

NTPC LIMITED

(A Government of India Enterprise)

**SINGRAULI SUPER THERMAL POWER PROJECT,
STAGE-III (2X800MW)**

LOCATED AT

PO – Shakti Nagar, Distt. Sonbhadra, Uttar Pradesh-231222

TERMS AND CONDITIONS OF CONTRACT

FOR

**DPR, DE & PMC for MGR and Railway Siding Works
including OHE and S&T
for
Singrauli STPP Stage-III (2x800MW)**

Bidding Document No.: CS-1150-350A-9

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INTRODUCTION

Name of the Project: SINGRAULI SUPER THERMAL POWER PROJECT, STAGE-III (2X800MW) located at PO – Shakti Nagar, Distt. Sonbhadra, Uttar Pradesh-231222

Name of the Package: DPR, DE & PMC for MGR and Railway Siding Works including OHE and S&T for SINGRAULI STPP-III (2x800 MW)

Bids are invited for the aforesaid Package for SINGRAULI, STPP-III (2x800 MW) under Single Stage Two Envelope bidding process as mentioned below:

- **Envelope-I** containing "Techno-Commercial Bid".
- **Envelope-II** containing "Price Bid"

The bidder has to submit Techno-Commercial Bid (Envelope-I) and Price Bid (Envelope-II) through website portal <https://eprocurementpc.nic.in/> (electronic mode) only as per timelines given below.

Issuance of Bidding Document	04.10.2025
Bid (both Techno-Commercial and Price) receipt date & time	27.10.2025 up to 18:30 Hrs. (IST)
Date & Time for opening of Envelope-I (Techno-Commercial) bid.	28.10.2025 at 10:30 Hrs. (IST)
Date & Time for opening of Envelope-II (Price) bid	Shall be intimated later

To submit their bid through electronic mode, bidder has to use their digital signature certificate keys. The bidders are requested to download the entire bidding documents from the website <https://eprocurementpc.nic.in/>, within the date and time as specified on the website https://eprocurementpc.nic.in, after online registration in the above website.

"Techno-Commercial Bid" shall be opened as per the date and time mentioned in the E-Tender Portal of NTPC (<https://eprocurementpc.nic.in>). The "Price Bid" shall be opened at a later date and time intimated in writing/email separately by the Owner.

1.0 DEFINITION OF TERMS

- 1.1 Unless defined otherwise, the following terms wherever used in this document shall have the following meanings.
- 1.2 'Owner' or 'Client' or 'NTPC' or 'Employer' shall mean NTPC Limited, New Delhi, India (A Government of India Enterprise) incorporated under Companies Act 1956, with its registered office at Core-7, Scope Complex, 7 Institutional Area, Lodhi Road, New Delhi-110 003 and shall include their legal representatives, successors and permitted assigns.
- 1.3 'Project Management Consultant (PMC) / Project Executing Agency (PEA) shall mean (Name of the Company) as appointed by the owner for the work stipulated at clause 3.0 of Terms and Conditions of Contract for **DPR, DE & PMC for MGR and**

Railway Siding Works including OHE and S&T for SINGRAULI STPP-III (2x800 MW) and shall include their legal representatives, successors and permitted assigns.

- 1.4 'Contract' shall mean the Letter of Award/Contract Agreement entered into between the Owner and PMC/PEA, together with the contract documents referred to therein, they shall constitute the contract and the term 'Contract' shall in all such documents be construed accordingly.
- 1.5 'Contractor' means any person to whom execution of any part of the work including preparation of any design or supply of any plant & equipment is awarded by PMC/PEA on behalf of Owner and includes its legal successor or permitted assigns.
- 1.6 'Engineer' or 'Engineer-in-Charge' or 'EIC' shall mean the officer appointed in writing by the Owner to act as 'Coordinator' from time to time on behalf of Owner in all matters pertaining to this contract. 'Engineer-in-Charge' shall be authorized by the Owner for supervision, inspection, scrutiny and approval of some or all of the services rendered by the PMC/PEA under the contract.
- 1.7 'Specification' or 'Bidding Document' or 'Bid Document' shall mean the Terms and Conditions of Contract forming a part of the contract and such other schedules, documents, and drawings.
- 1.8 'Notice of Award of Contract' / 'Letter of Award' shall mean the official intimation from the Owner notifying PMC/PEA that its proposal has been accepted, and that PMC/PEA is required to sign the Contract Agreement.
- 1.9 'Date of Commencement' shall mean the date on which both the parties have signed the Contract Agreement, or any other date mentioned in the Contract/Letter of Award, as the effective date of Commencement, whichever is earlier. Further, Date of Commencement for start of construction of Railway Siding shall be the date on which NTPC advises PMC/PEA to proceed with the work or the date mentioned in LOA whichever occurs later.
- 1.10 'Week' shall mean a continuous period of seven (7) days.
- 1.11 'Indian Rupees' shall mean the currency of the Government of India.
- 1.12 The 'Government' shall mean the 'Government of India' or Government of State of Uttar Pradesh or an authorized representative/agency/department of the 'Government of India' or an authorized representative/agency/department of the 'Government of State of Uttar Pradesh'.
- 1.13 The Words imparting singular shall also include the plural and vice-versa where the context so requires.
- 1.14 The 'Project' or 'Site' or 'Singrauli Super Thermal Power Project' or 'Singrauli Super Thermal Power Project Stage-III (2 x 800 MW)' shall mean and include the land and other places on or over or into or through which the Railway Siding System and its associated sub-systems such as signaling and telecommunication system, etc., are to be constructed by PMC/PEA as specified in scope of work. It shall also include any adjacent land, Path Street, river or a reservoir which may be allocated or used by the Owner or PMC/PEA in performance of the Contract.

