.

Experience for those works only shall be considered for evaluation purposes, which match eligibility requirement stipulated above, on or before the last day of month previous to one in which tender has been invited (publication date of NIT). The experience of incomplete/ongoing works as on last date of eligibility period will not be considered for evaluation. If the referred work includes construction as well as maintenance after construction, the experience of such work may be considered as 'acceptable' if the construction part is completed as on the last date of 'eligibility period', even if maintenance work is ongoing, and the certificate issued clearly stipulates the same.

In all the above cases, while considering the value of completed works, the full value of completed work be considered whether or not the date of commencement is within the said seven years period.

Cost of previous completed work(s) shall be given a simple weightage of 7% per year to bring them at current price level, while evaluating the qualification requirement of the bidder. Such weightage shall be considered after end date of completion. The year can be considered as suitable consecutive 365 days till the last day of month previous to one in which bid has been invited. Updating will be considered for full or part of the year (total no. of days / 365) i.e. considering 365 days in a year, till the last day of month previous to one in which bid has been invited.

Note: Till the time of changes in the e-procurement portal regarding weightage from 5% to 7% is configured in the portal, the 5% weightage shall be considered for work experience for floating of tender on NIC portal.

For work experience, bidders are required to submit satisfactory Work completion certificate issued by the employer against the experience of similar works containing all the information as sought online. In case of sub- contractor, suitable document as per provisions of eligibility, if applicable shall be submitted.

Work Order, BOQ, TDS etc. may be sought during clarification or along with deficient documents as per relevant clause.

Note:

1) The experience towards overseas jobs, if submitted, should be vetted/endorsed by the relevant* embassy/high commission concerned, towards authenticity of document in English or translated in English language.
(*Relevant embassy/High Commission means the embassy/High Commission in India of the country where the bidder has executed the said work or country of origin of the bidder OR the Indian embassy in the country where bidder has executed the work or country of origin of the bidder.)
2) Joint Venture/ Consortium, shall be allowed for participation in the bid with estimated cost Above Rs. 5.0 Crores.

The above qualification criteria shall be fulfilled by JV/Consortium in the following manner.

The qualifying criteria parameter e.g. experience of the individual partners of the JV/Consortium will be added together as deliberated hereinafter towards fulfillment of qualification criteria related to experience.

a) In case of completion of single work of similar nature costing, not less than the amount equal to 40% of the estimated cost put to tender: -

i) Any of the JV partner shall have the experience of having completed successfully a single work of similar nature equal to 40% of the estimated cost put to tender.

OR

b) In case of completion of two works of similar nature each costing not less than the amount equal to 25% of the estimated cost put to tender: -
i) Any one partner can match the above requirement.

OR

ii) At least two partners should each have completed at least one work of similar nature each costing not less than the amount equal to 25% of the estimated cost put to tender.

OR

c) In case of completion of three works of similar nature, each costing not less than the amount equal 20% of the estimated cost put to tender: -
i) Any one partner can match the above requirement.

OR

ii) Any two partners shall match the above requirement through completion of at least two work by one partner and one work by other partner of similar nature each costing not less than the amount equal 20% of the estimated cost put to tender: -

OR

iii) All the three partners shall match the above requirement through completion of at least one work of similar nature each costing not less than the amount equal 20% of the estimated cost put to tender.

If a Bidder participates as a Joint Venture (JV), the benefits as per Public Procurement Policy for MSEs Order-2012 shall not be applicable for them.

However, the participating share of JV/Consortium partners shall be as below:
i) Lead Partner shall have at least 50% participating share in JV
ii) Other partner(s) shall have at least 20% participating share in JV

In respect of the above eligibility criteria the bidders are required to furnish the following information on-line:

i. Start date & end date of each qualifying experience (similar nature)

ii. Work order Number /Agreement Number of each experience

iii. Name & address of Employer/Work Order Issuing authority of each experience

iv. In case the experience has been earned by the bidder as a partner in a joint venture firm/partnership firm then the proportionate value of experience in proportion to actual share of bidder in that joint venture firm/ partnership firm will be considered against eligibility else it shall be taken as 100%.

v. Executed Value of work against each experience

vi. In case the bidder is a Joint Venture, work experience as above may be furnished as the work experience of the bidder

vii. Scanned copy of documents as explained at clause 7 related to work experience.

Note:

a) In case the bidder is a Joint Venture/ Consortium, the above information in respect of each individual partner of JV/ Consortium may be furnished and the eligibility experience of JV will be assessed as per pre-defined logic elaborated above.

b) In case the bidder is a Joint Venture/ Consortium, the work experience of any or all of the individual partners of JV/ Consortium may be furnished to evaluate the work experience of the bidder. In case of JV/ Consortium, if work experience of all the partners is not submitted the system will not disqualify the JV/ Consortium and instead shall consider assuming a value of zero for partner/partners who has/have not submitted the experience value and certificate.

B. Financial turnover: Average annual financial turnover during the last 3(three) years, ending 31st March of 2023 (previous) financial year should be at least 30% of the estimated cost put to tender.

The intending bidders must submit the Financial Turnover certificate (with UDIN No.) issued by a Practicing Chartered Accountant having a membership number with Institute of Chartered Accountants of India, containing the information as furnished by bidder online.

The foreign partner(s) should submit Financial Turnover certificate based on IFRS (International Financial Reporting Standards) accounting standard certified by a local practicing public accountant/audit firm duly vetted/endorsed by the relevant *Embassy/High Commission concerned, towards authenticity of document.

(*Relevant embassy/High Commission means the embassy/High Commission in India of the country where the bidder has obtained Turnover certificate or country of origin of the bidder OR the Indian embassy in the country where the bidder has obtained Turnover certificate or country of origin of the bidder.)

Note:

i) Financial turnover shall be given a simple weightage of 7% per year to bring them at current price level, while evaluating the qualification requirement of the bidder. Such weightage shall be considered from the end date of financial year. Updating will be considered for full or part of the year (total no. of days / 365) i.e. considering 365 days in a year, till the last day of month previous to one in which bid has been invited.

JV/Consortiums shall meet the above eligibility requirement, in the following manner:

The qualifying criteria parameter e.g. financial resources of the individual partners

of the JV/Consortium will be added together, for the relevant financial year, and the total should not be less than as spelt out above. this is applicable for 8.1(C) also.

Note:

Till the time of changes in the e-procurement portal regarding weightage from 5% to 7% is configured in the portal, the 5% weightage shall be considered for Financial Turnover for floating of tender on NIC portal.

In respect of the above eligibility criteria the bidders are required to furnish the following information in evaluation sheet:

i) Financial Turnover for the last three years (last three years may be considered as stated above).
ii) Name of the Chartered Accountant issuing Certificate.
iii) Membership Number of the Chartered Accountant.
iv) Scanned Copy of document as explained at clause 7 related to financial turnover.

Special Note:

i) Confirmation regarding possessing of Financial Turnover issued by Practicing Chartered Accountant in the form of Yes / No.

Scanned copy of documents to be uploaded by bidders in Cover- I as per latest Guidelines for e-procurement of works and services (updated up to Aug-2021): Financial Turnover certificate having a Unique Document Identification Number (UDIN) with Institute of Chartered Accountants of India.

Note:

a) In case the bidder is a Joint Venture, the above information in respect of each individual partner of JV may be furnished and the financial turnover of JV will be assessed by adding the information furnished on the system.
b) In case of JV, if financial turnover of all the partners is not submitted the system will not disqualify the JV and instead shall consider assuming a value of zero for partner/partners who has/have not submitted the financial turnover certificate.
c) If the bidder does not submit turnover value and certificate for any year out of the three years, system will not disqualify him and instead shall consider all three years for computing the average by assuming a value of "zero" for the year(s) for which no information is given by the bidder.

C. Working Capital: The Bidder must submit the Certificate of possessing adequate Working Capital (at least 20% of the "Annualized value or Estimated value whichever is less" of this work) inclusive of access to lines of credit and availability of other financial resources to meet the requirement, issued by a Practicing Chartered Accountant having a Membership Number with Institute of Chartered Accountants of India. Such Certificate should contain the Unique Document Identification Number (UDIN). The bidder should possess the Working Capital issued within three months prior to the date of opening of tender.

In case, access to lines of credit constitutes the availability of Working Capital, Banker's Certificate (Scheduled Commercial Bank) shall also be submitted regarding availability of access to credit (issued within three months prior to the date of opening of tender) to meet the above eligibility criteria.

For foreign Partner(s), Banker's Certificate regarding availability of access to credit (issued within three months prior to the date of opening of tender) should be duly vetted/endorsed by the relevant Embassy/High Commission concerned, towards authenticity of document. Relevant Embassy/High Commission means the Embassy/High Commission in India of the Country where the bidder has obtained Banker's Certificate or Country of origin of the bidder).

Note: In case of tender of more than one-year period of construction of plant including trial run and performance guarantee test, the annualised value to be worked out as under:

$$\text{Annualised value} = \frac{\text{Estimated cost of the work (including GST) put to tender.}}{\text{Period of construction of plant including trial run and performance guarantee test in days.}} \times 365 \text{ days}$$

In case of JV/CONSORTIUM, the requirement of Working Capital under this clause shall be met as per following proportion:

a. The lead member shall have to possess at least 50% share in the required Working Capital in order to qualify in this tender.
b. All other members shall have to possess at least 25% share in the required Working Capital, in order to qualify in this tender.

In respect of the above eligibility criteria the bidders are required to furnish the following information in evaluation sheet:

i.) Date of issue of certificate by bank
ii.) Name of bank
iii.) Address of the bank
iv.) Value of access to credit issued by bank in the name of the bidder.
v.) Name of the Chartered Accountant issuing Certificate.
vi.) Membership Number of the Chartered Accountant.
vii.) Scanned Copy of document as explained at clause 7 related to working capital.

Scanned copy of documents to be uploaded by bidders (CONFIRMATORY DOCUMENT):

Certificate of Working Capital issued by a Practicing Chartered Accountant having a membership number with Institute of Chartered Accountants of India containing the information as furnished by bidder online.

D. Permanent Account Number:

The bidder should possess a Permanent Account Number (PAN) issued by Income Tax Department, Govt. of India.

In case of JV/CONSORTIUM, PAN card for each Indian partner of JV/CONSORTIUM and Verifiable Tax Residency Certificate of respective country for each foreign partner or JV/CONSORTIUM itself.

In respect of the above eligibility criteria the bidders are required to furnish the following information on line:

i. Confirmation in the form of YES/NO regarding possessing PAN issued by Income

Tax Department, Govt. of India.

ii. **Scanned copy of documents to be uploaded by bidders (BIDDER SPACE/ MY DOCUMENT/ Other Important Document (OID): PAN CARD of the bidder**

Note: In case of Joint Venture (JV)/ Consortium, each INDIAN Partner of JV/ Consortium should possess PAN Card issued by Income Tax Department, Govt. of India and each FOREIGN Partner of JV should possess Verifiable Tax Residency Certificate of respective Country OR JV itself should possess PAN card issued by Income Tax Department, Govt. of India.

[In case the work is awarded to JV/ Consortium, the PAN, in the name of JV/ Consortium, is to be submitted before execution of Agreement]

E. Goods and Services Tax (GST) (Not Applicable for Exempted Services):

The bidder should be either

GST Registered Bidder under regular scheme

OR

GST Registered Bidder under composition scheme

OR

GST unregistered Bidder

In respect of the above eligibility criteria the bidder is required to furnish the following information online:

i. Confirmation in the form of Yes/No regarding possessing of required document as enlisted in NIT with respect to GST status of the bidder.
ii. **Scanned copy of documents to be uploaded by bidders (BIDDER SPACE/ MY DOCUMENT/ Other Important Document (OID):** GST Registration of the bidder.

Note:

. i). In case of JV/CONSORTIUM, Bidder should submit scanned copy of GST status of Lead Partner only or GST Registration Certificate of JV/CONSORTIUM itself.

ii). In case the work/service is awarded to a JV/Consortium participating in the tender they have to submit PAN, GST registration (as applicable in the tender and for the bidder status) etc. in the name of the JV/Consortium after Award of Work/Service before the payment of first running on account bill.

iii) If turnover of bidder exceeds exemption/threshold limit, the bidder must have GST registration as per GST Act and rules.

iv) During the execution of the contract if the GST status of the bidder changes, then the payment of GST, if any, to the contractor will be made as per the GST status declared by the bidder during tender stage based on which cost to company has been ascertained or at actuals, whichever is lower.

Scanned copy of documents to be uploaded by bidder(s) in support of information / declaration furnished online by the bidder against Eligibility Criteria as Confirmatory Document

F. General Essential Requirements for Both Services and Works:

In order to qualify in the tender, the bidders have to accept the following conditions:

i. All the Terms and Condition of the NIT and Tender Document Unconditionally on line in the form of User Portal Agreement.

ii. Expected values of each of the General Technical Evaluation (GTE) items

iii. To upload online the scanned copy of documents, as specified in the NIT for evaluation by Tender Committee as per the checklist given in the NIT.

Data to be furnished by Bidder on-line:
i. Confirmation in the form of **Agree**/**Disagree** for accepting user portal agreement

ii. Confirmation in the form of **Yes**/**No** for each GTE item

Technical evaluation by the System:

System will capture data in the **Agree**/**Disagree** OR **YES**/**NO** format from the bidder and will decide the eligibility for (i) & (ii) above.

For (iii), the confirmatory documents will be downloaded and evaluated by Tender Committee as explained in Part I. The outcome is to be uploaded on line in Confirmatory Document page by Evaluator

Scanned copy of documents to be uploaded by bidders (CONFIRMATORY DOCUMENT): To be taken as per Checklist

G. ***Legal Status of the bidder:***

Any one of the following documents:

1. Affidavit or any other document to prove proprietorship/individual status of the bidder.
2. Partnership deed containing name of partners.
3. Memorandum & Article of Association with certificate of incorporation containing name of bidder

Note: In case of JV/ Consortium:

a. Details of all partners as at (i), (ii) & (iii) above (as applicable)
b. JV/ Consortium agreement as per NIT Format **(Annexure-II)** containing name of partners and lead partner, Power of Attorney to the Lead Partner and share of each partner.
c. Power of Attorney to the Lead Partner.
d. **Special Note:** The bidder has to upload the JV/ Consortium documents as per the format of Annexure -II pertaining to subject tender with reference to NIT No. and Tender ID.

Scanned copy of documents to be uploaded by bidders (BIDDER SPACE/ MY DOCUMENT/ Other Important Document (OID): Legal Status of the bidder.

H. ***Digital Signature Certificate (DSC):***

If the bidder himself is the DSC holder bidding on-line, then no document is required. However, if the DSC holder is bidding online on behalf of the bidder, then the Power of Attorney or any sort of legally acceptable document for the authority to bid on behalf of the bidder is required.

Scanned copy of documents to be uploaded by bidders (CONFIRMATORY DOCUMENT):

I. Banning:

The bidders would give a declaration that they have not been banned or delisted by any Govt. or Quasi Govt. agencies or PSUs. If a bidder has been banned or delisted by any Govt. or Quasi Govt. agencies or PSUs, this fact must be clearly stated and it may not necessarily be a cause for disqualification. If the declaration is not given, the bid will be rejected as non-responsive.

A declaration in the Undertaking at **Annexure VII** shall be accepted by bidder unconditionally in GTE (General Technical Evaluation).

J. <u>Valid Electrical License</u>:

The tenderers should have Valid H.T. Electrical Contractor's License **suitable for executing the entire tendered job**, issued by Govt. licensing Board of any Indian state/UT.

(In case the bidder is a Joint Venture, at least one partner of JV should possess the valid H.T. Electrical Contractor's License suitable for executing the entire tendered job, issued by Electrical Licensing Board/Authority of any Indian state/UT).

Scanned copy of documents to be uploaded by bidders (CONFIRMATORY DOCUMENT)

K. Purchase Preference under 'Make in India' Policy for "Local supplier".

Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) dated 16.09.2020, issued by Govt. of India as amended from time to time shall be applicable.

In terms of the above said policy, purchase preference shall be given to Class-I local supplier.
In terms with the above said policy, Class-I local suppliers and Class-II local suppliers shall be eligible to bid.

The definitions of Class-I *Local Supplier*, Class-II local supplier, Non-Local supplier, *Local Content* and Margin of Purchase Preference as per above mentioned Order are as follows: -

A. 'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%, as defined under said order.

B. 'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 20% but less than 50%, as defined under said order.

C. 'Non-Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20% as defined under said order

D. '*Local Content*' means the amount of value added in India which shall be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

E. 'Margin of Purchase Preference' means the maximum extent to which

the price quoted by a Class-I local supplier may be above the L1 for the purpose of purchase preference. The margin of purchase preference is 20%.

In respect of the above eligibility criteria the bidder is required to furnish the following information online:

Confirmation in the form of Yes/No regarding possessing of required document indicating percentage of local content as enlisted in NIT.

Note:-

a) If the estimated value of Procurement is less than Rs. 10 crores, all the Bidders at the time of bidding shall submit either self-certification indicating the percentage of local content in the offered items in Undertaking as per format.

b) If the estimated value of procurement is more than Rs. 10 crores, all the Bidders shall submit along with its bid a certificate from the statutory auditor or cost auditor of the Company (in case of companies) or from a practicing cost accountant or practicing chartered account (in respect of suppliers other than companies) giving the percentage of local content.

Scanned copy of documents to be uploaded by bidder(s) in support of information / declaration furnished online by the bidder against Eligibility Criteria as Confirmatory Document.

Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) dated 16.09.2020, issued by Govt. of India as amended from time to time shall be applicable. (NOT APPLICABLE WHERE ESTIMATED COST PUT TO TENDER IS LESS THAN 5 LAKHS.)

In terms with the above said policy, Class-I local suppliers and Class-II local suppliers shall be eligible to bid. Non-local supplier is not eligible to bid. The purchase preference shall be given to Class-I local supplier only.

In terms of the above said policy, purchase preference shall be given to Class-I local suppliers in the following manner :

I. In the procurement of works which are divisible in nature, the following procedure shall be followed :-

i) Among all qualified bids, the lowest bid will be termed as L-1. If L-1 is from a Class-I local supplier, the contract for full quantity will be awarded to L-1 at L-1 price by the Purchaser.

ii) If L-1 is not a Class-I local supplier, 50% of the order quantity shall be awarded to L-1. Thereafter, the lowest bidder among the Class-I local suppliers will be invited to match the L-1 price for the remaining 50% quantity subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract for that quantity shall be awarded to such local supplier subject to his matching the L-1 price. In case such lowest eligible Class-I supplier fails to match the L-1 price or

accept less than the offer quantity, the next higher Class-I local supplier within the margin of purchase preference shall be invited to match the L-1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local supplier, then such balance quantity may also be ordered on L-1 bidder.

II. In the procurement of works which are not divisible, and in procurement of services where the bid is evaluated on price alone, the following procedure shall be followed:-

i) Among all qualified bids, the lowest bid will be termed as L-1. If L-1 is from a Class-I local supplier, the contract will be awarded to L-1.

ii) If L-1 is not from a Class-I local supplier, the lowest bidder among the Class-I local suppliers, will be invited to match the L-1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such Class-I local supplier subject to matching the L-1 price.

iii) In case such lowest eligible Class-I local supplier fails to match the L-1 price, the Class-I local supplier with the next higher bid within the margin of purchase preference shall be invited to match the L-1 price and so on and contract shall be awarded accordingly. In case none of the Class-I local suppliers within the margin of purchase preference matches the L-1 price, then the contract may be awarded to the L-1 bidder.

Note: The confirmation from the bidder regarding matching of L1 price may be taken in confirmatory document link of e-Procurement portal by recycling 'Any other document' link.

Verification of local content:

i) All the Bidders at the time of bidding shall submit self-certification indicating the percentage of local content in the offered items.

ii) ECL may constitute committees with internal and external experts for independent verification of auditor's / accountant's certificates on random basis and in the case of complaints.

iii) False declarations will attract **Guidelines on Debarment of firms from Bidding** for a period up to two year and with process in line with clause 19 of GTC.

iv) A local supplier who has been debarred by any procuring entity for violation of above order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities.

8.5 If the bidder is a subsidiary of a company, the experience and resources of the holding company or its other subsidiaries will not be taken into account.

However, if the bidder is a holding company, the experience and resources of its wholly owned subsidiaries will be taken into consideration.

8.6 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

a) Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or

b) The 'contract' shall mean the notice inviting tender, the tender as accepted by the company and the formal agreement executed between the company and the contractor together with the documents referred to therein including conditions of contract, special conditions, if any, specifications, designs & drawings including those to be submitted during progress of work, scope of work, billing schedule/schedule of quantities with rates and amounts. Until the formal agreement is signed between the Owner and Contractor, LOA/Work Order together with Contract Document, shall constitute the Contract.

In respect of the above eligibility criteria the bidder is required to furnish the following information online:

a. Confirmation in the form of Yes/No regarding possessing of required document indicating percentage of local content as enlisted in NIT.

7. a. **General Technical Evaluation (GTE) and Bidder's space/ My Document/ Other Important Document (OID):**

The bidders have to accept unconditionally in GTE (General Technical Evaluation) the **Annexure VI** (Letter of Bid), Undertaking at **Annexure VII** and **Annexure I** (Integrity Pact), if applicable regarding Genuineness of the information furnished by him online & authenticity of the scanned copy of documents uploaded by him on-line in support of his eligibility criteria, declaration w.r.t Make in India order dated 16.09.2020 etc. No recycling of these documents will be needed.

Moreover, the following documents shall be considered from the Bidder's space/ My Document / Other Important Document (OID), and no recycling will be done for these documents i.e. no further clarification will be sought from bidder –

Sl. No.	**Submission of Documents related to Eligibility Criteria**	**Scanned copy of document(s) uploaded by bidder in Bidder's space/ My Document / Other Important Document (OID)**
1.	Permanent Account Number (PAN) *[Ref.Cl.No.8(D) of e-Tender Notice]*	Copy of PAN card issued by Income Tax department, Govt. of India. **Note:** In case of Joint Venture (JV)/ Consortium, each INDIAN Partner of JV/ Consortium should possess PAN Card issued by Income Tax Department, Govt. of India and each FOREIGN Partner of JV/ Consortium should possess Verifiable Tax Residency Certificate of respective Country OR JV/ Consortium itself should possess PAN card issued by Income Tax Department, Govt.

		of India. ***[In case the work is awarded to JV*** Consortium***, the PAN, in the name of JV, is to be submitted before execution of Agreement]***
2.	Goods & Services Tax (GST) Registration. **(Not Applicable for Exempted Services)** *[Ref.Cl.No.8(E) of e-Tender Notice]*	The following documents depending upon the status w.r.to GST as declared by Bidder in the BOQ sheet: a) Status: GST Registered Bidder under regular scheme Document: GST Registration Certificate (i.e. GST identification Number) issued by appropriate authority of India. b) Status: GST Registered Bidder under composition scheme Document: GST Registration Certificate (i.e. GST identification Number) issued by appropriate authority of India. c) Status: GST unregistered bidder: Document: A Certificate with UDIN from a practicing Chartered Accountant having membership number with Institute of Chartered Accountants of India certifying that the bidder is GST unregistered bidder in compliance with the relevant GST rules of. India. [In case of JV/ Consortium a Certificate from a practicing Chartered Accountant having membership number with Institute of Chartered Accountants of India confirming the status of JV/ Consortium w.r.t GST in compliance with relevant GST rules or GST Registration Certificate of JV/ Consortium] **Note:** *If turnover of bidder exceeds exemption/threshold limit, the bidder must have GST registration as per GST Act and rules.*
3.	Legal Status of the Bidder (Ref. Clause No 8 (G) of NIT)	Any one of the following documents: 1. Affidavit or any other document to prove proprietorship/**Individual status of the bidder.** 2.Partnership deed containing name of partners 3.Memorandum & Article of Association with certificate of incorporation containing name of bidder Note: In case of JV/ Consortium: a. Details of all partners as at (i), (ii) & (iii) above (as applicable) b. JV/ Consortium agreement as per NIT Format **(Annexure-II)** containing name of partners and lead partner, Power of Attorney to the Lead Partner and share of each partner. c. Power of Attorney to the Lead Partner. d. **Special Note:** The bidder has to upload the JV/

		Consortium documents as per the format of Annexure -II pertaining to subject tender with reference to NIT No. and Tender ID..
Note: Only one file in .pdf format can be uploaded against each eligibility criteria. Any additional/ other relevant documents to support the information/declaration furnished by bidder online against eligibility criteria may also be attached by the bidder in the same file to be uploaded against respective eligibility criteria.		

b. All the bidders have to submit the information in objective manner confirmed by the uploaded documents. The documents related to the information furnished in Evaluation Sheet and GTE by bidder, based on which the manual evaluation will be done, only be considered. If the bidder uploads any other document, it will be given no cognizance.
The scanned copy of following documents (valid on the end date of bid submission) will be uploaded by the bidder while submitting bid online:

PART-I (Cover-I)

Sl. No.	**Submission of Documents related to Eligibility Criteria**	**Scanned copy of documents (valid on the end date of bid submission) to be uploaded by bidder in support of information/ declaration furnished online by the bidder against Eligibility Criteria as Confirmatory Document**
1.	Work Experience [Ref.Cl.No.8(A) of e-Tender Notice]	For work experience, bidders are required to submit satisfactory Work completion certificate issued by the employer against the experience of similar works containing all the information as sought online. In case of sub- contractor, suitable document as per provisions of eligibility, if applicable shall be submitted. Work Order, BOQ, TDS etc. may be sought during clarification or along with deficient documents as per relevant clause.
2.	Financial Turnover [Ref.Cl.No.8(B) of e-Tender Notice]	Financial Turnover Certificate having a Unique Identification Number (UDIN) with Institute of Chartered Accountants of India for last 3(three) financial years issued by a practicing Chartered Accountant having a membership number with Institute of Chartered Accountants of India. (**In case of JV/ Consortium, Turnover Certificate for each individual partner of JV)**
3.	Working Capital [Ref.Cl.No.8(C) of e-Tender Notice]	Certificate with UDIN of Working Capital issued by a practicing Chartered Accountant having a membership number with Institute of Chartered Accountants of India containing the information as furnished by Bidder online.

Sl. No.	Submission of Documents related to Eligibility Criteria	Scanned copy of documents (valid on the end date of bid submission) to be uploaded by bidder in support of information/ declaration furnished online by the bidder against Eligibility Criteria as Confirmatory Document
4.	Digital Signature Certificate (DSC)[Ref.Cl.No.8(H) of e- Tender Notice]	a. If the bidder himself is the DSC holder bidding on-line then no document is required. However, if the DSC holder is bidding online on behalf of the bidder, then, the Power of Attorney or any sort of legally accepted document for the authority to bid on behalf of the Bidder.
5.	Local Supplier Status of Bidder	a. If the estimated value of Procurement is less than Rs. 10 crores, all the Bidders at the time of bidding shall submit self-certification indicating the percentage of local content in the offered items. b. If the estimated value of procurement is more than Rs. 10 crores, all the Bidders shall submit along with its bid a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered account (in respect of suppliers other than companies) giving the percentage of local content.
6.	Valid Electrical License	Valid H.T. Electrical Contractor's License suitable for executing the entire tendered job, issued by Govt. licensing Board of any Indian state/UT. (In case the bidder is a Joint Venture, at least one partner of JV should possess the valid H.T. Electrical Contractor's License suitable for executing the entire tendered job, issued by Electrical Licensing Board/Authority of any Indian state/UT).
7.	Undertaking	Undertaking by Bidder/s on his Letter Head regarding relatives as employees of company, Registration with CMPF /EPF authorities, Banning/ Delisting of Bidder, non-engagements of child-labours. Restrictions on procurement from a bidder of a country which shares a land boarder, One bid per bidder as per point 4 of ITB, Arbitration clause (in case of partnership/Joint Venture/ Consortium firm), Local supplier status of the Bidder as per clause 8(E) of NIT etc. as per the format given in the bid document at **Annexure VIII.**
Note: Only one file in .pdf format can be uploaded against each eligibility criteria. Any additional/ other relevant documents to support the information/declaration furnished by bidder online against eligibility criteria may also be attached by the bidder in the same file to be uploaded against respective eligibility criteria.		

8. <u>General Instructions for Submission of Bid:</u>

All the bids are to be submitted online and, on the website,**<u>https://coalindiatenders.nic.in</u>**. No bid shall be accepted offline.

a) The bidder should strictly comply with the following instructions:

i) The bidders are required to submit offers online in Two Parts (Two Covers) in the links Cover-I, and Cover-II.

ii) Two Parts (Two Covers) of the bid should contain the details as follows:

Part-I/Cover-I:

- Authorization for DSC
- Undertaking
- Information regarding Eligibility Criteria,

Part–II/Cover-II:

a. All the bids are to be submitted online on e-procurement portal of CIL. No bid shall be accepted offline.

b. In order to submit the Bid, the Bidders have to get themselves registered online on the e-Procurement portal of CIL with valid Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root Certificate of CCA. The online Registration of the Bidders on the portal will be free of cost and one-time activity only. The registration should be in the name of Bidder, whereas DSC holder may be either Bidder himself or his duly authorized person. The Bidder is one whose name will appear as Bidder in the e-Procurement Portal.

c. The Bidders have to accept unconditionally the online user portal agreement which contains the acceptance of all the Terms and Conditions of NIT including General and Special Terms & Conditions and other conditions, if any, along with on-line undertaking in support of the authenticity of the declarations regarding the facts, figures, information and documents furnished by the Bidder on-line in order to become an eligible Bidder. No conditional bid shall be accepted.

d. Letter of Bid: The Letter of Bid addressed to the Tender Inviting Authority (TIA) will be given in Tender document containing name of the work, NIT No., Tender ID. This will be the covering letter of the Bidder for his submitted bid. The Bidders have to accept unconditionally the Letter of Bid in GTE (General Technical Evaluation) at the time of bid submission. This online acceptance during bidding through GTE shall be construed as submission of LOB by bidder.

e. Confirmatory Documents:

All the Confirmatory documents as enlisted in the NIT in support of online information furnished by the Bidder are to be uploaded in Cover-I by the Bidder while submitting the bid online.

f. Price Bid (Part-II/Cover-II):

The Price bid containing the Bill of Quantity will be in Excel format and will be downloaded by the bidder and bidder will quote the rates for all items on this Excel file. Prior to quoting the rates in the BOQ file, the bidder will select the appropriate status from the following drop-down list given in the BOQ: -

I. Status: GST Registered Bidder under regular scheme
II. Status: GST Registered Bidder under composition scheme
III. Status: GST unregistered bidder

The rates quoted by the bidder will be excluding GST and GST component (to be paid by ECL and/or the bidder) will appear as a separate entity. The component of GST will be taken by the system based on the status of bidder selected by the bidder during bid submission and with the pre-defined business logic given in the BOQ file by the department. This file will be digitally signed and uploaded by the bidder after ascertaining the correctness of facts and figures.
Thereafter, the bidder will upload the same Excel file during bid submission in cover-II. The Price-bid (excluding GST) will be in Item Rate BOQ format and the bidder will have to quote for all the tendered items. The Price Bid of the tenderers will have no condition. The price bid which is incomplete and not submitted as per instruction given in this document is liable for rejection.

System for decision of L1 bidder

The L1 bidder will be decided based on Overall Quoted Value (i.e. cost to the Company). The system for decision of L1 bidder will be as per following 02(two) cases: -

Case – 1: Works for which INPUT TAX CREDIT (ITC) is not available to the Company.

For calculation of Overall Bid Value, the GST [CGST, SGST/UTGST, IGST and GST (compensation to state tax)] chargeable on supply (whether payable by the bidder under forward charge or by ECL (under reverse charge)) as computed by the system will be added, to decide the L1 i.e. the ranking of the Bidders will be decided based on rates quoted by the bidders plus GST. This value of the bidder will be "the Cost to Company" [Base value + GST].
Then share of GST to be deposited by ECL, if any will be deducted from overall bid value to arrive at the Contract value. The Price-bids of the tenderers shall have no condition. The Price Bid which is incomplete and not submitted as per instruction given above is liable for rejection.

Case – 2: Works for which INPUT TAX CREDIT (ITC) is available to the Company.

For calculation of Overall Bid Value, the GST [CGST, SGST/UTGST, IGST and GST (compensation to state tax)] chargeable on supply (whether payable by the bidder under forward charge or by ECL (under reverse charge)) as computed by the system will be ignored to decide the L1 i.e. the ranking of the Bidders will be decided based on rates quoted by the bidders excluding GST. This value of the bidder will be "the cost to Company".
Then share of GST to be paid by bidder shall be added with overall bid value to arrive at the Contract value. The Price-bids of the tenderers shall have no condition. The Price Bid which is incomplete and not submitted as per instruction given above is liable for rejection.

Note: The bidder should select their GST category as per clause no. 6(E) of NIT.

9. Validity Period of Offer

The rates offered in Part II (Price Bid) should be valid for 180 days after the last date of submission of Bid.

10. It is the bidder's responsibility to comply with the system requirement i.e. hardware, software and internet connectivity at bidder's premises to access the e-tender portal.

Under no circumstances, ECL shall be liable to the bidders for any direct/indirect loss or damage incurred by them arising out of incorrect use of the e-tender system or internet connectivity failures.

11. Opening of Technical Bid:

11.1 Opening of Technical bid: The Technical bid (Part-I/Cover-I) will be opened one day after the Bid submission end date or next working day whichever is later. Technical bid (Part-I/ Cover-I) will be decrypted and opened online by the "Bid Openers" with their Digital Signature Certificates on the prescheduled date & time of Tender Opening.

11.2 The bids submitted will be evaluated manually on the basis of relevant data provided by bidder through a form in an objective and structured manner while submitting bid. If the parameter given by bidder in objective and structured manner does not confirm to required eligibility criteria as specified in the tender document then the bid will be rejected.

11.3. All the documents uploaded by bidder(s) including i.e. Letter of Bid and the Evaluation sheets generated by the system online shall be downloaded after opening of Technical bid (Part-I/ Cover-I). After decryption and opening of Technical bid (Part-I/ Cover-I) the "technical bid opening summary" will be uploaded on the same day.

12. <u>Technical Evaluation of Tender:</u>

A. After opening of Technical bid, the documents submitted by bidder(s) in cover I as enlisted in the NIT will be downloaded by the Evaluator and shall be put up to the Tender Committee. The Tender Committee will examine the uploaded documents against information/declarations furnished by the bidder(s) in Evaluation Sheet & GTE. If it confirms to all of the information/ declarations furnished by the bidder online and does not change the eligibility status of the bidder then the bidder will be considered eligible for opening of price bid.

B. In case the Tender Committee finds that there is some deficiency in uploaded documents corresponding to the information furnished online or in case corresponding document have not been uploaded by bidder(s) then the same will be specified online by Evaluator clearly indicating the omissions/shortcomings in the uploaded documents and indicating start date and end date allowing 7 days (7 x 24 hours) time for online re-submission by bidder(s). The bidder(s) will get this information on their personalized dashboard under "Upload confirmatory document" link. Additionally, information shall also be sent by system generated email and SMS, but it will be the bidder's responsibility to check the updated status/information on their personalized dash board regularly after opening of bid. No separate communication will be required in this regard. Non-receipt of e-mail and SMS will not be accepted as a reason of non-submission of documents within prescribed time. The bidder(s) will upload the scanned copy of all those specified documents in support of the information/ declarations furnished by them online within the specified period of 7 days. If the bidder(s) fails to submit the specified document/s in 7(Seven) days (7 x 24 hours), no further document shall be sought from Bidder.

C. It is responsibility of Bidders to upload legible/clearly readable scanned copy of all the required documents as mentioned above.

D. The tender will be evaluated on the basis of documents uploaded by bidder(s) online. The bidder(s) is/are not required to submit hard copy of any document through offline mode. Any document submitted offline will not be given any cognizance in the evaluation of tender.

E. In case the bidder(s) submit(s) requisite documents online as per NIT, then the bidder(s) will be considered eligible for opening of Price Bid.

F. Seeking clarification shall be restricted to confirmation of submitted document/online information only and it should be only for one time for a period of upto 7 days. The clarification shall be taken in online mode in the e- Procurement portal of CIL only.

G. In case bidder(s) fails to confirm the information(s)/ declaration(s) submitted through Evaluation Sheet & GTE by the submitted documents as (B) above, their/his bid shall be rejected; however, if the confirmatory documents do not change eligibility status of the bidder in connection his information(s)/declaration(s) submitted through Evaluation Sheet & GTE, then his/their bid will be accepted for opening of Price Bid.

H. After Technical evaluation of tender, "Technical Evaluation Summary" will be uploaded by the evaluator and price bid shall be opened on preschedule date and time mentioned in the NIT online in the e- Procurement portal of CIL. However, in case there is any extension of date and time of price bid opening, it shall be notified online and price bid shall be opened online on e-Procurement portal of CIL at rescheduled date and time.

I. In case none of the bidder(s) complies the technical eligibility criteria as per NIT, then bidder(s) will be rejected online and re-tender (if required) will be done (with the same or different quantity, as per the instant requirement).

J. Preference to Make in India (as applicable) vide Order No. P45021/2/2017-PP (BE-II) issued by Govt. of India as amended from time to time shall be applicable. Accordingly, provisions of these guidelines are to be modified suitably.

13. Price Bid Opening and Award of Work:

A. The Tender Committee will recommend for award of work to the successful bidder after evaluation of the reasonableness of L-1 rates. The reasonableness of rates will be evaluated as per the provisions of Manual of CIL and other guidelines issued from time to time.

The approval for award of work to L-1 bidder will be accorded by the competent authority as per Delegation of Power based on the TC recommendation.

B. After competent approval and financial concurrence of TCR, the work order to the L-1 bidder will be issued and the scanned copy of the Work Order will be uploaded on the e-Procurement portal and simultaneously the original copy will be sent to the bidder through registered/speed post.

C. Any tender hosted on the e-Procurement site must be logically concluded i.e. either Award of work is issued at AOC page on e-Procurement portal in online mode or the tender is cancelled/ retendered online through corrigendum.

D. If L1 bidder backs out (i.e. Techno commercially established L1 bidder), **the EMD will be forfeited and the bidder will be debarred for minimum one (1) year from participating in tenders in ECL.**

14. The tenderer shall closely study all specifications in detail, which govern the rates for which he is tendering. However, banning shall be done as per Guidelines for Banning Business.

15. BID VALIDITY: The Bid Validity Period will be 180 (one hundred eighty) days from the end date of bid submission. The validity period of tender shall be decided based on the final end date of submission of bids, after extension, if any.

16. Modification and Withdrawal of Bid:

Modification of the submitted bid shall be allowed online only before the deadline of submission of tender and the bidder may modify and resubmit the bid online as many times as he may wish.

Bidders may withdraw their bids online within the end date of bid submission. However, if the bidder once withdraws his bid, he will not be able to resubmit the bid in that particular tender.

For withdrawal of bid after the end date of bid submission, the bidder will have to make a request in writing to the Tender Inviting Authority. Withdrawal of bid may be allowed till issue of work order/LOA with the following provision of penal action:

a. If the request of withdrawal is received before online notification for opening of price bid, the EMD will be forfeited and bidder will be debarred for 1 (one) year from participating in tenders in ECL. The Price-bid of remaining bidders will be opened and the tender process shall go on.

b. If the request of withdrawal is received after online notification for opening of price bid, the EMD will be forfeited and the bidder will be debarred for minimum 1 (one) year from participating in tenders in ECL. The Price-bid of all eligible bidders including this bidder will be opened and action will follow as under:

i. If the bidder withdrawing his bid is other than L 1, the tender process shall go on.

ii. If the bidder withdrawing his bid is L-1, then re-tender will be done.

Note:
i). In case of clause (a) & (b) above, a letter will be issued to the bidder by Tender Inviting Authority with the approval of Tender Accepting Authority, stating that the EMD of bidder is forfeited, and this bidder is debarred for 1 (one) year (in case of clause-a) OR minimum one (1) year (in case of clause-b) from participating in tenders in ECL. This letter will be circulated to all Areas of the ECL and the updated list will be maintained by all Tender Inviting Authority/Evaluators.

ii). Penal action against clause (a) & (b) above will be enforced from the date of issue of such order. The standard operating procedure to handle withdrawal of bid after end date of submission shall be as Clause no 14 of Chapter I.

Note: Standard Operative Procedure (SOP) for managing the cases of Withdrawal of Bids in e-Procurement System of ECL

I. The Mode of Withdrawal:

A. Online Withdrawal of Bids:

a. The system of online withdrawal is available on the portal up to end date of bid submission, where any bidder can withdraw his/her bid which will attract no penal action.
b. The system of online withdrawal beyond end date of bid submission and till award of contract is also available but not fully functional and under development stage. Once it is developed and implemented only online withdrawal shall be considered except for some exceptional cases as mentioned in clause below.

B. Offline Withdrawal of Bids:

a. A partner of bidder (in case of JV/ Consortium and partnership firms) whose DSC is registered on the e-Procurement portal can access the portal for online withdrawal but when there is a split in the business relationship, the partners whose DSC is not registered on the portal do not have the option of online withdrawal of bid. Hence such partners may opt to use offline method of withdrawal of his/her offer (or express his disassociation from the bidder organization).
b. Till a fully functional system of online withdrawal of bid (beyond end date of bid

submission and till award of contract) is not developed and implemented, offline withdrawal shall also be considered.

17. Tender Status: It will be the bidder's responsibility to check the status of their Bid online regularly, after the opening of bid till award of contract. Additionally, information shall also be sent by system generated email and SMS at nodal points (Date of bid opening, Requisition for Clarification on Confirmatory document, award of work etc.). No separate communication will be required in this regard. Non-receipt of email and SMS will not be accepted as a reason of non- submission of Confirmatory documents within prescribed time. The Tender Status will be in public domain and anyone visiting the site can view it by identifying the tender.

18. In case the works / service is awarded to a joint venture participating in the tender they have to submit GST registration (as applicable in the tender and for the bidder status) on the name of the Joint Venture after Award of the Works / Service at the time execution of agreement / before the payment of first running on account bill.

19. The Company reserves the right to postpone the date of receipt and opening of tenders or to cancel the tenders without assigning any reason whatsoever.