- 1.15 'Starting Date' shall mean the date from which the periods specified for various activities are measured and as set forth in the completion schedules. The starting date for each schedule, unless otherwise agreed, shall be as indicated in the respective schedule.
- 1.16 Contract Price means total fees payable to PMC/PEA as stipulated in clause 5.2 & 5.3
- 1.17 'Month' shall mean calendar month. 'Day or Days' unless herein otherwise expressly defined shall mean calendar day or day of 24 hours each.
- 1.18 The 'works' shall mean the works to be executed in accordance with the Contract or part(s) thereof as the case may be and shall include all extra or additional, altered or substituted works or temporary and urgent works as required for performance of the contract.
- 1.19 The title or heading shall not alter or affect the intent or scope of the clauses or articles of the Documents.
- 1.20 The Date of Completion of Contract/Facilities
- Unless otherwise terminated under the provisions of any other relevant clause of the document, the Contract/Facilities shall be deemed to have been completed after issuance of the certification from Engineer-in-charge that there is no demand outstanding against PMC and all works under the contract have been satisfactorily executed by PMC/PEA. The above date shall be the date on which the section or a part of the same is certified as fit for the commencement of rail traffic, by the Railways.
- 1.21 Words imparting 'Person' shall include firms, companies, corporations and association or bodies of individuals, whether incorporated or not.
- 1.22 The Defect Liability Period shall be twelve (12) months from the date of issuance of certificate for Completion of Facilities from NTPC for entire Railway siding and MGR.
- 1.23 "Final Report", "Final Document" or "Detailed Project Report" (DPR) shall mean the final report submitted by PMC/PEA in respect of the consultancy assignment as per Indian Railways/RDSO guidelines.
- 1.24 Estimated Direct Cost means total cost as per break up mentioned at Clause 4.0 below.

2.0 BID VALIDITY AND BID SECURITY

The proposal shall be on firm price basis and valid for acceptance for at least 120 days from the date of submission of the offer. Bidder is required to submit bid security for an amount of INR 20,00,000/- (Indian Rupees Twenty Lakhs only) which shall be initially valid for a period of one hundred sixty five (165) days from the date of Bid Opening of Envelope-I (Techno Commercial) Bid as per the format (Annexure-B/B1) and from any of the banks mentioned in the Annexure-A1 enclosed in the bid document. The bid security shall, at the Bidder's option, be in the form of a bank guarantee or insurance surety bond or EFT.

In exceptional circumstances, Employer may solicit the Bidder's consent to an extension of the bid validity period. The request and responses thereto shall be made in writing by post, or e-mail. If a Bidder accepts to extend the period of bid validity, the validity of bid security shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request will not be required nor permitted to modify its bid.

2.1 BID DOCUMENTS

2.1.1 This document is meant for exclusive purpose of submitting the offer by the bidder against the specification and shall not be transferred, reproduced or otherwise used for purposes other than for which it is specifically issued.

2.1.2 Not used.

2.1.3 DOCUMENTS COMPRISING THE BIDS

2.1.3.1 The Techno-Commercial (Envelope-I) Bid shall comprise of the following:

2.1.3.1.1 The Documents to be submitted in physical form in separate sealed envelope (s) duly marked at the address giving at clause 43.0, before the last date of submission of Bid. In addition, the scanned copy of these physical forms are to be uploaded by Bidder in **Fee Cover/ Envelope** on the e-tender portal at website portal <https://eprocurentpc.nic.in/>.

(a) Attachment 1: Bid Security

2.1 The Bidder shall furnish, as part of its Bid, a Bid Security in a separate sealed envelope in the amount and currency as stipulated above. In case bid security amount is deposited as EFT, Proof of e-payment of Bid Security, shall be submitted in the e-tendering portal or in a separate sealed envelope.

EFT Account Details for Bid Security	
Name	NTPC Limited
Bank Name	State Bank of India
Bank Address	CAG II Branch, 5th Floor Redfort Capital, Parsvnath Towers, Bhai Veer Singh Marg, Gole Market, New Delhi- 11000
Current Account Number	NTPCPY050003551001
IFSC	SBIN0017313

2.2 The Bid Security shall, at the Bidder's option, be in the form of e-BG, Electronic Fund Transfer (EFT)/ irrevocable Letter of Credit or a bank guarantee from any of the banks specified in the Bid Data Sheets or an Insurance Surety Bond from an Insurer as per guidelines issued by Insurance Regulatory and Development Authority of India (IRDAI).

Upon successful e-payment of the Bid Security on the NTPC e-tender portal, an e-receipt shall be generated by the system, a copy of which is to be

submitted by the bidder as a part of its bid, in the e-tendering portal or in a separate sealed envelope, as a proof of e-payment of Bid Security.

The format of the Bank Guarantee/ Insurance Surety Bond shall be in accordance with the form of bank guarantee/ Insurance Surety Bond towards bid security included in the Bidding Documents. The Bank Guarantee/ Insurance Surety Bond shall be issued on Non-Judicial stamp paper/e-stamp paper of appropriate value as per applicable Stamp Act(s).

Bid Security shall remain valid for a period of forty-five (45) days beyond the original Bid validity period and beyond any extension of bid validity subsequently requested under relevant clause.

2.3 Wherever Bids under Joint Venture route are permitted as per the Qualifying Requirements in the Bidding Documents, the Bid Security by the Joint Venture must be on behalf of all the partners of the Joint Venture.

2.4 Any bid not accompanied by an acceptable bid security in a separate sealed envelope shall be rejected by the employer as being non-responsive. In case, the bid security is submitted as e-BG/EFT, bidder to submit the copy of e-BG/proof of e-payment of bid security either in separate sealed envelope or in the e-tendering portal. Further Stage-II (Price Bid) (in case of Two Stage bidding) not accompanied by requisite bid security extension (in case Bid Security is submitted in the form of BG/ Insurance Surety Bond) in a separate sealed envelope shall be rejected by the Employer as being non-responsive.

2.5 BG against Bid Security issued by a Bank outside India needs to bear stamp duty of appropriate value as applicable. The BG may be got adjudicated by the employer from Collector of Stamps, within 3 months of arrival of BG in India. Expenses incurred in this regard shall be borne by NTPC.

Insurance Surety Bond against Bid Security issued by an Indian Insurance company outside India needs to bear stamp duty of appropriate value as applicable. The Insurance Surety Bond may be got adjudicated by the employer from Collector of Stamps, within 3 months of arrival of Insurance Surety Bond in India. Expenses incurred in this regard shall be borne by NTPC.

2.6 Subject to clause 2.8 below, the Bid Security of the Bidder whose Techno-Commercial Bid has not been found acceptable, shall be returned along with letter communicating rejection of Techno-Commercial Bid. The Bid Security of the bidders who are unsuccessful after opening of Price Bids shall be returned expeditiously after placement of award on successful bidder.

2.7 The Bid Security of the successful Bidder to whom the contract is awarded will be returned when the said Bidder has accepted the Letter of Award.

2.8 The Bid Security may be forfeited

a) If the Bidder withdraws or varies its Bid during the period of Bid validity;

- b) If the Bidder does not accept the correction of its Bid Price pursuant to ITB Sub- Clause for Arithmetical Correction.
- c) If the Bidder refuses to withdraw, without any cost to the Employer, any deviation, variation, additional condition or any other mention anywhere in the bid (Price bid in case of Two Stage Bid), contrary to the provisions of bidding documents;
- d) In the case of a successful Bidder, if the Bidder fails within the specified time limit to furnish the required Contract Performance Guarantee/Security Deposit in accordance with relevant clause.
- e) If the bidder/his representatives commits any fraud while competing for this contract pursuant to Fraud Prevention Policy of NTPC.
- f) In case the Bidder/Contractor is disqualified from bidding process in terms of Section 3 and 4 of Integrity Pact.
- g) Any suppression of material fact or false declaration regarding Insolvency, bankruptcy and Liquidation proceeding against Bidder, Associate, Collaborator or Technology Provider.”