20. The Company does not bind itself to accept the lowest bid and reserves the right to reject any or all the bid without assigning any reasons whatsoever and also to split up the work between two or more tenderers or accept the tender in part and not in its entirety, at its sole discretion.

21. Any addendum/corrigendum/date extension etc. in respect of this tender shall be issued on our website (https://coalindiatenders.nic.in) only. No separate notification shall be issued in the press. Bidders are therefore requested to visit our website regularly to keep themselves updated.

22. This Tender Notice shall be deemed to be part of the Contract Agreement. The "General Terms & Conditions", Additional Terms & Conditions, Special Terms & Conditions (if any), Technical Specifications, drawings (if any) and any other document uploaded on portal as NIT document forms an integral part of this NIT and shall also form a part of the Contract agreement.

23. <u>Non-disclosure/ Confidentiality clause</u>:

The bidder will not at any time during pendency of contract or afterwards, disclose to any person any information as to documents, components, parts, information, drawings, data, sketches, plans, programs, specifications, techniques, processes, software, inventions and other materials, both written and oral, of a secret, confidential or proprietary nature, including without limitation any and all information relating to finance , invention, research, design or development of information system and any supportive or incidental subsystems, and any and all subject matter claimed in or disclosed by any patent application prepared or filed by or on behalf of ECL, in any jurisdiction, and any amendments or supplements thereto. The bidder should understand that any breach of this clause would constitute a serious offence for which appropriate legal action may be taken to ensure the enforcement of confidentiality clause.

ECL also desires that the bidder shall hold in trust and confidence, and not disclose to others or use for its own benefit or for the benefit of other, any Proprietary Information which is disclosed to the bidder by ECL at any time during the agreement / award of work / execution of work and thereafter. The bidder shall disclose Proprietary Information received under the contract to person within its organization only if such persons (i) have a need to know and (ii) are bound in writing to protect the confidentiality of such Proprietary Information. This clause shall survive and continue after any expiration or termination of the

contract and shall bind the contractor, its employees, agents, representatives, successors, heirs and assigns.

24. Pre-Contract Integrity Pact:

The bidders have to accept unconditionally the Integrity Pact in GTE (General Technical Evaluation) at the time of bid submission.

Name, address and contact No. of the Independent External Monitors (IEM) nominated for this tender:

Sl. No.	Name	Address	email Id
1	Shri V.N.Gaur, IAS (Retd.)	45. Panchsheel Judges Society, Pocket 7, Builders Area, Greater Noida, Gautam Buddha Nagar - 201315	vngaur@gmail.com
2	Shri S. Srinivasan, IAS (Retd.)	Flat No D-5-107, Block no. 5, V Floor, Kendariya Vihar, B.B Road (Bangalore-Bellary Road), Yelahanka, Bangalore-560064	s.srinivasan1980@gmail.com

37. Restriction on Procurement from a bidder of a country which share a land border with India and on sub-contracting to Contractors from such countries:

I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.

II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or Company, including any member of a consortium or JV/Consortium (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

III. "Bidder from a country which shares a land border with India" for the purpose of this Order means. -

a. An entity incorporated, established or registered in such a country; or
b. A Subsidiary of an entity incorporated, established or registered in such a country; or
c. An entry substantially controlled through entities incorporated, established or registered in such a country; or
d. An entity whose beneficial owner is situated in such a country; or
e. An Indian (or other) agent of such an entity; or
f. A natural person who is a citizen of such a country; or
g. A consortium or JV/Consortium where any member of the consortium or JV/Consortium falls under any of the above

IV. The beneficial owner for the purpose of (III) above will be as under

1. In case of a Company or Limited Liability Partnership, the beneficial owner is the natural persons, who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means

Explanation--

a. “Controlling ownership interest” means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the Company
b. “Control” shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership:
3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural persons, who, whether acting alone or together, or through one or more juridical person has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals,
4. Where no natural person is identified under (1) or (d) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

Note:

1. (a) The intending bidder must submit Certificate in compliance to order no,. F. No.6/18/2019-PPD dt 23/7/20 0f Ministry of Finance, Dept of Expenditure, Public Procurement Division with respect to “restriction of bidders from a country which shares a land border with India and on sub-contracting to contractors from such countries”

   AND

   (b) Valid registration from competent authority (If applicable).
   Registration should be valid at the time of submission of bid and acceptance of bids.

2. Regarding registration with Competent Authority.

3. Regarding exclusion from restriction.

4. As per Office Memorandum No. F.18/37/2020-PPD dated 08.02.2021 issued by Procurement Policy Division, Department of Expenditure, Ministry of Finance, GOVERNMENT OF INDIA the following is hereby clarified:

   i. A bidder is permitted to procure raw material, components, sub-assemblies etc. from vendors from countries which shares a land border with India. Such vendors will not be

required to be registered with the Competent authority (as per para 11 of the order issued vide OM F.No.6/18/2019-PPD dated 23.07.2020 issued by Procurement Policy Division, Department of Expenditure, Ministry of Finance, GOVERNMENT OF INDIA), as it is not regarded as “sub-contracting”.

ii. However, in case a bidder has proposed to supply finished goods procured directly/indirectly from vendors from the countries sharing land border with India, such vendor will be required to be registered with the Competent Authority.

General Manager (Civil)/ HOD,
ECL HQ

Section-2

Instruction to Bidder

SECTION-05
INSTRUCTIONS TO BIDDERS

1. SCOPE OF TENDERER

1.1 The Eastern Coalfields Limited (referred to as Employer in these documents) invites bids for the construction on turnkey basis for the works (as defined in these documents and referred to as "the works") detailed in the table given in the Notice Inviting Tenders (NIT). The bidders may submit bid for all of the works detailed in the NIT.

1.2 The successful Bidder will be expected to complete the Work(s) within the Intended Completion period specified in the notice.

1.3 The total scope of supply and works & services shall be split into two contracts-one covering the supply part and the other covering the works & services part. Both contracts will contain a cross fall breach clause specifying the breach of any one contract will also constitute breach of the other contract and the whole contract combined.

2. ELIGIBLE TENDERERS:

2.1 The Invitation for Bid(s) is open to all Bidders including an individual, proprietorship firm, partnership firm, company registered under Companies Act, any legal entity or JV/Consortium. The bidders shall be eligible to participate only if they fulfill the qualifying criteria laid down separately hereinafter.

2.2 A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the Works shall not be eligible to Bid.

2.3 Joint Venture (JV)/ Consortium: Two or three companies/ contractors may jointly undertake contract/contracts. Each entity will be jointly and severally responsible for completing the task as per the contract.

JV/Consortium details:
Name of all Members of a JV/CONSORTIUM (not more than 3):

1. Lead Member (minimum participation share – 50%)
2. Member (minimum participation share – 20%)
3. Member (minimum participation share – 20%)

JV/Consortium must comply the following requirements:

i. The qualifying criteria parameter e.g. experience, financial resources (of the relevant period) and the equipment/fleet strength of the individual member of the JV/CONSORTIUM will be added together and the total criteria should not be less than as spelt out in qualifying/eligibility criteria as specified in e-tender Notice. However, the required Working Capital shall be met by individual members of JV/CONSORTIUM as spelt out in the relevant Clause.

ii. The formation of JV/CONSORTIUM or change in the JV/CONSORTIUM character/ members after submission of the bid and any change in the bidding regarding JV/CONSORTIUM will not be

permitted.

iii. The bid, and in case of a successful bid - the agreement, shall be signed so as to legally bind all members jointly and severally and any bid shall be submitted with a copy of the JV/CONSORTIUM Agreement providing the joint and several liabilities with respect to the contract.

iv. The pre-qualification of a JV/CONSORTIUM does not necessarily pre-qualify any of its member individually or as a member in any other JV/CONSORTIUM. In case of dissolution of a JV/CONSORTIUM, each one of the constituent firms may pre-qualify if they meet all the pre-qualification requirements, subject to written approval of the employer.

v. The bid submission must include documentary evidence to the relationship between JV/CONSORTIUM members in the form of JV/CONSORTIUM Agreement to legally bind all partners jointly and severally for the proposed agreement which should set out the principles for the constitution, operation, responsibilities regarding work and financial arrangements, participation (percentage share in the total) and liabilities (joint and several) in respect of each and all of the firms in the JV/CONSORTIUM. Such JV/CONSORTIUM Agreement must evidence the commitment of the parties to bid for the facilities applied for (if pre-qualified) and to execute the contract for the facilities if their bid is successful.

vi. One of the members shall be nominated as 'In-charge' of the contract and shall be designated as Lead Partner. This authorization shall be evidenced by submitting with the bid a Power of Attorney signed by legally authorized signatories of all the members.

vii. The JV/CONSORTIUM must provide that the Lead Member shall be authorized to incur liabilities and receive instructions for and on behalf of any and all members of the JV/CONSORTIUM and the entire execution of the contract shall be done with active participation of the Lead Member.

viii. The contract agreement should be signed by each JV/CONSORTIUM members. Subsequent declarations/letters/documents shall be signed by lead member authorized to sign on behalf of the JV/CONSORTIUM or authorized signatory on behalf of JV/CONSORTIUM.

ix. The bid should be signed/digitally signed by the DSC holder submitting the Bid.

x. An entity can be a member in only one JV/CONSORTIUM. Bid submitted by JV/CONSORTIUM including the same entity as member will be rejected.

xi. The JV/CONSORTIUM agreement may specify the share of each individual member for the purpose of execution of this contract. This is required only for the sole purpose of apportioning the value of the contract to that extent to individual member for subsequent submission in other bids if he intends to do so for the purpose of the qualification in that Bid.

xii. The JV/CONSORTIUM agreement must specifically state that it is valid for the project for which bidding is done. If JV/CONSORTIUM breaks up midway before award of work and during bid validity period bid will be rejected.

If JV/CONSORTIUM breaks up midway before award of work and during bid validity/after award of work/during pendency of contract, in addition to normal penalties as per provision of bid document, all the members of the JV/CONSORTIUM shall be debarred from participating in future bids for a minimum period of 12 months.

xiii. JV/CONSORTIUM agreement shall be registered in accordance with law so as to be legally valid and binding on the members before making any payment.

Note: If the work is awarded to a JV/CONSORTIUM firm, they will register the JV/CONSORTIUM agreement under Registration Act in accordance with law.

xiv. JV/CONSORTIUM shall open a bank account in the name of JV/CONSORTIUM and all payments due to the JV/CONSORTIUM shall be credited by employer to that account only. To facilitate statutory deductions all statutory documents like PAN, GST registration etc. shall be submitted by JV/CONSORTIUM before making any payment.

xv. The JV/CONSORTIUM must enroll in the e-Procurement portal with the name of the firm as appearing in the JV/CONSORTIUM agreement.

2.5 Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) issued by Govt. of India as amended from time to time shall be applicable. The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.

2.6 No sub-letting of the work as a whole by the contractor is permissible. Prior permission is required to be taken from the principle employer for engagement of sub-contractors.

3. QUALIFICATION OF THE TENDERER:

3.1 All bidders shall provide in Part-1- Forms of Bid and Qualification Information, contractors bid and undertaking and in Part-II - a preliminary

description of the proposed work method and schedule, including drawings and charts, as necessary.

3.2 In the event that prequalification of potential bidders has been undertaken, only Bids from pre-qualified bidders will be considered for award of Contract.

3.3 If the employer has not undertaken pre-qualification of potential bidders, all bidders shall include the following information and documents with their bids as mentioned herein below in clause 3.4(copies of all documentary evidences are to be duly authenticated by the tenderers/ constituted attorney of the tenderer with full signature and seal. All signed declarations are to be made in the tenderer's letter head.)

3.4 If the bidder is a subsidiary of a company, the experience and resources of the holding company or its other subsidiaries will not be taken into account. However, if the bidder is a holding company, the experience and resources of its wholly owned subsidiaries will be taken into consideration.

3.5 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

a) Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or.
b. record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.

Notes: (Not a part of bid document)

l) The qualification criteria shown above are to be considered as a standard for normal works.
2) For specialized works, based on requirement, the subsidiary may add or modify with the approval of competent authority.
3) The documents to be furnished by the bidder to prove that he is satisfying the qualification criteria laid down should all be in the bidders name except in cases where though the name has changed, owners continued to remain the same and in cases of amalgamation of entities and when a holding company relies on the credential of its wholly owned subsidiaries.

4. ONE BID PER BIDDER

Each Bidder shall submit only one Bid, either individually, or as a proprietor, or as a partner in a partnership firm or as a partner in a JV/Consortium/Consortium or as a Company registered under Companies Act. A Bidder who submits or participates in more than one Bid (other than as a sub-Contractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

5. COST OF BIDDING

The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible or liable for those costs.

6. SITE VISIT

6.1 The Bidder, at the Bidder's own responsibility, cost and risk, is encouraged to visit and examine the Site of Works and its surroundings, approach road, soil condition, investigation report, existing works if any connected to the tendered work, drawings connected to the work if/ as available and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

6.2 It shall be deemed that the tenderer has visited the site/area and got fully acquainted with the working conditions and other prevalent conditions and fluctuations thereto whether he actually visits the site/area or not and has taken all the factors into account while quoting his rates and prices.

6.3 Site Investigation Reports: The Contractor, in preparing the bid, shall rely on the Site Investigation Report referred to in the contract data, supplemented by any information available to the Bidder

6.4 The bidder is expected, before quoting his rate, to go through the requirement of materials, workmanship, specification and conditions of contract.

7. CONTENT OF BIDDING DOCUMENTS

The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 9:

Section 1 Notice Inviting Tender
Section 2 Instructions to Bidders.
Section 3 Forms of Bid, Qualification Information, Contractors Bid and undertaking;
Section 4 Conditions of Contract;
Section 5 Specifications;
Section 6 Tender Drawings;
Section 7 Scope of work/procedure and form of bidding the price including weight and volume of major components of work
Section 8 Forms of Securities, Forms of Bank Guarantees and form of Article of Agreement.
Section 9 Pre-contract Integrity pact (if applicable)

8. CLARIFICATION OF BIDDING DOCUMENTS

8.1 **Pre-Notice Inviting Tender (NIT) Conference:** In complex and innovative procurement cases or where the procuring entity may not have the required knowledge to formulate tender provisions, a pre-NIT conference may help the procuring entity in obtaining inputs from the industry. Such conferences should be widely publicized so that different potential suppliers can attend.
For a successful pre-NIT Discussion, a provisional set of Bid documents,

covering all aspects of Scope of work, eligibility-criteria (if any), technical parameters (If any) and conditions of contract be prepared and hosted in the web-site.

The provisional bid document shall cover a notice for pre-NIT discussion on a suitable date. The notice shall request participation of interested bidders and offer comments/ suggestion for incorporation in the final document.

Such comments / suggestions (on any/all aspect of the document) may be suitably incorporated, if found necessary, and final bid document be drafted. This final draft, after due approval shall be the final bid document.

Bids be invited thereafter as per standard practice

8.2 **Pre-bid meeting:** In case of turnkey contract(s) or contract(s) of special nature for procurement of sophisticated and costly work/ services/ equipment or wherever felt necessary, a suitable provision is to be kept in the bidding documents for inviting the bidders or their official representatives to attend one or more pre-bid conference at a specified place and time, for clarifying issues and clearing doubts, if any, about the specifications/ Terms of Reference and other allied technical/ commercial details of the work, services, plant, equipment and machinery etc.

Bidders should be asked to submit written queries in advance of the conference. After the conference, Minutes of the pre-bid meeting including all the questions and replies shall be prepared and approved by the tender inviting authority. In order to bring clarity to replies, all questions/ answers and needed amendments should be merged in the sequence of clauses in the bidding document. It is a good practice to consolidate all queries received either as part of pre-bid meeting or just after issuing bidding documents and deal with in a comprehensive way. Minutes of the meeting, including the text of the questions raised and the responses given, shall be uploaded in the portal. The techno-commercial requirements may be revised if considered necessary by way of issue of a formal corrigendum (mere minutes of the meeting of pre-bid conference would not suffice) and uploaded in the portal. These pre-bid minutes shall be published along with the bid documents on the appropriate website including CPPP.

Any significant change in condition necessitated from Pre-Bid meeting shall require approval of respective FDs and subsequently, Document download date, Bid submission end date and bid opening date shall be shifted to a date 15 days beyond the date on which changed condition is uploaded. The seek clarification end date shall be adjusted as per e-Procurement Manual for works and services of CIL.

Notice inviting authority may decide to incorporate pre-bid meeting in the bid-notice. Non-attendance in the pre-bid meeting will not be a cause for disqualification of the bidder. Relevant issues raised and clarification given may be hosted in the web-site without disclosing the name of the bidder.

Pre-bid meeting may take place, if required, after publication of Tender but in any case, at least 1 (one) day before the start date of Bid submission. If a Pre-Bid meeting is held then the minutes of the Pre-Bid meeting shall be uploaded on the Portal, before start date of bid submission which can be viewed by all interested bidders

For procurement of highly technological and complex works, tender

submission dates may be extended by the CIL/Subsidiaries in order to reply queries in the pre-bid meetings or any other justifiable reason.

8.3 **Online clarification:** The Bidder may seek clarification online within the specified period. The identity of the Bidder will not be disclosed by the system. The department will clarify as far as possible the relevant queries of Bidders. The clarifications given by department will be visible to all the Bidders intending to participate in that tender. The clarifications may be asked from the day of e-Publication of NIT. The period for seeking clarification by Bidder will be up to 7 (seven) days before the end date of bid submission. The replies to clarifications sought by Bidders should be given by the department at least 2 (two) days before the end date of bid submission.

In exceptional cases where a large number of queries from Bidders are expected, the period for seeking clarification may be kept maximum upto 15 (fifteen) days before the end date of bid submission, but the minimum period given to the Bidders for seeking clarification should not be less than 10 (ten) days in such cases.

The Tender Inviting Authority will be responsible for replying/responding to the clarifications online within the prescribed time frame. However, if the Tender Inviting Authority feels that the query is of such a nature that advice of tender committee or any other authority is required to give clarification, he may do so to reply the queries within the prescribed time limit. The queries of Bidders clarified online and also unanswered queries of Bidders shall be referred in the TCR.

9. AMENDMENT OF BIDDING DOCUMENTS

9.1 Before the deadline for submission of Bids, the Employer may modify the bidding documents by issuing addenda.

9.2 Any addendum thus issued shall be part of the bidding documents and shall be up loaded on the portal.

9.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer shall extend, as necessary, the deadline for submission of Bids, in accordance with Sub-clause 18.2 below.

10. LANGUAGE OF BID

All documents relating to the Bid shall be in the English language.

11. BID PRICES

11.1 The bidder shall closely study all specification in detail and scope of work which govern the rates he is quoting. The contract shall be for the whole Works as described in Sub-Clause 1.1, based on the scope of work as detailed in the bidding document.

11.2 The Bidder shall submit rates and prices for all items of the Works described in the scope of works

11.3 All duties, taxes excluding Goods and Services Tax (GST) & GST Compensation Cess (if applicable) only and other levies payable by the

Bidder/Contractor under the Contract, or for any other cause as applicable on the last date of submission of Bid, shall be included in the rates, prices and the total Bid Price submitted by the Bidder. Applicable GST, either payable by Bidder or by Company under reverse charge mechanism shall be computed by system in BOQ sheet as per pre-defined logic.

All investments, operating expenses, incidentals, overheads, leads, lifts, carriages etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the Bidder.

However, such duties, taxes, levies etc. which is notified after the last date of submission of Bid and/or any increase over the rate existing on the last date of submission of Bid shall be reimbursed by the Company on production of documentary evidence in support of payment actually made to the concerned authorities.

Similarly, if there is any decrease in such duties, taxes and levies the same shall become recoverable from the Contractor.

11.4 The item wise rate quoted by Bidder shall be inclusive of all taxes, duties & levies but excluding GST & GST Compensation Cess, if applicable. The payment of GST and GST Compensation Cess by service availer (i.e. ECL) to Bidder/Contractor (if GST payable by Bidder/Contractor) would be made only on the latter submitting a Bill/invoice in accordance with the provision of relevant GST Act and the rules made thereunder and after online filing of valid return on GST portal. Payment of GST & GST Compensation Cess is responsibility of Bidder/Contractor.

However, in case Contractor is GST unregistered Bidder/dealer or GST registered under composition scheme in compliance with GST rules, the Bidder/dealer shall not charge any GST and/or GST Compensation Cess on bill/invoice. In case of unregistered dealer/Bidder, GST, if applicable will be deposited by ECL directly to concerned authorities in terms with GST provisions.

Input tax credit is to be availed by ECL as per rule.

If ECL fails to claim Input Tax Credit(ITC) on eligible Inputs, input services and Capital Goods or the ITC claimed is disallowed due to failure on the part of supplier/vendor of goods and services in incorporating the tax invoice issued to ECL in its relevant returns under GST, payment of CGST & SGST or IGST, GST (Compensation to State) Cess shown in tax invoice to the tax authorities, issue of proper tax invoice or any other reason whatsoever, the applicable taxes & cess paid based on such Tax invoice shall be recovered from the current bills or any other dues of the supplier/vendor along with interest, if any.

Note: During the execution of the contract if the GST status of the bidder changes, then the payment of GST, if any, to the Contractor will be made as

per the GST status declared by the bidder during tender stage based on which cost to Company has been ascertained or at actuals, whichever is lower.

11.5 The rates and prices quoted by the Bidder shall be fixed for the duration of the contract and shall not be subject to variations on any account except to the extent variations allowed as per the conditions of the contract indicated in the bidding document.

12. CURRENCIES OF BID AND PAYMENT

The unit rates and prices shall be quoted by the Bidder entirely in Indian Rupees.

13. BID VALIDITY

13.1 Bid shall remain valid for a period not less than one hundred and eighty (180) days after the deadline for bid submission specified in Clause 14. A bid valid for a shorter period shall be rejected by the Employer.

13.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidder's responses shall be made in writing or by e-mail. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his bid security for a period of the extension, and in compliance with Clause 14 in all respects.

Reasons for seeking extension of bid validity should be recorded by the procuring officers.

14. **BID SECURITY/EARNEST MONEY DEPOSIT**

14.1 The Bidder shall furnish, as part of his bid, a Bid Security/Earnest Money of the amount as shown in e-tender notice and in the form as deliberated below:

The Bidder will have to make the payment of EMD through ONLINE mode only. No Offline mode of Payment of EMD/Bid security shall be applicable and acceptable.

In online mode the Bidder can make payment of EMD either through net-banking from designated Banks/s or through NEFT/RTGS from any scheduled Bank. In case of payment through net-banking the money will be transferred to ECL designated Account. In case of payment through NEFT/RTGS the Bidder will have to make payment as per the Challan generated by system on e-Procurement portal. Bidder will be allowed by the system to submit the bid only when the EMD is successfully received in ECL designated account and the information flows from Bank's Server to e-Procurement portal. The Earnest Money/ bid security for the unsuccessful Bidder shall be refundable as promptly as possible. The EMD shall bear no interest. No Bid will be accepted unless accompanied by requisite Bid Security/ Earnest Money Deposit as stated above.

14.2. Any Bid not accompanied by an acceptable Bid Security/EMD shall be rejected by the employer as nonresponsive unless otherwise exempted in the Bid document.

14.3 The EMD of rejected Bidders will be refunded at any stage directly to the account from where it had been received (except the cases where EMD is to be forfeited).

14.4 The Bid Security / EMD of successful Bidder may be retained and adjusted with Performance Security / Security Deposit at Bidder's option.

14.5 The Bid Security/Earnest Money may be forfeited:

a. if the Bidder withdraws the Bid after the end date of Bid submission during the period of Bid validity / extended validity with mutual consent; or

b. in the case of a successful Bidder, if the Bidder fails within the specified time limit to furnish the required Performance Security Deposit;

Additionally, the Company shall debar such defaulting Contractor from participating in future bids for a minimum period of 12(twelve) months.

14.6 The Bid Security/ EMD deposited with the Employer will not carry any interest.

14.7 No claim from the Bidders will be entertained for non-receipt of the refund in any account other than the one from where the money is received.

14.8 If the refund of EMD is not received by the Bidder in the account from which the EMD has been made due to any technical reason, then it will be paid through conventional system of e-payment. For this purpose, Bidder should submit e-Mandate form as per Clause No.7 during bid submission.

14.9 In case the tender is cancelled then EMD of all the participating Bidders will be refunded unless it is forfeited by the Department.
If the Bidder withdraws the bid online (i.e. before the end date of submission of tender) then the EMD will be refunded automatically after the opening of tender.

15. ALTERNATIVE PROPOSALS BY BIDDERS

15.1 Bidders shall submit offers that comply with the requirements of the Bidding documents, including the basic technical design as indicated in the drawings and specifications. Alternatives will not be considered, unless specifically allowed in the Bidding Data. If so allowed, Sub-Clause 16.2 shall govern.

15.2 If so allowed in the bid document, Bidders wishing to offer technical alternatives to the requirements of the Bidding documents must also submit

a Bid that complies with the requirements of the Bidding documents, including the basic technical design as indicated in the drawings and specifications. In addition to submitting the basic Bid, the Bidder shall provide all information necessary for a complete evaluation of the alternative by the Employer, including design calculations, technical specifications, breakdown of prices, proposed construction methods and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements stipulated in the bidding document shall be considered by the Employer.

16. SUBMISSION OF BID:

a. In order to submit the Bid, the bidders have to get themselves registered online on the e-Procurement portal (https://coalindiatenders.nic.in) with valid Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root Certificate of CCA. The online Registration of the Bidders on the portal will be free of cost and one-time activity only. The registration should be in the name of bidder, whereas DSC holder may be either bidder himself or his duly authorized person.

b. The Bidder will submit their bid online. No off-line bid shall be accepted.

c. The Bidders will have to accept unconditionally the online User Portal Agreement which contains the acceptance of all the Terms and Conditions of NIT including General and Special Terms & Conditions, Integrity Pact and other conditions, if any, along with online undertaking in support of the authenticity of the declarations regarding the facts, figures, information and documents furnished by the Bidder online in order to become an eligible Bidder. No conditional bid shall be allowed/accepted. This User Portal Agreement of Guidelines for e-Procurement of Works and Services will be a part of NIT/Contract Document.

d. The Bidders will have to accept unconditionally in GTE (General Technical Evaluation) the Undertaking regarding Genuineness of the information furnished by him on-line & authenticity of the scanned copy of documents uploaded by him on-line in support of his eligibility criteria, declaration w.r.t Make in India order and compliance w.r.t procurement from Bidder of a country which shares a land border with India etc. and Letter of Bid. All such undertakings requiring unconditional acceptance and where no input from Bidder is required in the undertaking shall be included in the GTE Template and shall be accepted by the Bidder during Bid submission.

In the undertaking given by Bidder online through acceptance in GTE, there will be provision for penal action, if any information/declaration furnished online by the Bidder against eligibility criteria is found to be wrong at any stage which changes the eligibility status of the Bidder.

e. The Bidder will have to make the payment of EMD through online mode only.

In Online mode the Bidder can make payment of EMD either through net-banking from designated Bank/s or through NEFT/RTGS from any Scheduled Bank. In case of payment through net-banking the money will be immediately transferred to ECL's designated Account. In case of payment through NEFT/RTGS the Bidder will have to make payment as per the Challans generated by system on e-Procurement portal and will have to furnish online the UTR Numbers before submission of bid. Bidder will be allowed to submit his/her bid only when the EMD is successfully received in ECL account and the information flows from Bank to e-Procurement system.

In case of exemption of EMD the scanned copy of document in support of exemption will have to be uploaded by the Bidder during bid submission. However, this option is to be enabled only in those cases where the exemption of EMD to some Bidders is allowed as per NIT.

f. The EMD for Tenders for Turnkey Contracts will be as per Contract Management Manual and EMD for Civil, E&M and other tenders will be as per Manual of Civil Engineering Works of CIL and the existing policy of CIL.

g. The qualification in bid will also be subject to the receipt and acceptance of EMD (except in case of EMD exempted Bidder) within schedule date and time as mentioned in the NIT.

h. The information will be provided by the Bidder by filling up relevant data through a form in an objective and structured manner. The software will use the information provided by the Bidders to evaluate the technical bid automatically.

i. For online submission of tender the Bidders will have to upload the following-

For Two Part System- All the confirmatory documents as prescribed in the NIT and TPS (if applicable) in Cover-I and "Price-bid" in Cover-II (Both are to be decrypted separately).

In case of EMD exemption, one more document in support of the claim of EMD exemption will have to be uploaded by the Bidder at specified folder.

i). Letter of Bid: The Letter of Bid addressed to the Tender Inviting Authority (TIA) will be given in Tender document containing name of the work, NIT No., Tender ID. This will be the covering letter of the Bidder for his submitted bid. The Bidders have to accept unconditionally the Letter of Bid in GTE (General Technical Evaluation) at the time of bid submission. This online acceptance during bidding through GTE shall be construed as submission of LOB by bidder.

ii). Technical Parameter Sheet (TPS) (If applicable as per standard NIT and compatible with the e-procurement portal): The Technical Parameter Sheet containing the technical specification parameters for the tendered

work/service will be in Excel format (password protected) and will be uploaded during tender creation. This will be downloaded by the Bidder and he will furnish all the required information on this Excel file. Thereafter, the Bidder will upload the same Excel file during bid submission in General Technical Evaluation (GTE). The Technical Parameter Sheet which is incomplete and not submitted as per instruction given above will be rejected.

iii). Confirmatory Documents: All the confirmatory documents as enlisted in the NIT in support of online information submitted by the Bidder are to be uploaded in Cover-I or through "My Document" link in Bidder space by the Bidder while submitting his/her bid.

iv). Price bid: The Price bid containing the Bill of Quantity will be in .xls format (password protected) and will be uploaded during tender creation. This will be downloaded by the Bidder and he will quote the rates for all items on this Excel file. Thereafter, the Bidder will upload the same Excel file during bid submission in Cover-I/ Cover-II, as specified for One Part system and in Cover-II for Two Part system. The Price-bid will be in Item Rate or Percentage Rate BOQ or Mixed Rate BOQ format and the Bidder will have to quote for all the tendered items and the L-1 will be decided on overall quoted value (i.e. Cost to Company). The Price-bids of the tenderers will have no condition. The Price Bid which is incomplete and not submitted as per instruction given above will be rejected.

v). However, in case of tenders having provision for exemption of EMD, the Bidder claiming for exemption will have to upload the requisite document as specified in NIT in support of their claim for exemption of EMD.

17. DEADLINE FOR SUBMISSION OF BIDS

17.1 Bids shall be submitted online on the e-procurement portal of CIL within the deadlines prescribed as per Guidelines for e-procurement for Works and Services of CIL.

17.2 The Employer may extend the deadline for submission of Bids by issuing a Corrigendum in accordance with Clause 9, in which case, all rights and obligations of the Employer and the Bidders previously subject to the original deadline will then be subject to the new deadline.

17.3 Auto extension of Bid may also be done in accordance to Guidelines for e-procurement for Works and Services of CIL.

18. MODIFICATION AND WITHDRAWAL OF BIDS

Modification of the submitted bid shall be allowed on-line only before the deadline of submission of tender and the Bidder may modify and resubmit the bid on-line as many times as he may wish.

Bidders may withdraw their bids online within the end date of bid submission and their EMD will be refunded. However, if the Bidder once withdraws his bid, he will not be able to resubmit the bid in that particular tender. For withdrawal of bid after the end date of bid submission, the Bidder will have to

make a request in writing to the Tender Inviting Authority. Withdrawal of bid may be allowed till issue of work order/LOA with the following provision of penal action:

The penal actions are-

1. If the request of withdrawal is received before online notification for opening of price bid, the EMD will be forfeited and Bidder will be debarred for a minimum period of one year from participating in tenders in ECL. The Price-bid of remaining Bidders will be opened and the tender process shall go on.

2. If the request of withdrawal is received after online notification for opening of price bid, the EMD will be forfeited and the Bidder will be debarred for a minimum period of one year from participating in tenders in ECL. The Price-bids of all eligible Bidders including this Bidder will be opened and action will follow as under:
   i). If the Bidder withdrawing his bid is other than L-1, the tender process shall go on.
   ii). If the Bidder withdrawing his bid is L-1, then re-tender will be done.

Note:

a) In case the Accepting Authority of the work is Board or Empowered Committee or FDs or CMD of ECL, then the Competent Authority for forfeit of EMD and debarment shall be CMD of ECL.
b) In case the Accepting Authority of the work is up to the level of Director of ECL, then the Competent Authority for forfeit of EMD and debarment shall be Director of ECL.

i. In case of above penal actions, Guidelines on Debarment of Firms from Bidding is to be followed.
ii. Penal action against clauses above will be enforced from the date of issue of such order.
iii. The standard operating procedure to handle withdrawal of bid after end date of submission shall be as per Guidelines for e-Procurement of Works and Services.

19. BID OPENING

19.1 The Technical bid (Cover-I) will be opened one day after the Bid submission end date or next working day whichever is later. Technical bid (Cover-I) will be decrypted and opened online by the “Bid Openers” with their Digital Signature Certificates on the prescheduled date & time of Tender Opening.

19.2 All the documents uploaded by Bidder(s) including EMD exemption documents (if any) and the Evaluation sheets generated by the system online shall be downloaded after opening of Technical bid (Cover-I). After decryption and opening of Technical bid (Cover-I) the “technical bid opening summary” will be uploaded on the same day.

19.3 The bids submitted will be evaluated manually on the basis of relevant data provided by bidder through a form in an objective and structured manner while submitting bid. If the parameter given by bidder in objective and structured manner does not confirm to required eligibility criteria as specified

in the tender document then the bid will be rejected.

19.4 Acceptance of Bidder in a general form of online declaration will be recognized and accepted as the certification regarding authenticity of all the information and documents furnished by them online and acceptance of all terms and conditions of the bid document, since such acceptance by Bidder with Digital Signature Certificate is legally tenable.

20. PROCESS TO BE CONFIDENTIAL

20.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid. However, the Tender Status will be in public domain and anyone visiting the site can view it by identifying the tender.

It will be the bidder's responsibility to check the status of their Bid online regularly, after the opening of bid till award of contract. Additionally, information shall also be sent by system generated e-mail and SMS at nodal points (Date of bid opening, Requisition for Clarification on Confirmatory document from bidder(s), award of work etc.). No separate communication will be required in this regard. Non-receipt of e-mail and SMS will not be accepted as a reason of non-submission of Confirmatory documents within prescribed time.

20.2 Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid.

20.3 From the time of bid opening to the time of contract award, no bidder shall contact the Procuring Entity on any matter related to the bid, except on request and prior written permission.

21. CLARIFICATION OF BIDS

21.1 To assist in the examination, evaluation, and comparison of Bids, the Employer may, at the Employer's discretion, ask any Bidder for clarification of the Bidder's Bid, including breakdowns of unit rates.

21.2 No document presented by the bidder after closing date and time of submission of bid will be considered unless otherwise called for during scrutiny / evaluation and shall be against written request only.

22. EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS

22.1 Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid:

a. meets the eligibility criteria defined in Clause 3;
b. is accompanied by the required securities and
c. is substantially responsive to the requirements of the Bidding documents.

22.2 A substantially responsive Bid is one which conforms to all the terms, conditions & specifications of the Bidding documents without material deviation or reservation. A material deviation or reservation is one:

a. which affects in any substantial way the scope, quality, or performance of the works;
b. which limits in any substantial way, inconsistent with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or
c. whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.

22.3 If a Bid is not substantially responsive, it may be rejected by the Employer at its sole discretion.

23. EVALUATION AND COMPARISON OF BIDS

23.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause 22. Price bid of the bidder will have no condition.

23.2 The Employer reserves the right to accept or reject any variation, deviation and other factors that are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the employer shall not be taken into account in Bid evaluation.

23.3 No document presented by the bidder, after closing date and time of bid, will be taken into account by the evaluation committee unless otherwise called for during scrutiny / technical scrutiny by the tender committee as clarification. If a bidder offers a rebate unilaterally after the closing date and time of the bid, it will not be taken into account for evaluation purpose by the tender committee, but if that bidder emerges as the lowest evaluated, the rebate offer will be taken into account for determination of the total offer.

23.4 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analyses for any or all items of the work, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed.

24. AWARD CRITERIA

Subject to Clause 25, the Employer will award the Contract to the best qualified Bidder whose Bid has been determined to be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price. Employer shall be the sole judge in this regard.

25. EMPLOYER'S RIGHT TO ACCEPT ANY BID, NEGOTIATE AND TO REJECT ANY OR ALL BIDS

25.1 Notwithstanding Clause 24, the Employer reserves the right to accept, negotiate, or reject any Bid, and to cancel the bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

25.2 **(A) Negotiations**

i) Normally, there should be no negotiation. Negotiations should be a rare exception rather than the rule and may be resorted to only in exceptional circumstances. If it is decided to hold negotiations for reduction of prices, they should be held only with the lowest acceptable

bidder (L1), who is techno-commercially responsive and on whom the contract would have been placed but for the decision to negotiate. In no case, including where a cartel/ pool rates are suspected, should negotiations be extended to those who had either not tendered originally or whose tender was rejected because of unresponsiveness of bid, unsatisfactory credentials, inadequacy of capacity or unworkable rates. The circumstances where negotiations may be considered could be:

a) Where the procurement is done on nomination basis;
b) Procurement is from single or limited sources;
c) Procurements where there is suspicion of cartel formation which should be recorded; and
d) Where the requirements are urgent and the delay in re-tendering for the entire requirement due to the unreasonableness of the quoted rates would jeopardise essential operations, maintenance and safety, negotiations with L1 bidder(s) may be done for bare minimum quantum of requirements. The balance bulk requirement should, however, be procured through a re-tender, following the normal tendering process.

ii) The decision whether to invite fresh tenders or to negotiate and with whom, should be made by the tender accepting authority limited to CMD of ECL based on the recommendations of the TC. Convincing reasons must be recorded by the authority recommending negotiations. The CA should exercise due diligence while accepting a tender or ordering negotiations or calling for a re-tender and a definite timeframe should be indicated.

iii) Normally all counter offers are considered negotiations by other means and the principles of negotiations should apply to such counter offers. For example, a counter offer to L1, in order to arrive at an acceptable rate, shall amount to a negotiation. However, any counter offer to L2, L3, and so on (at the rates accepted by L1) in case of splitting of quantities shall not be deemed to be a negotiation.

iv) After the CA or TC has decided to call a specific bidder for negotiation, the following procedure should be adopted:

a) Negotiations must be carried out by the CA or TC only;
b) It must be understood that, if the period of validity of the original offer expires before the close of negotiations, the original offer will not be available for acceptance. The period of validity of the original offer must, therefore, be extended, wherever necessary, before negotiations;
c) The tenderer to be called in for negotiations should be addressed as per the format of letter laid down in Annexure-IX, so that the rates originally quoted by him shall remain open for acceptance in the event of failure of the contemplated negotiation;
d) A negotiations meeting should be started only after obtaining a signed declaration from the negotiating contractor as per Annexure-IX; and

Revised bids should be obtained in writing from the selected tenderers at the end of the negotiations in the format of letter laid

down in Annexure-X. The revised bids so obtained should be read out to the tenderers or their representatives present, immediately after completing the negotiations. If necessary, the negotiating party may be given some time to submit its revised offer. In case, however, the selected bidder prefers to send a revised bid instead of being present at the negotiation, the offer should be taken into account. In case a bidder does not submit the revised bid, its original bid shall be considered.

B)

In case, negotiation with L-1 does not yield a reasonable rate, re-tendering should be done straightway.

However, in case there is an emergency and the time required for re-tendering cannot be allowed, the case of awarding work to the L-1 Bidder at negotiated rate may be considered by an authority one step higher than the otherwise Competent Authority after recording the reasons.

Where CFDs is the approving authority, approval shall be from CFDs only. However, TAA shall be in accordance with current prevalent DoP of ECL.

1. If there are more than one lowest Bidder & splitting up of the work is allowed then work can be split to all bidders at L-1 Price.
2. If there are more than one lowest Bidder& splitting up of the work is not considered necessary, L-1 may be decided as under:

All L-1 Bidders may be advised to submit the reduced price online & final L-1 may be decided on the basis of revised (reduced) Price.

OR

Through “Reverse Auction” amongst the L-1 Bidders online, if “Reverse Auction” is available in online mode.
The above Principle may be followed for offline tenders also.

All factual details including complaints and negotiations, if any, to be brought out and reasons for recommendation of award to be recorded in TCR in detail.

The tender committee submits final recommendations (covering Part-I & Part-II) in detail along with minutes of the negotiation, if any and decision of the tender committee at each stage. The tender committee recommendations with the supporting documents are sent for approval of the competent authority through associate finance.

26. NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT

26.1 The Bidder, whose Bid has been accepted, will be notified of the award by

the Employer prior to expiration of the Bid validity period through e-Procurement portal and confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called "the Contract Price").
The offline communication of LOA shall not be mandatory.

26.2 The notification of award will constitute the formation of the Contract.
The works should be completed within the period specified in the NIT from expiry of *30(Thirty)days from the issue of letter of acceptance issued by department or within 7 days of handing over of the site, whichever is later.

26.3 The Agreement will incorporate all agreements between the Employer and the successful Bidder, work programme etc. within 60(sixty) days following the notification of award along with the letter of Acceptance and / or Work Order issued by department.
In case of failure to submit performance security and enter in to agreement in specified period or extended period, on written request of contractor, if any, the department in addition to other penal measures as per clause 14.5 of ITB shall debar the selected bidder from participating in re-tender. In addition, the department may debar the bidder from participating in future bids in accordance with Guidelines for Debarment of firms from Bidding.

26.4 In the bidding process, the cause of rejection of Bid of any bidder should be intimated to non-qualified bidder after the award of the work to the successful one. The Security / Earnest Money shall be refunded to unsuccessful bidders as per provision of Cl. 14.3.

26.5 The contractor shall enter into and execute contract agreement in the prescribed form. The cost of the stamp papers for the contract agreement shall be borne by the contractor. Two sets of contract document/agreements shall be prepared and signed by both the parties One of the sets shall be stamped "Original" and the other "Duplicate". The duplicate copy will be supplied to the contractor free of cost and the original is to be retained by the company. For any additional copy, additional cost to be charged.
All additional copies should be certified by the Engineer-in-Charge.
The contractor shall keep copy of these documents on the site/place of work in proper manner so that these are available for inspection at all reasonable times by the Engineer-in-charge, his representatives or any other officials authorized by the company for the purpose.
The contract document shall not be used by the contractor for any purpose other than this contract and the contractor shall ensure that all persons employed for this contract strictly adhere to this and maintain secrecy, as required of such documents.