2.9 CONFIRMATION OF PHYSICAL BGS THROUGH STRUCTURED FINANCIAL MESSAGING SYSTEM (SFMS)/ SWIFT (Not applicable for e-BGs through NESL platform)

While issuing the physical BGs, the Bidder's Bank shall also send electronic message through secure SFMS (in case of BGs issued from within India) or SWIFT (in case of BGs issued from outside India) to Employer's Beneficiary Bank whose details are provided herein below:

- (i) Bank Name: ICICI Bank Limited
- (ii) Branch: CONNAUGHT PLACE BRANCH
- (iii) Bank Address: 9A, PHELPS BUILDING, INNER CIRCLE, NEW DELHI-110001
- (iv) IFSC Code: ICIC0000007

BG issuing/amending bank must send the BG advice in the form of message format via SFMS (Structured Financial Messaging System) as provided by RBI. The format of the message for confirmation of the BG shall be as below:

BG advising message: IFN 760COV/ IFN 767COV via SFMS

Field Number: Particulars (to be mentioned in Row 1)

7037: NTPCBG (unique identifier)

- 2.10 In case of Bidders opting for physical Bank Guarantee as Bid Security but unable to submit the Original Bank Guarantee at the tender opening location, before the deadline for submission of bids, following shall also be considered acceptable, subject to para 2.11 below:

- (i) The issuing bank shall intimate through their own official e-mail id to concerned C&M department with a copy to Bidder regarding issuance / extension of Bank Guarantee (BG) along with following documents, before the deadline of submission of bids: -
 - a) The scanned copy of the BG.
 - b) SFMS / SWIFT message acknowledgement copy sent to Employer / Employer's banker stating the date of sending.
 - c) An undertaking from the issuing Bank strictly as per format enclosed at Annexure-C.

SFMS / SWIFT message must be sent to the Employer/Employer's bank, details of which are mentioned in Bidding documents.

- (ii) Bidders shall also be required to upload the scanned copy of the BG on e-Tender Portal in Fee Cover.

2.11 The bidder shall be required to submit all the documents in the manner as specified at para 2.10 above, to reach Employer before the deadline for submission of bids, failing which its bid shall be rejected as being non-responsive.

In such a case, Bidder shall also be required to submit the Original BG in physical form to reach Employer at the address mentioned in Bidding Documents, not later than 10 days from the date of submission of Techno-Commercial bids or before the Price Bid opening, whichever is earlier, failing which its bid shall be rejected and not considered for further evaluation.

(b) **Attachment 2: Power of Attorney**

A power of attorney, duly notarized by a Notary Public, indicating that the person signing the bid has the authority to sign the bid and that the bid is binding upon the Bidder during the full period of its validity.

(The Authority of the person issuing the Power of Attorney shall also be submitted).

Further, Bidder to note that bid can be submitted/digitally signed by only one person. The Power of Attorney must be in the name of person digitally signing the bids.

(c) **Attachment-4: Integrity Pact**

The Integrity Pact shall be furnished duly signed in accordance with the provision of Integrity Pact specified in Clause 40.

2.1.3.1.2 The scanned copy of following attachments is to be uploaded by Bidder in **Technical Cover/Envelope** on the e-tender portal <https://eprocurentpc.nic.in/>..:

(a) **Schedule-2: (Work Schedule)**

Time is the essence of the Contract. Bidder is requested to furnish the Work Schedule for execution of the Contract.

(b) Attachment 3: EFT Form (Electronic Fund Transfer Form)

EFT form duly filled in as per Employer's format.

(c) Attachment-5: Site visit Certificate

The Bidder is mandatorily required to visit and examine the site where the work to be executed and obtain for itself on its own responsibility, all information that may be necessary for preparing the bid and entering into a contract for the subject package. The costs of visiting the site shall be borne by the bidder fully.

The Bidder shall submit the Site Visit Certificate as per enclosed format at Attachment-5, duly signed by bidder and NTPC site representative along with their Envelope-I (Techno-Commercial) Bid.

2.1.3.2 Attributes in General Technical Evaluation (GTE)

Bidders shall certify their compliance by accepting the following General Technical Evaluation (GTE) condition of the Tender at e-Tender Portal prior to the submission of Bid :

“Do you certify full compliance to all provisions of Bidding Document?”

By accepting above GTE, Bidder shall certify their compliance to all provisions of Bidding Documents including but not limited to the following important provisions:

- (a) All provisions of Bidding Document.
- (b) Fraud Prevention Policy of NTPC.
- (c) Policy for Debarment from Business Dealings of NTPC.
- (d) Clause “Restrictions on procurement from a Bidder of a country which shares a land border with India.
- (e) All provisions of the Integrity Pact.
- (f) Anti-Bribery and Anti-Corruption (ABAC) Policy of NTPC
- (g) Clause 48.0 “Conflict of Interest”

Acceptance of above GTE shall be considered as Bidder's confirmation that any deviation to the any provision found anywhere in their Bid Proposal, implicit or explicit, shall stand unconditionally withdrawn, without any cost implication whatsoever to the Employer, failing which the bid shall be rejected and bid security shall be forfeited.

Note: The Techno-Commercial Bid should not contain any price content entry. In case, the Techno-Commercial Bid is found to contain any price content, such bid shall be liable for rejection. Bids cannot be submitted without acceptance of above GTEs.

2.1.3.3 The Price Bid (Envelope-II) shall comprise of the following:

The Price Bid submitted by the Bidder shall comprise of the following:

The Bill of Quantity (BOQ) consisting of the total amount/ percentage (as applicable) against each head is to be submitted on the e-tender portal <https://eprocurementpc.nic.in/>.

2.1.3.4 SUBMISSION OF BIDS

The Bid (comprising the Techno-commercial, Price Bid & BOQ) shall be submitted simultaneously at the <https://eprocurementpc.nic.in/> through e-tender mode in the manner specified in the bidding document.

Bidder shall upload the complete Bid, Attachments and BOQ along with all annexures on the website <https://eprocurementpc.nic.in/>. Bidders to ensure that all uploaded documents must be digitally certified.

Bidder to further ensure that documents uploaded online are being downloaded properly. Employer shall not be responsible for corrupt files, if any, uploaded online by bidder. Further file related to particular Attachment/Schedule including their annexures/ appendices, if any, shall be given name of that Attachment/Schedule only

The Owner, at its discretion, may hold post bid discussions with the bidder(s) to discuss the issues (if any).

2.2 UNDERSTANDING AND CLARIFICATIONS ON BID DOCUMENTS

The bidder is required to carefully examine the bid documents and fully inform himself as to all the conditions and matters which may in any way affect the works or the cost thereof. If any bidder finds discrepancies or omissions in the specifications and documents or is in doubt as to the true meaning of any part, he shall at once but in no case later than seven (7) days prior to the deadline for submission of techno-commercial bids, request clarifications in writing. For this purpose, the Owner will consider to respond to only those clarifications, which are received not later than seven (7) days prior to the deadline for submission of bids prescribed by the Owner. The Employer will post the Clarifications at <https://eprocurementpc.nic.in/> and Bidders can view these Clarifications once they are posted. Bidders are requested to regularly check <https://eprocurementpc.nic.in/> regarding posting of clarification, if any. After receipt of such amendments/interpretations/clarifications, the bidder may submit his offer but within the time and date as specified. All such amendments and clarifications shall form an integral part of the specifications and accompany the PMC/PEA's proposal.

Verbal clarifications and information given by the owner or his employee(s) or his representative(s) shall not in any way be binding on the Owner.

2.3 DISCREPANCIES AND ADJUSTMENT OF ERRORS

2.3.1 If there are varying or conflicting provisions of the bid documents, NTPC shall be deciding authority with regard to the intention of the document.

- 2.3.2 Any errors in description, quantity or rate in Schedules or any omission there from shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised there in according to drawings and specifications or from any of his obligations under the contract.

2.4 SIGNATURE OF BIDS/OFFERS

- 2.4.1 The bid including all documents attached at <https://eprocurementpc.nic.in/> shall be digitally certified using Class-III signature by a duly authorised representative of the Bidder to bind him to the contract. The authorization shall be indicated by written power of attorney as per clause 2.1.3.1.1 (b) and shall be uploaded at Fee Cover/Envelope at on the website <https://eprocurementpc.nic.in.>
- 2.4.2 Offers by Corporation/Company must be digitally signed by the persons authorized to furnish offer on behalf of such corporation/Company in the matter.
- 2.4.3 The bidder's name stated on the proposal shall be the exact legal name of the firm and shall be the same as that registered with NTPC.
- 2.4.4 A power of attorney, duly notarized by a Notary Public, indicating that the person signing the bid has the authority to sign the bid (and that the bid is binding upon the Bidder during the full period of its validity in accordance with Clause 2.0.

(The Authority of the person/ Board Resolution in this regard issuing the Power of Attorney shall also be submitted).

Further, Bidder to note that bid can be submitted/ digitally signed by only one person. The power of Attorney must be in the name of person digitally signing the bids.