27. PERFORMANCE SECURITY/ SECURITY DEPOSIT/PERFORMANCE GUARANTEE

Security Deposit shall consist of two parts;

a) Performance Security to be submitted at award of work and
b) Retention Money to be recovered from running bills.

The Security Deposit shall bear no interest.

For details refer Clause No. 3 of Conditions of Contract (General terms and Conditions)

28. EMPLOYMENT OF LABOUR

28.1 Contractors are to employ, to the extent possible (as per policy decision of the company valid from time to time), local project affected people and pay wages not less than the minimum wages as per minimum Wages Act of Central or state govt. (whichever is higher) or HPC wages of CIL as applicable and mentioned in NIT.

Payment of Provident Fund for the workmen employed by him for the work as per the Law prevailing under provision of CMPF/EPF and allied scheme valid from time to time shall be responsibility of the contractor which shall be in accordance with the given guidelines:

1. The Contractor must be mandatorily registered as employer under the CMPF Act and allied scheme and shall submit details of their workers with the CMPF number, wherever required. The contractor shall submit CMPF registration certificate before signing of agreement.
2. If any employee of a Contractor is not a member of any Provident Fund, he shall be required to become a member of CMPF scheme immediately, for availing benefits therefrom.
3. Where the employees of a Contractor are members of EPF scheme, the Contractor shall provide appropriate facilitation to those employees who voluntarily opt for conversion from EPF Schemes to CMPF Schemes

In all the cases mentioned above, the contractor needs to ensure that the employee has become a member of any of the provident fund as the case may be and the unique membership number of the CMPF/EPF or Allied Scheme needs to be submitted to Employer.

In addition to the above, the Contractor shall provide a copy of the updated passbook having entry made in the CMPF/EPF or Allied Scheme(s) of Provident fund as the case may by the competent authority annually /as and when asked. Bidder shall also submit copies of statutory returns.

The contractor shall also comply with the provisions of the CMPF/ EPF and regularly deposit the contributions in accordance with the same. The Company shall have no liability whatsoever in this regard

Note:
However, if the basic rate of wages of labour as fixed by CIL (i.e. with respect to HPC wages) is revised during the contract period then the incremental difference shall be reimbursed on actual basis through a suitable mechanism as decided by ECL.

28.2 The Contractor shall comply with statutory requirements of various acts including Child Labour (Prohibition & Regulation) Act, 1986 as amended from time to time and all rules, regulations and schemes framed thereunder from time to time in addition to other applicable labour laws.

28.3 The payment to the contractor's labourers has to be made through Bank only.

28.4 Bonus is to be paid to the contract workers engaged by the Contractors as per the provisions of Payment of Bonus Act,1965 as amended from time to time.

28.4 The contractors shall register themselves on the Contract Labour Payment Management Portal (CLPMP) of CIL within 30 days of issue of work order and will have to enter and update periodically the following details in the portal:

a. Work Order details
b. Details of Contractor workers and payment of wages in respect of each Work Order each month.

28.5 All the contract workers shall be covered with the Bio-metric attendance system for payment of wages.

28.6 Contractors should deploy suitably experienced workers as mentioned in relevant Govt. circular.

NOTE: In case company decides/ circulates separate wages for such works within mine premises, the same may be allowed based on appropriate circular. Clause 28.1 shall stand amended to this extent before notification of bid.

29. LEGAL JURISDICTION

Matter relating to any dispute or difference arising out of this tender and subsequent contract awarded based on the bid shall be subject to the jurisdiction of Asansol court only.

30. DEEMED EXPORTS

If the bidder has quoted any item/ items under the deemed exports then it will be the responsibility of the Bidder to get all the benefits under deemed exports from the Government. The Company's responsibility shall only be limited to the issuance of required certificates. The quotation of the Bidder will be unconditional and phrases like "Subject to availability of deemed exports benefit" will not find place in it.

31. CONSULTANTS NOT TO BID & VICE-VERSA:

A firm which has been engaged by the Company to provide Goods or Works for a project or any of its affiliates will be barred from providing consultancy services for the same project. Conversely, a firm hired to provide consultancy services for the preparation or implementation of a project and any of its affiliates will be barred from subsequently providing Goods or Works or services related to the initial assignment for the same project.

32. SUB-CONTRACTOR/ SUB-VENDOR:

32.1 The contract agreement will specify major items of supply of services for which the contractor proposes to engage Sub-Contractor/ Sub-Vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit the proposals in this regard to the Engineer in Charge/ Designated Officer in Charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer in Charge/ Designated Officer will not relieve the contractor from any of his obligation, duties and responsibilities under the contract.

32.2 If a contractor submits his bid, qualifies and does not get the contract because of his not being the lowest, he will be prohibited from working as a sub-contractor for the contractor who is executing the work.

32.3 The total value of subcontracted work should not exceed the percentage of the contract price specified in the contract (say 25%). Sub-contracting by the contractor without the approval of the Procuring Entity shall be a breach of contract, unless explicitly permitted in the contract.

33. e-payment

The bidders have to furnish the details of their bank A/c Nos. Name and Address of the Bank and Branch Code along with the Bid. Successful Bidder/ Bidders are required to submit an Authorization form duly signed for e-payment to them. Enclosed Annexure be filled in and submitted along with the Bid.

34. Integrity Pact (Applicable for bids with estimated cost exceeding Rs. 5 Crores).

34.1 Bidders are required to accept unconditionally the Pre-Contract Integrity Pact in GTE as per enclosed format, Annexure-I

34.2 **Code of Integrity for Public Procurement (CIPP)**

Bidders are required to accept the CIPP as available in the Bid document (Annexure -IA) online at e-procurement portal of CIL. This will be signed by the authorized signatory of the Bidder (s) with name, designation and seal of the Company at time of execution of formal agreement. In case of Partnership Firms/JV/CONSORTIUM all partners shall sign at the time of agreement.

35. Changes in Firms Constitution to be intimated

Previous approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the constitution of the Firm. If previous approval is not obtained the same will be treated as a breach of contract and shall have same consequences due to such breach of contract.

36. Miscellaneous.

36.1 The bidders should fill the bid document properly and carefully. They should avoid quoting absurd rates.

36.2 The contractor will have to submit valid H.T. Electrical Contractor's license issued by the electrical licensing board of state of execution or electrical contractor's license issued by any Indian state duly recognized/endorsed by electrical licensing board of state of execution before execution of

agreement.

36.3 After opening of the Tender if the company decides to seek clarification, the tenderer should be in a position to depute their representative, at short notice, with full authority on technical and other matters.

36.4 Throughout the bidding documents, the terms 'bid' and tender and their derivatives are synonymous.

36.5 The company shall not be responsible for any delay/difficulties/inaccessibility of the downloading facility for any reason whatsoever.

i) The bidders will be required to submit an undertaking that they will accept the Bid documents as available in the website and their Bid shall be rejected if any tampering in the Bid documents is found to be done during opening or at any time after opening of Bid and during pendency of the contract. The Undertaking enclosed with the bid covers this aspect.

ii) In case of any discrepancy between the Bid documents downloaded from the website and the master copy downloaded from website and available in the office, the latter shall prevail and will be binding on the Bidders. No claim on this account will be entertained.

36.6 Instruction to Bidders shall be a part of contract agreement.

37. Restriction on Procurement from a bidder of a country which share a land border with India and on sub-contracting to Contractors from such countries:

VI. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.

VII. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or Company, including any member of a consortium or JV/Consortium (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

VIII. "Bidder from a country which shares a land border with India" for the purpose of this Order means. -

h. An entity incorporated, established or registered in such a country; or
i. A Subsidiary of an entity incorporated, established or registered in such a country; or
j. An entry substantially controlled through entities incorporated, established or registered in such a country; or
k. An entity whose beneficial owner is situated in such a country; or
l. An Indian (or other) agent of such an entity; or
m. A natural person who is a citizen of such a country; or
n. A consortium or JV/Consortium where any member of the consortium or JV/Consortium falls under any of the above

IX. The beneficial owner for the purpose of (III) above will be as under

6. In case of a Company or Limited Liability Partnership, the beneficial owner is the natural persons, who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means
Explanation--

a. “Controlling ownership interest” means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the Company

b. “Control” shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

7. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership:
8. In case of an unincorporated association or body of individuals, the beneficial owner is the natural persons, who, whether acting alone or together, or through one or more juridical person has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals,
9. Where no natural person is identified under (1) or (d) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
10. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

X. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

SECTION -3

CONDITIONS OF CONTRACT

SUB-SECTION3.1
GENERAL TERMS AND CONDITIONS OF CONTRACT

1. DEFINITIONS:

i. The word "Company'" or "Employer" or "Owner" wherever occurs in the conditions, means the ..... Limited, represented at the headquarters of the Company by the ..... or his authorised representative or any other officer specially deputed for the purpose.

ii. The word “Principal Employer" or "Engineer" wherever occurs, means the authorised representative or any other officer specially deputed by the Company for the purpose of contract.
iii. "Bid" (including the term ‘tender’, ‘offer’, ‘quotation’ or ‘proposal’ in certain contexts) means an offer to supply goods, services or execution of works made in accordance with the terms and conditions set out in a document inviting such offers.
iv. "Bidder" (including the term ‘tenderer’, ‘consultant’ or ‘service provider’ in certain contexts) means any eligible person or firm or company, including a JV/Consortium (that is an association of several persons, or firms or companies), participating in a procurement process with a Procuring Entity.
v. "Bid security" (including the term ‘Earnest Money Deposit’(EMD), in certain contexts) means a security from a bidder securing obligations resulting from a prospective contract award with the intention to avoid: the withdrawal or modification of an offer within the validity of the bid, after the deadline for submission of such documents; failure to sign the contract or failure to provide the required security for the performance of the contract after an offer has been accepted; or failure to comply with any other condition precedent to signing the contract specified in the tender documents.
vi. “Class-I local supplier” means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for ‘Class-I local supplier’ under the Public Procurement (Preference to Make in India), Order 2017.
vii. “Class-II local supplier” means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for ‘Class-II local supplier’ but less than that prescribed for ‘Class-I local supplier’ under the Public Procurement (Preference to Make in India), Order 2017.
viii. “Local Content” means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.
ix. “Non-Local supplier” means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for ‘Class-II local supplier’ under the Public Procurement (Preference to Make in India), Order 2017.
x. "Notice inviting tenders" (including the term ‘Invitation to bid’ or ‘request for proposals’ in certain contexts) means a document and any amendment thereto published or notified by the Procuring Entity, which informs the potential bidders that it intends to procure goods, services and/or works.
xi. "Prospective bidder" means anyone likely or desirous to be a bidder.
xii. The word "Contractor"/"Contractors" or "Manufacturer" wherever occurs means the successful Bidder/Bidders who has/have deposited the necessary Earnest Money and has/have been given written intimation about the acceptance of tender and shall include legal representative of such individual or persons composing a firm or a company or the successors and permitted assignees of such individual, firm or company, as the case may be.

xiii. "Site" means the land and places including any building and erection thereon, over, under, in or through which the Permanent works or Temporary works designed by the Engineer-in-Charge are to be executed and any other lands and places provided by the Employer for working space or any other purpose as may be specifically designated in the Contract as forming part of the site.

xiv. The term "sub-contractor", as employed herein, includes those having a direct contract with contractor either on piece rate, items rate, time rate or on any other basis and it includes one who furnishes work to a special design according to the plans or specifications of this work but does not include one who merely supplied materials.

xv. "Consulting Engineer"/"Consultant" shall mean any firm or person duly appointed as such from time to time by the owner.

xvi. 'Accepting authority' shall mean the management of the company and includes an authorised representative of the company or any other person or body of persons empowered in this behalf by the company.

xvii. A 'Day 'shall mean a day of 24 hours from midnight to midnight.

xviii. Engineer-in-charge/Designated Officer-in-charge who is of an appropriate seniority will be responsible for supervising and administering the contract, certifying payment due to the contractor, valuing variations to the contract, awarding extension of time and valuing compensation events. Engineer-in-charge/Designated Officer-in-charge may further appoint his representatives i.e. another person/ Project Manager or any other competent person and notify to the contractor who is directly responsible for supervising the work being executed at the site, on his behalf under the Delegation of Powers of the company. However, overall responsibility, as far as the contract is concerned will be that of the Engineer-in-charge/Designated Officer-in-charge.

xix. The "Procurement contract" (including the terms 'Purchase Order' or 'Supply Order' or 'Withdrawal Order' or 'Work Order' or 'Consultancy Contract' or 'Contract for other services' under certain contexts), means an agreement relating to the subject matter of procurement, entered into between the Procuring Entity and the supplier, service provider or contractor on mutually acceptable terms and conditions and which are in compliance with all the relevant provisions of the laws of the country. The term "contract" will also include "rate contract' and "framework contract".

The agreement shall include the notice inviting tender, the tender/bid as accepted by the company, the work order issued to the contractor, and the formal contract agreement executed between the company and the contractor together with the documents referred to therein including general terms and conditions, special conditions, if any, frozen terms and conditions/technical parameters/scope of work and revised offer, if any, specifications, drawings, including those to be submitted during progress of work, schedule of quantities with rates and amounts.

Until the formal agreement is signed between the Owner and contractor, LOA/Work order together with contract document accepted by the bidder (i.e., bid/ tender/ proposal/ offer) shall constitute the contract.

xx. The 'works' shall mean and include the furnishing of equipment, labour, and the services in accordance with the contract or parts thereof as the case may be and shall also include all extra or additional, altered or substituted works or any work of emergent nature, which in the opinion of the Engineer-in-charge,

become necessary during the progress of the works to obviate any risk or accident or failure or become necessary for security.

xxi. "Specification" shall mean the technical specifications forming a part of the contract and such other schedules and drawings as may be mutually agreed upon.

xxii. 'Contract price' shall mean the total sum for which tender is accepted by the company.

xxiii. 'Written notice' shall mean a notice or communication in writing and shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an office of the Corporation/Company for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

xxiv. "Letter of Acceptance" of the tender shall mean the official notice issued by the company notifying the contractor that his tender has been accepted.

xxv. "Date of Contract" shall mean the date on which both the parties have signed the contract agreement.

xxvi. "Manufacturer's Works' or Contractor's Works" shall mean the place of work used by the Manufacturer, the Contractor, their collaborators or sub-contractors for the performance of the works.

xxvii. "Inspector" shall mean the Owner or any person nominated by the Owner from time to time, to inspect the equipment stores or Works under the contract and/or the duly authorised representative of the owner.

xxviii. When the words "Approved", "Subject to Approval", "Satisfactory", "Equal to", "Proper", "Requested", "As directed", "Where directed", "When directed", "Determined by", "Accepted", "Permitted", or words and phrases of like import are used, the approval, judgment, direction etc. is understood to be a function of the Owner/Engineer/Engineer-in-Charge.

xxix. "Test of Completion" shall mean such tests as prescribed in the contract to be performed by the contractor before the Works is taken over by the Owner.

xxx. "Start-up" shall mean the time period required to bring the equipment covered under the Contract from an inactive condition, when construction is essentially complete, to the state ready for trial operation. The start-up period shall include preliminary inspection and check out of equipment and supporting sub-systems; initial operation of the complete equipment covered under the Contract to obtain necessary pre-trial operation data, perform calibration and corrective action; shut down inspection and adjustment prior to the trial operation period.

xxxi. "Initial operation" shall mean the first integral operation of the complete equipment covered under the contract with sub-systems and supporting equipment in service.

xxxii. "Trial Operation", "Reliability Test", Trial Run", "Complete Test" shall mean the extended period of time after the "Start-up" period. During this trial operation period the unit shall be operated over the full load range. The length of Trial Operation shall be as determined by the Engineer, unless otherwise specified elsewhere in the Contract.

xxxiii. "Performance and Guarantee Tests" shall mean all operation checks and tests required to determine and demonstrate capacity, efficiency, and operating characteristics as specified in the contract document.

xxxiv. "Commercial Operation" shall mean the condition of operation in

which the complete equipment covered under the contract is officially declared by the owner to be available for continuous operation at different loads upto and including rated capacity. Such declaration by the owner however, shall not relieve or prejudice any of the contractor's obligation under this contract.

xxxv. "Final Acceptance" shall mean the owner's written acceptance of the works performed under the contract, after successful completion of performance and guarantee tests.

xxxvi. "Guarantee Period/Maintenance Period" shall mean the period during which the contractor shall remain liable for repair or replacement of any defective part of the works performed under the contract.

xxxvii. "Drawings"/"Plans" shall mean all:

(a) drawings furnished by the owner/consultant as a basis for proposals,

(b) supplementary drawings furnished by the Owner/Consultant to clarify and to define in greater detail the intent of the contract,

(c) drawings submitted by the contractor with his proposal provided such drawings are acceptable to the Owner/Consultant,

(d) drawings furnished by the Owner/Consultant to the Contractor during the progress of the work, and

(e) engineering data and drawings submitted by the Contractor during the progress of the work provided such drawings are acceptable to the Engineer,

xxxviii. "Codes" shall mean the following, including the latest amendments, and/or replacements, if any:

(a) Standards of Bureau of Indian Standards relevant to the works under the contract and their specifications.

(b) Other Internationally approved Standards and/or rules and regulations touching the subject matter of the contract.

(i) A.S.M.E. Test codes.
(ii) A.I.E.E. Test codes.
(iii) American Society of Materials Testing Codes.
(iv) Indian Electricity Act and Rules and Regulations made thereunder.
(v) Indian Explosive Act and Rules and Regulations made thereunder.
(vi) Indian Petroleum Act and Rules and Regulations made thereunder.
(vii) Indian Mines Act and Rules and Regulations made thereunder.

(c) Any other laws, rules, regulations and Acts applicable in the country with respect to labour, safety, compensation, insurance etc.

xxxix. Words importing singular only shall also include the plural and vice-versa where the context so requires.

xl. Words importing "Person" shall include firms, companies, corporations, and associations or bodies of individuals, whether incorporated or not.

xli. Terms and expressions, not defined herein, shall have the same meaning as are assigned to them in the Indian Sale of Goods Act, failing that in the Indian Contract Act, and failing that in the General Clauses Act.

xlii. "Commissioning" the plant/project shall mean completion in all respects of construction rendering the plan/project ready for performance test and commercial operation as per xxv.

xliii. "Government Approvals" shall mean all permits, licenses, authorisations, consents, clearances, decrees, waivers, privileges, approvals from and filing with government instrumentalities necessary for the development,

construction and operation of the plant/project.

xliv. "Month" shall mean a calendar month according to the Gregorian calendar.

xlv. "Bank Guarantee" shall mean the Bank Guarantee to be provided by ..... to.....

xlvi. 'Tender Accepting Authority (TAA)/ Awarding Authority' shall mean the management of the Company and includes an authorized representative of the Company or any other person or body of persons empowered in this behalf by the Company to approve the Tender.

Tender Accepting Authority (TAA)/Awarding Authority at any time after the award of tender till the finalization of contract shall be construed as the authority as per the prevalent DoP of ECL.

Note: Interpretation of Tender Accepting Authority (TAA)/ Awarding Authority as above is applicable for the existing and future contracts.

2. CONTRACT DOCUMENTS:

The following documents shall constitute the contract documents:

(i) Articles of Agreement,
(ii) Notice Inviting Tender and Instruction to Bidders,
(iii) Conditions of Contract, including General Terms and Conditions, Additional Terms and Conditions, Special Conditions, if any etc. forming part of the Agreement,
(iv) Letter of Acceptance of Bid indicating deviations, if any, from the Conditions of Contract incorporated in the Bid/Tender document issued to the Bidder,
(v) Scope of works/Bills of Quantities,
(vi) Finalized work programme,
(vii) Integrity Pact as applicable as decided by ECL
(viii) Guidelines for Debarment of firms from Bidding,
(ix) Code of Integrity for Public Procurement.
(x) Any other document, if required.

2.1 After acceptance of tender the Contractor shall be deemed to have carefully examined all Contract Documents to his satisfaction. If he shall have any doubt as to the meaning of any portion of the Contract Documents, he shall before signing the Contract, set forth the particulars thereof, and submit them to the Owner in writing in order that such doubt may be removed. The Owner will provide such clarifications as may be necessary in writing to the Contractor. Any information otherwise obtained from the Owner or the Engineer shall not in any way relieve the Contractor of his responsibility to fulfill his obligations under the Contract.

2.2 The Contractor shall enter into a Contract Agreement with the Owner within 60 (sixty) days from the date of 'Acceptance of Tender' or within such extended time as may be granted by the owner. The performance Bank Guarantee for the proper fulfillment of the contract shall be furnished by the contractor in the prescribed form within twenty one (21) days of 'Acceptance of tender'. The performance Guarantee shall be as per terms prescribed in clause 3.0 herein after.

2.3 The owner, after the issue of the letter of Acceptance of Tender, will send one copy of the final agreement to the contractor for his scrutiny and approval.

2.4 The agreement, unless otherwise agreed to, shall be signed within 60 days of the issue of the letter of Acceptance of tender, at the office of the owner on a date and time to be mutually agreed. The contractor shall provide for signing of the contract, performance guarantee in copies as required, appropriate power of attorney and other requisite materials. In case it is agreed mutually that the contract is to be signed beyond the stipulated time, the bid guarantee submitted with the tender will have to be extended accordingly.

2.5 The agreement will be signed in six originals and the contractor shall be provided with one signed original and the rest will be retained by the owner. None of these documents shall be used by the contractor for any purpose other than this contract and the contractor shall ensure that all persons employed for this contract strictly adhere to this and maintain secrecy, as required of such documents.

2.6 The contractor shall provide free of cost to the owner all the engineering data, drawings and descriptive materials submitted with the bid, in at least six (6) copies to form a part of the contract immediately after issue of letter of acceptance.

2.7 Subsequent to signing of the contract, the contractor at his own cost shall provide the owner with at least six (6) true copies of agreement within thirty (30) days after the signing of the contract.

2.8 The date of commencement shall be reckoned from the expiry of 30 days from the issue of letter of acceptance and submission of Performance Security or seven days after handing over the site for the first activity as per PERT network chart, whichever is later.

2.9 The laws applicable to this contract shall be the laws in force in India. The courts of West Bengal shall have exclusive jurisdiction in all matters arising under this contract.

3.0 PERFORMANCE GUARANTEE/SECURITY DEPOSIT:

3.1 Security Deposit shall consist of two parts:

a) Performance Security to be submitted at award of work and
b) Retention Money to be recovered from running bills.

The security deposit shall bear no interest.

3.1.1Performance Security should be 5% of contract amount and should be submitted by the successful bidder within 21 days of issue of LOA in any of the form given below after which bid security/earnest money will be refunded to the contractor.

- a Bank Guarantee in the form given in the bid document from any schedule bank acceptable to the owner. Bank guarantee issued by out station bank shall be operative at their local branch at ……or their branch

at .....
- Govt. Securities, FDR or any other form of deposit stipulated by the owner and duly pledged in favour of owner.
- Demand Draft drawn in favour of ……. on any Scheduled Bank payable at its Branch at……..

However, Company may approve submission of Performance Security beyond 21 days by another 14 days with proper justification on a case to case basis.

The Earnest Money/ Bid Security deposited shall be discharged when the Bidder has signed the Agreement and furnished the required Performance Security/ 1st part of security deposit.
The bid security deposited may be adjusted against the Performance security at bidder's option.
Work shall commence only after submission of Performance Security.

3.1.2 If Performance Security is provided by the successful Bidders in the form of Bank Guarantee it shall be issued either –

(a) at Bidder's option by a Scheduled Bank
or
(b) by a Foreign Bank located in India and acceptable to the Employer. BG of scheduled commercial bank located in India and acceptable to the company should only be accepted. Thus, any BG issued by foreign bank from outside India shall not be accepted.

(c) the validity of the Bank Guarantee shall be for a period of "one year" or "ninety days, beyond the period of contract/extended period of contract (if any)", whichever is more.

Bank Guarantee (BG) is to be submitted in the format prescribed by the Company. Bank Guarantee shall be irrevocable and it shall be issued by any Indian Nationalized Bank/Scheduled Bank on Structured Financial Messaging System (SFMS) platform which is payable / enforceable at ……..

The paper BG would be delivered by Issuing Bank to the Beneficiary under Speed Post/Registered Post (AD). Original Bank Guarantee shall be accepted from Issuing Bank only. However, the paper BG would be operative only on receipt of a separate advice through SFMS and confirmed by the Advising Bank (i.e. Beneficiary Bank). The confirmation of issuance of BG through SFMS from Advising Bank shall be obtained through electronically as well as print out of the said message from Advising Bank with seal and signature.

The details of Beneficiary for issue of BG under SFMS platform is furnished below:

Name of Beneficiary & its details	Name	ECL
	Area	
	Bank Account No.	029105005131
	Department	
Beneficiary Bank & Address	CICI Bank Ltd., Murgasol, Asansol	
	Ground floor Plot No. 793, Murgasol, G. T. Road, Asansol-713303	
IFCS Code	ICIC0000291	

The above particulars are to be incorporated by the Issuing Bank properly while issuing BG under SFMS mode to avoid any problem in future.

Original Bank Guarantee (issued by the Issuing Bank) shall be sent by the Issuing Bank to concerned Department by Registered Post (AD).

Note:

Safe Custody and Monitoring of Securities-
The BG Details after confirmation and acceptance shall be entered in SAP by Associate Finance and its validity expiry shall be monitored through SAP. The BG shall be sent by Associate Finance to Finance Department of ECL for safe custody. Extension of bank guarantees and other instruments, where warranted, should be sought immediately and implemented within their validity period.

For release of BGs, the proposal shall be forwarded by EIC with their recommendations in accordance with the contract conditions, for approval by the CA with the concurrence of the Finance Division.

In case the successful Bidder fails to submit the Performance Security within the stipulated time then the award of work may be cancelled with forfeiture of the Bid Security/Earnest Money.

Additionally, the Company shall debar such defaulting Contractor from participating in future tenders in concerned ECL for a period of minimum one year from the date of issue of such letter.

In case of JV/CONSORTIUM/Partnership firm, the debarment shall also be applicable to all individual partners of JV/CONSORTIUM/Partnership firm.

3.1.3 Retention Money should be deducted at 5% from running on account bills. Total of performance security and Retention Money should not exceed 10% of contract amount or lesser sum indicated in the bid document. Retention Money may be refunded against equivalent Bank Guarantee, on written request of the contractor, on its accumulation to a minimum amount of Rs 25 lakhs.

However, Bank Guarantee against retention money shall be with suitable

validity based on nature of work which shall be 90 days beyond the defect liability period, but in no case less than the period of one year.

3.2 The Guarantee amount shall be payable to the Employer without any condition whatsoever.

3.3 Performance Security / Retention Money shall be converted into Performance Guarantee on successful completion of work in accordance with contract and upon satisfactory PG Test.

Performance security/ Retention Money/ security deposit submitted in the form of BG which shall be valid for 90 days after the end date of scheduled completion and to be extended for minimum period of 1(one) year in one instance which must cover the time period of 90 days beyond completion of Defect Liability period.

3.4 The Performance Guarantee shall cover additionally the following guarantees to the Employer:

(a) The successful bidder guarantees the successful and satisfactory operation of the equipment furnished and erected under the contract, as per the specifications and documents,

(b) The successful bidder further guarantees that the equipment provided and installed by him shall be free from all defects in design, material and workmanship and shall upon written notice from the employer, fully remedy free of expenses to the Employer such defects as developed under the normal use of the said equipment within the period of guarantee specified in the relevant clause of the Conditions of Contract.

3.5 The Contract Performance Guarantee is intended to secure the performance of the entire Contract.

However, it is not construed as limiting the damages under clause entitled 'Equipment Performance Guarantee' in section Technical Conditions of Contract and damages stipulated in the other clauses in the bidding documents.

3.6 All Bank Guarantees are to be submitted in the format prescribed by the company in the bid document. Bank Guarantee shall be irrevocable and it shall be from any Scheduled Bank acceptable to the owner. The BG issued by outstation bank shall be operative at its local branch at……...or branch at……..

3.7 The Company shall be at liberty to deduct/appropriate from the Contract Performance Guarantee/Security Deposit such sums as are due and payable by the contractor to the company as may be determined in terms of the contract, and the amount appropriated from the Contract Performance Guarantee/Security Deposit shall have to be restored by Contractor subsequently.

3.8 Performance Security deposit shall be returned to the Contractor after successful completion of 3 (Three) years of Defect Liability Period without any interest. The

balance SD i.e. Retention Money shall be released without any interest after successful completion of entire period of the Defect Liability. Any defect/defects in the work, if detected during Guarantee Period/Defect Liability Period shall be rectified or equipment/ system shall be replaced to the satisfaction of the engineer In-charge within the said defect liability/ operation/ maintenance/guarantee period or its due extension till completion of the rectification/ replacement works as required.

3.9 In case the successful bidder fails to submit the Performance security within the stipulated time then the award of work may be cancelled with forfeiture of the bid security/ earnest money.
Additionally, the company shall ban such defaulting contractor as per the Guidelines of Debarment of firms from Bidding. In case of JV/CONSORTIUM/Partnership firm, the debarment shall also be applicable to all individual partners of JV/CONSORTIUM/Partnership firm.

4.0 ASSIGNMENT AND SUBLETTING OF CONTRACT

4.1 Sub-contracting: The contract may provide for the contractor to get specified works executed from sub-contractors included in the pre-qualification application or later agreed to by the Procuring Entity, with a caveat that the responsibility for all sub-contract work rests with the prime contractor. Sub-contracting may be for specialized items of work, such as reinforced earth retaining walls, pre-stressing works, and so on. Procurement of material, hiring of equipment or engagement of labour will not mean sub-contracting. The total value of subcontracted work should not exceed the percentage of the contract price specified in the contract (say 25%). Sub-contracting by the contractor without the approval of the Procuring Entity shall be a breach of contract, unless explicitly permitted in the contract.

4.2 The contractor may, after informing the engineer and getting his written approval, assign or sub-let the contract or any part thereof other than for raw materials, for minor detail or any part of the plant for which makes are identified in the contract. Suppliers of the equipment not identified in the contract or any change in the identified supplier shall be subject to approval by the engineer. The experience list of the equipment vendors under consideration by the contractor for this contract shall be furnished to the engineer for approval prior to procurement of all such items/equipments. Such assignment sub-letting shall not relieve the contractor from any obligation, duty or responsibility under the contract. Any assignment as above without prior written approval of engineer shall be void.

4.3 For components/equipments procured by the contractors for the purposes of the contract, after obtaining the written approval of the owner, the contractor's purchase specifications and enquiries shall call for quality plans to be submitted by the suppliers alongwith their proposals. The quality plans called for from the vendors shall set out, during the various stages of manufacture and installation, the quality practices and procedures followed by the vendor's quality control organisation, the relevant reference documents/standards used, acceptance

level, inspection documentation raised, etc. Such quality plans of the successful vendor shall be discussed and finalised in consultation with the engineer and shall form a part of the purchase order/contract between the contractor and the vendor. Within 3 weeks of the release of the same purchase order/contracts for such bought out items/ components, a copy of the same without price details but together with detailed purchase specifications, quality plans and delivery conditions shall be furnished to the engineer by the contractor.

5.0 PATENT RIGHTS AND ROYALTIES

Royalties and fees for patent covering materials, articles, apparatus, devices, equipment or processes used in the works shall be deemed to have been included in the contract price. The contractor shall satisfy all demands that may be made at any time for such royalties or fees and he alone shall be liable for any damages or claims for patent infringements and shall keep the owner indemnified in that regard. The contractor shall, at his own cost and expense, defend all suits or proceedings that may be instituted for alleged infringement of any patent involved in the works, and, in case of an award of damages, the contractor shall pay for such award. In the event of any suit or other proceedings instituted against the owner, the same shall be defended at the cost and expense of the contractor who shall also satisfy/comply and decree, order or award made against the owner. But it shall be understood that no such machine, plant, work, material or thing has been used by the owner for any purpose or any manner other than that for which they have been furnished and installed by the contractor and specified under these specifications. Final payment to the contractor by the owner will not be made while any such suit or claim remains unsettled. In the event any apparatus or equipment, or any matter thereof furnished by the contractor, is in such suit or proceedings held to constitute infringement, and its use is enjoined, the contractor shall, at his option and at his own expense, either procure for the owner, the right to continue use of said apparatus, equipment or part thereof, replace it with non-infringing apparatus or equipment or modify it, so it becomes non-infringing.

6.0 TIME - THE ESSENCE OF CONTRACT

6.1 The time and the date of completion of the works as stipulated in the contractor's proposal and accepted by the owner without or with modifications, if any and so incorporated in the award letter shall be deemed to be the essence of the contract. The contractor shall so organise his resources and perform his work as to complete it not later than the date agreed to.

6.2 The contractor shall submit a detailed PERT network within the time frame agreed above consisting of adequate number of activities covering various key phases of the works such as design, procurement, manufacturing, shipment and field erection activities within fifteen (15) days after the date of acceptance of tender. This network shall also indicate the interface facilities to be provided by the owner and the dates by which such facilities are needed. Contractor shall discuss the network so submitted with the owner and the agreed network which may be in the form as submitted or in revised form in line with the outcome of discussions and shall form part of the contract to be signed within sixty (60) days from the date of letter of acceptance of notice of award of contract. During the performance of contract, if in the opinion of the engineer proper progress is

not maintained suitable changes shall be made in the contractor's operations to ensure proper progress.

For the purpose of this detailed time and progress/ PERT chart, the works shall be deemed to have commenced on the expiry of 30 days from the issue of letter of acceptance or seven days after handing over the site of work, whichever is later.

6.3 The above PERT network shall be reviewed and periodic review reports shall be submitted by the contractor as directed by the engineer.

6.4 Subsequent to the award of the contract, the contractor shall make available to the engineer, a detailed manufacturing programme, in line with the agreed contract network. Such manufacturing programme shall be reviewed, updated and submitted to the Engineer, once every two month thereafter.

7.0 CONTRACT PRICE

The lump sum prices quoted by the contractor in his bid with additions and deletions as may be agreed before signing of the contract, for the entire scope of the work including furnishing and erection of equipment covered under the specifications and documents and shall be treated as the contract price.

8.0 CHANGED QUANTITY

The owner reserves the right to vary the quantities of items or groups of items to be ordered as specified in the accompanying technical specifications, as may be necessary, during the execution of the contract, but such variations unless otherwise specified in the accompanying technical specifications shall be limited to plus or minus twenty percent (20%) of the original quantity ordered.

9.0 DEDUCTIONS FROM CONTRACT PRICE

9.1 All costs, damages or expenses which the owner may have paid, for which under the contract the contractor is liable, will be claimed by the owner. All such claims shall be intimated by the owner to the contractor regularly as and when they fall due. Such claims shall be supported by appropriate and certified vouchers or explanations, to enable the contractor to properly identify such claims. Such claims shall be paid by the contractor within fifteen (15) days of the receipt of the corresponding claims and if not paid by the contractor within the said period, the owner may then deduct the amount, from any moneys due or becoming due by him to the contractor under the contract or may be recovered by actions of law or otherwise, if the contractor fails to satisfy the owner of such claims and to recover the amount from any money due to the contractor on any account or under any other contract including contracts awarded by Coal India Ltd. or other subsidiaries and in the event of any shortfall, the contractor shall be called upon to pay the same on demand.

10.0 CONTRACT PRICE ADJUSTMENT

10.1 All adjustments in the contract price shall be computed in accordance with the conditions and formulae prescribed in the relevant clauses of 'Additional Terms and Conditions of Contract', the accompanying technical specifications and

further satisfying the requirements specified herein.

10.2 The contract price stated in the contract agreement is the base price. A certain fixed percentage of the base price as indicated in the technical specifications shall not be subject to any price adjustment. The balance percentage viz. the cost portion shall only be subject to price adjustment.

10.3 Price adjustment shall be applicable to the cost portion, only if changes in the cost of labour and materials (either increases or decreases) occur during the contract period, directly affecting the cost portion.

10.4 Variations in the cost of materials shall be determined by comparing published material indices as on the last date of submission of bid (inclusive of price part) or the revised price bid, whichever is later, with the same indices published during the manufacture at the respective cut off periods for material as specified in clause 2.0 of Additional Terms and Conditions of Contract. Variations in the cost of labour shall be determined by comparing the wages as per the Minimum Wages Act of Central or state govt. (whichever is higher) or HPC wages of CIL as applicable and mentioned in NIT as on the last date of submission of bid (inclusive of price part) or the revised price bid, whichever is later, with the same wages as per the Minimum Wages Act of Central or state govt. (whichever is higher) or HPC wages of CIL as applicable and mentioned in NIT, during the work/manufacture applicable to the place of work/manufacture at the respective cut off periods for labour as specified in clause 2.0 of Additional Terms and Conditions of Contract of this Volume.

10.5 The total computed variation in the contract price shall be restricted to a limiting percentage as specified in clause 2.5 of Additional Terms and Conditions of Contract of this volume.

10.6 The price adjustment for the erection shall be made on the value of erection work done as indicated in each billing.

10.7 Every three months after the award of contract, and a month prior to shipment of equipment (in the case of ex-factory price component of contract price), and every month after establishing his site office (in the case of erection) the contractor shall submit to the engineer a written notice of the changes, if any, that have occurred in the specified material and labour indices during the previous reporting period containing the effective date of such change, the amount of change, the amount of contract price adjustment and documentary evidence to substantiate the price adjustment.

10.8 The contract price adjustment provisions detailed above, shall only be applicable if so specified in the Additional Terms and Conditions of Contract.

11.0 PACKING, FORWARDING AND SHIPMENT

11.1 The contractor, wherever applicable, shall after proper painting, pack and crate all equipment in such a manner as to protect them from deterioration and damage during rail and road transportation to the site and storage at the site till the time of erection. The contractor shall be held responsible for all damages due to improper packing.

11.2 The contractor shall notify the owner of the date of each shipment from his works, and the expected date of arrival at the site for the information of the owner.

11.3 The contractor shall also give all shipping information concerning the weight, size and content of each packing including any other information the owner may require.

11.4 The following documents shall be sent by registered post to the owner within 3 days from the date of shipment, to enable the owner to make progressive payments to the contractor: the payment shall be made only after receipt and acceptance of material at site in good condition.

Application for payment in the standard format of the owner (3 copies),
Invoice (6 copies),
Packing list (6 copies),
Pre-dispatch clearance certificate, if any (3 copies),
Test certificate, wherever applicable (3 copies),

11.5 The contractor shall prepare detailed packing list of all packages and containers, bundles and loose material forming each and every consignment dispatched to site. The contractor shall further be responsible for making all necessary arrangements for loading, unloading and other handling right from his works up to the site and also till the equipment is erected, tested and commissioned. He shall be solely responsible for proper storage and safe custody of all equipment.

12.0 DEMURRAGE, WHARFAGE, ETC.

All demurrage, wharfage and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the contractor.

13.0 INSURANCE

13.1 The contractor shall arrange, secure and maintain insurance as may be necessary and for all such amounts to protect his interests and the interests of the owner, against all risks as detailed herein in the joint names of the Owner and the Contractor with the condition that payments against all claims shall be payable by insurers to the owner as elaborated at clause 13.5. All premiums and other charges of the said insurance policies shall be paid by the contractor. The form and the limit of such insurance, as defined herein together with the under-writer thereof in each case shall be acceptable to the owner. However, irrespective of such acceptance, the responsibility to maintain adequate insurance coverage on comprehensive all risks basis at all time during the period of contract shall be that of the contractor alone. The contractor's failure in this regard shall not relieve him of any of his contractual responsibilities and obligations.

13.2 Any loss of damage to the equipment, during handling, transporting, storage and erection, till such time the plant is taken over by the owner, shall be to the

account of the contractor. The contractor shall be responsible for preferring of all claims and make good for the damage or loss by way of repairs and/or replacement of the portion of the works damaged or lost. The transfer of title shall not in any way relieve the contractor of the above responsibilities during the period of the contract. The contractor shall provide the owner with a copy of all insurance policies and documents taken out by him in pursuance of the contract. Such copies of document shall be submitted to the owner immediately after such insurance coverage. The contractor shall also inform the owner in writing at least sixty (60) days in advance, regarding the expiry, cancellation and/or change in any of such documents and ensure revalidation/renewal, etc. as may be necessary well in time.

13.3 The risk that are to be covered under the insurance shall include, but not be limited to, the loss or damage in transit, storage at site, theft, pilferage, riot, civil commotion, weather conditions, accidents of all kinds, fire, etc. The scope of such insurance shall cover the entire value of the works from time to time.

13.4 All costs on account of insurance liabilities covered under the contract will be on contractor's account and will be included in contract price. However, the owner may from time to time, during the pendency of the contract, ask the contractor in writing to limit the insurance coverage risks and in such a case, the parties to the contract will agree for a mutual settlement for reduction in contract price to the extent of reduced premium amounts.

13.5 All insurance claims, payable by the insurers, shall be paid to the Owner which shall be released to the contractor in installments as may be certified by the Engineer-in-charge for the purpose of rebuilding or replacement or repair of the works and/or goods destroyed or damaged for which payment was received from the insurers.

13.6 The clause entitled insurance under the section erection terms and conditions of contract of this volume, covers the additional insurance requirements for the portion of the works to be performed at the site of work.

14.0 LIABILITY FOR ACCIDENTS AND DAMAGES

Under the contract, the contractor shall be responsible for loss or damage to the plant until the plant is taken over in accordance with clause entitled 'Taking Over' in section technical terms and conditions of contract of this volume.

15.0 LIQUIDATED DAMAGES FOR DELAY IN COMPLETION & INCENTIVES/ BONUS FOR EARLY COMPLETION

15.1 If the contractor fails to maintain the required progress in terms of the agreed time and progress chart or to complete the work and clear the site on or before the date of completion of contract or extended date of completion, he shall without prejudice to any other right or remedy available under the law to the company on account of such breach, pay as compensation/ Liquidated Damages @ half percent (1/2%) of the contract price per week or part thereof of delay. The aggregate of such compensation/ compensations shall not exceed 10 (ten) percent of the total value as shown in the contract.

This will also apply to items or group of items for which separate period of completion has been specified. The amount of compensation may be adjusted or setoff against any sum payable to the contractor under this or any other contract with the company.

15.1.1 The company, if satisfied, that the works can be completed by the contractor within a reasonable time after the specified time of completion, may allow further extension of time at its discretion with or without the levy of L.D. In the event of extension granted being with L.D, the company will be entitled without prejudice to any other right or remedy available in that behalf, to recover from the contractor as agreed damages equivalent to half percent of the contract value of the works for each week or part of the week subject to a ceiling of 10% of the contract price.

15.1.2 The company, if not satisfied that the works can be completed by the contractor, and in the event of failure on the part of the contractor to complete work within further extension of time allowed as aforesaid, shall be entitled, without prejudice to any other right, or remedy available in that behalf, to rescind the contract.

15.1.3 The company, if not satisfied with the progress of the contract and in the event of failure of the contractor to recoup the delays in the mutually agreed time frame, shall be entitled to terminate the contract.

15.1.4 In the event of such termination of the contract as described in clauses 15.1.2 or 15.1.3 or both, the company, shall be entitled to recover L.D. upto ten percent (10%) of the contract value besides recovery of compensation for damage/loss for termination as provided in 20.6 of General Terms and Conditions of Contract.

15.2 The company may waive the payment of compensation, depending upon merit of the case, on request received from the contractor if the entire work is completed within the date as specified in the contract or as validly extended without stipulating any penalty.

15.3 Incentives/ Bonus

Provision of incentives for completion of work before schedule should be sparingly made after careful assessment of tangible benefits therefrom and disclosed in the tender documents in clear monetary terms with approval of Estimate Approving Authority.

Incentives/ Bonus of one percent of the contract value per month subject to a maximum of five percent of contract value, for early completion be built into the contract very judiciously. To avail the incentive clause, it shall be mandatory on the part of the contractor to report the actual date of completion to the concerned Engineer-in-charge. The Engineer-in-charge shall report the actual date of completion of the works as soon as possible so that the report is received within seven days of such completion by the concerned CA. The completion of work shall mean here satisfactory completion of work without any

defects to the satisfaction of EIC. The payment of incentives/ bonus shall be done after the completion of defect liability period (DLP).

This clause shall be applicable for Original Works (valuing not less than Rs.100 crore including GST) only.

16.0 CONTRACTOR'S DEFAULT

16.1 If the contractor shall neglect to execute the works with the diligence and expedition or shall refuse or neglect to comply with any reasonable orders given to him, if writing by the engineer in connection with the works or shall contravene the provisions of the contract, the owner may give notice in writing to the contractor to make good the failure, neglect or contravention complained of. Should the contractor fail to comply with the notice within thirty (30) days from the date of service thereof, then and in such case the owner shall be at liberty to employ other workmen and forthwith execute such part of the works as the contractor may have neglected to do or if the owner shall think fit, it shall be lawful for him, without prejudice to any other right he may have under the contract, to take the works wholly or in part thereof and in that event the owner shall have free use of all contractor's equipment that may have been at the time on the site in connection with the works without being responsible to the contractor for fair wear and tear thereof and to the exclusion of any right of the contractor over the same, and the owner shall be entitled to retain and apply any balance which may otherwise be due on the contract by him to the contractor, or such part thereof as may be necessary, the payment of the cost of executing the said part of the works or of completing the works as the case may be. If the cost of completing the works or executing a part thereof as aforesaid shall exceed the balance due to the contractor, the contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for delay which the contractor shall have to pay if the completion of works is delayed.

16.2 In addition, such action by the owner as aforesaid shall not relieve the contractor of his liability to pay liquidated damages for delay in completion of works as defined in clause 15.0 of this section.

16.3 The termination of the contract under this clause shall not entitle the contractor to reduce the value of the performance bank guarantee nor the time thereof. The performance guarantee shall be valid for the full value and for the full period of the contract including guarantee period.

16.4 The bidding documents will clearly state that, if the contractor fails to complete the work and the order is cancelled, the amount due to him on account of work executed by him, if payable, shall be paid to him only after due recoveries as per the provisions of the contract and that too after alternative arrangements to complete the work has been made.

17.0 FORCE MAJEURE

17.1 Force majeure is herein defined as any cause which is beyond the control of the contractor or the owner as the case may be which they could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affect the performance of the contract, such as:

(a) natural phenomena, including but not limited to floods, draughts, earthquakes and epidemics:

(b) acts of any government, including but not limited to war, declared or undeclared, priorities, quarantines, embargoes, provided either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such causes.

17.2

(a) The successful Bidder/ Contractor will advise, in the event of his having resort to this clause by a registered letter duly certified by the local chamber of commerce or statutory authorities, the beginning and end of the cause of delay, within fifteen days of the occurrence and cessation of such Force Majeure condition. In the event of delay lasting over two months, if arising out of Force Majeure, the contract may be terminated at the discretion of the company.

(b) For delays arising out of Force Majeure, the successful Bidder/ Contractor will not claim extension in completion date for a period exceeding the period of delay attributable to the causes of Force Majeure and neither company nor the successful Bidder/ Contractor shall be liable to pay extra costs (like increase in rates, remobilisation advance, idle charges for labour and machinery etc.) provided it is mutually established that the Force Majeure conditions did actually exist.

(c) If any of the Force Majeure conditions exists in the place of operation of the bidder even at the time of submission of bid he will categorically specify them in his bid and state whether they have been taken into consideration in their quotations.

17.3 The contractor or the owner shall not be liable for delays in performing his obligations resulting from any force majeure cause as referred to and/or defined above. The date of completion will, subject to hereinafter provided, be extended by a reasonable time even though such cause may occur after contractor's performance of his obligations has been delayed for other causes.

18.0 DELAYS BY OWNER OR HIS AUTHORISED AGENT

18.1 Delays in Execution

i) A work may be completed ahead of schedule or delayed due to unforeseen fortuitous circumstances, extra effort or developments beyond the control of the procuring entity or the tenderer and it is sometimes difficult to apportion credit or responsibility. The contractor may experience delay or disruption due to his own actions or inaction, those of his sub-contractor or other contractors, those of the procuring entity or the engineer, or other causes. Such delays expose the non-performing party to various sanctions under the contract. These sanctions include extension of time, damages or default termination of the contract. While examining the request of the contractor for extension of time, the engineer shall consider all circumstances and categorise the delays as follows:

a) Excusable delays - Force Majeure (FM), that is, acts of God, abnormal weather, floods, and so on, applies;

b) Compensable delays – or Compensation Events, which put full burden of responsibility on the Procuring Entity as covered in the GCC; and
c) Inexcusable delay (contractor's own faults), which puts the full burden of responsibility on the contractor.
d) Concurrent delays - when two or more events responsible for delay overlap each other. The delays may be attributable to the Procuring Entity or the contractor or none, and fall in above categories. The eligibility for extension of time (EOT) should be determined by plotting each contributing concurrent delay on the critical path. The Procuring Entity should see that the concurrent delays do not result in unnecessary extra extension of time.

ii) Once the delay is categorised, it should then be determined not only whether the contractor is eligible for time extension but also whether sanctions, such as Liquidated Damage (LD) or default termination, can be imposed on the contractor.

18.2 In case the contractor's performance is delayed due to any act of omission on the part of the owner or his authorised agents, then the contractor shall be given due extension of time for the completion of the works, to the extent such omission on the part of the owner has caused delay in the contractor's performance of his work. Regarding reasonableness or otherwise of the extension of time, the decision of the engineer shall be final.

19.0 Extension of date of completion

19.1 On happening of any events causing delay as stated hereinafter, the contractor shall intimate immediately in writing the Engineer-in-charge:

a. due to any reasons defined as Force Majeure.
b. non-availability of stores which are the responsibility of the owner to supply
c. non-availability or breakdown of tools and plant to be made available or made available by the owner
d. delay on the part of the contractors or tradesmen engaged by the owner not forming part of the contract, holding up further progress of the work
e. non-availability of working drawings/work programme in time, which are to be made available by the company during progress of the work
f. any other causes which, at the sole discretion of the company is beyond the control of the contractor.

19.2 A "Hindrance Register" shall be maintained by both the Company and the Contractor at site to record the various hindrances, as mentioned above, encountered during the course of execution.

19.3 The contractor may request the company in writing for extension of time within 15 days of happening of such event causing delay stating also, if practicable, the period for which extension is desired. The company may, considering the eligibility of the request, give a fair and reasonable extension of time for completion of the work. Such extension shall be communicated to the contractor in writing by the company through the Engineer-in-charge within 1 month of the date of receipt of such request. The contractor shall however use

his best efforts to prevent or make good the delay by putting his endeavors constantly as may be reasonably required of him to the satisfaction of the Engineer-in-charge.

19.4 Interim extension of time may also be granted by the Engineer -In-charge during the course of execution, on written request for extension of time within 15 (fifteen) days of happening of such events as stated above, reserving the company's right to impose/ waive liquidated damages at the time of granting final extension of time as per contract agreement.

19.5 When the period fixed for the completion of the contract is about to expire, the question of extension of the contract may be considered at the instance of the Contractor or the Company or the both. The extension will have to be by party's agreement, expressed or implied.

19.6 In case the Contractor does not apply for grant of extension of time within 15 (fifteen) days of hindrance occurring in execution of the work and the Company wants to continue with the work beyond the stipulated date of completion for reason of the work having been hindered, the Engineer-in-charge at his sole discretion can grant interim extension of time even in the absence of application from the Contractor. Such extension of time granted by the Engineer-in-charge is valid provided the Contractor accepts the same either expressly or implied by his actions before and subsequent to the date of completion. Such extension of time shall be without prejudice to Company's right to levy compensation under the relevant clause of contract.

19.7 All interim extensions of time shall be granted by Tender Accepting Authority limited to Director (Tech) for works approved by Chairman/FDs/Board and Area GM for area works and all final extension of time shall be granted by Tender Accepting Authority limited to Chairman/ CMD of ECL.

Effort should be made to complete the work within the original contract period or extended period.

20.0 Cancellation, Termination, Suspension & Foreclosure of Contract

20.1 Cancellation of Contract-The owner shall, in addition to other remedial steps to be taken as provided in the conditions of contract, be entitled to cancel the contract in full or in part, if the contractor

a. makes default in proceeding with the works with due diligence and continues to do so even after a notice in writing from the Engineer-in-charge, then on the expiry of the period as specified in the notice

or

b. commits default/breach in complying with any of the terms and conditions of the contract and does not remedy it or fails to take effective steps for the remedy to the satisfaction of the Engineer-in-charge, then on the expiry of the period as may be specified by the Engineer-in-charge in a notice in writing

or

c. fails to complete the work or items of work with individual dates of

completion, on or before the date/dates of completion or as extended by the company, then on the expiry of the period as may be specified by the Engineer-in-charge in a notice in writing

or

d. shall offer or give or agree to give any person in the service of the company or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for act/acts of favour in relation to the obtaining or execution of this or any other contract for the company.

or

e. Shall try to obtain a contract with the company by way of ring tendering or other non-bonafide method of competitive tendering.

or

f. transfers, sublets, assigns the entire work or any portion thereof without the prior approval in writing from the Engineer-in-charge. The Engineer-in-charge may by giving a written notice, cancel the whole contract or portion of it in default.

20.2 The owner shall in such an event give fifteen (15) days' notice in writing to the contractor of his decision to do so.

20.3 The contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and contracts to the extent they are related to the work terminated and terms satisfactory to the owner, stop all further sub-contracting or purchasing activity related to the work terminated, and assist the owner in maintenance, protection, and disposition of the works acquired under the contract by the owner.

20.4 Termination of Contract-The contract shall stand terminated under the following circumstances unless the owner is satisfied that the legal representatives of the individual contractor or of the proprietor of the proprietary concern and in the case of partnership the surviving partners, are capable of carrying out and completing the contract and the owner shall in any way not be liable to payment of any compensation to the estate of deceased contractor and/or to the surviving partners of the contractor's firm on account of the termination of the contract.:

a. If the contractor being an individual in the case of proprietary concern or in the case of a partnership firm any of its partners is declared insolvent under the provisions of insolvency act for the time being in force, or makes any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors amounting to proceedings for liquidation or composition under any insolvency act.
b. In the case of the contractor being a company, its affairs are under liquidation either by a resolution passed by the company or by an order of court, not being a voluntary liquidation proceedings for the purpose of amalgamation or reorganisation, or a receiver or manager is appointed by the court on the application by the debenture holders of the company, if any.
c. If the contractor shall suffer an execution being levied on his/their goods,

estates and allow it to be continued for a period of 21 days.

d. On the death of the contractor being a proprietary concern or of any of the partners in the case of a partnership concern and the company is not satisfied that the legal representative of the deceased proprietor or the other surviving partners of the partnership concern are capable of carrying out and completing the contract. The decision of the company in this respect shall be final and binding which is to be intimated in writing to the legal representative or to the partnership concern.

20.5 If the contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the contractor is a partnership concern and one of the partners dies, then unless the owner is satisfied that the legal representatives of the individual contractor or of the proprietor of the proprietary concern and in the case of partnership the surviving partners, are capable of carrying out and completing the contract the owner shall be entitled to cancel the contract as to its incomplete part without being in any way liable to payment of any compensation to the estate of deceased contractor and/or to the surviving partners of the contractor's firm on account of the cancellation of the contract.

The decision of the owner that the legal representatives of the deceased contractor or surviving partners of the contractor's firm cannot carry out and complete the contract shall be final and binding on the parties. In the event of such cancellation the owner shall not hold the estate of the deceased contractor and/or the surviving partners of the estate of the deceased contractor and/or the surviving partners of the contractor's firm liable to damages for not completing the contract.

20.6 On cancellation of the contract or on termination of the contract, the Engineer-in-charge shall have powers

a. To take possession of the site and any materials, constructional plant, implements, stores, etc. thereon.

b. In such an event, the contractor shall be liable for loss/damage suffered by the employer because of action under this clause and to compensate for this loss or damage, the employer shall be entitled to recover higher of the following:

i) Forfeiture of security deposit comprising of performance guarantee and retention money at the disposal of the employer.

or

ii) 20% of value of incomplete work (Contract Value minus already executed value of the work).

The amount to be recovered from the contractor as determined above, shall, without prejudice to any other right or remedy available to the employer as per law or as per agreement, will be recovered from any money due to the contractor on any account or under any other contract and in the event of any shortfall, the contractor shall be liable to pay the same within 30 days. In case of failure to pay the same the amount shall be debt payable.

In the event of above course being adopted by the Engineer-in-charge, the

contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased materials, equipment or entered into agreement or made advances on any account or with a view to the execution of work or performance of the contract. And in case action is taken under any of provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum for any work thereof or actually performed under this contract unless and until the engineer-in-charge has certified in writing the performance of such work and value payable in respect thereof and he shall only be entitled to be paid the value so certified.

The need for determination of the amount of recovery of any extra cost/expenditure or of any loss/damage suffered by the company shall not however arise in the case of termination of the contract for death/demise of the contractor.

20.7 Suspension of Contract- The company shall have power to suspend the progress of the work or any part thereof and the Engineer-in-charge may direct the contractor in writing to suspend the work, for such period and in such manner as may be specified therein, on account of any default on the part of the contractor, or for proper execution of the work for reasons other than any default on the part of the contractor, or on ground of safety of the work or part thereof. In the event of suspension for reason other than any default on the part of the contractor, extension of time shall be allowed by the company equal to the period of such suspension. Any necessary and demonstrable costs incurred by the contractor as a result of such suspension of the works will be paid by the owner, provided such costs are substantiated to the satisfaction of the engineer. The owner shall not be responsible for any liabilities if suspension or delay is due to some default on the part of the contractor or his sub-contractor.

The work shall, throughout the stipulated period of contract, be carried out with all due diligence on the part of the contractor. In the event of termination or suspension of the contract, on account of default on the part of the contractor, as narrated hereinbefore, the security deposit and other dues of this work or any other work done under this company shall be forfeited and brought under the absolute disposal of the company provided, that the amount so forfeited shall not exceed 10% of the contract value.

20.8 Foreclosure of Contract (in full or in part) - If at any time after acceptance of the tender, the company decides to abandon or reduce the scope of the work for any reason whatsoever the company, through its Engineer-in-charge, shall give notice in writing to that effect to the contractor. In the event of abandonment/reduction in the scope of work, the company shall be liable:

a. to pay the contractor at the contract rates full amount for works executed and measured at site upto the date of such abandonment/reduction in the work.
b. to pay reasonable amount assessed and certified by the Engineer-in-charge of the expenditure incurred, if any, by the contractor on preliminary works at site. e.g. temporary access roads, temporary construction for labour and staff quarters, office accommodation, storage of materials, water storage tanks and supply for the work including supply to labour/staff quarters, office, etc.
c. to pay for the materials brought to site or to be delivered at site, which the

contractor is legally liable to pay, for the purpose of consumption in works carried out or were to be carried out but for the foreclosure, including the cost of purchase and transportation and cost of delivery of such materials. The materials to be taken over by the company should be in good condition and the company may allow at its discretion the contractor to retain the materials in full or part if so desired by him and to be transported by the contractor from site to his place.

d. to take back the materials issued by the company but remaining unused, if any, in the work on the date of abandonment/reduction in the work, at the original issued price less allowance for any deterioration or damage caused while in custody of the contractor
e. to pay for the transportation of tools and plants of the contractor from site to contractor's place or to any other destination, whichever is less.

The contractor shall, if required by the Engineer-in-charge, furnish to him books of accounts, papers, relevant documents as may be necessary to enable the Engineer-in-charge to assess the amount payable in terms of para 20.8 (b), (c) and (e) above, the contractor shall not have any claim for compensation whatsoever either for abandonment or for reduction in the scope of work, other than those as specified above.

21.0 NO WAIVER OF RIGHTS

Neither the inspection by the owner or the engineer or any of their officials, employees or agents nor any order by the owner or the engineer for payment of money or any payment for or acceptance of, the whole or any part of the works by the owner or the engineer, nor any extension of time, nor any possession taken by the engineer shall operate as a waiver of any provision of the contract, or of any power herein reserved to the owner, or any right to damages herein provided, nor shall any waiver of any breach in the contract be held to be a waiver of any other or subsequent breach.

22.0 CERTIFICATE NOT TO AFFECT RIGHT OF OWNER AND LIABILITY OF CONTRACTOR

No interim payment certificate of the engineer, nor any sum paid on account, by the owner, nor any extension of time for execution of the works granted by the engineer shall affect or prejudice the rights of the owner against the contractor or relieve the contractor of his obligations for the due performance of the contract, or be interpreted as approval of the works done or of the equipment furnished and no certificate shall create liability for the owner to pay for alterations, amendments, variations or additional works not ordered, in writing, by the engineer or discharge the liability of the contractor for the payment of damages whether due, ascertained, or certified or not, or any sum against the payment of which he is bound to indemnify the owner, nor shall any such certificate nor the acceptance by him of any sum paid on account or otherwise affect of prejudice the rights of the contractor against the owner.

23.0 GRAFTS AND COMMISSIONS ETC.

Any graft, commission, gift or advantage given, promised or offered by or on behalf of the contractor or his partner, agent, officers, director, employee or

servant or any one of his or their behalf in relation to the obtaining or to the execution of this or any other contract with the owner, shall, in addition to any criminal liability which it may incur, subject the contractor to the cancellation of this and all other contracts and also to payment of any loss or damage to the owner resulting from any cancellation. The owner shall then be entitled to deduct the amount so payable from any moneys otherwise due to the contractor under the contract.

24.0 LANGUAGE AND MEASURES

All documents pertaining to the contract including specifications, schedules notices, correspondence, operating and maintenance instructions, drawings or any other writing shall be written in English language. The metric system of measurement shall be used exclusively in the contract.

25.0 RELEASE OF INFORMATION

The contractor shall not communicate or use in advertising, publicity, sales releases or in any other medium photographs or other reproduction of the works under this contract, or descriptions of the site, dimensions, quantity, quality or other information, concerning the works unless prior written permission has been obtained from the owner.

26.0 CONSTRUCTION OF THE CONTRACT

26.1 In case, Owner hands over his equipment to the Contractor for executing, then the Contractor shall at the time of taking delivery of the equipment/ despatch documents be required to execute an indemnity bond in favour of the Owner in the form acceptable to the Owner for keeping the equipment in safe custody and to utilise the same exclusively for the purpose of the said contract

26.2 The contract shall in all respects be construed and governed according to Indian Laws.

26.3 It is clearly understood that the total consideration for the contract (s) has been broken up into various components only for the convenience of payment of advance under the contract (s) and for the measurement of deviations or modifications under the contract (s).

27.0 COMPLETION OF CONTRACT

Unless otherwise terminated under the provisions of any other relevant clause, this contract shall be deemed to have been completed at the expiration of the guarantee period as provided for under the clause entitled 'Guarantee' in this section.

28.0 ENFORCEMENT OF TERMS

The failure of either party to enforce at any time of the provisions of this contract or any rights in respect thereto or to exercise any option herein provided, shall in no way be construed to be a waiver of such provisions, rights or options or in any way to affect the validity of the contract. The exercise by either party of any of its rights herein shall not preclude or prejudice either party from exercising the same or any other right it may have hereunder.

29.0 ENGINEER'S DECISION

29.1 In respect of all matters which are left to the decision of the engineer including the granting or with holding of the certificates, the engineer shall, if required to do so by the contractor give in writing a decision thereon.

29.2 If in the opinion of the contractor, a decision made by the engineer is not in accordance with the meaning and intent of the contract, the contractor may file with the engineer within fifteen (15) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered as acceptance of the engineer's decision and the decision shall become final and binding.

29.3 The engineer's decision and the filling of the written objection thereto shall be a condition precedent to the right to any legal proceedings. It is the intent of the agreement that there shall be no delay in the execution of the works and the decision of the engineer as rendered shall be promptly observed.

30.0 CO-OPERATION WITH OTHER CONTRACTORS AND CONSULTING ENGINEERS

The contractor shall agree to co-operate with the owner's other contractors and consulting engineers and freely exchange with them such technical information as is necessary to obtain the most efficient and economical design and to avoid unnecessary duplication of efforts. The engineer shall be provided with three copies of all correspondence addressed by the contractor to other sub-contractors and consulting engineers in respect of such exchange of technical information,

31.0 TRAINING OF OWNER'S PERSONNEL

31.1 The contractor shall undertake to train free of cost, engineering personnel selected and sent by the owner at the works of the contractor unless otherwise specified in the technical specifications. The period and the nature of training for the individual personnel shall be agreed upon mutually between the contractor and the owner. These engineering personnel shall be given special training in the shops, where the equipment will be manufactured and/or their collaborator's works and where possible, in any other plant where equipment manufactured by the contractor or his collaborator is under installation or test, to enable those personnel to become familiar with the equipment being furnished by the contractor.

31.2 All traveling and living expenses for the engineering personnel to be trained during the total period of training will be borne by the owner. These engineering personnel while undergoing training shall be responsible to the contractor for discipline.

31.3 In the event of the owner, for any reason, failing to avail of the training facilities, he shall not be entitled for any rebate whatsoever on this account.

32.0 POWER TO VARY OR OMIT WORK

32.1 No alterations, amendments, omissions, suspensions or variations of the works (hereinafter referred to as 'Variation') under the contract as detailed in the contract documents, shall be made by the contractor except as directed in writing by the engineer, but the engineer shall have full power subject to the provision hereinafter contained from time to time during the execution of the contract, by notice in writing, to instruct the contractor to make such variation without prejudice to the contract. The contractor shall carry out such variation

and be bound by the same conditions as far as applicable as though the said variation occurred in the contract documents. If any suggested variation would, in the opinion of the contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the contract, he shall notify the engineer there of in writing and the engineer shall decide forthwith, whether or not the same shall be carried out and if the engineer confirm his instructions, contractor's obligations and guarantees shall be modified to such an extent as may be mutually agreed. Any agreed difference in cost occasioned by any such variation shall be added to or deducted from the contract price as the case may be.

32.2 In the event of the engineer requiring any variation, such reasonable and proper notice shall be given to the contractor to enable him to work his arrangements accordingly, and in cases where goods or materials are already prepared or any design, drawings of pattern made or work done requires to be altered, a reasonable and agreed sum in respect there of shall be paid to the contractor.

32.3 In any case in which the contractor has received instructions from the engineer as to the requirement of carrying out the altered or additional substituted work which either then or later on, will in the opinion of the contractor, involve a claim for additional payments, the contractor shall immediately and in no case later than thirty (30) days, after receipt of the instructions aforesaid and before carrying out the instructions, advise the engineer to that effect. But the engineer shall not become liable for the payment of any charges in respect of any such variations, unless the instructions for the performance of the same shall be confirmed in writing by the engineer.

32.4 If any variation in the works, results in reduction of contract price, the parties shall, agree, in writing, so to the extent of any change in the price, before in contractor proceeds with the change.

32.5 In all the above cases, in the event of a disagreement as to the reasonableness of the said sum, the decision of the engineer shall prevail.

32.6 Notwithstanding anything stated above in this clause, the engineer shall have the full power to instruct the contractor, in writing, during the execution of the contract, to vary to quantities of the items or groups of items. The contractor shall carry out such variations and be bound by the same conditions, as though the said variations occurred in the contract documents. However, the contract price shall be adjusted at the rates and the prices provided for the original quantities in the contract.

33.0 GUARANTEE/ DEFECT LIABILITY

33.1 The contractor shall warrant that the equipment will be new and in accordance with the contract documents and be free from defects in material, design, manufacture and workmanship for a period of sixty (60) calendar months commencing immediately upon the satisfactory completion of the Performance Guarantee (PG) Test. The contractor's liability shall be limited to the replacement of any defective parts in the equipment of his own manufacture or those of his sub-contractor (s)/ sub-vendor (s) or replacement of the complete equipment, under normal use and arising solely from faulty design, manufacture, materials, and/or workmanship provided always that such defective parts/ equipment are repairable at the site/ replacing the equipment as a whole without hampering the operation of the plant. Such replaced

defective parts/ old equipment shall be returned to the contractor unless otherwise arranged. No repairs or replacements shall be carried out by the engineer in charge of the employer during the 60 calendar months, as the plant is under the supervision of the contractor's supervisory engineers/staff.

33.2 The operation of the plant will be done departmentally by the respective subsidiary companies or by the EPC contractor, as per provisions of tender document. However, in both cases the successful EPC contractor shall be responsible for maintaining the plant during 60 calendar months including repair, replacement of the spare parts, components, equipment etc. free of cost.

33.3 If the facilities or any part thereof cannot be used by reason of such defect and/or making good such defect, 60 calendar months (i.e. five years of Defect liability period (DLP) including maintenance of plant by contractor or five years of Operation & Maintenance of plant by contractor, as per the provisions of tender document) of any facilities or such part, as the case may be, shall be extended by a period equal to the period during which the facilities or such part cannot be used by the employer because of aforesaid reasons.

33.4 In case of failure of any equipment/system in during the initial period of 60 calendar months (i.e. five years of Defect liability period (DLP) including maintenance of plant by contractor or five years of DLP including Operation & Maintenance of plant by contractor, as per the provisions of tender document) the EPC contractor shall repair/replace the equipment/system etc. at his own cost.

All the equipment should be guaranteed for a minimum of 90% availability of plant during defect liability period from the date of commissioning calculated on quarterly basis.
The following formula may be adopted to calculate percentage availability:-

$$\frac{(Total\ shift\ hours - breakdown\ hours - maintenance\ hours)}{Total\ shift\ hours} \times 100$$

Total shift hours=8×No. of shifts operated in 3 or 12 months as elaborated (quarterly/annual basis) including those on scheduled holidays.

In the event that equipment fails to achieve the availability herein provided, measured over each quarter, contractor shall be liable for and pay to the employer, as penalty, a sum equal to as indicated hereunder to be adjusted against running bill/performance guarantee:

a. 0.25% of contract price (excluding GST) for reduction in every percentage or part thereof from guaranteed availability of 90%, calculated on quarterly basis.
b. In case the availability falls below 80%, 10% of contract price (excluding GST) shall be deducted as penalty calculated on annual basis.

However, the total penalty on account of failure in guaranteed availability shall not exceed 10% of contract price (excluding GST). This will be in addition to Liquidated damages (LD) for delay in completion and failure in PG Test.

34.0 REPLACEMENT OF DEFECTIVE PARTS AND MATERIALS

34.1 If during the progress of the works the engineer shall decide and inform in writing to the contractor, that the contractor has manufactured any plant or part of the plant unsound or imperfect or has furnished any plant inferior than the quality specified, the contractor on receiving details of such defects or deficiencies shall at his own expense within seven (7) days of his receiving the notice, or otherwise, within such time as may be reasonably necessary for making it good, proceed to alter, re-construct or remove such work and furnish fresh equipment upto the standards of the specifications. In case the contractor fails to do so, the engineer may on giving the contractor seven (7) days' notice in writing of his intentions to do so, proceed to remove the portion of the works so complained of and, at the cost of the contractor, perform all such work or furnish all such equipment provided that nothing in this clause shall be deemed to deprive the owner of or affect any rights under the contract which the owner may otherwise have in respect of such defects and deficiencies.

34.2 The contractor's full and extreme liability under this clause shall be satisfied by the payments to the owner of the extra cost, of such replacement procured, including erection, as provided for in the contract, such extra cost being the ascertained difference between the price paid by the owner for such replacements and the contract price portion for such defective plant and repayments of any sum paid by the owner to the contractor in respect of such defective plant. Should the owner not so replace the defective plant, the contractor's extreme liability under this clause shall be limited to repayment of all sums paid by the owner under the contract for such defective plant.

35.0 DEFENCE OF SUITS

If any action in court is brought against the owner or engineer or an officer or agent of the owner. for the failure or neglect on the part of the contractor to perform any acts, matters, covenants or things under the contract, or for damage or injury caused by the alleged omission or negligence on the part of the contractor, his agents, representatives or his sub-contractors, workmen, suppliers or employees, the contractor shall in all such cases indemnify and keep the owner, and the engineer and/or his representative, harmless from all losses, damages, expenses or decrees arising of such action.

36.0 LIMITATIONS OF LIABILITIES

Except in cases of criminal negligence or willful misconduct,

i) Notwithstanding anything herein to the contrary, no party shall be liable for any indirect, special, punitive, consequential or exemplary damages, whether foreseeable or not, arising out of or in relation to this contract, loss of goodwill or profits, lost business however characterized, any/or from any other remote cause whatsoever.

ii) The contractor shall not be liable to the Owner for any losses, claims, damages, costs or expenses whatsoever arising out of or in connection with this contract in excess of the contract value of the work which caused such losses, claims, damages, costs or expenses.

iii) However, the limitation of liability of the contractor indicated above shall not apply to liquidated damages.

37.0 MARGINAL NOTES

The marginal notes to any clause of the contract shall not affect or control the construction of such clause.

38.0 TAXES, PERMITS & LICENCES

38.1 The contractor shall be liable and pay all- Indian taxes, (other than GST) duties, levies, royalties, whether local, municipal, provincial or central lawfully assessed against the owner or the contractor in pursuance of the contract. In addition, the contractor shall be responsible for payment of all Indian duties, levies and taxes lawfully assessed against the contractor for his personal income and property only. This clause shall be read in conjunction with clause 11.3 of Instruction to Bidders.

The contractor, along with his bills, shall submit proper documents in the name of the Company to enable the Company Claim Input Tax Credit under the applicable laws. The invoice shall be in compliance with the relevant rules.

ECL is entitled to avail Input Tax Credit on account of: CGST, SGST/UTGST, IGST and GST Compensation Cess, as applicable for indigenous product/imported products. Hence set off allowed against CGST, SGST/UTGST, IGST and GST Compensation Cess as per relevant rules/act. Contractor shall submit relevant document as desired by ECL at the time of supply, along with the bills/invoice as per relevant rules for enabling ECL to claim Input tax credit benefit.

38.2 The Company shall deduct Income Tax as per prevalent rate from time to time from the gross amount(excluding GST) of the bill payable to the contractor; at present the rate of deduction is 1% for individual/proprietorship firm and 2% for others. However, if the contractor produces a certificate from the Income Tax authorities for no deduction of tax/deduction of tax at reduced rate, the same shall be complied with by the Company.

38.3 An amount of 1% of the work value payable to the contractor will be deducted from all bills towards the workers welfare under “The Building And Other Construction Workers’ Welfare Cess Act, 1996” and “The Building And Other Construction Workers’ Welfare Cess Rule, 1998, if applicable.

39.0 PROGRESS REPORTS AND PHOTOGRAPHS

During the various stages of the works in the pursuance of the contract, the contractor shall at his own cost submit periodic progress reports as may be reasonably required by the engineer with such materials as charts, net-works, photographs, test certificates, etc. such progress report shall be in the form and size as may be required by the engineer and shall be submitted in at least three (3) copies.

40.0 LONG TERM AVAILABILITY OF SPARES

40.1 The contractor shall guarantee the long term availability of spares to the owner for the full life of the equipments covered under the contract. The contractor shall guarantee that before going out of production of spare parts of the equipment covered under the contract, he shall give the owner at least twelve (12) months advance notice so that the latter may order his bulk requirement

of spares, if he so desires. The same provision will also be applicable to sub-contractor. Further, in case of discontinuance of manufacture of any spares by the contractor or his sub-contractors the contractor will provide the owner two years in advance, with full manufacturing drawings, material specifications and technical information required by the owner for the purpose of manufacture of such items.

40.2 Further, in case of discontinuance of supply of spares by the contractor or his sub-contractors the contractor will provide the owner with full information for replacement of such spares with other equivalent makes, if so required by the owner.

40.3 The contractor shall provide the owner with a "directory" of his sub-contractors giving the addresses and other particulars of his sub-contractors. The owner, if he so desires, shall have the right to procure the spares directly from sub-contractors.

40.4 Notwithstanding anything stated elsewhere in the bid documents, the prices of all spares which may be procured to cover long term requirements beyond the Sixty (60) calendar months, will be generally in accordance with the mutually agreed prices.

40.5 The contractor will indicate in advance the delivery period of the items of spares, which the owner may procure in accordance with the sub-clause 40.4. In case of emergency requirements of spares, the contractor would make every effort to expedite the manufacture and delivery of such spares on the basis of mutually agreed time schedule.

40.6 The procedure specified in clause 40.4 and 40.5 shall apply for future procurement of items included in stand by spare list, mandatory spares lists, optional spares list and special tools, plants and equipment list, if any, specified in the bid documents.

40.7 The Contractor shall indemnify the owner for the availability of long time spares as per the terms and conditions laid down above in clause 40.1 to clause 40.6.

40.8 In case of equipment/ system (including manufactured domestic and overseas) the availability of spare parts for additional sixty (60) calendar months after sixty (60) calendar months (i.e. five years of Defect liability period (DLP) including maintenance of plant by contractor or five years of Operation & Maintenance of plant by contractor, as per the provisions of tender document) shall have to be guaranteed by the contractor. In this regard, the contractor will have to provide, an undertaking from the respective OEMs regarding supply of spare parts and maintenance support as and when required during the said period, before starting of Defect Liability Period.

41.0 PAYMENT

41.1 The payment to the contractor for the performance of the works under the contract will be made by the owner as per the guidelines and conditions specified herein. All payment made during the contract shall be on account payments only. The final payment will be made on completion of all the works and on fulfillment by the contractor of all his liabilities under the contract. The payment to the contractor will be made through Electronics Mode.

41.2 CURRENCY OF PAYMENT

All payments under the contract shall be in Indian Rupees only.

41.3 DUE DATES FOR PAYMENT

Owner will make progressive payment as and when the payment is due as per the terms of payment set forth in the accompanying technical specifications. Payment will become due and payable by the owner within thirty 30) days from the date of receipt of contractor's bill/invoice/debit note by the owner, provided the documents submitted are complete in all respects.

41.4 PAYMENT SCHEDULE

The contractor shall prepare and submit to the engineer for approval, a break-up of the contract price. This contract price break-up shall be interlinked with the agreed detailed PERT network of the contractor setting forth his starting and completion dates for the various key phases of works prepared as per condition of this section. while preparing the PERT network, the supply of P&M Equipment shall be linked to construction of respective Civil and Structural Works. Any payment under the contract shall be made only after the contractor's price break-up is approved by the engineer. The aggregate sum of the contractor's price break-up shall be equal to the lump sum contract price.

41.5 INTERIM PAYMENTS

41.5.1 The contractor shall submit running bill for the payment in the prescribed proforma of the owner to be supplied in due course at the time of payment.

41.5.2 Each such running bill shall state the amount claimed and shall set forth in detail, in the order of the payment schedule, particulars of the works including the works executed at site and of the equipment shipped/brought on to the site pursuant to the contract up to the date mentioned in the bill and for the period covered since the last preceding certificate, if any.

41.5.3 Every interim payment claim shall indicate the contract value of the works executed up to the date mentioned in the running bill, provided that no sum shall be included in any running bill in respect of the works that, according to the decision of the engineer, does not comply with the contract, or has been performed, at the date of certificate prematurely.

41.6 TERMS OF PAYMENTS

41.6.1 Payment: Since the total job is on turn-key basis, any payment to the Contractor before the final payment shall be treated as interim payment towards the total contract value.

The Contractor may at intervals of not less than one month submit claims/ bills for payment on account of work done after proper scrutiny and certification of the same by the Employer. The progressive payment shall be made in respect of the following:

a) Design engineering
b) Civil construction including foundation and buildings
c)Structural fabrication and erection
d) Supply of equipment
e) Machinery Erection
f) Trial Run and commissioning

All such payments shall be made by the Employer online within a month from the date of the submission of claims/bills. Payment will also be governed by Clauses of 3.0 of General Terms & Conditions of Contract. Any sum due from the Contractor shall be deducted from the first or next subsequent on account of payments as the case may be, in general the following procedure of payment shall be followed:

41.6.1.1 Design and Engineering.

a) 90% payment on completion of approval of system, mechanical, electrical, civil, structural design, drawings etc. as per contract on pro-rata basis.
b) 5% payment on Preliminary acceptance of the works after start-up and trial operation as per General Technical Conditions.
c) 5% on issue of final acceptance certificate of the works after performance and guarantee test as per General Technical Conditions.

41.6.1.2 Civil/Structural Works:

a) 95% payment on progress of work completed, duly measured and certified by the engineer.
b) 5 % on issue of final acceptance certificate of the works after performance guarantee test as per General Technical Conditions.

41.6.1.3 Supply of Equipment:

a) 90% payment on receipt of the equipment conforming to stipulated specifications and quality in good condition at site to be certified by the site engineer.
b) 5% on preliminary acceptance of the works after start-up and trial operation as per General Technical Conditions.
c) 5% on issue of final acceptance certificate of the works after performance and guarantee test as per General Technical Conditions.

Note: The supply of equipment should commensurate with mutually agreed BAR/PERT chart.

41.6.1.4 Installation & Commissioning:

a) 90% progress payment based on the installation and commissioning of plant and equipment duly certified by site engineer.
b) 5% payment on preliminary acceptance of the works after start-up and trial operation as per General Technical Conditions.
c) 5% on issue of final acceptance certificate of the works after performance and guarantee test as per General Technical Conditions.

41.6.1.5 Final Bill:

As soon as possible after completion of the works to the satisfaction of the Employer the Contractor shall forward a certified final bill. It shall be accompanied by all relevant vouchers, such as royalty clearance certificate (if any) from appropriate authorities, submission of copies of working drawings, technical documents as required documents showing therein all additions and alternations etc. in the process of execution, completion certificate for embedded and covered up works, plant handing over certificate etc. as applicable. The Contractor shall be paid full and final payment only after deduction of amounts paid against on account bill and

any other amount due etc. payable by Contractor.

In cases where the Preliminary Acceptance Test (start-up & trial operation) and Final Acceptance Test (Performance Guarantee Test) is not completed for reasons not attributable to the contractor, the payment which is to be released after Preliminary Acceptance & Final Acceptance certificate will be released against equivalent amount of Bank Guarantee with validity upto actual completion (Initial BG validity should for 1(one) year and to be extended till actual completion of respective tests.

42. Settlement of Disputes with the Contractor

It is incumbent upon the contractor to avoid litigation and disputes during the course of execution. However, if such disputes take place between the contractor and the department, effort shall be made first to settle the disputes at the company level.

The contractor should make request in writing to the Engineer-in-charge for settlement of such disputes/ claims within 30 (thirty) days of arising of the cause of dispute/ claim failing which no disputes/ claims of the contractor shall be entertained by the company.

Effort shall be made to resolve the dispute in two stages:
In first stage dispute shall be referred to Area GM/GM,HoD(C). If difference still persist the dispute shall be referred to a committee constituted by the owner. The committee shall have one member of the rank of Director of the company who shall be chairman of the committee.
If differences still persist, then matter shall be resolved through conciliation.
Conciliation:
The party initiating conciliation shall send a written invitation to the other party to conciliate and proceedings shall commence when the other party accepts the initiations to conciliation. The parties may agree on the name of a sole conciliator or each party may appoint one conciliator. The conciliation shall assist the parties to reach an amicable settlement of their dispute. When the parties sign the settlement agreement, it shall be final and binding on the parties. The conciliator shall authenticate the settlement agreement and furnish a copy thereof to each party.
If differences still persist, the settlement of the dispute shall be resolved in the following manner:
Disputes or differences relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprise (CPSEs) / Port Trusts inter se and also between CPSEs and Government Departments/ Organizations (excluding disputes relating to Railways, Income Tax, Customs & Excise Department), shall be taken up by either party for its resolution through Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD) as mentioned in DPE OM No. 05/003/2019-FTS-10937 dated 14th December 2022 and the decision of AMRCD on the said dispute will be binding on both the parties.

In case of parties other than above Agencies, the redressal of the dispute may be sought through Arbitration (THE ARBITRATION AND CONCILIATION ACT, 1996 as amended by AMENDMENT ACT of 2015).

42.0 A Settlement of Disputes through Arbitration

(i) Normally, there should not be any scope of dispute between the employer (department) and the contractor after entering into a mutually agreed valid contract. However, due to various unforeseen reasons, disputes may arise during the progress of the contract between the employer (department) and the contractor.
Therefore, the conditions governing the contract shall contain suitable provision for settlement of such disputes / differences binding on both the parties.