3.0 SCOPE OF WORK

- 3.1 PMC/PEA shall be responsible for the entire scope of Railway siding and MGR works (including Jayant loading point and connectivity of MGR with Jayant/NCL Silo-3) and their successful commissioning including OHE and S&T works and getting the work executed through the "contractors" engaged for and on behalf of Owner and successful commissioning of OHE and S&T System including Associated Electrical & Mechanical System Package. The scope of work also includes all testing and trial for commissioning of various sub-systems for MGR and Railway Siding system as per terms & conditions specified in the bidding document/agreed between PMC/PEA and Owner.
- 3.2 The scope of work for the PMC/PEA for successful commissioning of the system shall include the following:
- i) Detailed Scope of work shall be as per Terms of Reference (TOR) as enclosed.
 - ii) DPR, Detailed Engg., Preparation of tender documents, calling tenders/ NIT and award of all packages to various contractors for execution of the work.
 - iii) Procurement of all permanent way materials and other materials required for work at site (other than agreed to be issued by NTPC, if any) including follow-up and receipt, safe custody and handling of the same at site.

- iv) Execution of all associated civil works departmentally or through contractors including earthwork, permanent way, minor/major bridges, culverts, drainage system, plant drains, Nallah crossings including laying of underground hume pipes, overhead cables etc. complete for successful commissioning of the Railway Siding and MGR system and obtaining necessary approvals from Railways (as required).
- v) Execution of all service building including their electrification (Cabins, offices, stores, workshop building etc.). Further, any other building/facility (if required) during execution of the contract.
- vi) Dressing of the formation top, ballasting, track laying for complete Railway Siding and MGR system including testing and commissioning of tracks.
- vii) Proper maintenance of tracks for a period of 06 months after successful commissioning. (This clause needs to be included in the scope of respective contractors, engaged by PMC/PEA for execution/construction work without any extra cost/ additional BOQ items).
- viii) Procurement and installation of S&T and OHE.
- ix) Erection of level crossings.
- x) Re-grading of roads, dismantling of existing built-up structures along the proposed Railway Siding and MGR, if any.
- xi) Procurement of plant and machinery including follow up and receipt, safe custody and handing over the same to NTPC at site.
- xii) Testing and trials for commissioning of various sub-systems including permanent way, OHE and Signaling & Telecommunications.
- xiii) Commissioning of the transportation system of the Railway Siding and MGR.
- xiv) Launching schemes and workshop fabrication drawings as required shall be checked by "PMC/PEA" at his costs.
- xv) PMC/PEA consultant has to carry out Geo-Technical Study, Detailed Engineering and Proof Check of design and drawing from any IIT.

Note: Bidder's scope includes all related works for the proposed Railway siding and MGR system though not explicitly mentioned but required to make the system complete.

- 3.3. The project management, construction and commissioning of the complete system shall be done strictly as per Railways/RDSO guidelines. Any observations of railways during site inspections should be suitably addressed by PMC Consultants.
- 3.4 The work towards shifting HT/LT and other utilities shall be in the scope of PMC Consultant. However, all assistance required shall be provided by NTPC as and when required.
- 3.5 All the above works shall be executed by "PMC/PEA" in accordance with the design, technical specifications and drawings prepared by PMC/ PEA and

approved by Railways/NTPC.

3.6 PMC/PEA shall furnish 3 sets of soft copies of all reports & as constructed drawing copies in Pen drive to NTPC.

3.7 The ownership of the entire work as mentioned in the bidder's scope shall rest with NTPC.

WORK SCHEDULE for PMC:

Sl. No.	Activity	From the date of Letter of Award	
		Start (In Months)	Finish (In Months)
1.0	Finalization of execution strategy and contract package list	08	10
2.0	Tendering and award of MGR and Railway siding Packages (Earth work, Rail procurement & laying, Formation work, Bridge & culverts, Misc. buildingsetc.)	10	14
3.0	Construction of MGR and Railway Siding System civil works (Earth work, Rail laying, Formation work & P-way works, Bridge & culverts and interconnection etc.)	12	24
4.0	Construction of Miscellaneous Buildings.	14	24
5.0	Tendering and award of MGR and Railway sidingPackage for Electrical, OHE and S&T works	14	18
6.0	Execution of MGR/Railway siding Package Electrical, OHE & S&T	16	28
6.0	Dry Engine Run		29
7.0	Completion of all facilities		30

4.0 COST ESTIMATE

4.1 The estimated Direct Cost towards construction of the above scope of work is **INR 24442.21/- Lakh** as per the break-up provided at **Annexure-A4**.

4.2 **FEASIBILITY STUDY REPORT**, prepared by M/s MGR Infra Techno Economic Services (MGRITES) is enclosed.