(ii) Mode of settlement of such disputes/differences shall be through Arbitration. However, when a dispute/difference arises, then, depending on the position of the case, either the employer (department) or the contractor shall give notice to the other party of its intention to commence arbitration. The applicable arbitration procedure will be as per the Arbitration and Conciliation Act, 1996 as amended by Amendment Act of 2015.

(iii) Venue of Arbitration: The venue of arbitration shall be the place from where the contract has been issued.

(iv) Applicable Law: The contracts shall be interpreted in accordance with the laws of the Union of India.

(v) Legal Advice:
While processing a case for arbitration, the purchase organization is to take legal advice, at appropriate stages from competent authorities viz their Legal Department.

(vi) Following clause shall be included in the General Conditions of the Contract (GCC):

Sole Arbitration Clause:
In the event of any question, dispute or difference arising under these terms & conditions or any condition contained in this contract or interpretation of the terms of, or in connection with this Contract (except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration of a person, appointed to be the arbitrator by the Chairman, CIL/ CMD of ECL (as the case may be). The award of the arbitrator shall be final and binding on the parties of this Contract.

(a) In the event of the Arbitrator dying, neglecting or refusing to act or resigning or being unable to act for any reason, or his/her award being set aside by the court for any reason, it shall be lawful for the Chairman, CIL / CMD of ECL (as the case may be) to appoint another arbitrator in place of the outgoing arbitrator in the manner aforesaid.

(b) It is further a term of this contract that no person other than the person appointed by the Chairman, CIL / CMD of ECL (as the case may be) as aforesaid should act as arbitrator and that, if for any reason that is not possible, the matter is not to be referred to Arbitration at all.
Subject as aforesaid, Arbitration and Conciliation Act, 1996 as amended by Amendment Act of 2015, and the rules thereunder and any statutory

modification thereof for the time being in force shall be deemed to apply to the Arbitration proceedings under this clause.

The venue of arbitration shall be the place from which the contract is issued or such other place as the Chairman, CIL / CMD of ECL (as the case may be) at his discretion may determine.

(vii) Contracts with Partnership firm/ JV/Consortium:

A partner is the implied authority to bind the firm in a contract coming in the purview of the usual business of the firm. The implied authority of a partner, however, does not extend to enter into arbitration agreement on behalf of the firm. Therefore, while entering into a contract with partnership firm /JV/Consortium care should be taken to obtain consent of all the partners to the arbitration agreement.

A suitable clause for obtaining consent of all the partners to the arbitration agreement shall be included in the General Conditions of the Contract (GCC).

(viii) In cases where ECL has challenged an arbitral award and as a result, the amount of the arbitral award has not been paid, 75% of the arbitral award (which may include interest up to date of the award) shall be paid by ECL to the contractor/ concessionaire against a Bank Guarantee (BG). The BG shall only be for the said 75% of the arbitral award as above and not for the interest which may become payable to ECL should the subsequent court order require refund of the said amount.

The payment may be made into a designated Escrow Account with the stipulation that the proceeds will be used first, for payment of lenders' dues, second, for completion of the project and then for completion of other projects of ECL as mutually agreed/ decided. Any balance remaining in the escrow account subsequent to settlement of lenders' dues and completion of projects of ECL may be allowed to be used by the contractor/ concessionaire with the prior approval of the lead banker and ECL. If otherwise eligible and subject to contractual provisions, retention money and other amounts withheld may also be released against BG.

The only circumstances in which such payment need not be made is where the contractor declines, or is unable, to provide the requisite bank guarantee and/or fails to open an escrow account as required. Persons responsible for not adhering to are liable to be held personally accountable for the additional interest arising, in the event of the final court order going against the procuring entity.

(ix) Arbitration /court awards should be critically reviewed. In cases where there is a decision against ECL the decision to appeal should not be taken in a routine manner, but only when the case genuinely merits going for the appeal and there are high chances of winning in the court/ higher court. There is a perception that such appeals etc. are sometimes resorted to postpone the problem and defer personal accountability. Casual appealing in arbitration / court cases has resulted in payment of heavy damages / compensation / additional interest cost, thereby causing more harm to the exchequer, in addition to tarnishing the image of the Government.

(x) Legal department of ECL should monitor the success rate of appealing

against arbitration awards. There should be a clear delegation to empower officials to accept arbitration / court orders. A special board / committee may be set up by legal department of ECL to review the case before an appeal is filed against an order. Arbitration /court awards should not be routinely appealed without due application of mind on all facts and circumstances including realistic probability of success. The board / committee or other authority deciding on the matter **shall** clarify that it has considered both legal merits and the practical chances of success and after considering the cost of, and rising through, litigation / appeal / further litigation as the case may be, it is satisfied that such litigation / appeal /further litigation cost is likely to be financially beneficial compared to accepting the arbitration / court award.

43.0 GST On Works Contracts

All duties, taxes (excluding Goods and Services Tax (GST) and GST Compensation Cess (if applicable) only) and other levies payable by the Bidder/Contractor under the Contract, or for any other cause as applicable on the last date of submission of Bid, shall be included in the rates, prices and the total Bid Price submitted by the Bidder. Applicable GST, either payable by Bidder or by Company under reverse charge mechanism shall be computed by system in BOQ sheet as per predefined logic.

All investments, operating expenses, incidentals, overheads etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total bid price submitted by the Bidder.

However, such duties, taxes, levies etc. which is notified after the last date of submission of Bid and/or any increase over the rate existing on the last date of submission of Bid shall be reimbursed by the Company on production of documentary evidence in support of payment actually made to the concerned authorities.

Similarly, if there is any decrease in such duties, taxes and levies the same shall become recoverable from the Contractor. The details of such duties, taxes and other levies along with rates shall be declared by the Bidder.

The item wise rate quoted by Bidder shall be inclusive of all taxes, duties & levies but excluding GST & GST Compensation Cess if applicable. The payment of GST and GST Compensation Cess by service availer (i.e. ECL) to Bidder/Contractor (if GST payable by Bidder/Contractor) would be made only on the latter submitting a Bill/Invoice in accordance with the provision of relevant GST Act and the rules made thereunder and after online filing of valid return on GST portal. Payment of GST & GST Compensation Cess is responsibility of Bidder/Contractor.

However, in case Contractor is GST unregistered Bidder/dealer or GST registered under composition scheme in compliance with GST rules, the Bidder/dealer shall not charge any GST and/or GST Compensation Cess on Bill/Invoice. In case of unregistered dealer/Bidder, GST, if applicable will be deposited by ECL directly to concerned authorities in terms with GST provisions.

Input tax credit is to be availed by ECL as per rule.

If ECL fails to claim Input Tax Credit (ITC) on eligible Inputs, input services and Capital Goods or the ITC claimed is disallowed due to failure on the part of supplier/vendor of goods and services in incorporating the tax invoice issued to ECL in its relevant returns under GST, payment of CGST & SGST or IGST, GST (Compensation to State) Cess shown in tax invoice to the tax authorities, issue of proper tax invoice or any other reason whatsoever, the applicable taxes & cess paid based on such Tax invoice shall be recovered from the current bills or any other dues of the supplier/vendor along with interest, if any.

The company reserves the right to deduct/withhold any amount towards taxes, levies, etc. and to deal with such amount in terms of the provisions of the Statute or in terms of the direction of any Statutory authority and the company shall only provide with certificate towards such deduction and shall not be responsible for any reason whatsoever.

Note: During the execution of the contract if the GST status of the Bidder changes, then the payment of GST, if any, to the Contractor will be made as per the GST status declared by the Bidder during tender stage based on which cost to Company has been ascertained or at actuals, whichever is lower.

45.0 Discrepancies in contract documents & Adjustments thereof

45.1 In the event of varying or conflicting provision in any of the document(s) forming part of the contract, the Accepting Authority's decision/clarification shall hold good with regard to the intention of the document or contract as the case may be.

45.2 Any error in description, quantity or rate in Bill of Quantities or any omission there from, shall not vitiate the contract or release the contractor from discharging his obligations under the contract including execution of work according to the Drawings and Specifications forming part of the particular contract document.

46.0 E-way Bill:

The e-way bill required in connection with supply of goods or services, if any, shall be arranged by the supplier/vendor. However, the e-way bill will be arranged by ECL if the supplier/vendor is unregistered one or if provisions of the relevant Act and the rules made there under specifically states that the e-way bill is required to be issued by recipient of goods.

47.0 In the event of recovery of any claim towards LD Charges, Penalty, fee, fine or any other charges (Except EMD) from the supplier/vendor, the same will be recovered along with the applicable GST and the amount shall be adjusted with the payment to be made to the supplier/vendor against their bill/invoice or any other dues.

SUB-SECTION-3.2
ADDITIONAL TERMS & CONDITIONS OF CONTRACT

The following additional terms & conditions are also acceptable to the company. The tenderers are requested not to quote any additional conditions in their tender.

1. MOBILISATION ADVANCE:

i) In the case of works whose estimated value is more than Rs.100.00 Crores, a maximum of 10% of the total contract value of work will be paid as mobilization advance subject to submission of Bank Guarantee for 110% advance amount.

ii) Mobilization Advance against survey, soil investigation, design & engineering will be paid in two equal installments - one after signing of the agreement and the second after the system design drawings have been completed and detailed design work is to be taken up by the contractor.

iii) Mobilization Advance against supply of equipments shall be released only after the contractor has finalized their venders/suppliers for the specific equipment and the amount of advance shall be proportionate to the value of equipment for which venders/suppliers have been finalized vis-à-vis the total value of equipments offered in the contract limited to 10% of the contract value.

iv) Mobilisation Advance against works contract for site activities shall be paid in two equal installments. First installment shall be paid after the contractor has opened their site office and having finalised their subcontractors. The second installment shall be paid for taking procurement action of construction materials like reinforcing steel and structural steel by the contractor.

v) The mobilisation advance shall be recovered from the bills of the contractor from the second running on account bills onward @ 20% of the advance amount paid. However, the full amount of mobilization advance will be recovered maximum within scheduled date of completion as per agreement excluding Defect Liability period.

Though the 'Mobilisation Advance' shall be given interest free but the interest shall be charged as per the rate of CIL's borrowing rate under cash credit arrangement as varying from time to time to be compounded quarterly, on delayed recoveries either due to the late submission of bill by the Contractor or any other reason attributable to the Contractor besides the reason giving rise to encashment of BG as stated in the Clause for 'Mobilisation Advance' elsewhere.

In addition to the above, interest will be charged as per aforesaid rate on Mobilisation Advance in case the contract is terminated due to default of the Contractor.

vi) The value of Bank Guarantee may be reduced to the extent such advance is recovered by the company subject to the conditions that the value of Bank Guarantee amount at any time is more than the recoverable outstanding advance. Bank Guarantee shall be irrevocable and from a Nationalised Bank /Scheduled Bank.

vii) Part Bank Guarantee" (BGs) against the Mobilization Advance shall be taken

in as many numbers as the proposed recovery instalments and shall be equivalent to 110% of the amount of each instalment.

viii) In case of "Machinery and Equipment advance", insurance and hypothecation to the employer shall be ensured.

ix) Mobilization advance will be given in instalments and subsequent instalments will be released after getting satisfactory utilization Certificate from the contractor for the earlier instalments.

2. PRICE VARIATION CLAUSE:

2.1 The contract price shall remain firm without any price variation due to escalation for the portions of survey, geo-engineering investigations, design and engineering and supply of equipments, plant and machineries as envisaged in the scope of work and the price agreed thereon as per the contract except the statutory increase/decrease in taxes and duties.

2.2 If the contract is to be extended beyond the stipulated period for completion of the work due to fault on the part of the contractor escalation on prices should not be allowed further if not provided otherwise in the accepted contract.

2.2 For the portions of civil and structural works and erection and commissioning works of the plant & machineries, the price variation due to escalation shall be allowed to the extent as detailed hereinafter:

2.2.1 If the prices of materials (not being materials supplied at fixed issue rates by the company) and wages of labour, required for execution of the work, increase, the contractor shall be compensated for such increase as per provisions detailed below:

a) The amount of the contract shall accordingly be varied, subject to the condition that such compensation for variation in prices shall be available only for the work done during the stipulated period of the contract as per the work programme agreed including such period for which the contract is validly extended under the provisions of the contract without any penal action.

b) The base date for working out such price variation shall be as on the last date of submission of bid (inclusive of price part) or the revised price bid (inclusive of revised offer if any), whichever is later.

c) The compensation of Price variation shall be worked out at quarterly intervals and shall be with respect to the cost of work done during the previous three months. The first such payment shall be made at the end of three months after the month (Excluding) in which the tender was accepted and thereafter at three months' interval.

2.2.1.1 Price Variation for Labour:

The amount paid to the contractor for the work done shall be adjusted for increase or decrease in the cost of labour and the cost shall be calculated quarterly in accordance with the following formula:

VL=W x [A/100] x [(L- Lo)/ Lo]

Where:

VL =Variation in labour cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W =Value of work done during the period under reckoning to which the price variation relates as indicated in clause no. 2.3 of the 'ADDITIONAL TERMS & CONDITIONS OF CONTRACT'.

A =Component of labour expressed as percentage of the total value of work adopted from Table-1

Lo=Minimum wages for unskilled workers payable as per the Minimum Wages Act of Central or state govt. (whichever is higher) or HPC wages of CIL as applicable and mentioned in NIT, applicable to the place of work as on the last date stipulated for receipt of the Price bids or Revised Price bids whichever is later.

L =Revised minimum wages of unskilled workers corresponding to Lo during the period to which the escalation relates.

2.2.1.2 Price Variation on Materials:

The amount to be paid to the contractor for the work done shall be adjusted for increase or decrease in the cost of materials and the cost shall be calculated quarterly in accordance with the following formula:

$$Vm = W \times \frac{B}{100} \times \frac{M - Mo}{Mo}$$

Where :

Vm =Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W = Value of work done during the period under reckoning to which the price variation relates as indicated in clause no. 2.3 of the ' ADDITIONAL TERMS & CONDITIONS OF CONTRACT'.

B = Component of material expressed as percentage of the total value of work adopted from Table-1

M = Average All India Wholesale Price Index for all commodities for the period to which price variation relates as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. Of India.

Mo = All India Wholesale Price Index for all commodities as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. Of India, relating to the last date on which the price bids or revised price bids whichever is later were stipulated to be received.

2.2.1.3 Price Variation on POL :

The amount to be paid to the contractor for the work done shall be adjusted for increase or decrease in the cost of POL and the cost shall be calculated quarterly in accordance with the following formula:

$$Vf = W \times \frac{C}{100} \times \frac{F - Fo}{Fo}$$

Where :

Vf = Variation in the cost of fuel , oil & lubricants increase or decrease in the

amount in rupees to be paid or recovered.

W = Value of work done during the period under reckoning to which the price variation relates as indicated in clause no. 2.3 of the 'ADDITIONAL TERMS & CONDITIONS OF CONTRACT'.

C = Component of POL expressed as percentage of total value of work adopted from Table-1

F = Average Index Number for Wholesale Price for the group of fuel , power, light and lubricants as published by Economic Advisor , Ministry if Industry , Govt. Of India prevalent on the last date of receipt of price bids whichever is later.

F o = Index Number for Wholesale Price for the group of "Fuel, power, light and lubricants" as published by the Economic Advisor, Ministry of Industry, Govt. Of India prevalent on the last date stipulated for receipt of the Price bids or Revised Price bids whichever is later.

2.3 WHILE CALCULATING THE VALUE OF "W" THE FOLLOWING MAY BE NOTED:

The cost on which the escalation/price variation shall be payable shall be reckoned as 85% of the cost of work as per the bills to which escalation relates, and from this amount the value of materials supplied or services rendered at the prescribed charges under the relevant provisions of the contract, and proposed to recovered in the particular bill, shall be deducted before the amount of compensation for escalation/price variation is worked out. Further the cost shall not include any work for which payment is made at prevailing market rates.

2.4 In the event the price of materials and/ or wages of labour required for execution of the work decreases, there shall be downward adjustment of the work so that such price of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard the formulae hereinbefore stated under this clause shall mutatis /mutandis apply.

For all other works not listed above, the component of labour , material and POL of the total cost of work shall be as specifically indicated in the tender document.

The price variation clause as stated above will be applied for extended time frame of a contract by following the principles as under

i) Normally, if and when it is understood that a contract is not going to be completed within the scheduled time period, the contract is kept operative by extending the time of completion provisionally. During this provisional extended period the operation of the Price Variation Clause will remain suspended.

ii) If and when it is decided at the end of the successful completion of the work that the delay was due to causes not attributable to the contractor, then the Price Variation Clause will be revived and applied as if the scheduled date of completion has been shifted to the approved extended date.

iii) If it is decided at the end of successful completion of the work that the delay was due to the fault of the contractor then the Price Variation Clause will not be revived and no payment will be made to the contractor on this account. Additionally, the Clause related to Compensation for delay will be applied.

iv) In some cases the total delay may be partially due to causes not attributable to the contractor and partially due to his fault. It may be difficult to exactly quantify the total delay proportionately in such cases. The Price Variation Clause under such condition will be made operative for the entire extended time period by freezing the relevant indices on the date of the scheduled date of completion as originally fixed in the contract/ agreement. At the same time the Clause related to the compensation for delay will also be applied.

Table - 1

Value of A , B & C in the Price variation formula in the 'Additional Terms and Conditions of Contract :

Sl. No.	Particulars	A Labour component	B Material component	C POL component	Remarks
1.	For Building works	25	75	NIL	
2.	For Road works	15	80	05	
3.	For external sewerage, external water supply and external electrification	10	90	NIL	
4.	For external water supply, external sanitary and external electrification (Through labour rate contract)	75	25	NIL	
5.	For steel structural works	15	85	NIL	
6.	For steel structural works with Department free supply of rolled steel sections (Through labour rate contract)	75	25	NIL	
7.	For Coal Handling Plant Civil works	25	75	NIL	
8.	For underground civil works such as Incline Drivage, Shaft Sinking etc.	35	65	NIL	
9	For Erection and Commissioning of P&	65	35	NIL	

2.5 CEILING ON PRICE VARIATION DUE TO ESCALATION

There shall be a ceiling on price variation due to escalation covered under clauses mentioned hereinbefore on the contract, limited to 10% of that portion of the price for which price variation is applicable.

2.6 VARIATION IN THE TAXES, DUTIES, LEVIES ETC.

Other statutory variation due to increase in taxes, duties, levies etc. by Govt. (Central or State or Local) as on the last date of submission of bid, with the taxes, duties, levies etc. during the manufacture/works/ supply, as the case may be, shall be borne by the owner. Similarly decrease in taxes, duties, levies etc. shall be returned/deducted to/by the owner.

SUB-SECTION – 3.3
GENERAL TECHNICAL CONDITIONS

1.0 GENERAL

This part covers technical conditions pursuant to the contract and will form an integral part of the contract. The following provisions shall supplement all the detailed technical specifications and requirements brought out in the accompanying technical specifications. The contractor's proposal shall be based on the use of equipment and materials complying fully with the requirements, specified herein. It is recognised that the contractor may have standardised on the use of certain components, materials, processes or procedures different that those specified herein. Alternate proposals offering similar equipment based on the manufacturer's standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the owner.

2.0 LIMIT OF CONTRACT

Equipment furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or needed for erection, completion and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the technical specifications unless included in the list of exclusions. All similar standard components/parts of similar standard equipment provided, shall be inter-changeable with one another.

3.0 EQUIPMENT PERFORMANCE GUARANTEE

3.1 The performance tests of the equipment under the scope of the contract are detailed in the technical specifications. These guarantees shall supplement the general performance guarantee provisions covered under general terms & conditions of contract in clause entitled "Guarantee".

3.2 Liquidated damages for not meeting performance guarantee during the performance and guarantee tests shall be assessed and recovered from the contractor, as detailed in the General Technical Conditions. Such liquidated damages shall be without any limitation whatsoever and shall be in addition to damages, if any payable under any other clauses of conditions of contract.

4.0 ENGINEERING DATA

4.1 The furnishing of engineering data by the contractor shall be in accordance with the schedule for each set of equipment as specified in the technical specifications. The review of these data by the engineer will cover only general conformance of the data to the specifications and documents, interfaces with the equipment provided under the specifications, external connections and of the dimensions which might affect plant layout. This review by the engineer may not indicate a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or items indicated or the accuracy of the information submitted. This review and/or approval by the engineer shall not be construed by the contractor, as limiting

any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and documents.

4.2 All engineering data submitted by the contractor after final process including review and approval by the engineer shall form part of the contract documents and the entire works covered under these specifications shall be performed in strict conformity, unless otherwise expressly requested by the engineer in writing.

5.0 DRAWING

5.1 All drawings submitted by the contractor including those submitted at the time of bid shall be sufficiently detailed to indicate the type, size, arrangement, weight of each component, break-up for packing and shipment, the external-connections, fixing arrangements required, the dimensions required for installation and inter-connections with other equipment and materials, clearances and spaces required between various portions of equipment and any other information specifically requested in the specifications.

5.2 Each drawing submitted by the contractor shall be clearly marked with the name of the owner, the unit designation, the specifications title, the specification number and the name of the project. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, notings, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.

5.3 The owner may use a 35 mm microfilm system in processing drawings. All drawings shall be suitable for microfilming. Drawings which are not suitable for microfilming will not be accepted. A copy of each drawings reviewed will be returned to the contractor as stipulated herein. The owner may also accept and use floppies/ disks for computer based drawings.

5.3.1 Copies of drawings returned to the contractor will be in the form of a print with the owner's marking, or a print made from a microfilm of the marked up drawing or in the form of aperture cards if the contractor has facilities to process such cards or print made from floppies for computer based drawings.

5.4 The drawings submitted by the contractor shall be reviewed by the engineer as far as practicable within four (4) weeks and shall be modified by the contractor if any modifications and/or corrections are required by the engineer. The contractor shall incorporate such modifications and/or corrections and submit the final drawings for approval. Any delay arising out of failure by the contractor to rectify the drawings in good time shall not alter the contract completion date and it will be on the Contractor’s account.

5.5 Approval by the Nodal Officer or his Nominee: the Contractor shall submit specifications and drawings showing the proposed Temporary Works to the Nodal Officer/Engineer-in-charge or his Nominee, who is to approve them if they comply with the specifications and drawings. The Contractor shall be responsible for design of Temporary Works.

The Nodal Officer/Engineer-in-charge or nominee's approval shall not alter the contractor's responsibility for design of the Temporary Works.

5.6. The drawings sent for approval to the engineer shall be in quintuplicate. One print of such drawings will be returned to the contractor by the engineer marked approved/approved with corrections. The contractor shall thereupon furnish the owner with nine prints and one reproducible original of the drawings after incorporating all corrections.

5.7 Further work by the contractor shall be in strict accordance with these drawings and no deviation shall be permitted without the written approval of the engineer, if so required.

5.8 All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at the contractor's risk. The contractor may make any changes in the design which are necessary to make the equipment conform, to the provisions and intent of the contract and such changes will again be subject to approval by the engineer. Approval of contractor's drawings or work by the engineer shall not relieve the contractor of any of his responsibilities and liabilities under the contract.

5.9 Drawings shall include all installation and detailed piping drawings wherever applicable. All piping 100 mm and larger shall be routed in detail and smaller pipe shall be shown schematically or by isometric drawings. All drawings shall be fully corrected to agree with actual as built construction.

5.10 Operating and Maintenance Manual: If "as built" drawings and/or operating and Maintenance Manuals are required the contractor shall supply them by the dates stated in the contract data.

If the Contractor does not supply the drawings and/or Manuals by the dates stated in the contract data, or they do not receive the Nodal Officer or his Nominee's approval, the Nodal Officer or his Nominee shall withhold the amount stated in the contract data from payments due to the contractor.

6.0 INSTRUCTION MANUALS

6.1 The contractor shall submit to the engineer, preliminary instruction manuals for all the equipment, covered under the contract within the time agreed upon between the owner & the contractor. The final instruction manuals complete in all respects shall be submitted by the contractor thirty (30) days before the first shipment of the equipment. The instruction manuals shall contain full details and drawings of all the equipment furnished, the erection procedures, testing procedures, operation and maintenance procedures of the equipment. These instruction manuals shall be submitted in the form of one (1) reproducible original and twelve (12) copies.

6.2 If after the commissioning and initial operation of the plant, the instruction manuals require any modifications/ additions/changes, the same shall be

incorporated and the updated final instruction manuals in the form of one (1) reproducible original and twelve (12) copies shall be submitted by the contractor to the owner.

6.3 The contractor shall furnish to the owner, twelve (12) sets of spare parts catalogue.

7.0 FIRST FILL OF CONSUMABLE, OILS AND LUBRICANTS

All the first fill of consumable such as oils, lubricants and essential chemicals etc., which will be required to put the equipment covered under the scope of the specifications, into successful trial operation, shall be furnished by the contractor unless specifically excluded under the exclusions in the specifications and other documents.

8.0 MANUFACTURING SCHEDULE

The contractor shall submit to the engineer his manufacture and delivery schedules for all equipment within thirty (30) days from the date of issuance of the letter of acceptance of tender. Such schedules shall be in line with the detailed net-work for all phases of the work of the contractor. Such schedules shall be reviewed, up-dated and submitted to the engineer, once every two (2) months thereafter, by the contractor. Schedule shall also include the materials and equipment purchased from outside suppliers.

9.0 REFERENCE STANDARDS

9.1 The codes and/or standards referred to in these specifications shall govern, in all cases wherever such references are made. In case of a conflict between such codes and/or standards and the specifications, the latter shall govern. Such codes and/or standards referred to shall mean the latest revisions, amendments/changes adopted and published by the relevant agencies. In case of any further conflict in this matter, the same shall be referred to the engineer whose decision shall be final and binding.

9.2 Other internationally acceptable standards which ensure equal or higher performance than those specified shall also be accepted.

10.0 DESIGN IMPROVEMENT

10.1 The engineer or the contractor may propose changes in the specification of the equipment or quality thereof and if the parties agree upon any such changes the specification shall be modified accordingly.

10.2 If any such agreed upon change is such that it affects the price and schedule of completion, the parties shall agree in writing as to the extent of any change in the price and/or schedule of completion before the contractor proceeds with the change. Following such agreement, the provision thereof, shall be deemed to have been amended accordingly.

11.0 QUALITY ASSURANCE

11.1 Quality Assurance Programme

To ensure that the equipment and services under the scope of this contract

whether manufactured or performed within the contractor's works or at his sub-contractor's premises or at the owner's site or at any other place of work are in accordance with the specifications, the contractor shall adopt suitable quality assurance programme to control such activities at all points necessary. Such programme shall be outlined by the contractor on acceptance of LOA and before execution of the agreement and shall be finally accepted by the engineer after discussions before execution of the work. A quality assurance programme of the contractor shall generally cover the following:

a. his organisation structure for the management and implementation of the proposed quality assurance programme:
b. documentation control system:
c. qualification data for bidder's key personnel:
d. the procedure for purchase of materials, parts components and selection of sub-contractor's services including vendor analysis, source inspection, incoming raw-material inspection, verification of materials purchased etc.:
e. system for shop manufacturing and site erection control including process control and fabrication and assembly controls:
f. control of non-conforming items and system for corrective actions:
g. inspection and test procedure both for manufacture and field activities:
h. control of calibration and testing of measuring and testing equipment:
i. system for indication and appraisal of inspection status:
j. system for quality audits:
k. system for authorising release of manufactured product to the owner:
l. system for maintenance of records:
m. system for handling storage and delivery: and
n. a quality plan detailing out the specific quality control procedure adopted for controlling the quality characteristics relevant to each item of equipment furnished and each work at different stages executed at work site.

11.2 Quality Assurance Documents

The contractor shall be required to submit the following Quality Assurance Documents within three weeks after despatch of the equipment:

i. all non-destructive examination procedures stress relief and weld repair procedure actually used during fabrication.
ii. welder and welding operator qualification certificates.
iii. welder identification list, listing welder's and welding operator's qualification procedure and welding identification symbols.
iv. material mill test reports on components as specified by the specification.
v. the inspection plan with verification, inspection plan check points, verification sketches, if used, and methods used to verify that the inspection and testing points in the inspection plan were performed satisfactorily.
vi. sketches and drawings used for indicating the method of traceability of the radiographs to the location on the equipment.
vii. all non-destructive examination result reports including radiography interpretation reports.
viii. stress relief time temperature charts.
ix. factory test results for testing required as per applicable codes and standard referred in the specifications.
x. the engineer or his duly authorised representative reserves the right to carry

out quality audit and quality surveillance of the systems and procedures of the contractor/his vendor's quality management and control activities.

12.0 ENGINEER'S SUPERVISION

12.1 To eliminate delays and avoid disputes and litigation it is agreed between the parties to the contract that all matters and questions shall be referred to the engineer and his decision shall be final.

12.2 The work shall be performed under the direction and supervision of the engineer. The scope of the duties of the engineer, pursuant to the contract, will include but not be limited to the following:

a. interpretation of all the terms and conditions of these documents and specification.
b. review and interpretation of all the contractor's drawings, engineering data etc.
c. witness or authorise his representative to witness tests and trials either at the manufacturer's works or at site, or at any place where work is performed under the contract.
d. inspect, accept or reject any equipment, material and work under the contract.
e. issue certificate of acceptance and/or progressive payment and final payment certificates.
f. review and suggest modifications and improvements in completion schedules from time to time.
g. supervise the quality assurance programme implementation at all stages of the works.
h. to receive and endorse the despatch documents enabling the contractor to clear the consignments.

13.0 INSPECTION, TESTING AND INSPECTION CERTIFICATE

13.1 The engineer, his duly authorised representative and/or outside inspection agency acting on behalf of the owner shall have at all reasonable times access to the contractor's premises or works and shall have the power at all reasonable times to inspect and examine the materials and workmanship of the works during its manufacture or erection and if part of the works is being manufactured or assembled at other premises or works, the contractor shall obtain for the engineer and for his duly authorised representative permission to inspect as if the works were manufactured or assembled on the contractor's own premises or works.

13.2 The contractor shall give the Engineer/Inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the contractor's account except for the expenses of the Inspector. The Engineer/Inspector, unless witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date on which the equipment is notified as being ready for test/inspection, failing which the contractor may proceed with the test which shall be deemed to have been made in the Inspector's presence and he shall forthwith forward to the Inspector duly certified copies of tests in triplicate.

13.3 The Engineer or Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the contractor, of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the contract. The contractor shall give due consideration to such objections and shall either make the modifications that may be necessary to meet the said objections or shall confirm in writing to the Engineer/Inspector giving reasons therein, that no modifications are necessary to comply with the contract.

13.4 When the factory tests have been completed at the contractor's or sub-contractor's works, the Engineer/Inspector shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the Engineer/Inspector, the certificate shall be issued within fifteen (15) days of the receipt of the contractor's test certificate by the Engineer/Inspector. Failure of the Engineer/Inspector to issue such a certificate shall not prevent the contractor from proceeding with the works. The completion of these tests or the issue of the certificate shall not bind the owner to accept the equipment should it, on further tests after erection, be found not to comply with the contract.

13.5 In all cases where the contract provides for tests whether at the premises or works of the contractor or of any sub-contractor, the contractor, except where otherwise specified, shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the Engineer/Inspector or his authorised representative to carry out effectively such tests of the equipment in accordance with the contract and shall be given facilities to the Engineer/Inspector or to his authorised representative to accomplish testing.

13.6 The inspection by Engineer and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the contractor in respect of the agreed quality assurance programme forming a part of the contract.

14.0 TEST

14.1 Start up

14.1.1 On completion of erection of the equipment and before start-up, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the Engineer and the contractor for correctness and completeness of installation and acceptability of start-up, leading to initial pre-commissioning tests at site. The list of pre-commissioning tests to be performed shall be as mutually agreed and included in the contractor's quality assurance programme.

14.1.2 The contractor's commissioning/start-up engineers specifically identified as far as possible shall be responsible for carrying out all the pre-commissioning tests. On completion of inspection, checking and after the pre-commissioning tests are satisfactorily over, the complete equipment shall be placed on initial operation during which period the complete equipment shall be operated

integral with sub-systems and supporting equipment as a complete plant referred hereinafter as plant.

14.2 Trial Operation

14.2.1 The plant shall then be on trial operation during which period all necessary adjustments shall be made while operating over the full load-range enabling the plant to be made ready for performance and guarantee tests.

14.2.2 The duration of trial operation of the complete equipment shall be fourteen (14) days out of which at least seventy-two (72) hours shall be continuous operation on full load or any other duration as may be agreed to, between the engineer and the contractor. The trial operation shall be considered successful, provided that each item of the equipment can operate continuously at the specified operating characteristics, for the period of trial operation.

14.2.3 For the period of trial operation, the time of operation with any load shall be counted. Minor interruptions not exceeding four (4) hours at a time, caused during the continuous operation shall not affect the total duration of trial operation. However, if in the opinion of the engineer, the interruption is long, the trial operation shall be prolonged for the period of interruption.

14.2.4 A trial operation report comprising of observations and recordings of various parameters to be measured in respect of the above trial operation shall be prepared by the contractor. This report, besides recording the details of the various observations during trial run, shall also include the dates of start and finish of the trial operations and shall be signed by the representatives of both the parties. The report shall have sheets, recording all the details of interruptions occurred, adjustments made and any minor repairs done during the trial operation. Based on the observations, necessary modifications/ repairs to the plant shall be carried out by the contractor to the full satisfaction of the engineer to enable the later to accord permission to carry out performance and guarantee tests on the plant. However, minor defects which do not endanger the safe operation of the equipment, shall not be considered as reasons for withholding the aforesaid permission.

14.3 Performance and guarantee test

14.3.1 The final test as to the performance and guarantees shall be conducted at site, by the owner. Such tests will be commenced within a period of two (2) months after successful completion of trial operations. Any extension of time beyond the above two (2) months shall be mutually agreed upon.

14.3.2 These tests shall be binding on both the parties of the contract to determine compliance of the equipment with the performance guarantees.

14.3.3 The available instrumentation and control equipment will be used during such tests and the engineer will calibrate, all such measuring equipment and devices as far as practicable. However, un-measurable parameters shall be taken into account in a reasonable manner by the engineer, for the equipment of these tests. The tests will be conducted at the specified load points and as near the specified cycle condition as practicable. The engineer will apply proper corrections in calculation, to take into account conditions which do not

correspond to the specified conditions.

14.3.4 Any special equipment, tools and tackles required for the successful completion of the performance and guarantee tests shall be provided by the contractor, free of cost.

14.3.5 The guaranteed performance figures of the equipment shall be proved by the contractor during these performance and guarantee tests. Should the results of these tests show any decrease from the guaranteed values, the contractor shall modify the equipment as required to enable it to meet the guarantees. In such case, performance and guarantee tests shall be repeated within one month, from the date the equipment is ready for re-tests and all cost for modifications including labour, materials and the cost of additional testing to prove that the equipment meets the guarantees, shall be borne by the contractor. Duration of performance guarantee tests will be of one month of which 6 (six) days continuous on load operation is the minimum requirement and in case it fails, the process of performance guarantee tests will be repeated.

14.3.6 The specific tests to be conducted on equipment has been brought out in the technical specifications.

14.3.7 Performance and guarantee test shall make allowance for instrumentation errors as may be decided by the engineer-in-charge.

14.4 TEST CODES

The provisions outlined in the ASME performance test codes or other international and Indian approved equivalents shall generally be used as a guide for all the above test procedures unless otherwise specified in the technical specifications.

15.0 PACKING

All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at site till the time of erection. While packing all the materials, the limitation from the point of view of availability of railway wagon sizes in India should be taken into account. The contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing.

16.0 PROTECTION

All coated surfaces shall be protected against abrasions, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves and piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get rusted, due to exposure to weather, should also be properly treated and protected in a suitable manner.

17.0 PRESERVATIVE SHOP COATING

17.1 All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces which will not be easily accessible after the shop assembly, shall before hand be treated and protected for the life of the equipment. All surfaces shall be thoroughly cleaned of all mill scale, oxide and other coatings and prepared in the shop. The surfaces that are to be finish painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer. Transformers and other electrical equipment, if included shall be shop finished with one or more coats of primer and two coats of high grade resistance enamel. The finished colours shall be as per manufacturer's standards, to be selected and specified by the engineering at a later date.

17.2 Shop primer for all steel surface which will be exposed to operating temperature below 95 ^{0}C shall be selected by the Contractor after obtaining specific approval of the engineer regarding the quality of primer proposed to be applied. Special high temperature primer shall be used on surfaces exposed to temperatures higher than 95 ^{0}C and such primers shall also be subject to the approval of the engineer.

17.3 All other steel surfaces which are not to be painted shall be coated with suitable dust preventive compound subject to the approval of the engineer.

18.0 PROTECTIVE GUARDS

Suitable guards shall be provided for protection of personnel on all exposed rotating and/or moving machine parts. All such guards with necessary spares and accessories shall be designed for easy installation and removal for maintenance purposes.

19.0 DESIGN CO-ORDINATION

The contractor shall be responsible for the selection and design of appropriate equipment to provide the best co-ordinated performance of the entire system. The basic design requirements are detailed out in Technical Specifications. The design of various components, sub-assemblies and assemblies shall be so done, so that it facilitates easy field assembly and maintenance. All the rotating components shall be so selected that the natural frequency of the complete unit is not critical at or close to the operating range of the unit.

20.0 DESIGN CO-ORDINATION MEETING

The contractor will be called upon to attend design co-ordination meetings with the engineer, other contractors and the consultants of the owner during the period of contract. The contractor shall attend such meetings at his own cost at ------- or at mutually agreed venue as and when required and fully co-operate with such persons and agencies involved during those discussions.

21.0 TOOLS AND TACKLES

The contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, dis-assembly and maintenance of the equipment. However, these tools and tackles shall be separately packed and brought on to site.

22.0 NOISE LEVEL

The equivalent 'A' weighted sound level measured at a distance of 1.5 metres above floor level in elevation and one metre horizontally from the base of any equipment furnished and installed under these specifications, expressed in decibels to a reference of 0.0002 microbar, shall not exceed 85 dB.

23.0 TAKING OVER

Upon successful completion of all the tests to be performed at site on equipment furnished and erected by the contractor, the engineer shall issue to the contractor a taking over certificate as a proof of the final acceptance of the equipment. Such certificate shall not unreasonably be withheld nor will the engineer delay the issuance thereof, on account of minor omissions or defects which do not affect the commercial operation and/or cause any serious risk to the equipment. Such certificate shall not relieve the contractor of any of his obligations which otherwise survive, by the terms and conditions of the contract after issuance of such certificate.

24.0 INDIAN STANDARDS

Normally Indian Standards as published by BUREAU OF INDIAN STANDARDS shall be followed. Wherever relevant Indian Standard is not published by the BIS, International Standards or American Standard or German Standard or British Standard, as decided by the Engineer in consultations with the Consultants employed by the Owner, shall be followed.

25.0 WELDING

If the manufacturer has special requirements relating to the welding procedures for welds at the terminals of the equipment to be procured by the owner under separate specifications, the requirements shall be submitted to the engineer in advance of commencement of erection work.

26.0 LUBRICATION

Equipment shall be lubricated by systems designed for continuous operation. Lubricant level indicators shall be furnished and marked to indicate proper levels under both stand-still and operating conditions.

27.0 EQUIPMENT BASES

A cast iron or welded steel base plate shall be provided for all rotating equipment which is to be installed on a concrete/structural steel base unless otherwise agreed to by the engineer. Each base plate shall support the unit and its drive assembly, shall be of a neat design with pads for anchoring the units, shall have a raised lip all around, and shall have threaded drain connections.

28.0 RATING PLATES, NAME PLATES AND LABELS

28.1 Each main and auxiliary items of plant is to have permanently attached to it in a conspicuous position a rating plate of non-corrosive material upon which is to be engraved the manufacturer's name, equipment, type or serial number, together with details of the loading conditions under which the item of plant in question have been designed to operate, and such diagram plates as may be required by the engineer.

28.2 Each item of plant is to be provided with a nameplate or label designating the service of the particular equipment. The inscriptions are to be approved by

the engineer or shall be as detailed in the appropriate sections of the technical specifications.

28.3 Such nameplates or labels are to be of white non-hygroscopic material with engraved black lettering or, alternatively, in the case of indoor circuit breakers, starters etc. of transparent plastic material with suitably coloured lettering engraved on the back.

28.4 Items of plant such as valves, which are subject to handling, are to be provided with an engraved chromium plated nameplate or label with engraving filled with enamel.

28.5 All such name plates, instruction plates, lubrication charts etc. shall be bilingual with Hindi inscription first, followed by English. Alternatively, two separate plates one with Hindi and the other with English inscriptions may be provided.

29.0 COLOUR CODE FOR PIPE SERVICES

All pipe services wherever applicable are to be painted in accordance with the owner's standard colour scheme, by the contractor.

30.0 SERVICE BY THE OWNER

30.1 The following services shall be provided by the owner:

i. Drinking water at one point within 100 metres of the work site, charges to be decided by the company.
ii. Auxiliary power for construction at one point within 100 metres of the work site, charges to be decided by the company.

30.2 In the event of the contractor requiring these services at parameters other than those specified above, for any systems, equipment, instrument etc. he shall make the necessary arrangements himself.

(To be kept wherever applicable)
SUB-SECTION – 3.4
ERECTION CONDITIONS OF CONTRACT

1.0 GENERAL

1.1 The following shall supplement the conditions already contained in the other parts of these specifications and documents and shall govern that portion of the work of this contract to be performed at site.

1.2 The contractor upon signing of the contract shall, in addition to a project co-ordinator, nominate another responsible officer as his representative at site suitably designated for the purpose of overall responsibility and co-ordination of the works to be performed at site. Such person shall function from the site office of the contractor during the pendency of contract.

2.0 REGULATION OF LOCAL AUTHORITIES AND STATUTES

2.1 The contractor shall comply with all the rules and regulations of local authorities during the performance of his field activities. He shall also comply with the minimum wages act, 1948 and the payment of wages act (both of the Government of India and the local State Government) and the rules made thereunder in respect of any employee or workman employed or engaged by him or his sub-contractor. The contractor shall make all necessary payments of the Provident Fund for the workmen employed by him for the work as per the laws prevailing under provisions of CMPF and Allied Schemes and CMPF and Miscellaneous Provisions Act 1948 or Employees Provident Fund and Miscellaneous Provisions Act 1952 as the case may be.

2.2 All registration and statutory inspection fees, if any, in respect of his work pursuant to this contract shall be to the account of the contractor. However, any registration, statutory inspection fees lawfully payable under the provisions of the rules and regulations of the Government and any other statutory laws and its amendments from time to time during erection in respect of the plant equipment ultimately to be owned by the owner, shall be to the account of the owner. Should any such inspection or registration need to be arranged due to the fault of the contractor or his sub-contractor, the additional fees for such inspection and/or registration shall be borne by the contractor.

3.0 OWNER'S LIEN ON EQUIPMENT

The owner shall have lien on all equipment including those of the contractor brought to the site for the purpose of erection, testing and commissioning of the plant. The owner shall continue to hold the lien on all such equipment throughout the period of contract. No material brought to the site shall be removed from the site by the contractor and/or his sub-contractors without the prior written approval of the engineer.

4.0 INSPECTION, TESTING AND INSPECTION CERTIFICATES

The provisions of the clause entitled inspection testing and inspection certificates under section GTC shall also be applicable to the erection portion of the works. The engineer shall have the right to re-inspect any equipment though previously inspected and approved by him, at the contractor's works, before and after the same are constructed and/or erected at site. If by the above inspection, the engineer rejects any work or equipment, the contractor shall make good for such

rejection either by replacement or modifications/repairs as may be necessary, to the satisfaction of the engineer. Such replacement will also include the replacement or re-execution of such of those works of other contractors and/or agencies, which might have got damaged or affected by the replacements or re-work done to the contractor's work.

5.0 ACCESS TO SITE AND WORKS ON SITE

5.1 Suitable access to and possession of the site shall be accorded to the contractor by the owner in reasonable time.

5.2 The works so far as it is carried out on the owner's premises, shall be carried out at such time as the owner may approve and the owner shall give the contractor reasonable facilities for carrying out the works.

5.3 In the execution of the works, no persons other than the contractor or his duly appointed representative, sub-contractor and workmen, shall be allowed to do work on the site, except by the special permission, in writing of the engineer or his representative.

6.0 CONTRACTOR'S SITE OFFICE ESTABLISHMENT

The contractor shall establish a site office at the site and keep posted an authorised representative for the purpose of the contract. Any written order or instruction of the engineer or his duly authorised representative, shall be communicated to the said authorised resident representing the contractor and the same shall be deemed to have been communicated to the contractor at his legal address.

7.0 CO-OPERATION WITH OTHER CONTRACTORS

7.1 The contractor shall co-operate with all other contractors or tradesmen of the owner, who may be performing other works on behalf of the owner and the workmen who may be employed by the owner and doing work in the vicinity of the works under the contract. The contractor shall also so arrange to perform his work as to minimise, to the maximum extent possible, interference with the work of other contractors and his workmen. Any injury or damage that may be sustained in the employees of the other contractors and the owner, due to the contractor's work shall promptly be made good at his own expense. The engineer shall determine the resolution of any difference or conflict that may arise between the contractor and other contractors or between the contractor and the workmen of the owner in regard to their work. If the works of the contractor is delayed because of any acts or omissions of another contractor, the contractor shall have no claim against the owner on that account other than an extension of time for completing his works.

7.2 The engineer shall be notified promptly by the contractor of any defects in the other contractor's works that could affect the contractor's works. The engineer shall determine the corrective measures if any, required to rectify this situation after inspection of the works and such decisions by the engineer shall be binding on the contractor.

8.0 DISCIPLINE OF WORKMEN

The contractor shall adhere to the disciplinary procedure set by the engineer in respect of his employees and workmen at site. The engineer shall be at liberty to object to the presence of any representative or employees of the contractor at the site, if in the opinion of the engineer such employee has mis-conducted himself or

be incompetent or negligent or otherwise undesirable and then the contractor shall remove such a person objected to and provide in his place a competent replacement.

9.0 CONTRACTOR'S FIELD OPERATION

9.1 The contractor shall keep the engineer informed in advance regarding his field activity plans and schedules for carrying out each part of the works. Any review of such plan or schedule or method of work by the engineer shall not relieve the contractor of any of his responsibilities towards the field activities. Such reviews shall also not be considered as an assumption of any risk or liability by the engineer or the owner or any of his representatives and no claim of the contractor will be entertained because of the failure or inefficiency of any such plan or schedule or method of work reviewed. The contractor shall be solely responsible for the safety, adequacy and efficiency of plant and equipment and his erection methods.

9.2 The contractor shall have complete responsibility for the conditions of the work site including the safety of all persons employed by him or his sub-contractor and all the properties under his custody during the performance of the work. This requirement shall apply continuously till the completion of the contract and shall not be limited to normal working hours. The construction review by the engineer is not intended to include review of contractor's safety measures in, on or near the work-site, and their adequacy or otherwise.

10.0 PHOTOGRAPHS AND PROGRESS REPORT

10.1 The contractor shall furnish three (3) prints each to the engineer of progress photographs of the work done at site. Photographs shall be taken as and when indicated by the engineer or his representative. Photographs shall be adequate in size and number to indicate various stages of erection. Each photograph shall contain the date, the name of the contractor and the title of the photograph.

10.2 The above photographs shall accompany the monthly progress report detailing out the progress achieved on all erection activities as compared to the schedules. The report shall also indicate the reasons for the variance between the scheduled and actual progress and the action proposed for corrective measures wherever necessary.

11.0 MAN-POWER REPORT

11.1 The contractor shall submit to the engineer, on the first day of every month, a man hour schedule for the month, detailing the man hours scheduled for the month, skill wise and area-wise.

11.2 The contractor shall also submit to the engineer on the first day of every month, a man power report of the previous months detailing the number of persons scheduled to have been employed and actually employed, skill-wise and areas of employment of such labour.

12.0 PROTECTION WORK

The contractor shall have total responsibility for protecting his works till it is finally taken over by the engineer. No claim will be entertained by the owner or the engineer for any damage or loss to the contractor's works and the contractor shall

be responsible for the complete restoration of the damaged works to its original condition to comply with the specifications and drawings. Should any such damage to the contractor's works occur because of other party not under his supervision or control, the contractor shall make his claim directly with the party concerned. If dis-agreement or conflict or dispute develops between the contractor and the other party or parties concerned regarding the responsibility for damage to the contractor's works the same shall be resolved as per the provisions of the clause 7.0 above entitled co-operation with other contractors. The contractor shall not cause any delay in the repair of such damaged works because of any delay in the resolution of such disputes. The contractor shall proceed to repair the work immediately and the cause thereof will be assigned pending resolution of such dispute.

13.0 EMPLOYMENT OF LABOUR

13.1 Contractors are to employ, to the extent possible (as per policy decision of the company valid from time to time), local project affected people and pay wages not less than the minimum wages as per minimum Wages Act or such other legislations or award of the minimum wage fixed by respective State Govt. or Central Govt. as may be in force.

No female labour shall be employed after darkness. No persons below the age of eighteen years shall be employed.

13.2 All traveling expenses including provisions of all necessary transport to and from site lodging allowances and other payments to contractor's employees shall be the sole responsibility of the contractor.

13.3 The hour of work on the site shall be decided by the owner and the contractor shall adhere to it. Working hours will normally be eight (8) hours per day-Monday to Saturday.

13.4 Contractor's employees shall wear identification badges while on work at site.

13.5 Payment of Provident Fund for the workmen employed by him for the work as per the Law prevailing under provision of CMPF/EPF and allied scheme valid from time to time shall be responsibility of the Contractor which shall be in accordance with the given guidelines:

1. The Contractor must be mandatorily registered as employer under the CMPF Act and allied scheme and shall submit details of their workers with the CMPF number, wherever required. The contractor shall submit CMPF registration certificate before signing of agreement.
2. If any employee of a Contractor is not a member of any Provident Fund, he shall be required to become a member of CMPF scheme immediately, for availing benefits therefrom.
3. Where the employees of a Contractor are members of EPF scheme, the Contractor shall provide appropriate facilitation to those employees who voluntarily opt for conversion from EPF Schemes to CMPF Schemes.
   In addition to the above, the Contractor shall provide a copy of the updated passbook having entry made in the CMPF/EPF or Allied Scheme(s) of Provident fund as the case may be, to the Competent Authority annually or as and when asked. Bidder shall also submit copies of statutory returns.

The contractor shall also comply with the provisions of the CMPF/ EPF and regularly deposit the contributions in accordance with the same. The Company shall have no liability whatsoever in this regard.

13.6 The Contractor shall comply with statutory requirements of various acts including Child Labour (Prohibition & Regulation) Act, 1986 as amended from time to time and all rules, regulations and schemes framed there under from time to time in addition to other applicable labour laws.

13.7 The payment to the contractor's labourers has to be made through Bank only.

13.8 Bonus is to be paid to the contract workers engaged by the Contractors as per the provisions of Payment of Bonus Act,1965 as amended from time to time.

13.9 The contractors shall register themselves on the Contract Labour Payment Management Portal (CLPMP) of CIL within 30 days of issue of Letter of Acceptance/work order and will have to enter and update periodically the following details in the portal:

a. LOA/Work Order details

b. Details of Contractor workers and payment of wages in respect of each Work Order each month.

13.10 All the contract workers shall be covered with the Bio-metric attendance system for payment of wages.

13.11 Contractors should deploy suitably experienced workers as mentioned in relevant Govt. circular.

14.0 FACILITIES TO BE PROVIDED BY THE OWNER

14.1SPACE:

The contractor shall advise the owner within thirty (30) days from the date of acceptance of the letter of award, about his exact requirement of space for his office, mess-rooms storage area, pre-assembly and fabrication areas, labour colony area, toilets, etc. The above requirement shall be reviewed by the engineer and space will be allotted to the contractor for construction of his temporary structures like office, storage sheds, labour and staff colony and other utilities etc. for his own as well as his sub-contractor's use.

14.2 ELECTRICITY:

The contractor shall arrange necessary electricity at his own cost for the work and his own establishment. However, if available and feasible the company may arrange electricity at one point near the work site and necessary recovery of cost of energy consumed will be made at rates prescribed by the company from time to time. Energy meter for this purpose shall be provided by the contractor.

14.3 WATER:

The contractor shall arrange necessary water for the work and his own establishment and nothing extra will be paid for the same. Such water used by the contractor shall be fit for construction purposes. However, if available and feasible the company may arrange water, at the written request of the contractor, to the extent possible, at one point near the work site for which recovery @ 1% of the contract value of work done will be made from the contractor's bills. The contractor shall make his own arrangement of water connection and laying of pipe lines from main source of supply. Department do not guarantee to maintain uninterrupted supply of water. No claim of damage or refund of water charges will be entertained on account of such break down.

15.0 FACILITIES TO BE PROVIDED BY THE CONTRACTOR

15.1 Tools, tackles and scaffoldings

The contractor shall provide all the construction equipment, tools, tackles and scaffoldings required for pre-assembly, erection, testing and commissioning of the equipment covered under the contract. He shall submit a list of all such materials to the engineer before the commencement of pre-assembly at site. These tools and tackles shall not be removed from the site without the written permission of the engineer.

15.2 Communication

The owner will extend the telephone & telex facilities, if available at site, for purposes of contract. The contractor shall be charged at actual for such facilities.

15.3 First – aid

15.3.1 The contractor shall provide necessary first-aid facilities for all his employees, representatives and workmen working at the site. Enough number of contractor's personnel shall be trained in administering first-aid.

15.3.2 The owner will provide the contractor, in case of an emergency, the services of an ambulance for transportation to the nearest hospital.

15.4 Cleanliness

15.4.1 The contractor shall be responsible for keeping the entire area allotted to him clean and free from rubbish, debris etc. during the period of contract. The contractor shall employ enough number of special personnel to thoroughly clean his work area at least once in a day. All such rubbish and scrap material shall be stacked or disposed in a place to be identified by the engineer. Materials and stores shall be so arranged to permit easy cleaning of the area in areas where equipment might drip oil and cause damage to the floor surface, a suitable protective cover of a flame resistant, oil proof sheet shall be provided to protect the floor from such damage.

15.4.2 Similarly the labour colony, the offices and the residential areas of the contractor's employees and workmen shall be kept clean and neat to the entire satisfaction of the engineer. Proper sanitary arrangement shall be provided by the contractor, in the work areas, office and residential areas of the contractor.

16.0 LINES AND GRADES

All the works shall be performed to the lines, grades and elevations indicated on the drawings. The contractor shall be responsible to locate and layout the works. Basic horizontal and vertical control points will be established and marked by the engineer at site at suitable points. These points shall be used as datum for the works under the contract. The contractor shall inform the engineer well in advance of the times and places at which he wishes to do work in the area allotted to him, so that suitable datum points may be established and checked by the engineer to enable the contractor to proceed with his works. Any work done without being properly located may be removed and/or dismantled by the engineer at contractor's expense.

17.0 FIRE PROTECTION

17.1 The work procedures that are to be used during the erection shall be those which minimise fire hazards to the extent practicable. Combustible materials,

combustible waste and rubbish shall be collected and removed from the site at least once each day. Fuels, oils and volatile or flammable materials shall be stored away from the construction and equipment and materials storage areas in safe containers. Untreated canvas paper, plastic or other flammable flexible materials shall not at all be used at site for any other purpose unless otherwise specified. If any such materials are received with the equipment at the site, the same shall be removed and replaced with acceptable material before moving into the construction area or storage.

17.2 Similarly corrugated paper fabricated cartons etc. will not be permitted in the construction area either for storage or for handling of materials. All such materials used shall be water proof and flame resistant type. All the other materials such as working drawings, plants, etc. which are combustible but are essential for the works to be executed shall be protected against combustion resulting from welding sparks, cutting flames and other similar fire sources.

17.3 All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire-fighting and shall be assigned specific fire protection duties. Enough of such trained personnel must be available at the site during the entire period of the contract.

17.4 The contractor shall provide enough fire protection equipment of the types and number for the ware-houses, office, temporary structures, labour colony area etc. Access to such fire protection equipment, shall be easy and kept open at all times.

18.0 SECURITY

The contractor shall have total responsibility for all equipment and materials in his custody stored, loose, semi-assembled and/or erected by him at site. The contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss. All materials of the contractor shall enter and leave the project site only with the written permission of the engineer in the prescribed manner.

19.0 CONTRACTOR'S AREA LIMITS

The engineer will mark-out the boundary limits of access roads, parking spaces, storage and construction areas for the contractor and the contractor shall not trespass the areas not so marked out for him. The contractor shall be responsible to ensure that none of his personnel move out of the areas marked out for his operations. In case of such a need for the contractor's personnel to work out of the areas marked out for him, the same shall be done only with the written permission of the engineer.

20.0 CONTRACTOR'S CO-OPERATION WITH THE OWNER

In cases where the performance of the erection work by the contractor affects the operation of the system facilities of the owner, such erection work of the contractor shall be scheduled to be performed only in the manner stipulated by the engineer and the same shall be acceptable at all times to the contractor. The engineer may impose such restrictions on the facilities provided to the contractor such as electricity, water, etc. as he may think fit in the interest of the owner and the contractor shall strictly adhere etc. such restrictions and co-operate with the

engineer. It will be the responsibility of the contractor to provide all necessary temporary instrumentation and other measuring devices required during start-up and operation of the equipment systems, which are erected by him. The contractor shall also be responsible for flushing and initial filling of all the oil and lubricants required for the equipment furnished and erected by him, so as to make such equipment ready for operation. The contractor shall be responsible for supplying such flushing oil and other lubricants unless otherwise specified elsewhere in these documents & specifications.

21.0 PRE-COMMISSIONING TRIALS AND INITIAL OPERATIONS

The pre-commissioning trials and initial operations of the equipment furnished and erected by the contractor shall be the responsibility of the contractor as detailed in relevant clauses in section GTC. The contractor shall provide, in addition, test instruments, calibrating devices, etc. and the labour required for the successful performance of these trials. It is anticipated that the above test may prolong for a long time, the contractor's workmen required for the above test shall always be present at site during such trials.

22.0 MATERIALS HANDLING AND STORAGE

22.1 All the equipment furnished under the contract and arriving at site shall be promptly received, unloaded and transported and stored in the storage spaces by the contractor.

22.2 Contractor shall be responsible for examining all the shipment and notify the engineer immediately or any damage, shortage, discrepancy, etc. for the purpose of engineer's information only. The contractor shall submit to the engineer every week a report detailing all the receipts during the week. However, the contractor shall be solely responsible for any shortages or damage in transit, handling and/or in storage and erection of the equipment at the site. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the contractor.

22.3 The contractor shall maintain an accurate and exhaustive record detailing out the list of all equipment received by him for the purpose of erection and keep such record open for the inspection of the engineer at any time.

22.4 All equipment shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings, etc. shall be used for unloading and/or handling of the equipment without the specific written permission of the engineer. The equipment stored shall be properly protected to prevent damage either to the equipment or to the floor where they are stored. The equipment from the store shall be moved to the actual location at the appropriate time so as to avoid damage of such equipment at site.

22.5 All electrical panels, control gear, motors and such other devices shall be properly dried by heating before they are installed and energised. Motor bearings, slip rings, commutators and other exposed parts shall be protected against moisture ingress and corrosion during storage and periodically inspected. Heavy rotating parts in assembled conditions shall be periodically rotated to prevent corrosion due to prolonged storage.

22.6 All the electrical equipment such as motors, generators, etc. shall be tested for

insulation resistance at least once in three months from the date of receipt till the date of commissioning and a record of such measured insulation values maintained by the contractor. Such records shall be open for inspection by the engineer.

22.7 The contractor shall ensure that all the packing materials and protection devices used for the various equipment during transit and storage are removed before the equipment are installed.

22.8 The consumable and other supplies likely to deteriorate due to storage must be thoroughly protected and stored in a suitable manner to prevent damage or deterioration in quality by storage.

22.9 All the materials stored in the open or duty location must be covered with suitable weather-proof and flameproof covering materials wherever applicable.

22.10 If the materials belonging to the contractor are stored in areas other than those earmarked for him, the engineer will have the right to get it moved to the area earmarked for the contractor at the contractor's cost.

22.11 The contractor shall be responsible for making suitable indoor storage facilities to store all equipment which require indoor storage. Normally, all the electrical equipment such as motors, control gear, generators, exciters and consumable like electrodes, lubricants etc. shall be stored in the closed storage space. The engineer, in addition, may direct the contractor to move certain other materials which in his opinion will require indoor storage, to indoor storage areas which the contractor shall strictly comply with.

23.0 CONSTRUCTION MANAGEMENT

23.1 The field activities of the contractors working at site, will be co-ordinated by the engineer and the engineer's decision shall be final in resolving any disputes or conflicts between the contractor and other contractors and tradesmen of the owner regarding scheduling and co-ordination of work. Such decision by the engineer shall not be a cause for extra compensation or extension of time for the contractor.

23.2 The engineer shall hold weekly meetings of all the contractors working at site, at a time and a place to be designated by the engineer. The contractor shall attend such meetings and take notes of discussions during the meeting and the decisions of the engineer and shall strictly adhere to those decisions in performing his works. In addition to the above weekly meetings, the engineer may call for other meetings either with individual contractors or with selected number of contractors and in such a case the contractor, if called will also attend such meetings.

23.3 Time is the essence of the contract and the contractor shall be responsible for performance of this works in accordance with the specified construction schedule. If at any time, the contractor is falling behind the schedule, he shall take necessary action to make good for such delays by increasing his work force or by working overtime or otherwise accelerate the progress of the work to comply with the schedule and shall communicate such actions in writing to the engineer, satisfying that his action will compensate for the delay. The contractor

shall not be allowed any extra compensation for such action.

23.4 The engineer shall however not be responsible for provision of additional labour and/or materials or supply or any other services to the contractor except for the co-ordination work between various contractors as set out earlier.

24.0 FIELD OFFICE RECORDS

The contractor shall maintain at his site office up-to-date copies of all drawings, specifications and other contract documents and any other supplementary data complete with all the latest revisions thereto. The contractor shall also maintain in addition the continuous record of all changes to the above contract documents, drawings, specifications, supplementary data, etc. effected at the field and on completion of his total assignment under the contract shall incorporate all such changes on the drawings and other engineering data to indicate as installed condition of the equipment furnished and erected under the contract. Such drawings and engineering data shall be submitted to the engineer in required number of copies. Daily work programme with progress of the previous day and deployment of labour related to work programme and attendance of workmen deployed during the previous day shall be maintained in a register. This register shall be signed by authorised representative of the contractor which will then be checked and signed by the owner's representative. Every three months this register shall be deposited to the owner which shall then be owners property.

25.0 CONTRACTOR'S MATERIALS BROUGHT ON TO SITE

25.1 The contractor shall bring to site all equipment, parts, materials, including construction equipment, tools and tackles for the purpose of the works with intimation to the engineer. All such goods shall, from the time of their being brought vest in the owner, but may be used for the purpose of the works only and shall not on any account be removed or taken away by the contractor without the written permission of the engineer. The contractor shall nevertheless be solely liable and responsible for any loss or destruction thereof and damage thereto.

25.2 The owner shall have a lien on such goods for any sum or sums which may at any time be due or owing to him by the contractor, under, in respect of or by reasons of the contract. After giving a fifteen (15) days' notice in writing of his intention to do so, the owner shall be at liberty to sell and dispose of any such goods, in such manner as he shall think fit including public auction or private treaty and to apply the proceeds in or towards the satisfaction of such sum or sums due as aforesaid.

25.3 After the completion of the works, the contractor shall remove from the site under the direction of the engineer the materials such as construction equipment, erection tools and tackles, scaffolding etc. with the written permission of the engineer. If the contractor fails to remove such materials, within 15 days of issue of a notice by the engineer to do so then the engineer shall have the liberty to dispose of such materials as detailed under clause 25.2 above and credit the proceeds thereto the account of the contractor.

26.0 PROTECTION OF PROPERTY AND CONTRACTOR'S LIABILITY

26.1 The contractor shall be responsible for any damage resulting from his operations. He shall also be responsible for protection of all persons including members of public and employees of the owner and the employees of other contractors and

sub-contractors and all public and private property including structures, buildings, other plants and equipment and utilities either above or below the ground.

26.2 The contractor will ensure provision of necessary safety equipment such as barriers, sign-boards, warning lights and alarms, etc. to provide adequate protection to persons and property. The contractor shall be responsible to give reasonable notice to the engineer and the owners of public or private property and utilities when such property and utilities are likely to get damaged or injured during the performance of his works and shall make all necessary arrangements with such owners, related to removal and/or replacement or protection of such property and utilities.

27.0 PAINTING

All exposed metal parts of the equipment including pipings, structure railing etc. wherever applicable, after installation unless otherwise surface protected, shall be first painted with at least one coat of suitable primer which matches the shop primer paint used, after thoroughly cleaning all such parts of all dirt, rust, scales, greases, oils and other foreign materials by wire brushing, scarping or sand blasting, and the same being inspected and approved by the engineer for painting. Afterwards, the above parts shall be finished with two coats of alloyed resin machinery enamel paints. The quality of the finish paint shall be as per the standards of ISI or equivalent and to be of the colour as approved by the engineer.

28.0 INSURANCE

28.1 In addition to the conditions covered under the clause entitled insurance in general terms and conditions of contract, the following provisions will also apply to the portion of the works to be done beyond the contractor's own or his sub-contractor's works.

28.2 Workmen's compensation insurance

This insurance shall protect the contractor against all claims applicable under the Workmen's Compensation Act 1948 (Government of India). This policy shall also cover the contractor against claims for injury, disability disease or death of his or his sub-contractor's employees, which for any reason are not covered under the Workmen's Compensation Act 1948. The liabilities shall not be less than

Workmen's compensation	As per statutory provisions
Employer's liability	As per statutory provisions

28.3 Comprehensive Automobile Insurance

This insurance shall be in such a form to protect the contractor against all claims for injuries, disability, disease and death to members of public including the owner's men and damage to the property of others arising from the use of motor vehicles during on or off the site operations, irrespective of the ownership of such vehicles.

28.4 Comprehensive General Liability Insurance

28.4.1 This insurance shall protect the contractor against all claims arising from injuries, disabilities, disease or death of members of public or damage to property of others, due to any act or omission on the part of the contractor, his agents, his employees, his representatives and sub-contractors or from riots, strikes and civil commotion. The insurance shall also cover all the liabilities of the contractor arising out of the clause entitled defense of suits under General Terms and

Conditions of contracts.

28.4.2 The hazards to be covered will pertain to all the works which and areas where the contractor, his sub-contractors, his agents and his employees have to perform work pursuant to the contract.

28.5 The above are only illustrative list of insurance covers normally required and it will be the responsibility of the contractor to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect, in pursuance of the contract.

29.0 UNFAVOURABLE WORKING CONDITIONS

The contractor shall confine all his field operations to those works which can be performed without subjecting the equipment and materials to adverse effects, during inclement weather conditions, like monsoon, storms, etc. and during other unfavourable construction conditions. No field activities shall be performed by the contractor under conditions which might adversely affect quality and efficiency thereof, unless special precautions or measures are taken by the contractor in a proper and satisfactory manner in performance of such works and with concurrence of the engineer. Such unfavorable construction conditions will in no way relieve the contractor of his responsibility to perform works as per the schedule.

30.0 PROTECTION OF MONUMENTS AND REFERENCE POINTS

The contractor shall ensure that any finds such as relic, antiquity, coins, fossils, etc. which he might come across during the course of performance of his works either during excavation or elsewhere, are properly protected and handed over to the engineer. Similarly, the contractor shall ensure that the bench marks, reference points, etc., which are marked out either with the help of engineer or by the engineer shall not be disturbed in any way during the performance of his works. If any work is to be performed which disturb such references, the same shall be done only after these are transferred to other suitable locations under the direction of the engineer. The contractor shall provide all necessary materials and assistance for such relocation of reference points etc.

31.0 WORK AND SAFETY REGULATIONS

31.1 The contractor shall ensure proper safety of all the workmen, materials plant and equipment belonging to him or the Company or to others, working at or near the site. The contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislation and the engineer-in-charge as he may deem necessary.

31.2 The contractor will notify well in advance to the engineer-in-charge of his intention to bring to the site any container filled with liquid or gaseous fuel or explosive or petroleum substance or such chemicals which may involve hazards. The engineer-in-charge shall have the right to prescribe the conditions, under which such container is to be stored, handled and used during the performance of the works and the contractor shall strictly adhere to and comply with such instructions. The engineer-in-charge shall have the right at his sole discretion to inspect any such container or such construction plant/equipment for which material in the container is required to be used and if in his opinion, its use is not safe, he may forbid its' use. No claim due to such prohibition shall be entertained

by the owner. Nor the owner shall entertain any claim of the contractor towards additional safety provisions/conditions to be provided for constructed as per engineer-in-charge's instructions.

Further any such decision of engineer-in-charge shall not, in any way, absolve the contractor of his responsibilities, and in case, use of such a container or entry thereof into the site area is forbidden by engineer-in-charge, the contractor shall use alternative methods with the approval of engineer-in-charge without any cost implication to Company or extension of work schedule.

31.3 Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in Petroleum Act 1934, Explosives Act 1948, and Petroleum and Carbide of Calcium Manual Published by the Chief Inspector of Explosives of India. All such storage shall have prior approval of the engineer-in-charge. In case, any approvals are necessary from the Chief Inspector (Explosive) or any statutory authorities, the contractor shall be responsible for obtaining the same.

31.4 All equipment used in construction and erection by contractor shall meet Indian, Inter-national Standards and where such standards do not exist, the contractor shall ensure these to be absolutely safe. All equipment shall be strictly operated and maintained by the contractor in accordance with manufacturer's operation manual and safety instructions and as per Guidelines/Rules of the Company in this regard.

31.5 Periodical Examinations and all tests for all lifting/hoisting equipment and tackles shall be carried out in accordance with the relevant provisions of Factories Act 1948, Indian Electricity Act 1910 and associated Laws/Rules enforced from time to time. A register of such examinations and tests shall be properly maintained by the contractor and will be promptly produced as and when desired by engineer-in-charge or by the person authorised by him.

31.6 The contract shall be fully responsible for the safe storage of his and his sub-contractors radio-active sources in accordance with BARC/DAE Rules and other applicable provisions. All precautionary measures stipulated by BARC/DAE in connection with use, storage and handling of such material will be taken by contractor.

31.7 The contractor shall provide suitable safety equipment of prescribed standard to all employee and workmen according to the need, as may be directed by engineer-in-charge who will also have right to examine these safety equipment to determine their suitability, reliability, acceptability and adaptability.

31.8 Where explosives are to be used, the same shall be used under the direct control and supervision of an expert, experienced, qualified and competent person strictly in accordance with the code practices/rules framed under Indian Explosives Act pertaining to handling, storage and use of the explosives.

31.9 The contractor shall provide safe working conditions to all workmen and employees at the site including safe means of access, railings, stairs, ladders, scaffoldings etc. The scaffoldings, stairs, ladders etc. shall be erected under the

control and supervision of an experienced and competent person. For erection, good and standard quality of material only shall be used by the contractor.

31.10 The contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to the owner or other contractors under any circumstances, whatsoever, unless expressly permitted in writing by the Company to handle such fuses, wiring or electrical equipment.

31.11 Before the contractor connects any electrical appliances to any plug or socket belonging to the other contractor or owner, he shall:

a satisfy the engineer that the appliances is in good working condition
b inform the engineer of the maximum current rating, voltage and phases of the appliances.
c obtain permission of the engineer detailing the sockets to which the appliances may be connected.

31.12 The engineer will not grant permission to connect until he is satisfied that:
a. the appliance is in good condition and is fitted with a suitable plug.
b. the appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.

31.13 No electric cable is in use by the contractor/owner will be disturbed without prior permission. No weight of any description will be imposed on any cable and no ladder or similar equipment will rest against or attached to it.

31.14 No repair work shall be carried out on any live equipment. The equipment shall must be declared safe by engineer-in-charge and a permit to work shall be issued by engineer-in-charge before any repair work is carried out by the contractor. While working on electric lines/equipments whether alive or dead, suitable type and sufficient quantity of tools will have to be provided by contractor to electricians/workmen/officers.

31.15 The contractor shall employ necessary number of qualified, full time electricians/ electrical supervisors to maintain in his temporary electrical installations.

31.16 The contractor employing more than 250 workmen whether temporary, casual, probationer, regular or permanent or on contract, shall employ at least one full time officer exclusively as safety officer to supervise safety aspects of the equipment and workmen who will co-ordinate with the project safety officer. In case of work being carried out through sub-contractor's, the sub-contractor's workmen/employees will also be considered as the contractor's employees/workmen for above purpose. The name and address of a such safety officer of contractor will be promptly informed in writing to engineer-in-charge with a copy to safety officer-in charge before he starts work or immediately after any change of the incumbent is made during currency of the contract.

31.17 In case any accident occurs during the construction/erection or other associated activities undertaken by the contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the contractor to promptly inform the same to the company's engineer-in-charge in prescribed form and also to all the authorities envisaged

under the applicable laws.

31.18 The engineer-in-charge shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/or property, and/or equipment. In such cases, the contractor shall be informed in writing about the nature of hazards and possible injury/accident and he shall comply to remove short comings promptly. The contractor after stopping the specific work, can, if felt necessary, appeal against the order of stoppage of work to the General Manager of the project within 3 days of such stoppage of work and decision of the project G.M in this respect shall be conclusive and binding on the contractor.

31.19 The contractor shall not be entitled for any damages/compensation for stoppage of work due to safety reasons as provided in para 31.18 above and the period of such stoppage of work will not be taken as an extension of time for completion of work and will not be the ground for waiver of levy of liquidated damages.

31.20 The contractor shall follow and comply with all the Company safety rules relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without demur, protest or content or reservation. In case of any inconformity between statutory requirement and the Company safety rules referred above, the later shall be binding on the contractor unless the statutory provisions are more stringent.

31.21 If the contractor fails in providing safe working environment as per the Company safety rules or continues the work even after being instructed to stop work by engineer-in-charge as provided in para 31.18 above, the contractor shall promptly pay to the Company, on demand i.e. by the owner compensation at the rate of Rs. 5,000/= per day or part there of till the instructions are complied with and an so certified by engineer-in-charge. However, in case of accident taking place causing injury to any individual, the provisions contained in para 31.22 shall also apply in addition to compensation mentioned in this para.

31.22 If the contractor does not take all safety precautions and/or fails to comply with the safety rules as prescribed by the Company or under the applicable laws for the safety of the equipment and plant and for the safety of personnel and the contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other contractors, or the Company employees or any other person who are at site or adjacent thereto, the contractor shall be responsible for payment of compensation under the relevant provisions of the workmen's compensation act and rules framed thereunder or any other applicable laws as applicable from time to time.

Permanent disablement shall have same meaning as indicated in workmen's compensation act. The compensation mentioned above shall be in addition to the compensation payable to the workmen/employees under the relevant provisions of the workmen's compensation act and rules framed thereunder or any other applicable laws as applicable from time to time.
In case the owner is made to pay such compensation then the contractor is liable to reimburse the owner such amount.

32.0 CODE REQUIREMENTS

The erection requirements and procedures to be followed during the installation of the equipment shall be in accordance with the relevant Indian Standard codes of practice or in their absence appropriate International Standard, Indian Boiler Regulations. ASME codes and accepted good engineering practice, the engineer's drawings and other applicable Indian recognised codes and the laws and regulations of the Government of India.

33.0 FOUNDATION DRESSING AND GROUTING

33.1 The surfaces of foundations shall be dressed to bring the top surface of the foundations to the required level, prior to placement of equipment/equipment bases on the foundations.

33.2 All the equipment bases and structural steel base plates shall be grouted and finished as per these specifications unless otherwise recommended by the equipment manufacturer.

33.3 The concrete foundation surfaces shall be properly prepared by chipping, grinding as required to bring the type of such foundation to the required level, to provide the necessary roughness for bondage and to assure enough bearing strength. All laitance and surface film shall be removed and cleaned.

33.4 GROUTING MIX

The grouting mixtures shall be composed of Portland cement, sand and water. The Portland cement to be used shall conform to ISI No. 269 or equivalent, sand shall conform to ISI No.383/2386 or equivalent. The grout proportions for flat based where the grouting space does not exceed 35 mm shall be 50 Kg bag of cement to 75 Kg of sand. Only the required quantity of water shall be added so as to make the mix quaky and flowable and the mix shall not show excess water on top when it is being puddled in place. For thicker grout beds upto 65 mm, the amount of sand shall be increased to 105 Kg per bag of cement. Bases which are hollow and are to be filed full of grouting shall be filled to a level of 25 mm above the outside rim with a mortar mix in the volumetric proportions of one bag of cement and 1.5 bags sand and 1.5 part 6 mm granite gravel. An acceptable plasticiser may be added to the grout mixes in a proportion recommended by the plasticisers manufacturer. All such grouts shall be thoroughly mixed for not less than five minutes in an approved mechanical mixer and shall be used immediately after mixing.

33.5 PLACING OF GROUT

33.5.1 After the base has been prepared, its alignment and level has been checked and approved and before actually placing the grout a low dam shall be set around the base at a distance that will permit pouring and manipulation of the grout. The height of such dam shall be at least 25 mm above the bottom of the base. Suitable size and number of chains shall be introduced under the base before placing the grout, so that such chains can be moved back and forth to push the grout into every part of the space under the base.

33.5.2 The grout shall be poured either through grout holes if provided or shall be poured at one side or at two adjacent sides giving it a pressure head to make the grout move in a solid mass under the base and out in the opposite side. Pouring shall be continued until the entire space below the base is thoroughly filled and the grout stands at least 25 mm higher all around than the bottom of the base. Enough care should be taken to avoid any air or water pockets beneath the bases.

33.6 FINISHING OF THE EDGES OF THE GROUT

The poured grout should be allowed to stand undisturbed until it is well set. Immediately thereafter, the dam shall be removed and grout which extends beyond the edges of the structural or equipment base plates shall be out off flush and removed. The edges of the grout shall then be pointed and finished with 1:2 cement mortar pressed firmly to bond with the body of the grout and smoothed with a tool to present a smooth vertical surface. The work shall be done in a clean and scientific manner and the adjacent floor spaces, exposed edges of the foundations, and structural steel and equipment base plates shall be thoroughly cleaned of any spillage of the grout.

33.7 CHECKING OF EQUIPMENT AFTER GROUTING

After the grout is set and cured, the contractor shall check and verify the alignment of equipment, alignment of shafts of rotating machinery, the slopes of all bearing pedestals, centring of rotors with respect to their sealing bores, couplings, etc. as applicable and the like items to ensure that no displacement had taken place during grouting. The values recorded prior to grouting shall be used during such post grouting check-up and verifications. Such pre and post grout records of alignment details shall be maintained by the contractor in a manner acceptable to the engineer.

34.0 SHAFT ALIGNMENTS

All the shafts of rotating equipment shall be properly aligned to those of the matching equipment to as perfect an accuracy as practicable. The equipment shall be free from excessive vibration so as to avoid over-heating of bearings or other conditions which may tend to shorten the life of the equipment. All bearings, shafts and other rotating parts shall be thoroughly cleaned and suitably lubricated before starting.

35.0 DOWELING

All the motors and other equipment shall be suitably doweled after alignment of shafts with tapered machined dowels as per the direction of the engineer.

36.0 CHECK OUT OF CONTROL SYSTEMS / POWER SUPPLY

After completion of wiring, cabling furnished under separate specifications and laid and terminated by the owner, the contractor shall check out the operation of all control systems for the equipment furnished and installed under these specifications and documents. The contractor shall get the drawings pertaining to the control system, power supply etc. approved from Directorate General of Mine Safety (DGMS) or any other appropriate authority as necessary, wherever required as per the rules and regulations of the of Indian Mines Act governed by D.G.M.S.

37.0 COMMISSIONING SPARES

The contractor shall make arrangement for an adequate inventory at site of necessary commissioning spares prior to commissioning of the equipment furnished and erected so that any damage or loss during this commissioning activities necessitating the requirements of spares will not come in the way of timely completion of the works under the contract.

38.0 CABLING

38.1 All cables shall be supported by conduits or cable tray run in air or in cable channels. These shall be installed in exposed runs parallel or perpendicular to dominant surfaces with right angle turn made of symmetrical bends or fittings. When cables are run on cable trays, they shall be clamped at a minimum interval of 2000 mm or otherwise as directed by the engineer.

38.2 Each cable, whether power or control , shall be provided with a metallic or plastic of an approved type, bearing a cable reference number indicated in the cable and conduit list (prepared by the contractor), at every 5 metre run or part there of and at both ends or the cable adjacent to the terminations. Cable routing is to be done in such a way that cables are accessible for any maintenance and for easy identification.

38.3 Sharp bending and kinking of cables shall be avoided. The minimum radii for PVC insulated cables 1100 V grade shall be 15D, where D is the over all diameter of the cable. Installation of other cables like high voltage, coaxial, screened, compensating, mineral insulated shall be in accordance with the cable manufacturer's recommendations. Wherever cables cross roads and water, oil, sewage or gas lines, special care should be taken for the protection of the cables in designing the cable channels.

38.4 In each cable run some extra length shall be kept at a suitable point to enable one to two straight through joints to be made should the cable develop fault at a later date.

38.5 Control cable terminations shall be made in accordance with wiring diagrams, using identifying codes subject to engineer's approval. Multicore control cable jackets shall be removed as required to train and terminate the conductors. The cable jacket shall be left on the cable, as far as possible, to the point of the first conductor branch. The insulated conductors from which the jacket is removed shall be neatly twined in bundles and terminated. The bundles shall be firmly but not tightly tied utilising plastic or nylon ties or specially treated fungus protected cord made for this purpose. Control cable conductor insulation shall be securely and evenly cut.

38.6 The connectors for control cables shall be covered with a transparent insulating sleeve so as to prevent accidental contact with ground or adjacent terminals and shall preferably terminate Elmex terminals and washers. The insulating sleeve shall be fire resistant and shall be long enough to over-pass the conductor insulation. All control cables shall be fanned out and connection made to terminal blocks and test equipment for proper operation before cables are corded together.

SUB–SECTION – 3.5
SAFETY CODE

1. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper that ¼ to 1 (¼ horizontal and 1 vertical).

2. Scaffolding of staging more than 3.6 m (12ft). above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm (3ft) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

3. Working platforms, gangways and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6 m (12ft) above ground level, they should be closely boarded, should have adequate width and should be suitably fastened as described in (2) above.

4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90 cm (3ft).

5. Safety means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m (30ft) in length while the width between side rails in rung ladder shall in no case be less than 20 cm (11 ½") for ladder upto and including 3 m (10ft) in length. For longer ladders, this width should be increased at least ¼" for additional 30 cm (1ft.) of length. Uniform step spacing of not more than 30 cm shall be kept. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defense of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit; action or proceedings to any such person or which may, with the consent of the contractor, be paid to compensate any claim by any such person.

6. Excavation and Trenching: All trenches 1.2 m (4ft) or more in depth, shall at all times be supplied with at least one ladder for each 30 m. (100 ft.) in length or fraction thereof. Ladder shall extend from bottom of the trench to at least 90 cm (3ft) above the surface of the ground. The side of the trenches which are 1.5 m (5ft) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5 m (5ft) of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances, undermining or undercutting shall be done.