5.0 CONSIDERATION OF CONTRACT

5.1 For the entire scope of services to be performed by PMC/PEA, NTPC shall pay on the basis of 'Direct Cost', which shall include the following:

- a) Cost of all materials procured for incorporating in works including transportation, loading, insurance, unloading and taxes & duties. **Charges for inspection, to be performed either by PMC/PEA or any other inspection agency appointed by PMC/PEA directly, are not to be included in direct cost.**
- b) Amounts to be paid to Contractors engaged for carrying out works under the contract.
- c) Cost of all office buildings, storage sheds as approved and mutually agreed by NTPC.
- d) Earnest money deposit forfeiture, interest earned on short term deposits if any and miscellaneous revenue receipts shall be credited to NTPC.
- e) Any variation in amount payable to contractor as per the award of arbitration shall be borne by Owner and the same shall not be included under Direct Cost for the purpose of determination of fees payable to PMC/PEA. However, appointment of defense counsel, wherever required shall be done by PMC/PEA with the prior approval of Owner with regard to such appointment and the cost. Further, arbitrator's fees as well as defense counsel's fees (if applicable) shall be paid/reimbursed by NTPC and shall not be included under Direct Cost for the purpose of fee payable to PMC/PEA.
- f) Cost towards safe custody of materials directly procured by PMC/PEA till the appointment of the contractor to whom materials are to be issued for execution. However, in case of contingency arrangement for storage of material directly procured by PMC, PMC shall float tender for the work separately and for such tender, NTPC approval shall be sought.

5.2 PMC/PEA shall be paid a fee towards project management by the Owner. The fee shall include PMC/PEA's all site expenses, inspection charges for inspection carried out by PMC/PEA or any other agency appointed by PMC/PEA, overheads & profits and which are not separately payable. The percentage of estimated Direct Cost shall be furnished in **Bill of Quantity (BOQ)** of NTPC e-tender site.

Project Management fee of INR..... (excluding GST) calculated
@ % of estimated Direct Cost (excluding GST) of
INR.....

The above fee shall remain valid for (+/-)10% variation of the estimated Direct Cost. In case the variation is more than +/- 10% of the estimated Direct Cost on account of increase /

decrease in quantities necessitated during execution or increase/ decrease in the scope of work, the above fees will be increased or decreased proportionately for the entire variation including +/- 10%.

Further, in case of additional works carried out by PMC/PEA at the instance of NTPC, not covered in DPR, consultancy fee for Project Management shall be based on NIT cost estimate or awarded direct cost whichever is lower for such work/package identified by the Owner/PMC/PEA. However, price adjustment formula as specified in clause no. 11.0 (c) shall not be applicable for such additional work.

The fee to be paid to PMC/PEA does not include GST which shall be paid as per actual.

Fee, levied by Indian Railways or any other department, for any services rendered by them, shall be paid directly by NTPC to the Railways/department and shall be excluded from the Direct Cost and no fee will be payable to PMC/PEA on such direct payments to Railways /Department.

Any increase or decrease of PMC/PEA Fee shall be worked out based on the unit rate adopted in the Estimated Direct Cost furnished along with the bidding documents/DPR.

Detailed Procedure for deriving PMC fee on account of Scope Change/qty variation for bridges and Sheds & Buildings is presented at **Annexure-A5. The format for preparation of post award variation statement is placed at Annexure A6.**

5.3 CONSULTANCY FEE FOR DPR & DETAILED ENGG.

INR [Inclusive of all taxes, duties, levies, insurance charges, licence fee etc.], however excluding GST which shall be paid as per actuals. Detailed breakup for Consultancy Fee for Design (DPR and detailed Engineering) is to be furnished in Bill of Quantity (BOQ) of NTPC e-tender site.

6.0 SPECIFIC EXCLUSIONS FROM DIRECT COST

The specific exclusions from Direct Cost shall be as elaborated but not limited to the following:

- a) All expenses incurred by PMC/PEA for their head office, site office and those in relation to technical co-ordination, procurement and its follow-up (All establishment expenses incurred by PMC/PEA for their head office and those in relation to technical co-ordination, Procurement and its follow-up including inspection by either PMC/PEA or any other agency appointed by PMC/PEA) NIT is to be hosted on website.

All activities regarding preparation of drawings, in connection with setting out of works including field survey etc., drawings for phase of working, temporary arrangement, launching schemes for approval from Railways as required shall be carried out by PMC/PEA and all related costs shall be excluded from direct cost.

However, the work of preparation of fabrication drawings only shall be included in the scope of the contractors engaged by the PMC/PEA. PMC/PEA shall be responsible for checking the correctness of such fabrication drawings submitted by the contractors, as per RDSO/Railway guidelines.