7. Demolition: before any demolition work is commenced and also during the progress of the work,

   i. All roads and open areas adjacent to the work site shall either be closed or suitably protected.

   ii. No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electrically charged.

   iii. All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

8. All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned: - The following safety equipment shall invariably be provided.

   i) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

   ii) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes, shall be provided with protective goggles.

   iii) Those engaged in welding works shall be provided with welder's protective eye-shields.

   iv) Stone breaker shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

   v) When workers are employed in sewers and manholes, which are in active use, the contractors shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warming signals or boards to prevent accident to the public. In addition, the contractor shall ensure that the following safety measures are adhered to: -

      a) Entry for workers into the line shall not be allowed except under supervision of the Engineering Assistant or any other higher officer.

      b) At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manhole for working inside.

      c) Before entry, presence of Toxic gases should be tested by inserting wet lead acetate paper which changes colour in the presence of such gases and gives indication of their presence.

      d) Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.

e) Safety belt with rope should be provided to the workers. While working inside the manholes, such rope should be handled by two men standing outside to enable him to be pulled out during emergency.

f) The area should be barricaded or condoned of by suitable means to avoid mishaps of any kind. Proper warming signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.

g) No smoking or open flames shall be allowed near the blocked manhole being cleaned.

h) The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.

i) Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-in-Charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.

j) Gas masks with Oxygen Cylinder should be kept at site for use in emergency.

k) Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non-sparking gas engines also could be used but they should be placed at least 2 meters away from the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.

l) The workers engaged for cleaning the manholes / sewers should be properly trained before allowing to work in the manhole.

m) The workers shall be provided with Gumboots or non-sparking shoes bump helmets and gloves non-sparking tools safety lights and gas masks and portable air blowers (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.

n) Workmen descending a manhole shall try each ladder stop or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.

o) If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.

p) The extents to which these precautions are to be taken depend on individual situation but the decision of the Engineer-in-Charge regarding the steps to be taken in this regard in an individual case will be final.

vi) The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following precaution should be taken: -

a) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.

b) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.

c) Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on the cessation of work.

d) Measures shall be taken, wherever practicable, to prevent danger arising out of from dust caused by dry rubbing down and scraping.

e) Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.

f) Overall shall be worn by working painters during the whole of working period.

g) Suitable arrangement shall be made to prevent clothing put off during working hours being spoiled by painting materials.

9. When the work is done near any place where there is risk of drowning, all necessary equipments should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision, should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.

10. Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following standards or conditions: -

i). (a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and in good working order.

(b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

ii) Every crane driver or hoisting appliance operator, shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to operator.

iii) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load each safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

iv) In case of departmental machines, the safe working load shall be notified by the Electrical Engineer-in-Charge. As regards contractor's machines the contractors shall notify the safe working load of the machine to the Engineer-in-Charge

whenever he brings any mach8inery to site of work and get it verified by the Electrical Engineer concerned.

11. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

12. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.

13. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.

14. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer or Engineer-in-Charge of the department or their representatives.

15. Notwithstanding the above clauses from (1) to (15), there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

****

SUB–SECTION – 3.6
TECHNICAL SPECIFICATIONS

Technical Specifications to be followed:

Civil Engineering Works

Latest CPWD specification shall be adopted. These specifications cover all type of Building Works. The specifications are available as a printed document issued by CPWD and also in soft copy in .pdf format on CPWD website.

All latest version of relevant BIS Codes shall also be followed.

Roads and Bridges

Standard Specifications issued by Ministry of Road Transport & Highway may be followed. Presently MORT&H Specifications for Roads and Bridges 2013 is available. These specifications cover exhaustively various roads and bridge works.

All latest version of relevant BIS Codes shall also be followed.

Electrical Engineering Works

All latest version of relevant BIS Codes shall also be followed.

Public procurement (Preference to make in India) order 2017 with latest amendment(s) will have to be complied with by the contractor wherever applicable.

****

SUB–SECTION – 3.7
e – TENDER PORTAL USER AGREEMENT

In order to create a user account and use the eTender portal you must read and accept this eTender portal User Agreement.

A. UNDERTAKINGS TO BE FURNISHED ONLINE BY THE BIDDER

I DO HEREBY UNDERTAKE

1. That all the information being submitted by me/us is genuine, authentic, true and valid on the date of submission of tender and if any information is found to be false at any stage of tendering or contract period, I/We will be liable to the following penal actions apart from other penal actions prescribed elsewhere in the tender document.

    a. Cancellation of my/our bid/contract (as the case may be)
    b. Forfeiture of EMD.
    c. Punitive action as per tender document

2. That I/we accept all terms and condition of NIT, including General Terms and Condition and Special/Additional Terms and Condition as stated there in the tender document as available on the website.

3. That I/we accept the Integrity Pact as given in the tender document (if applicable).

4. That I/we, am/are giving my/our consent for e-payment and submitting/ shall submit the mandate form for e-Payment in the format as prescribed in the document in case, the work is awarded to us.

5. That I/we do authorize ECL for seeking information/clarification from my Bankers having reference in this bid.

6. That I/we will upload original/certified photo/scanned of all the relevant documents as prescribed in the tender document in support of the information and data furnished by me/us online.

7. I/We confirm that I/We have not been banned or de-listed by any Govt. or Quasi Govt. agencies or PSUs. In case We are banned or delisted this information shall be specifically informed to the tender issuing authority.

8. That I/We accept all the undertakings as specified elsewhere in the tender document.

9. That this online agreement will be a part of my bid and if the work is awarded to me/us, this will be a part of our agreement with ECL.

B. TERMS AND CONDITIONS OF E-TENDER SERVICES AGREEMENT

You may print and download portions of material from the different areas of the website solely for your own non-commercial use provided that you agree that you shall not change or delete any copyright or proprietary materials from the site.

https://coalindiatenders.nic.in is an e-procurement portal of Coal India Limited/its Subsidiary.

THIS E-TENDER PORTAL AND RELATED SERVICES SUBJECT TO YOUR COMPLIANCE WITH THE USER'S TERMS AND CONDITIONS SET FORTH BELOW:

PLEASE READ THE FOLLOWING INFORMATION CAREFULLY. YOU MAY NOT COMPLETE YOUR REGISTRATION AND USE THE E-TENDER PORTAL WITHOUT AGREEING TO COMPLY WITH ALL OF THE TERMS AND CONDITIONS SET FORTH BELOW.

BY REGISTERING THE USER NAME AND PASSWORD, YOU AGREE TO ABIDE BY ALL THE TERMSAND CONDITIONS SET FORTH BELOW:

Bidder Registration, Password and Security:

Upon successful completion of Registration online, User ID and Password will be registered. You can login, only by giving valid User ID and Password and then signing with your valid Digital Signature Certificate.

The Online registration/enrollment of bidder on the portal should be done in the name of the bidder. The person whose DSC is attached to the Registered Bidder should be either the bidder himself Or, duly authorized by the Bidder.

User ID and password are strictly personal to each Authorised User and non-transferable. The User shall ensure that its Authorised Users do not divulge or disclose their user ID or password to third parties. In the event that the Authorised User comes to know that the User ID/Password has been/ might have been divulged, disclosed or discovered by any third party, user or its authorized user shall immediately modify the password using "Change Password" option. ECL will have no responsibility or obligation in this regard.

At the time of enrollment in the e-Tendering portal of CIL/its Subsidiaries, the Bidders should ensure that the status of DSC is active on this site. The activation of newly issued DSC may take 24 hrs or more. Hence Bidders who are obtaining new DSC should register at least 24 hrs before the submission of Bid.

By registering in this portal you forthwith assume the responsibility for maintaining the confidentiality of the Password and account, and for all activities that occur under your Password or Account. You also agree to (a).immediately notify by e-mail to Application Administrator/Nodal officer, of any unauthorized use of your Password or Account or any other breach of security, and (b) ensure that you log-out from your account at the end of each session. CIL/its Subsidiaries shall not be liable for any loss or damage caused to you due to your failure to comply with the foregoing.

Registered user can modify or update some of the information in their profile as and when required at their own discretion. However some information such as "User ID" are protected against changes by Bidder after enrollment and some other information such as "Bidder Name" etc. are protected against changes by Bidder after bid submission.

Modification of software:

With consent of Project Advisory Committee, e-procurement of CIL, the Administrator of e-Tender portal, reserves the right to modify, add, delete and/or change the contents , classification and presentation of the information on the market place at any time as it may in its absolute discretion find to be expedient and without giving any notice. It is the user's responsibility to refer to the terms and/or any change or addition to the same while accessing the site.

Coal India Limited reserves right to interrupt/suspend the availability of the e-Tender system without any notice to the users.

System Requirements:

It is the users responsibility to comply with the system requirements : hardware, software, Internet connectivity at user premises to access the eTender portal as mentioned in the home page in the link "Resources Required".

Under any circumstances, CIL shall not be liable to the Users for any direct/indirect loss incurred by them or damages caused to them arising out of the following:

(a). Incorrect use of the e-Tender System, or ;

(b). Internet Connectivity failures in respect of the equipments used by the Users or by the Internet Service Providers, or ;

(c). Inability of the Bidder to submit their bid due to any DSC related problems, hardware, software or any other factor which are personal/ special/local to the Bidder.

Contents of Tender Information:

Tenders shall be published by the authorized Tender Inviting Authorities of the respective Tendering entities of ECL. In case of any clarifications arising out of the tenders, the users have to contact the respective Tender Inviting Authority.

Bid Submission Acknowledgement:

The User should complete all the processes and steps required for Bid submission. The successful Bid submission can be ascertained once acknowledgement is given by the system through Bid Submission number i.e. Bid ID, after completion of all the processes and steps. Coal India Limited is not responsible for incomplete bid submission by users. Users may also note that the incomplete bids will not be saved by the system and so the same will not be available to the Tender Inviting Authority for processing. The acknowledgment is the only confirmation of submission of bid, which the bidder can show as a proof of participating in the tender. Other than this acknowledgement, no proof will be considered as a confirmation to the submission of a bid. If the bidder fails to produce this acknowledgement required for verification in case of dispute, his claim for submission of bid may not be considered.

Upload files:

The bidders have to ensure that the files being uploaded by them are free from all kinds of viruses and contain only the relevant information as stated by the Tender Inviting Authorities for the particular tender. It is not obligatory on the part of ECL to read each and every document uploaded by the Bidder. If any bidder/Company has uploaded/attached irrelevant data, bogus or fabricated certificates towards his qualification requirements to the respective tender then their User account will be liable for termination permanently or temporarily by ECL without any prior notice.

User Conduct:

You agree that all information, data, text, software, photographs, graphics, messages or other materials ("Content"), whether publicly posted or privately transmitted, are the sole responsibility of the person from which such Content is originated. This means that you are entirely responsible for all Content that you upload, post, email or otherwise transmit via the eTender portal.

ECL does not control the Content posted via the e-Tender portal and, as such, does not guarantee the accuracy, integrity or quality of such Content. Hence under no circumstances, ECL is liable in any manner for any Content, including, but not limited to, for any errors or omissions in any Content, or for any loss or damage of any kind incurred as a result of the use of any Content posted, e-mailed or otherwise transmitted via the Site. **Amendments to a tender published:**

You agree that the ECL reserves the right to re-tender /cancel a tender or extend the closing date or amend the details of tender at any time by publishing corrigendum as applicable.

Special Admonitions For International Use :

Recognizing the global nature of the Internet, you agree to comply with all local rules regarding online content and acceptable Content. Specifically, you agree to comply with all applicable laws regarding the transmission of technical data to and from India or the country in which you reside.

Links :

The Site may provide, links to other World Wide Web sites or resources. Because ECL has no control over such sites and resources, you acknowledge and agree that the ECL is not responsible for the availability of such external sites or resources, and does not endorse and is not responsible or liable for any Content, advertising, products, or other materials on or available from such sites or resources.
You further acknowledge and agree that the ECL shall not be responsible or liable, directly or indirectly, for any damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such Content, Goods or Services available on or through any such site or resources.

Miscellaneous :

This Agreement shall all be governed and construed in accordance with the laws of India & applicable to agreements made and to be performed in India. The e-Tender portal's failure to insist upon or enforce strict performance of any provision of this Agreement shall not be construed as a waiver of any provision or right. Neither the course of conduct between the parties nor trade practice shall act to modify any provision of this Agreement. ECL may assign

its rights and duties under this Agreement to any party at any time without notice to you. Any rights not expressly granted herein are reserved.

Governing Law:

Terms shall be governed by, and construed in accordance with, Indian law. The parties agree that the principal civil court of the place where the registered office of ECL is situated shall have non-exclusive jurisdiction to entertain any dispute with ECL. In case of dispute being with a regional Institute of CMPDIL, the principal Civil Court where the said regional Institute is situated shall be place of suing.

ECL reserves the right to initiate any legal action against those bidders violating all or any of the above-mentioned terms & conditions of e-Tender services agreement.

Modification of terms of Agreement:

CIL/its Subsidiaries reserves the right to add to or change/modify the terms of this Agreement. Changes could be made by us after the first posting to the Site and you will be deemed to have accepted any change if you continue to access the Site after that time. CIL/its Subsidiaries reserves the right to modify, suspend/cancel, or discontinue any or all services/ make modifications and alterations in any or all of the content, at any time without prior notice.

Policy and Security:

General Policy:

ECL is committed to protecting the privacy of our e-Tender site visitors. ECL does not collect any personal or business information unless you provide it to us voluntarily when conducting an online enrolment, bid submission etc. or any other transaction on the Site.

Information Collected:

When you choose to provide personal or business information to us to conduct an online transaction, we use it only for the purpose of conducting the specific online transaction that you requested. The information is also used for the purpose of vendor searches. For each online transaction, we require only a minimum amount of personal and business information required to process your transaction.

When you visit our portal to browse, read pages, or download information, we automatically collect and store only the following information:

The Internet domain and IP address from which you access our portal;

The date and time you access our portal;

The pages you visit

This information would help us to make our site more useful to visitors and to learn about the number of visitors to our site and the types of technology our visitors use.

We do not give, share, sell or transfer any personal information to a third party unless required to do so by law. If you do not want any personal or business information to be collected, please

do not submit it to us; however, without this required information we will be unable to process your online bid submission or any other online transaction. Review, update and correction of any personal or business information can be done directly on the Site.

Use of Cookies:

When you choose to enter into an online transaction, we use cookies to save the information that you input while progressing through the transaction. A cookie is a very small amount of data that is sent from our server to your computer's hard drive. By enabling this feature, the cookie will remember the data entered by you and next time when you visit this site, the data stored in the cookie will be available in future.

Security:

The Site has security measures in place to protect against the loss, misuse and alteration of information under our control.

eMail / SMS Notifications:

The GePNIC eProcurement Server has functionality of automatically sending eMail / SMS alerts at various events as per the bidders preference. There is no manual intervention while sending these predefined eMail / SMS alerts. All events for which eMails / SMS being sent is also available to users on the Dash Board / the user login of the Bidder. Although all efforts will be made to ensure timely delivery of eMail / SMS, due to dependency in various other external factors, the delivery of eMail / SMS may not be assured and bidders are requested to check the portal on a periodic basis for any such events. Non receipt of eMail / SMS cannot be quoted as a reason for failure of service as this is an added facility being provided to users.

****

GUIDELINES ON DEBARMENT OF FIRMS FROM BIDDING

CIL and its Subsidiary Companies shall follow the following guidelines for effecting 'Debarment of firms from Bidding' with a contracting entity in respect of Works and Services Contracts.

1. Observance of Principle of Natural Justice before banning the business dealings with any contracting entity.

2. The contracting entity bidder/contractor may be debarred in the following circumstances: -

   i) If Bidder backs out after notification of opening of price bid and if that Bidder is found to be L-1.
   ii) If L-1 Bidder fails to submit PSD, if any and/or fails to execute the contract within stipulated period.
   iii)If L-1 Bidder fails to start the work on scheduled time.
   iv) In case of failure to execute the work as per mutually agreed work schedule.
   v) Continued and repeated failure to meet contractual Obligations:
      a. In case of partial failure on performance, agency shall be debarred from future participation in tenders keeping his present contract alive.
      b. On termination of contract.
   vi) Willful suppression of facts or furnishing of wrong information or manipulated or forged documents by the Agency or using any other illegal/unfair means.
   vii) Formation of price cartels with other contractors with a view to artificially hiking the price.
   viii) The contractor fails to maintain/repair/redo the work up to the expiry of performance guarantee period, when it is specifically brought to his notice.
   ix) Contractor fails to use Mobilisation advance given to him for the purpose it was intended.
   x) Contractor fails to renew the securities deposited to the department.
   xi) The contractor fails to rectify any lapse(s) in quality of the work done within defect liability period.
   xii) Transgression of any clause(s) relating to Contractor's obligation defined in the Integrity Pact wherever such Pact exists.
   xiii) Any other breach of Contract or misdeed which may cause financial loss or commercial disadvantage to the Company.

3. Such 'Debarment of firms from Bidding, if and when effected, shall be with prospective effect only. The effect of 'Debarment of firms from Bidding' shall be for future tenders from the date of issue of such Order. However, if any contracting entity is debarred after online notification of opening of Price Bid, such a debarment will not be effective for that work.

4. The debarment shall be for a minimum period of one year and shall be effective for the concerned Subsidiary for the tenders invited at Subsidiary level. Similarly, in case of tenders of CIL HQ, debarment shall be for CIL HQ. However, if such 'Debarment of firms from Bidding' has to be made effective for entire CIL and its Subsidiaries then approval of Chairman, CIL shall be required.

5. Once a contracting entity is debarred, it shall be extended to the constituents of that entity, all partners in case of JV/Consortium, all the partners in case of Partnership Firm, owner/proprietor in case of Proprietorship Firm and all the Directors in case of Limited Company. If such debarred owner/Proprietor/ Partner/Director make/form different Firms/entity and attempts to participate in tenders, the same will not be entertained during the currency of such debarment.

6. The above 'Debarment of firms from Bidding' shall be in addition to other penal provisions of NIT/Contract document.

7. Approving Authority: The 'Debarment of firms from Bidding' of a contracting entity shall be done with the approval of the Competent Authority as per the details below:

a) In case the Accepting Authority of the work is Board or Empowered Committee or FDs or CMD of ECL Company, then the Competent Authority for debarring shall be CMD of ECL.
b) In case the Accepting Authority of the work is up to the level of Director of ECL, then the Competent Authority for debarment shall be Director of ECL.
8. Appellate Authority shall be one Rank higher than the Competent Authority meant for 'Debarment of firms from Bidding'. In case the debarment is done with the approval of CMD of the Subsidiary Company then Chairman, CIL shall be the Appellate authority. Any change on the above may be done with approval of FDs of CIL.

10. All the orders of debarment or orders passed in appeal shall be marked to GM(CMC) / Civil / concerned HODs of ECL. Further, all such orders will be uploaded in Coal India site as well website of the Subsidiary Company.

11. Efforts shall be made by the concerned Department so that such order is linked to e tender portal of Coal India Limited.

SECTION – 4

MISCELLANEOUS FORMATS

CONTENTS:

ANNEXURE -I

PRE-CONTRACT INTEGRITY PACT
(To be signed on Plain Paper)

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on…….day of the month of ……20…, between, on one hand, Coal India Limited/Subsidiary Cos. acting through Shri …….., Designation of the officer, (hereinafter called the "BUYER / Principal", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s. ……..represented by Shri……, Chief Executive Officer (hereinafter called the "BIDDER/Seller/Contractor" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to execute ……(Name of the work) and the BIDDER/Seller is willing to offer/has offered the Services and

WHEREAS the BIDDER is a private Company / public Company / Government undertaking/ partnership/ proprietorship/ JV/Consortium constituted in accordance with the relevant law in the matter and the BUYER is a Ministry/ Department of the Govt. of India/ PSU performing its functions on behalf of the President of India.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to: -

Enabling the BUYER to complete the desired work at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement and Enabling BIDDERs to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Section 1 – Commitments of the Principal

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand,

take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/ PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

(1) The Bidder(s) / Contractor(s) commit themselves to take all measures necessary to prevent corruption. The Bidder(s) / Contractor(s) commit themselves to observe the following principles during participation in the tender process and during the contract execution.

a. The Bidder(s) / Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person, any material or other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b. The Bidder(s) / Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, Subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.

c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant IPC/ PC Act; further the Bidder(s) / Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s) / Contractors(s) of foreign origin shall disclose the name and address of the Agents/ representatives in India, if any. Similarly, the Bidder(s) /Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s) / Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/ representative have to be in

Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" shall be as per the provisions at Annexure-A.

e. The Bidder(s) / Contractor(s) will, when presenting their bid, disclose any and all payments made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

f. Bidder(s) / Contractor(s) who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.

(2) The Bidder(s) / Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder, before contract award, has committed a transgression through a violation of Section 2 or in any other form such as to put his reliability or credibility as Bidder into question, the Principal is entitled to disqualify the Bidder from the tender process or to terminate the contract, if already signed, for such reason.

(1) If the Bidder / Contractor / Supplier has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Principal is also entitled to exclude the Bidder / Contractor / Supplier from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the circumstances of the case, in particular the number of transgressions, the position of the transgressors within the Company, hierarchy of the Bidder and the amount of the damage. The exclusion will be imposed for a minimum of 6 months and maximum of 3 years.

(2) A transgression is considered to have occurred if the Principal, after due consideration of available facts and evidences within his / her knowledge concludes that there is a reasonable ground to suspect violation of any commitment listed under Section 2 i.e “Commitments of Bidder(s) / Contractor(s)”.

(3) The Bidder accepts and undertakes to respect and uphold the Principal’s absolute right to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including the lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.

(4) If the Bidder / Contractor / Supplier can prove that he has restored / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal may revoke the exclusion prematurely.

Section 4 - Compensation for Damages

(1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 - Previous transgression

(1) The Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Debarment of firms from Bidding ".

Section 6 - Equal treatment of all Bidders / Contractors / Sub-Contractors

(1) In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-Contractor.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.

(3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section7- Criminal charges against violating Bidder(s)/Contractor(s)/ Sub-Contractor(s)

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Sub-Contractor, or of an employee or a representative or an associate of a Bidder, Contractor or Sub-Contractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 - Independent External Monitor

(1) The Principal appoints competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his/ her functions neutrally and independently. The Monitor would have access to all Contract documents, whenever required. It will be obligatory for him / her to treat the information and

documents of the Bidders/Contractors as confidential. He/ she reports to the Chairman, Coal India Limited / CMD, Subsidiary Companies

(3) The Bidder(s) / Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his/ her request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-Contractors.

(4) The Monitor is under contractual obligation to treat the information and documents of the Bidder(s) / Contractor(s) / Sub-Contractor(s) with confidentiality. The Monitor has also signed declarations on 'Non-Disclosure of Confidential Information ' and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform Chairman, Coal India Limited / CMD, Subsidiary Companies and recuse himself / herself from that case.

(5) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

(6) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he/ she will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

(7) The Monitor will submit a written report to the Chairman, Coal India Limited / CMD, Subsidiary Companies within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

(8) If the Monitor has reported to the Chairman, Coal India Limited / CMD, Subsidiary Companies, a substantiated suspicion of an offence under relevant IPC/ PC Act, and the Chairman, Coal India Limited / CMD, Subsidiary Companies has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(9) The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. Any violation of

the same would entail disqualification of the bidders and exclusion from future business dealings.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Chairman Coal India Limited / CMD, Subsidiary Companies.

Section 10 - Other provisions

(1) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

(2) If the Contractor is a partnership or Joint Venture (JV/CONSORTIUM), this agreement must be signed by all partners or JV/CONSORTIUM members.

(3) Should one or several provisions of this Agreement turn out to be invalid, the remainder of this Agreement remains valid. In this case, the parties will strive to come to an Agreement to their original intentions.

(4) Issues like Warranty / Guarantee etc. shall be outside the purview of IEMs.

(5) In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the Integrity Pact will prevail.

Section 11- Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

Section 12- Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the BUYER.

Section 13- Other Legal Actions.

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

(For & On behalf of the Principal) (For & On behalf of Bidder/ Contractor)

(Office Seal) (Office Seal)

Place ----------
Date ----------

Witness 1: (Name Address) _____	&	Witness 2: (Name & Address) _____

ANNEXURE- A
Guidelines for Indian Agents for Foreign supplier (Part of Integrity Pact)

1. Authorized Indian Agent of a foreign manufacturer or indigenous manufacturer is also eligible to quote on behalf of its principal against the tender, in case manufacturer as a matter of corporate policy does not quote directly. However, in such case, authorized Indian Agent shall have to upload scanned copy of tender specific Manufacturer's Authorization, signed and stamped by the manufacturer to quote against the CIL Tender, indicating the Tender Reference No. and date along with the offer. The authorized Indian Agent is to upload scanned copies of details in respect of its organization along with the copies of document like certificate of incorporation / registration etc. alongwith the offer. The firm (Indian Agent) should be in existence for 3 years on the date of tender opening, irrespective of date of appointment as Indian Agent.
   In case an Indian Agent is participating in a tender on behalf of one manufacturer, it is not allowed to participate / quote on behalf of another manufacturer in this tender or in a parallel tender for the same item. Further, in a tender, either manufacturer can quote or its authorized Indian Agent can quote but both are not allowed to participate/ quote in the same tender. Also, one manufacturer can authorise only one agent to quote in the same tender. All the bids, not quoted as per the above guidelines, will be rejected.
2. The Foreign manufacturer must indicate the name & address of its agent in India. It should also indicate the commission payable to them and the specific services rendered by them. The Indian Agency commission will be payable only on FOB prices of goods and it should be quoted as a percentage of the FOB price. In case, the foreign manufacturer does not have any Indian Agent, it should be clearly mentioned in the bid. In terms of Integrity Pact, the Bidder has also to disclose all payments to agents, brokers or any other intermediaries.
   The amount of agency commission payable to Indian Agent should not exceed 5% or what is specified in agency agreement, whichever is lower.
3. In addition to above A certificate that no commission is payable by the principal supplier to any agent, broker or any other intermediary against this contract other than percentage as indicated in BOQ (not exciding 5% of FOB) of FOB value of the contract to Indian Agent. This certificate forms a part of letter of credit.
4. The payment of Indian Agency Commission, if any, involved, may be considered in case of necessity, subject to compliance of the Government of India guidelines issued from time to time. The name of the Indian Agent with their full address and the quantum of Agency commission if any, payable shall have to be mentioned in the offer by the foreign manufacturer.
   The following documents shall be submitted by the Bidder in case of contract with foreign principals involving Indian agents:

a. Foreign principal's pro-forma invoice or any other authentic document indicating the

commission payable to the Indian agent, nature of after sales service to be rendered by the Indian Agent and the precise relationship between the Principal and the Agent and their mutual interest

b. Copy of the agency agreement if any with the foreign principal stating the precise relationship between them and their mutual interest in the business.

However, if all the details given in Para – (i) are complied with, the requirement of submission of document mentioned at Para – (ii) may be waived.

5. Agency commission, if any, shall be paid in equivalent Indian Rupees.

ANNEXURE - IA

PROFORMA FOR DECLARATION TOWARDS CODE OF INTEGRITY FOR PUBLIC PROCUREMENT TO BE ACCEPTED UNCONDITIONALLY BY BIDDER/S

(To be signed on Plain Paper)

To
Tender Inviting Authority,
……
Sub: Declaration towards CIPP by Bidder
Ref: NIT No.:
Tender Id No:

Dear Sir,

I, Sri, ……., proprietor, representative, partner of ……I / We, _____Proprietor/ Partner / Legal Attorney /Director/ Accredited Representative of M/s ……. Solemnly declare that:

1. I/we have read and examined the conditions of Code of Integrity for Public Procurement in respect to this contract as laid down in the General Terms and Conditions.
2. Without prejudice to and in addition to the rights of the Procuring Entity to other penal provisions as per the bid documents or contract, if the Tender Inviting Authority comes to a conclusion that a (prospective) bidder/contractor/ Supplier/ consultant/ service provider, directly or through an agent, has violated this code of integrity in competing for the contract or in executing a contract, actions deemed fit as per the punitive actions recommended in the tender document may be taken against me/us.
3. In-case the contract is awarded to me/us, I/we will submit a signed copy of Code of Integrity for Public Procurement, signed by All Partners/Authorized Signatory of the Bidder.

(For & On behalf of the Principal)

(Office Seal)

(For & On behalf of Bidder/ Contractor)

(Office Seal)

Place ----------
Date ----------

Witness 1:
(Name & Address)
_____

Witness 2:
(Name & Address)
_____

Code of Integrity for Public Procurement (CIPP)

1. Introduction

Public procurement is perceived to be prone to corruption and ethical risks. To mitigate this, the officials of Procuring Entities involved in procurement and the bidders/ contractors must abide by the following Code of Integrity for Public Procurement (CIPP). All Procuring officials may be asked to submit sign declarations to this effect while processing PR on ERP of CIL. To implement it uniformly and mandatorily, this undertaking shall be in-built in the PR format in ERP of CIL. The bidders/ contractors should be asked to sign a declaration about abiding by a Code of Integrity for Public Procurement (including sub-contractors engaged by them) during submission of bid, with a warning that, in case of any transgression of this code, it would be liable for punitive actions such as cancellation of contracts, banning and blacklisting or action in Competition Commission of India, and so on.

2. Code of Integrity for Public Procurement

Procuring authorities as well as bidders, contractors and consultants should observe the highest standard of ethics and should not indulge in the following prohibited practices, either directly or indirectly, at any stage during the procurement process or during execution of resultant contracts:

i) **"Corrupt practice":** making offers, solicitation or acceptance of bribe, rewards or gifts or any material benefit, in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process or contract execution;

ii) **"Fraudulent practice":** any omission or misrepresentation that may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. This includes making false declaration or providing false information for participation in a tender process or to secure a contract or in execution of the contract;

iii) **"Anti-competitive practice":** any collusion, bid rigging or anti-competitive arrangement, or any other practice coming under the purview of The Competition Act, 2002, between two or more bidders, with or without the knowledge of the procuring entity, that may impair the transparency, fairness and the progress of the procurement process or to establish bid prices at artificial, non-competitive levels;

iv) **"Coercive practice":** harming or threatening to harm, persons or their property to influence their participation in the procurement process or affect the execution of a contract;

v) **"Conflict of Interest"-**A Bidder may be considered to have a Conflict of Interest with one or more parties in this bidding process, if:

a) they have controlling partner(s) in common; or

b) they receive or have received any direct or indirect subsidy/financial stake from any of them; or

c) they have the same legal representative/agent for purposes of this bid; or

d) they have business relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or

e) a Bidder or any of its affiliate participated as a consultant in the preparation of the design or technical specification of the contract that is the subject of the bid; or

f) in case of a holding Company having more than one Subsidiary/Sister Concern having common business ownership/management only one of them can bid. Bidders must proactively declare such sister/common business/management in same/similar line of Business;

all such Bidders having a Conflict of Interest, shall be disqualified.

The Bidders shall comply the above provision of "Conflict of Interest" and submit an undertaking with respect to Clause No. 4.2 (d) & 4.2 (e) in GTE.

Earnest Money deposited by such defaulting Bidders shall be forfeited and they shall be debarred from participating in future tenders in concerned Subsidiary/CIL HQ for a period of 12(twelve) months from the date of issue of such letter. In case of JV/CONSORTIUM/Partnership firm, the debarment shall also be applicable to all individual partners of JV/CONSORTIUM/Partnership firm.

vi) **"Obstructive practice":** materially impede the procuring entity's investigation into allegations of one or more of the above mentioned prohibited practices either by deliberately destroying, falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/ or by threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding the procuring entity's rights of audit or access to information;

3. **Obligations for Proactive Disclosures**

i) Procuring authorities as well as bidders, contractors and consultants, are obliged under Code of Integrity for Public Procurement to suo-moto proactively declares any conflicts of interest (coming under the definition mentioned above – pre-existing or as and as soon as these arise at any stage) in any procurement process or execution of contract. Failure to do so would amount to violation of this code of integrity; and

ii) Any bidder must declare, whether asked or not in a bid document, any previous transgressions of such a code of integrity with any entity in any country during the last three years or of being debarred by any other procuring entity. Failure to do so would amount to violation of this code of integrity.

iii) To encourage voluntary disclosures, such declarations would not mean automatic disqualification for the bidder making such declarations. The declared conflict of interest may be evaluated and mitigation steps, if possible, may be taken by the procuring entity. Similarly voluntary reporting of previous transgressions of Code of Integrity elsewhere may be evaluated and barring cases of various grades of debarment, an alert watch may be kept on the bidder's actions in the tender and subsequent contract.

4. Punitive Provisions

Without prejudice to and in addition to the rights of the procuring entity to other penal provisions as per the bid documents or contract, if the procuring entity comes to a conclusion that a (prospective) bidder/ contractor directly or through an agent, has violated this code of integrity in competing for the contract or in executing a contract, the procuring entity may take appropriate measures including one or more of the following:

i) If his bids are under consideration in any procurement
   a) Forfeiture or encashment of bid security;
   b) calling off of any pre-contract negotiations; and
   c) rejection and exclusion of the bidder from the procurement process

ii) If a contract has already been awarded
   a) Cancellation of the relevant contract and recovery of compensation for loss incurred by the procuring entity;

b) Forfeiture or encashment of any other security or bond relating to the procurement;
c) Recovery of payments including advance payments, if any, made by the procuring entity along with interest thereon at the prevailing rate;

iii) Provisions in addition to above:
a) / debarment of the bidder from participation in future procurements of the procuring entity for a period not less than one year;
b) In case of anti-competitive practices, information for further processing may be filed, with the Competition Commission of India;
c) Initiation of suitable disciplinary or criminal proceedings against any individual or staff found responsible.

ANNEXURE- II

PROFORMA OF JOINT VENTURE/CONSORTIUM AGREEMENT

(On Non-Judicial Stamp paper of appropriate value as per provision of the Stamp Act applicable in the concerned state)

This Joint Venture(JV)/Consortium agreement is made on this ……..day of…….

AMONGST/BETWEEN

M/s……, having its registered Office at ……..
Represented by Shri……. (Name and Designation) of M/s……..., who has power of Attorney to enter into JV/Consortium with……...and sign all documents/ agreements on behalf of M/s…… (hereinafter referred to as" ……")

AND

M/s……, having its registered Office at ……...
Represented by Shri…….(Name and Designation) of M/s……..., who has power of Attorney to enter into JV/Consortium with……...and sign all documents/agreements on behalf of M/s…… (hereinafter referred to as"……").

AND

M/s……, having its registered Office at ……...
Represented by Shri…….(Name and Designation) of M/s……..., who has power of Attorney to enter into JV/Consortium with……...and sign all documents/agreements on behalf of M/s…… (hereinafter referred to as"……").

The expressions M/s …….. and M/s……and M/s ……..shall, wherever the context admits, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as "JV/Consortium /Parties" and individually as "JV/Consortium Partner/Party".

WHEREAS M/s…….and M/s…… and M/s ……..agreed to form a JV/Consortium in order to join their forces to obtain best results from the combinations of their individual resources of technical and management skill, finance and equipment for the benefit of the project and in order to submit the Bid for the work of "……
……" (Hereinafter referred to as "Project") under…….. (Name of Company) (hereinafter referred to as "the Principal Employer").

The Parties hereby enter into this JV/Consortium Agreement (hereinafter referred to as "JV/Consortium agreement") to jointly prepare and submit the Bid for the Project and in the event of securing the Project from the Employer, to execute the Project in accordance with the Contract Terms and Conditions, to the satisfaction of the Principal Employer.

NOW THEREFORE, the parties, in consideration of the mutual premises contained herein, agree as follows:

1) FORMATION AND TERMINATION OF THE JV/CONSORTIUM.

The parties under this Agreement have decided to form a JV/Consortium to submit the Bid for the above Project and execute the Contract with the Principal Employer for the Project, if qualified and awarded.

a) The name and style of the JV/Consortium shall be "……"
(hereinafter called the "JV/Consortium")

b) The Head Office of the JV/Consortium shall be located at……. and the site office will be located at the site of the Project. All communication regarding the Project will be made to…… Telephone Nos…….

c) Neither of the parties of the JV/Consortium shall be allowed to assign, pledge, sell or otherwise dispose all or part of its respective interests in the JV/Consortium to any party including the existing partner of the JV/Consortium.

d) The terms of the JV/Consortium shall begin as on the date first set forth above and shall terminate on the earliest of the following dates.

i) The JV/Consortium fails to obtain qualification from the Employer.
ii) The Contract for the Project is not awarded to the JV/Consortium.
iii) The Employer cancels the Project.
iv) Either Party commits material breach of this Agreement and fails to cure such breach within the period designated by the non-defaulting Party.
v) Both parties agree to terminate this Agreement in writing.
vi) The Project is completed including defects liability period to the satisfaction of the Employer and all the parties complete any and all duties, liabilities and responsibilities under or in connection with the Contract and the JV/Consortium agreement.

2) LEAD PARTNER.

M/s……. shall be the Lead Partner of the JV/Consortium and is In-charge for performing the contract management. M/s……. shall be attorney of the parties duly authorized to incur liabilities and receive instructions for and on behalf of any and all partners in the JV/Consortium and also all the partners of the JV/Consortium shall be jointly and severally liable during the bidding process and for the execution of the contract as per

contract terms with the employer in accordance with the power of attorney annexed. All JV/Consortium Partners M/s……., M/s……. & M/s……. nominate and authorize Shri……. (name and designation) of M/s……. to sign all letters, correspondence, papers & certificates and to submit the Pre-qualification Application / Bid documents for and on behalf of the JV/Consortium.

3) REPRESENTATIVE OF THE PARTNERS OF THE JV/CONSORTIUM.

Each constituent party of the JV/Consortium appoints the following personnel as the representative of the relevant party with full power of attorney from the Board of Directors of the concerned Company, or from the partners of the entity, or from the proprietor.

JV/CONSORTIUM Partners	Name	Position in the respective Company
M/s…….	…….	……..
M/s…….	…….	…….
M/s ……. …	…….	…….

4) PARTICIPATION SHARE & WORK RESPONSIBILITIES.

4.1 The parties agree that their respective participation share (hereinafter called 'Participation Share') in the JV/Consortium shall be as follows:

M/s…….: ……..% (……..per cent)
M/s…….: ……..% (……..per cent) and
M/s…….. ……..% (…….per cent)

4.2 The Parties shall share the rights and obligations, risk, cost and expenses, working capitals, profits or losses or others arising out of or in relation to execution of the Project individually or collectively.

4.3 The parties shall jointly execute the works under the Project as an integrated entity and allocate responsibilities as regards division of work between themselves by organizing the adequate resources for successful completion of the Project. However, all parties shall remain jointly and severally responsible for the satisfactory execution of the Project in accordance with the Contract terms and conditions.

5) JOINT AND SEVERAL LIABILITIES.

All partner of JV/Consortium shall be liable jointly and severally during the Pre-qualification and Bidding process; and in the event the contract is awarded, during the execution of the Contract, in accordance with Contract terms.

6) WORKING CAPITAL

During the execution of work/service, the requirement of Working Capital shall be met individually or collectively by the JV/CONSORTIUM partners.

7) BID SECURITY:

Bid Security, Performance Security and other securities shall be paid by the JV/Consortium except as otherwise agreed.

8) PERSONNEL & EQUIPMENT

Team of Managers / Engineers of all the partners of the JV/Consortium will form part of the core management structure and assist in execution of the project. The list of personnel and equipment proposed to be engaged for the Project by each Party will be decided by the management committee.

9) NON-PERFORMANCE OF RESPONSIBILITY BY ANY PARTY OF JV/CONSORTIUM.

a) As between themselves, each Party shall be fully responsible for the fulfillment of all obligations arising out of its scope of the work for the Project to be clarified subject to the Agreement between the Parties and shall hold harmless and indemnified against any damage arising from its default or non-fulfilment of such obligations.

b) If any Party fails to perform its obligations described in this Agreement during the execution of the Project and to cure such breach within the period designated by the non-defaulting party, then the other party shall have the right to take up work, the interest and responsibilities of the defaulting party at the cost of the defaulting party.

c) Stepping into the shoes of the existing partner of JV/Consortium with all the liabilities of the existing partner from the beginning of the contract with the prior approval of Company.

d) Notwithstanding demarcation or allotment of work of between/amongst JV/Consortium partners, JV/Consortium shall be liable for non-performance of the whole contract irrespective of their demarcation or share of work.

e) In case bid being accepted by Company, the payments under the contract shall only be made to the JV/Consortium and not to the individual partners.

10) BANK A/C.

Separate Bank A/c. shall be opened in the name of the JV/Consortium in a scheduled or Nationalized Bank in India asper mutual Agreement and all payments due to the JV/Consortium shall be received only in that account, which shall be operated jointly by the representative of the Parties hereto. The financial obligations of the JV/Consortium shall be discharged through the said JV/Consortium Bank Account only and also all the payments received or paid by Company to the JV/Consortium shall be through that account alone.

11) LIMIT OF JV/CONSORTIUM ACTIVITIES.

The JV/Consortium activities are limited to the bidding and in case of award, to the performance of the Contract for the Project according to the conditions of the Contract with the Employer.

12) TAXES.

Each Party shall be responsible for its own taxes, duties and other levies to be imposed on each party in connection with the Project. The taxes, duties and

other levies imposed on the JV/Consortium in connection with the Project shall be paid from the account of the JV/Consortium.

13) EXCLUSIVITY

The Parties hereto agree and undertake that they shall not directly or indirectly either individually or with other party or parties take part in the Bid for the said Project. Each party further guarantees to the other party hereto that this undertaking shall also apply to its subsidiaries and companies under its direct or indirect control.

14) MISCELLANEOUS:

a. Neither party of the JV/Consortium shall assign, pledge, sell or otherwise dispose all or part of its respective interests in the JV/Consortium to all third party without the Agreement of the other party in writing.

b. Subject to the above Clause, the terms and conditions of this agreement shall be binding upon the parties, the Directors, Officers, Employees, Successors, Assigns and Representatives.

15) APPLICABLE LAW

This agreement shall be interpreted under laws and regulations of India**.**

IN WITNESS Whereof the parties hereto have hereunder set their respective hands and seals the day, month, year first above written.

For ……..	For……..
Signature _____	Signature _____
(Name & Address)	(Name & Address)
(Official Seal)	(Official Seal)
Place ……..	Place……..
Date ……	Date ……
Witness	Witness
Signature ……..	Signature ……
(Name & Address)	(Name & Address)

ANNEXURE-III

BANK GUARANTEE FOR PERFORMANCE SECURITY

To

……..

Re: Bank Guarantee in respect of Contract No……Dated…… Between……(Name of the Company) and……(Name of the Contractor)

WHEREAS

…….. (Name and address of the Contractor) (herein after called "the Contractor") has entered into a contract made as per letter of acceptance…… dated…….. (herein after called the said contract) with …… (name of the Company) (hereinafter called "the Company") to execute ……. (name of the contract and brief description of work) on the terms and conditions contained in the said Contract.

It has been agreed that the Contractor shall furnish a Performance Security in the shape of Bank Guarantee from a Scheduled Bank for a sum of Rs……. as security for due compliance and performance of the terms and conditions of the said Contract.

We…… (name of the Bank) having its Branch/Office at……. ….. have, at the request of the Contractor, agreed to furnish this Bank Guarantee by way of Performance Security.

NOW, THEREFORE, we the…… Bank (herein after called The Bank) hereby, unconditionally and irrevocably, guarantee and affirm as follows:

The Bank do hereby irrevocably guarantee and unconditionally agree with the Company that if the Contractor shall in any way fail to observe or perform the terms and conditions of the said Contract or shall commit any breach of its obligation thereunder, the Bank shall on its mere first written demand, and without any objection, demur and without any reference to the Contractor, pay to the Company the said sum of …… or such portion as shall then remain due with interest without requiring the Company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the sum, or failing on the Company to compel such payment by the Contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the Company and as regards the amount payable by the Bank under this Guarantee. The Bank shall not be entitled to withhold payment on the ground that the Contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between the Company and the Contractor regarding the claim.

The Bank further agree that the Guarantee shall come into force from the date hereof and shall remain in force and effect till the period that will be taken for the performance of the said Contract which is likely to be ……. day of …….. but if the period of Contract is extended either pursuant to the provisions in the said Contract or by mutual agreement between the Contractor and the Company, the Bank shall renew the period of the Bank Guarantee

failing which it shall pay to the Company the said sum of …….. or such lesser amount of the said sum of …… as may be due to the Company and as the Company may demand.

This Guarantee shall remain in force until the dues of the Company in respect of the said sum of ……..and interest are fully satisfied and the Company certifies that the Contract has been fully carried out by the Contractor and discharged the guarantee.

The Bank further agrees with the Company that the Company shall have the fullest liberty without consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of the said contract from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the Contractor and to forebear to enforce any of the terms and conditions relating to the said Contract and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the Contractor or to any forbearance, act or omissions on the part of the Company or any indulgence by the Company to the Contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect or relieving or discharging the Guarantor.

The Bank further agrees that in case this Guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above, the Bank shall pay to the Company the said sum of ……. ….. or such lesser sum as may then be deemed to the Company and as the Company may require.

This Bank Guarantee shall also be operative at our ……. Branch located at .....(detailed address), from whom, confirmation regarding issue of this guarantee or extension/renewal thereof shall be made available on demand.

Any notice by way of request, demand or otherwise hereunder may be sent by post/e-mail/Fax addressed to the bank branch / operative branch, which shall be deemed to be a sufficient demand notice. Bank shall effect payment thereof forthwith.

The details of outstation Bank issuing the Bank Guarantee are as below.

i) Complete Postal Address with PIN Code-
ii) Branch Code-
iii) IFSC Code –
iv) SWIFT –
v) Telephone No. –
vi) Fax No. –
vii) Email ID –

The details of Local Operating Branch of the Bank issued the Bank Guarantee are as below.

i) Complete Postal Address with PIN Code-
ii) Branch Code-

iii) I
FSC Code –
iv) S
WIFT –
v) T
elephone No. –
vi) F
ax No. –
viii) E
mail ID –

Whenever there is change in postal address and/or other details of this branch issued the guarantee and/or the operative branch, we .....(the issuing bank) will ensure to intimate respective Area, being the beneficiary, of such changed address, telephone number, fax number and e-mail ID.

Notwithstanding anything contained herein the liability of the Bank under this Guarantee is restricted to Rs……. The guarantee shall remain in force till the day ……*……. of ……*…….. and unless the guarantee is renewed or claim is preferred against the Bank on or before the said date all rights of the Company under this guarantee shall cease and the Bank shall be relieved and discharged from all liabilities hereunder except as provided in the preceding Clause.

** The date of guarantee shall cover a period of minimum one year or 90 days beyond the date of completion whichever is more.*

This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

The Bank has under its constitution power to give this Guarantee and Sri……. who has signed it on behalf of the Bank has authority to do so.

Signed and sealed this……. day of…….at……

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:
(Signature)
(Name)
(Designation)
(Code number)
(Address)

"The Bank Guarantee as referred above shall be operative at our branch at……. payable at……(NIT shall specify town/city of the operative Branch. Bank Guarantee shall specify name of the branch with address of the specified town/city)

NOTE: - The department shall ensure extension of guarantee period in case of extension of time.

ANNEXURE-IV

PROFORMA FOR BANK GUARANTEE AGAINST RELEASE OF RETENTION MONEY DEDUCTED FROM RUNNING ON ACCOUNT BILLS.

To

……..

……..

Re: Bank guarantee in respect of contract No……..…… Dated…… between ……. (Name of the ……..)
And …….. (Name of the Contractor)

WHEREAS

…….. (Name and address of the Contractor) (herein after called "the Contractor") has entered into a contract dated…….(herein after called the said contract) with ……. (name of the Company) (hereinafter called "the Company") to execute ……. (name of the contract and brief description of work) on the terms and conditions contained in the said contract.

It has been agreed that the Contractor shall furnish a Bank Guarantee from a Scheduled Bank for a sum of Rs…….. as security for release of equivalent amount of Retention Money/Bid Security as per Terms and Conditions of the said Contract.

We…… (name of the Bank) having its branch/Office at……..….. have, at the request of the Contractor, agreed to furnish this bank Guarantee by way of Bid Security.

NOW, THEREFORE, we the…… Bank (herein after called The Bank) hereby, unconditionally and irrevocably, guarantee and affirm as follows:

The Bank do hereby irrevocably guarantee and unconditionally agree with the Company that if the Contractor shall in any way fail to observe or perform the Terms and Conditions of the said Contract or shall commit any breach of its obligation thereunder, the Bank shall on its mere first written demand, and without any objection, demur and without any reference to the Contractor, pay to the Company the said sum of …… or such portion as shall then remain due with interest without requiring the Company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the sum, or failing on the Company to compel such payment by the Contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the Company and as regards the amount payable by the Bank under this guarantee. The Bank shall not be entitled to withhold payment on the ground that the Contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between the Company and the Contractor regarding the claim.

The Bank further agree that the Guarantee shall come into force from the date hereof and shall remain in force and effect till the period that will be taken for the performance of the said Contract which is likely to be ……. day of ……. but if the period of Contract is extended either pursuant to the provisions in the said Contract or by mutual agreement between the Contractor and the Company, the Bank shall renew the period of the Bank Guarantee failing which it shall pay to the Company the said sum of Rs…….. or such lesser amount of the said sum of Rs……. as may be due to the Company and as the Company may demand.

This Guarantee shall remain in force until the dues of the Company in respect of the said sum of Rs…….. and interest are fully satisfied and the Company certifies that the Contract has been fully carried out by the Contractor and he has discharged the guarantee.

The Bank further agrees with the Company that the Company shall have the fullest liberty without consent of the Bank and without affecting in any way the obligations hereunder to vary any of the Terms and Conditions of the said Contract or to extend time for performance of the said Contract from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the Contractor and to forebear to enforce any of the terms & conditions relating to the said Contract and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the Contractor or to any forbearance, act or omissions on the part of the Company or any indulgence by the Company to the Contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect or relieving or discharging the Guarantor.

The Bank further agrees that in case this Guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above the Bank shall pay to the Company the said sum of Rs…….. or such lesser sum as may then be deemed to the Company and as the Company may require.

This Bank Guarantee shall also be operative at our ……. Branch located at .....(detailed address), from whom, confirmation regarding issue of this guarantee or extension/renewal thereof shall be made available on demand.

Any notice by way of request, demand or otherwise hereunder may be sent by post/e-mail/Fax addressed to the bank branch / operative branch, which shall be deemed to be a sufficient demand notice. Bank shall effect payment thereof forthwith.

The details of outstation Bank issuing the Bank Guarantee are as below.

i) Complete Postal Address with PIN Code-
ii) Branch Code-
iii) IFSC Code –
iv) SWIFT –

v) Telephone No. –
vi) Fax No. –
vii) Email ID –

The details of Local Operating Branch of the Bank issued the Bank Guarantee are as below.

i) Complete Postal Address with PIN Code-
ii) Branch Code-
iii) IFSC Code –
iv) SWIFT –
v) Telephone No. –
vi) Fax No.
vii) Email ID –

Whenever there is change in postal address and/or other details of this branch issued the guarantee and/or the operative branch, we .....(the issuing bank) will ensure to intimate respective Area, being the beneficiary, of such changed address, telephone number, fax number and e-mail ID.

Notwithstanding anything contained herein the liability of the Bank under this Guarantee is restricted to Rs…….. The Guarantee shall remain in force till the day ……*…….. of ……*…….. and unless the Guarantee is renewed or claim is preferred against the Bank on or before the said date all rights of the Company under this Guarantee shall cease and the Bank shall be relieved and discharged from all liabilities hereunder except as provided in the preceding Clause.

* The date of guarantee shall cover a period of minimum one year or 270 days beyond the date of completion whichever is more.

Any notice by way of request, demand or otherwise hereunder maybe sent by post/e-mail/Fax addressed to the bank branch/operative branch, which shall be deemed to be a sufficient demand notice. Bank shall effect payment thereof forthwith.

This Guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

The Bank has under it is constitution power to give this guarantee and Shri …… who has signed it on behalf of the Bank has authority to do so.

Signed and sealed this……..day of……..at……

SIGNED, SEALED AND DELIVERED
For and on behalf of the Bank by:
(Signature)
(Name)
(Designation)
(Code number)

(Address)

"The Bank Guarantee as referred above shall be operative at our branch at…….. payable at…….(NIT shall specify town/city of the operative Branch. Bank Guarantee shall specify name of the branch with address of the specified town/city)"

NOTE:- The department shall ensure extension of guarantee period in case of extension of time.

Instructions to Bidders for both the above BGs

NOTES TO BANK GUARANTEES

While issuing the Bank Guarantee, the issuing bank may please note the following.

i) The bank guarantees issued by the issuing bank on behalf of Contractor, supplier, customer in favour of ……Coalfields Limited shall be in paper form as well as Structured Financial Messaging System (SFMS).

ii) ……..(Company name) has chosen ….(Bank name) and ….(Bank name) to act advising/beneficiary bank of ……(Company name). The bank issuing the guarantee can choose either of these banks to send confirmation through SFMS.

iii) The details of beneficiary for issue of bank guarantee in SFMS platform is as furnished as below.

1.	Name and details of the Beneficiary	i.	Name	
		ii.	Area	
		iii.	Name of Bank	
		iv.	Bank Account No.	***
		v.	Department	**
2.	Beneficiary's Advising Bank, Branch and Address for Confirmation of BGs through SFMS	i.	Name of Bank	
		ii.	Bank Branch Name	***
		iii.	Branch Code	***
		iii.	Beneficiary Bank Branch IFSC	***
		iv.	Beneficiary Bank Address	***

* Name of the Area/HQ, to which the NIT is concerned, is to be mentioned.

** Name of Department of the Area/ HQ, to which the NIT is concerned, is to be mentioned

***Details of Bank Account, IFSC Code, Bank Address of the Area/HQ to which the NIT is concerned, is to be mentioned

i) T

he Supplier / Contractor/ Customers are required to take note of it that above particulars are to be incorporated by the issuing bank properly while

issuing the Bank Guarantee under SFMS mode to avoid any future problem in accepting the BGs.

ii) T
he Guarantor (BG issuing bank) shall send information about issuance of this Guarantee through SFMS gateway to the ….(Bank name) (IFSC-_____) or ….(Bank name) (IFSC-_____), as the case may be, to aid in the process of confirmation of Bank Guarantee.

iii) T
he Guarantor (BG issuing bank) shall also send information about issuance of this Guarantee to its local operating branch at _____to aid in the process of confirmation as well as claim for encashment of Bank Guarantee.

iv) T
he Original Bank Guarantee issued by the outstation bank shall be sent by the Issuing Bank to the Concerned Department of Head Quarters or Area of …… Coalfields Limited at …… (as the case may be) by Speed Post /Registered Post (AD).

ANNEXURE-V

MANDATE FORM FOR ELECTRONIC FUND TRANSFER / INTERNET BANKING PAYMENT.

1. **Name of the Bidder: _____**
2. **Address of the Bidder: _____**

City _____PIN Code_____

E- Mail Id _____

Permanent Account Number _____

3. **Particulars of Bank**

Bank Name		Branch Name	
Branch Place		Branch City	
PIN Code		Branch Code	
MICR No.			
(9 Digits code number appearing on the MICR Band of the cheque supplied by the Bank. Please attach Xerox copy of a cheque of your bank for ensuring accuracy of the bank name, branch name and code number)			
RTGS CODE			
Account Type	Savings	Current	Cash Credit
Account Number (as appearing in the Cheque Book)			

4. **Date from which the mandate should be effective.**

I hereby declare that the particulars given above are correct and complete. If any transaction is delayed or not effected for reasons of incomplete or incorrect information. I shall not hold Company responsible. I also undertake to advise any change in the particulars of my account to facilitate updation of records for purpose of credit of amount through SBI Net / RTGS transfer. I agree to discharge responsibility expected of me as a participant under the scheme. Any bank charges levied by the bank for such e-transfer shall be borne by us.

Place:

Date:

Signature of the Party / Authorized Signatory

Certified that particulars furnished above are correct as per our records.

Banker's Stamp

Date

(Signature of the Authorized official from the Bank

ANNEXURE-VI

PROFORMA FOR LETTER OF BID TO BE ACCEPTED UNCONDITIONALLY BY BIDDER DURING SUBMISSION OF BID ONLINE: (TO BE ACCEPTED THROUGH GTE)

FORMAT OF "Letter of Bid" (for Works & Services Tenders)

To,
The Tender Inviting Authority.
.....Coalfields Limited

Sub: Letter of Bid for the work "_____" (to be filled by the department)

Ref: 1. NIT No.: "_____" (to be filled by the department)
2. Tender Id No.: "_____ _" (to be filled by the department)

Dear Sir,

This has reference to above referred bid. I/we have read and examined the conditions of contract, Scope of Work, technical specifications, BOQ and other documents carefully.

I /We am/are pleased to submit our bid for the above work. I/We hereby unconditionally accept the bid conditions and bid documents as available in the website/e-Procurement portal, in its entirety for the above work and agree to abide by and fulfill all terms and conditions and specifications as contained in the bid document.

I/we here by submit all the documents as required to meet the eligibility criteria as per provision of the bid notice/document.

I/We hereby confirm that this bid complies with the Bid validity, Bid Security and other documents as required by the Bidding documents.

If any information furnished by me/us towards eligibility criteria of this bid is found to be incorrect at any time, penal action as deemed fit may be taken against me/us for which I/We shall have no claim against ECL.

Until a formal agreement is prepared and executed, this bid and your subsequent Letter of Acceptance/Work Order shall constitute a binding contract between us and …….(*To be filled up by Department*) Coalfields Ltd.

Should this bid be accepted, we agree to furnish Performance Security within stipulated date and commence the work within stipulated date. In case of our failure to abide by the said provision .....……(*To be filled up by Department*) Coalfields Ltd. shall, without prejudice to any other right or remedy, be at liberty to" cancel the letter of acceptance/ award and to forfeit the Earnest Money and also debar us from participating in future tenders for a minimum period 12 months" OR to act as specified in the NIT

ANNEXURE-VII

PROFORMA FOR LETTER OF BID TO BE ACCEPTED UNCONDITIONALLY BY BIDDER DURING SUBMISSION OF BID ONLINE: (TO BE ACCEPTED THROUGH GTE)

FORMAT OF UNDERTAKING

We solemnly declare that:

1. I/We am/are submitting Bid for the work …….. against Tender id No.*(to be entered by TIA)* ..... Dated…… and I/we offer to execute the work in accordance with all the terms, conditions and provisions of the bid.

2. All information furnished by us in respect of fulfilment of eligibility criteria and qualification information of this Bid is complete, correct and true.

3. All copy of documents, credentials and documents submitted along with this Bid are genuine, authentic, true and valid.

4. I/ We hereby authorize department to seek references / clarifications from our Bankers.

5. We hereby undertake that we shall register and obtain license from the Competent Authority under the contract labour (Regulation & Abolition Act) as relevant, if applicable.

6. I/We have not been debarred by any procuring entity for violation of Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) dated 16.09.2020, issued by Govt. of India as amended from time to time.

7. I/We do not have relationship with any other participating Bidders, directly or through common third parties, that puts us in a position to have access to information about or influence on the bid of another Bidder, or

8. I/We or any of my/our affiliate has/have not participated as consultant in the preparation of the design or technical specification of the contract that is the subject of the bid.

9. **Certificate regarding compliance to order no.F.No.6/18/2019-PPD dt 23/7/2020 as amended from time to time of Ministry of Finance, Dept of Expenditure, Public Procurement Division with respect to restrictions on procurement of goods, services or works from a Bidder of a country which shares a land border with India and on sub-contracting to Contractors from such countries -** I/we have read the Clause regarding restrictions on procurement from a Bidder of a country which shares a land border with India and on sub-contracting to

Contractors from such countries; I/we certify that I am/ we are not from such a country or, if from such a country, has/have been registered with the Competent Authority and will not sub-contract any work to a Contractor from such countries unless such Contractor is registered with the Competent Authority. I hereby certify that I/we fulfil all requirements in this regard and I am/ we are eligible to be considered.
(Where applicable, evidence of Competent Authority shall be attached.)

10. If any information and document submitted is found to be false/ incorrect at any time, department may cancel my/our Bid and action as deemed fit may be taken against me/us, including termination of the contract, forfeiture of all dues and debarment of our firm and all partners of the firm etc as per the tender document.

Note: *Tender specific or for a particular category of tender, relevant Clauses may be added/modified/substituted while framing the standard NIT*

ANNEXURE-VIII

PROFORMA FOR UNDERTAKING TO BE UPLOADED BY BIDDER/S (ON THEIR LETTER HEAD) REGARDING RELATIVES AS EMPLOYEES OF COMPANY, ARBITRATION CLAUSE (IN CASE OF PARTNERSHIP FIRM/JV/CONSORTIUM), LOCAL SUPPLIER STATUS OF THE BIDDER ETC.:

PROFORMA FOR UNDERTAKING
(To be uploaded by the Bidder on his Letter Head during submission of bid online)

I/We,.....,Proprietor/Partner/Legal Attorney/Director/ Accredited Representative of M/s. ....., solemnly declare that:

1. Myself/Our Partners/Directors don't has/have any relative as employee of **Coal India Limited.**

   OR

   The details of relatives of Myself/Our Partners/Directors working as employee of Coal India Limited is as follows:
   a) Name of the employee
   b) Place of posting
   c) Department
   d) Designation
   e) Type of relation - Wife/Husband/ Father/ Step-Father/Mother / Step-Mother/ Son/Step-son/ Son's wife / Daughter / Daughter's Husband / Brother/ Step-Brother/ Sister / Stet-Sister.

2. *I/We hereby confirm that we have registration with CMPF / EPF Authorities. We shall make necessary payments as required under law.

   OR

   *I/We hereby undertake that we shall take appropriate steps for registration as relevant under CMPF / EPF authorities, if applicable. We shall make necessary payments as required under law.

   *** Delete whichever is not applicable.**

3. ** I/We have not been banned or delisted by any Govt., or Quasi Govt. Agencies or PSUs.

   OR

   **I / *We* ……...have been banned by the organization named "_____" for a period of…… year/s, effective from ……. to……..…..

   **** Delete whichever is not applicable.**

4.We,…… ……..(Name of Partners of Partnership Firm/JV/Consortium), partners of ……..(Name of Partnership Firm/JV/Consortium) hereby consent to abide by the

provisions of Clause 42 of General Terms and Conditions pertaining to arbitration.

(Applicable in case of Partnership firm/JV/Consortium)

5. We certify that the works/services offered by us against the tender for the work "…… (Name of work)" against NIT No/Tender ID. ..... Dated……, meet the minimum local content requirement and has local content:

   * Equal to or more than 50% (Select this, in case of Class-I Local Suppliers) i.e……% (indicating the percentage of local content)

   * More than 20% but less than 50% (Select this, in case of Class-II Local Suppliers) i.e……% (indicating the percentage of local content)

   ***Delete whichever is not applicable.**

6. **I/We have not been debarred by any procuring entity for violation of Preference to Make in India (as applicable) vide Order No. P-45021/2/2017-PP (BE-II) dated 16.09.2020, issued by Govt. of India as amended from time to time.

   OR

   **I / We ……..have been debarred by……(name of procuring entity) for violation of Preference to Make in India vide Order No. P-45021/2/2017-PP (BE-II) dated 16.09.2020, issued by Govt. of India as amended from time to time for a period of…… year/s, effective from ……. to……..…..

   **Delete whichever is not applicable.

   Note: A bidder who has been debarred by any procuring entity for violation of Preference to Make in India vide Order No. P-45021/2/2017-PP (BE-II) dated 16.09.2020, issued by Govt. of India as amended from time to time shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of debarment.

7. I/we will abide by instructions laid down in the Code of Integrity for Public Procurement (CIPP) as given in the tender document.

   *I/we do not have any previous transgression of CIPP in last three years with any entity in any country.

   OR

   *I / We have been debarred by…….(name of procuring entity) for violation of Code of Integrity for Public Procurement (CIPP), for a period of…… year/s, effective from ……. to……..…..

   *Delete whichever is not applicable

8. I / We, _____Proprietor/ Partner / Legal Attorney /Director/ Accredited Representative of M/s_____, solemnly declare that Myself/Our Partners/Directors don't has/have any work in washing of Coal as washery operator and/or Transportation of coal to washery in _____Area of _____ Coalfields Limited.

9. If any information and document submitted is found to be false/ incorrect at any time, department may cancel my/our Bid and action as deemed fit may be taken against me/us, including termination of the contract, forfeiture of all dues and debarment of our firm and all partners of the firm etc as per the tender document.

Note: *Tender specific or for a particular category of tender, relevant Clauses may be added/modified/substituted while framing the standard NIT*

Annexure IX

Invitation and Declaration for Negotiations
Invitation for Negotiations

(On letterhead of the procuring entity)
No: _____ Dt: _____
To M/ s_____ Registered A/ D
Sub: **Tender No ---------- opened on ----------for the supply of --------**

Dear Sir,

The rates quoted in your tender are considered high. You are therefore, requested to come for negotiations of rates, on..... (date) at.. (time) at..... (venue).

You should, however, come for negotiations only in case you are prepared to furnish before such date the declaration appended herewith.

A copy of the form in which you may submit your revised offer after negotiations is enclosed.

Yours faithfully,

Enclosure: (Authorised Officer)

(1) Form of Declaration

(2) Form of Revised Offer

FORM OF DECLARATION

(To be signed and submitted before start of negotiations)
(On company letterhead)
No:_____ Dt:_____
To _____
Sub: **Tender No ---------- Opened on ----------for the supply of --------**
Ref: Your invitation for negotiations No: dated:

Dear Sir,

I _____ duly authorised on behalf of M/ s. ___do declare that in the event of failure of the contemplated negotiations relating to Tender No.___ opened on ____my original tender shall remain open for acceptance on its original terms and conditions.

Yours faithfully,

Place:_____
Date: _____

Signatures of bidder, or officer authorised to sign the bid documents on behalf of the bidder

Annexure X

Format of Revised Offer in Negotiations

Revised Offer in Negotiations

(On company letterhead)

From……..

Full address……

To .....

Sir,

Sub: **Tender No ---------- opened on ----------for the supply of ----------**

Ref: Your invitation for negotiations no: dated:

1. On further discussions with your representatives on …….in response to your letter no …….. dated ……..

We are not prepared to reduce the rates already quoted in the original tender, which will remain valid up to…….

Or

1. I/ we reduce my/ our rates as shown in the enclosed schedule of items.

2. I/ we am/ are aware that the provisions of the original bidding document remain valid and binding on me.

3. I/ we undertake to execute the contract as per following Schedule.....

4. I/ we agree to abide by this tender on the revised rate quoted by me/ us, it is open for acceptance for a period of 180 days from this date, *i. e.*, up to ……. and in default of my/ our doing so, I/ we will forfeit the earnest money deposited with the original tender/ attached herewith. Eligibility as valid tenderers shall be deemed to be the consideration for the said forfeiture.

Yours faithfully,

Signatures of bidder or
Officer authorised to sign the bid
documents on behalf of the bidder

ANNEXURE-XI
FORMAT FOR COST ESTIMATE

Estimate break-up of different sub-heads for turn-key Execution

A. SURVEY, SOIL TESTING & DESIGN ENGINEERING COST

Item No.		Sub-heads/Item Description	Quantum of works	Unit Price	Amount
1		Detailed survey of the area within the battery limit & submission of reports	Complete works as per Tender document		
2		Sub-soil exploration, field & laboratory testing of samples & submission of report	Complete works as per Tender document		
3	Design Engineering Cost :				
	a)	Preparation of system engineering	As per system requirement.		
	b)	G.A. & detailed engineering design & drawings of all civil & structural worksin the system			
	c)	G.A. & detailed engineering design & drawings including working and maintenance manuals of i) all individual equipment (Mechanical & Electrical) ii) Dust Control & Pressurisation system. iii) Fire-fighting system. iv) Chutes & Liners v) Communication system vi) Illumination system. vii) ----------	Complete works for system.		
4		Documentation as per tender specification			
		Sub- Total of A			

FORMAT FOR COST ESTIMATE					
B. CIVIL AND STRUCTURAL WORKS					
Item No.		Sub-head/Item Description	Quantity	Unit Price	Amount
1		Earth work in cutting in all types of soil & rock	Cu.M.		
2		Earth work in filling i) Controlled filling ii) Uncontrolled filling	 Cu.M. Cu.M.		
3		P.C.C.at all level and as per system requirement. i) In 1:2:4 ii) In 1:4: 8	 Cu.M. Cu.M.		
4		R.C.C (Excluding reinforcement) i) M-15 ii) M-20 iii) M-25 at all level and as per system requirement	 Cu.M. Cu.M. Cu.M.		
5		Supply, bending ,binding & placing of Tor-steel in position.	.M.Te.		
6		Supply, fabrication & erection of structural steel at all level and as per tender specification	M.Te.		
7		22/24 Gauge C.G.I Sheeting at all level including supply	Sq.M.		
8		Random Rubble masonry works	Cu.M..		
9		B/W in 1:6	Cu.M.		
10		--			
11		--			
12		--			
		SUB-TOTAL of B			

FORMAT FOR COST ESTIMATE					
C. QUANTITY AND PRICE BREAK-UP OF DEVELOPMENT WORK AND INFRASTRUCTURES					
Sl no		Sub-head	Quantity	Unit price	Amount
1		Internal road of 3.5 m with	----------Km		

2		Different type of drains i) Type- A ii)Type- B iii)Type-C	-------Km ----------Km ----------Km		
3		10 ft height boundary wall	----------m		
4		Levelling & dressing of vacant area within battery limit	----------SqM		
5		Office Bldg in floor area	----------Sqm		
6		Related W\S & Store in floor area	----------Sqm		
7		----------			
		Sub total of C			

D. PRICE BREAK UP OF PLANT & MACHINERY										
Sl.No.	Sub-head		Qty.	Price per unit	Excise duty	Sales tax	Packing & Insurance	Transp-ortation	Any other duty	Total
D.1 - SUPPLY :										
1	MECHANICAL (List of Equipments)									
	i)									
	ii)									
	iii)									
	iv)									
	v)									
	vi)									
	vii)									
		Sub-Total -								
2	ELECTRICALS (List of Equipments)									
	i)									
	ii)									
	iii)									
	iv)									
	v)									
	vi)									
		Sub-Total -								
3	CONTROLS (List of Equipments)									
	i)									
	ii)									
	iii)									
	iv)									
Sub - Total -										
4	COMMUNICATION									
5	ILLUMINATION									
6	AUXILIARY									
	i)	Dust Suppression								
	ii)	Ventilation								
	iii)	Pressurisation								

D.	PRICE BREAK UP OF PLANT & MACHINERY									
Sl.No.	Sub-head		Qty.	Price per unit	Excise duty	Sales tax	Packing & Insurance	Transp-ortation	Any other duty	Total
	iv)	Fire Fighting								
	v)	Chute & Liner								
	vi)									
Sub-Total -										
7	SPARE PARTS (List of Spares)									
	i)									
	ii)									
	iii)									
	iv)									
Sub-Total -										
D.2	ERECTION, INSTALLATION AND COMMISSIONING OF PLANT & MACHINERY									
1	MECHANICAL (List of Equipments)									
	i)									
	ii)									
	iii)									
	iv)									
	v)									
	vi)									
	vii)									
	viii)									
Sub-Total -										
2.	ELECTRICAL (List of Equipments)									
	i)									
	ii)									
	iii)									
	iv)									
	v)									
	vi)									
Sub-Total -										
3	CONTROL (List of Equipments)									
	i)									
	ii)									
	iii)									
	iv)									
	v)									
Sub-Total -										
4	COMMUNICATION									
5	ILLUMINATION									
6	AUXILIARY									
7	SPARES (List of Spares)									
	i)	Dust Suppression								
	ii)	Ventilation								

D. PRICE BREAK UP OF PLANT & MACHINERY									
Sl.No.	Sub-head	Qty.	Price per unit	Excise duty	Sales tax	Packing & Insurance	Transp-ortation	Any other duty	Total
	iii) Pressurisation								
	iv) Fire Fighting								
	v) Chute & Liner								
	vi)								
Sub - total -									

D.3 MAINTENANCE AND TRAINING

Sl. No.	Description	Price
1	Maintenance of whole plant & training of employer personnel for one year as per description given in tender documents.	

ANNEXURE-XII

NO CLAIM CERTIFICATE

(On company letterhead)
To,
(Contract Executing Officer)
Procuring Entity_____
NO CLAIM CERTIFICATE
Sub: Contract Agreement no. ---------- dated ----------for the supply of ----------
We have received the sum of Rs. (Rupees _____only) in full and final settlement of all the payments due to us for the supply of under the above mentioned contract agreement, between us and……. We hereby unconditionally, and without any reservation whatsoever, certify that with this payment, we shall have no claim whatsoever, of any description, on any account, against Procuring Entity, against aforesaid contract agreement executed by us. We further declare unequivocally, that with this payment, we have received all the amounts payable to us, and have no dispute of any description whatsoever, regarding the amounts worked out as payable to us and received by us, and that we shall continue to be bound by the terms and conditions of the contract agreement, as regards performance of the contract.
Yours faithfully,
Signatures of contractor or
Officer authorised to sign the contract documents
on behalf of the contractor
(Company stamp)
Date:
Place:

Annexure-XIII

PROFORMA FOR EXECUTION OF AGREEMENT.

NON-JUDICIAL STAMP PAPER
(of appropriate value as per Stamp Act)

This agreement is made on …….. day of …….. between (Name of Company) having its registered office at …… (hereinafter called the 'COMPANY' which expression shall, unless repugnant to the subject or context, include its successors and assignees) of the one part and (Name of the Contractor) carrying on business as a (partnership/ proprietorship/ Ltd. Co. etc.) firm under the name and style …… (hereinafter called the 'said Contractor' which expression shall, unless the context requires otherwise include them and their respective heirs, executors, administrators and legal representatives) of the other part.

Whereas the Company invited tenders for the work of "…… ……..." and whereas the said Contractor/ Firm submitted tender for the said work and deposited a sum of Rs…….. as earnest money and whereas the tender of the said contract has been accepted by the Company for execution of the said work.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1) In this agreement words and expressions shall have the same meaning as are respectively assigned to them in the tender papers hereinafter referred to.

2) The following documents which are annexed to this agreement should be deemed to form and be read and construed as part of this agreement viz.

i) Annexure-A Tender Notice (Page .. to ..)

ii) Schedule –A General Terms & Conditions, Special Conditions, General Technical Specification and Safety Code (Page ……. to ……)

iii) Schedule-B The probable Quantities and Amount (Page …….. to ……..…)

iv) Schedule-C Negotiation letters (Page …….. to ……..…)

v) Schedule-D Letter of Acceptance/Work Order (Page …….. to ……...)

vi) Schedule-E Drawings (Page …….. to ……...)

3) In consideration for the payment of the sum of Rs……(W/O Value; both in words and figures) or such other sum as may be arrived at under the clause of the specification relating to Payment by items measurements at unit prices by the Company, the said Contractor shall, subject to the terms & condition contained herein execute and complete the work as described and to the extent of probable quantities as indicated in Schedule B with such variations by way of alteration, addition to or reduction from the said works.

4) The company has received a sum of Rs..... towards Performance Security Deposit (1st part of Security Deposit) in the form of Demand Draft / Certified Cheque/ B.G./ other form (details to be furnished) .

5) The said contractor hereby covenants with the company that the company shall deduct at 5% of R/A Bills as Retention Money (2ndpart of security deposit) to make the total Security as 10%(ten percent) of contract value, as per the terms & condition of the tender/ contract.

IN WITNESS WHEREOF THE parties herein have set their hands and seals the date and year above written.

1 Partner. Signature

2 Partner Signature

On behalf of M/S……..
The Contractor, as one of the constituted attorney,
In the presence of –

1. Name _____ Signature

Address :

Occupation :

Signed by Sri …….on behalf of Signature
(Name of Company) in presence of -

1. Name : Signature
2. Address: .

Annexure-XIV

PROFORMA OF MEMORANDUM (To be a Part of Contract Agreement)

TENDER FOR WORK

I/We hereby tender for the execution for the Eastern Coalfields Limited (ECL) of the work specified in the underwritten MEMORANDUM at rates specified in the Price-bid within a period of ---------- Days as per Work Order and subject to the annexed conditions of Contract and with such materials as are provided for by and in all other respects in accordance with such conditions so far as applicable.

MEMORANDUM

1	Name of Work	
2	Agreement Value of Work	
3	Performance Security Deposit	
4	Additional Performance Security Deposit	
5	Percentage to be deducted from Bills	
6	Scheduled Date of Commencement of Work	
7	Scheduled Date of Completion of Work	

Annexure-XV

PROFORMA OF BANK GUARANTEE FOR MOBILISATION ADVANCE
(On Non-Judicial Stamp paper of appropriate value as per provision of the Stamp Act applicable in the concerned state)

To
Eastern Coalfields Limited
Headquarter – Santoria (WB)

Dear Sir,

In consideration of Coal India Limited/Subsidiary Company having its Registered Office at …… (hereinafter called "the Company" which expression shall unless repugnant to the subject or context includes its successors and assigns) having agreed under the terms and conditions of the Contract No…… dated……. Entered into between Coal India Limited/Subsidiary Company and M/s having its Registered Office at …… (hereinafter called "the Contractor" to make mobilisation advance/lump-sum advance to the tune of Rs…… subject to submission of the Bank Guarantee for equal amount from any Nationalised/ Schedule Bank , We …… Bank (hereinafter referred to as the said Bank) hiving it is Registered Office at …….. do hereby undertake and agree to pay the Company to the extent of Rs……. on demand stating that the amount claimed by the Company is due and payable by the contractor for the reasons of non-refund and or non-recovery of the amount with interest thereon and to unconditionally pay the amount claimed by the company on such demand without any demur to the extent aforesaid.

2. We, ……. Bank agree that the Company shall be the sole judge as to whether the said Contractor has failed/neglected in refunding the amount advanced by the Company and/or extent of loss and damages caused to or suffered by the Company on account of the amount advanced not being recovered in full and non-utilisation of the said advanced amount or part thereof for the purpose of performance of the contract and interest payable thereon and the decision of the company in this behalf shall be final and binding on us.

3) We, the said Bank further agree that the Guarantee herein contained shall remain in full force and effect upto …… and any claim received after the said date shall in no case bind the Bank.

4) The Company shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee or indemnity from time to time vary any of the terms and conditions of the said contract or to extend the time of performance by the said contractor or to postpone any time and from time to time any of the powers exercisable by it against the said contractor and either to enforce or to forbear from enforcing any of the terms and conditions governing the said contract or securities available to the company and the said Bank shall not be released from its liability under these presents.

5. Notwithstanding anything contained herein the liability of the said Bank under this Guarantee is restricted to Rs…….. and this Guarantee shall come into force from the date hereof and shall remain in full force and effect till …… unless the written demand or claim under this Guarantee is made by the Company with us on or before ……. all rights of the Company under this Guarantee shall cease to have any effect and we shall be relieved and discharged our liabilities hereunder.

6. We, the said Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the company in writing and agree that any change in

the constitution of the said contractor or the said Bank shall not discharge our liability hereunder.

7. This guarantee issued by Sri…….. who is authorized by the Bank.
8. "The Bank Guarantee as referred above shall be operative/payable at our branch at…….. (Name and address of the Branch)
9. The Contact details of the Bank issuing BG and the local operating Branch of the Bank at Asansol (WB) are as under :

Particulars	Issuing Bank	Local Operating Branch at Asansol
Branch Code		
Postal Address		
Telephone No.		
FAX No.		
Email Id		

Signed and sealed this……..day of……..at……

SIGNED, SEALED AND DELIVERED
For and on behalf of the Bank by :

(Signature) (Name) (Designation)
(Code number) (address)

Under jurisdiction of Asansol court only.

NOTE:

(i) The Bank Guarantee issued by a scheduled bank shall be operative at its branch situated at Asansol (West Bengal State) or if the issuing bank does not have any branch at Asansol then Bank Guarantee shall be operative at any of its Kolkata Branch.

(ii) The Bank Guarantee (BG) issued by the issuing Bank on behalf of contractor in favour of "Eastern Coalfields Limited" shall be in paper form as well as issued under "Structured Financial Messaging System (SFMS)".

The details of beneficiary for issue of Bank Guarantee (BG) under SFMS platform is furnished below:

ICICI Bank as advising Bank of ECL:

SMS Field	**Details**	
7035	**IFSC Code**	**ICIC0000291**
7036	**Beneficiary Bank**	**ICICI Bank Ltd.**
	Branch	**Murgasol, Asansol**
	Address	**Ground floor Plot No. 793, Murgasol, G. T. Road, Asansol-713303**
	Bank Account No.	**029105005131**
7037	**Customer ID of Beneficiary**	**ECL554567270**
7038	**Area/Department**	
7039	**NIT/Work order/LOI No.**	

Annexure – XVI

Competent Authority and procedure for Registration with Competent Authority in case of bidder from a country which shares a land border with India

Annex I: Competent Authority and Procedure **for Registration**

A. The Competent Authority for the purpose of registration under this Order shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT)*.

B. The Registration Committee shall have the following members*:

i. An officer, not below the rank of Joint Secretary, designated for this purpose by DPIIT, who shall be the Chairman;
ii. Officers (ordinarily not below the rank of Joint Secretary) representing the Ministry of Home Affairs, Ministry of External Affairs, and of those Departments whose sectors are covered by applications under consideration;
iii. Any other officer whose presence is deemed necessary by the Chairman of the Committee.

C. DPIIT shall lay down the method of application, format etc. for such bidders as stated in para 1 of this Order.

D. On receipt of an application seeking registration from a bidder from a country covered by para 1 of this Order, the Competent Authority shall first seek political and security clearances from the Ministry of External Affairs and Ministry of Home Affairs, as per guidelines issued from time to time. Registration shall not be given unless political and security clearance have both been received.

E. The Ministry of External Affairs and Ministry of Home Affairs may issue guidelines for internal use regarding the procedure for scrutiny of such applications by them

F. The decision of the Competent Authority, to register such bidder may be for all kinds of tenders or for a specified type(s) of goods or services, and may be for a specified or unspecified duration of time, as deemed fit. The decision of the Competent Authority shall be final.

G. Registration shall not be granted unless the representatives of the Ministries of Home Affairs and External Affairs on the Committee concur*.

H. Registration granted by the Competent Authority of the Government of India shall be valid not only for procurement by Central Government and its agencies/ public enterprises etc. but also for procurement by State Governments and their agencies/ public enterprises etc. No fresh registration at the State level shall be required.

I. The Competent Authority is empowered to cancel the registration already granted if it determines that there is sufficient cause. Such cancellation by itself, however, will not affect the execution of contracts already awarded. Pending cancellation, it may also suspend the registration of a bidder, and the bidder shall not be eligible to bid in any further tenders during the period of suspension.

J. For national security reasons, the Competent Authority shall not be required togiven reasons for rejection / cancellation of registration of a bidder.

K. In transitional cases falling under para 3 of this Order, where it is felt that it willnot be practicable to exclude bidders from a country which shares a land border with India, a reference seeking permission to consider such bidders shall be made by the procuring entity to the Competent Authority, giving full information and detailed reasons. The Competent Authority shall decide whether such bidders may be considered, and if so shall follow the procedure laid down in theabove paras.

L. Periodic reports on the acceptance/ refusal of registration during the preceding period may be required to be sent to the Cabinet Secretariat. Details will be issued separately in due course by DPIIT.

[*Note:

i. In respect of application of this Order to procurement by/ under State Governments, all functions assigned to DPIIT shall be carried out by the State Government concerned through a specific department or authority designated by it. The composition of the Registration Committee shall be as decided by the State Government and paragraph G above shall not apply. However, the requirement of **political and security clearance as per para** D **shall remain and no registration shall be granted without such clearance.**

ii. Registration granted by State Governments shall be valid only for procurement by the State Government and its agencies/ public enterprises etc. and shall not be valid for procurement in other states or by the Government of India and their agencies/ public enterprises etc.]

Office order regarding exclusion from restrictions under Rule 144(xi) of the General financial Rules (GFRs)2017

F.No.6/18/2019-PPD
Ministry of Finance
Department of Expenditure
Public Procurement Division

161, North Block
New Delhi
23rd July, 2020

Order (Public Procurement No. 2)

Subject: Exclusion from restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017 –regarding.

In Order (Public Procurement No. 1) dated 23rd July 2020, orders have been issued requiring registration of bidders from a country sharing a land border with India in order to be eligible to bid in public procurement.

2. Notwithstanding anything contained therein, it is hereby clarified that the said Order will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects.

3. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given in the website of the Ministry of External Affairs.

(Sanjay Prasad)
Joint Secretary (PPD)
Email ID: js.pfc2.doe@gov.in
Telephone: 011-23093882

To,

(1) Secretaries of All Ministries/ Departments of Government of India for information and necessary action. They are also requested to inform these provisions to all procuring entities.

(2) Secretary, Department of Public Enterprises with a request to immediately reiterate these orders in respect of Public Enterprises.

(3) Chief Secretaries/ Administrators of Union Territories/ National Capital Territory of Delhi