- b) Salaries/wages, P.F.(s)/Pensions and other perquisites paid to staff and labour directly employed by PMC/PEA for follow up, receipt, safe custody of material and execution of work at site.
- c) Cost of direct field supervision at site.
- d) All expenses related to official and residential accommodation acquired by PMC/PEA and their maintenance at places other than the project site.
- e) Establishments charges including essential expenses related to accommodation, furnishing and maintenance of office.
- f) All expense including salaries, allowances, travel expenses for personnel identified as related to inspection activities.
- g) Cost of all necessary insurance for plants and equipment provided by PMC/PEA and Insurance of PMC/PEA's personnel, if any.
- h) All capital cost for procurement of tools, plants and equipment incurred by PMC/PEA / Contractors.
- i) Charges (excluding penalty), if any, levied by Railways or any other Govt. /State department for any services rendered by them, which shall be paid directly by NTPC to the Railways/ concerned department.
- j) Temporary quarters constructed and maintained for PMC/PEA's staff.

7.0 COST CONTROL

7.1 The PMC/PEA shall maintain separate bank account(s) at the respective Project site(s) for the money drawn by him from NTPC for the work. This money shall be utilized only for execution of the contract for Singrauli STPP Stage-III (2x800MW).

7.2 For effective cost control, all drawings shall have bill of quantities for major items and shall have approval by NTPC or PMC/PEA before they are released for construction purposes. However, the approval by NTPC shall not relieve PMC/PEA of their responsibilities. Further, a quarterly statement shall be furnished by PMC/PEA for NTPC's review indicating the actual quantities of work executed, their variance from the quantities identified in the finalized FR and reasons for the same. In addition, progress reports shall be furnished by 7th of every month giving details up to the end of previous month and program for next three months.

NTPC clearance is required for drawings for in-plant where layout has interface with other facilities.

Periodical (monthly/quarterly) project expenditure statement along with bank statement shall be furnished by "PMC/PEA" for NTPC's review indicating the work executed and program for next one month/quarter.

7.3 Any proposal for upward/downward revision of cost estimate indicated at para 4.1 on account of change in scope, quantities, indicated in FR or any other reason shall have reasoned vetting of Project Technical Services/Field Engg. of NTPC, Corporate Engineering with the concurrence of Project Finance of NTPC. PMC/PEA (if required) shall prepare an updated NIT cost estimate for

each package. The updated cost estimate for the purpose of NIT shall however be vetted by Project Finance and Execution Department of Owner.

- 7.4 In case of Variation in cost at the time of award of package with respect to NIT Cost Estimate or for change in specification / quantities / scope during execution having additional financial implication prior approval from NTPC shall be obtained by PMC/PEA as follows:
- 7.4.1 The approval of such proposal shall be conveyed to PMC/PEA within 45 days from the date of its receipt.
- 7.4.2 Whenever the lowest & responsive bid price of any package to be awarded by PMC/PEA exceeds NIT cost estimate by 10% of the respective package, the award recommendation by PMC/PEA shall necessarily be routed through NTPC's Engineer-in-charge. The PMC/PEA shall consider the observations / comments / remarks of NTPC while finalizing the Contract. Further, during execution, in case of any variation in quantities or scope change, if the revised estimated cost of respective package exceeds NIT cost estimate by 10%, PMC/PEA shall submit details of cost along with justifications, for consideration/approval of NTPC.
- 7.4.3 Whenever the Consolidated cost estimate for the work i.e. entire Railway Siding Package (aggregate of value of different packages awarded & cost estimate for the other packages yet to be awarded) exceeds the total estimated direct cost indicated at para 4.1 of terms and conditions, the PMC/PEA shall submit the details of increase in cost along with justifications for approval of NTPC.
- 7.5 Release of payments against any proposal for upward revision of cost estimate on account of change in scope, quantities during execution of any package/s as indicated in the BOQ or for any other reason on compliance with 15(a),15(g) would be regulated (provided total cost estimate of the entire Railway Siding exceeds the total estimated direct cost indicated at para 4.1 of terms and conditions or total estimated cost including variation, if any, of any package awarded by PMC/PEA during execution, exceeds NIT Cost Estimate by 10% of the respective package) as per the following payment terms
- (i) 75% of the applicable payment shall be released on vetting / approval of such proposal by Project Technical Services with the concurrence of Project Finance.
 - (ii) Balance 25% of the applicable payment shall be released on approval of NTPC and issuance of the amendment to Contract(s) by PMC/PEA to their Contractors.

8.0 TERMS OF PAYMENT:

8.1 Advances

- a) NTPC shall release interest free advances @ 10% of the Project management Fee (referred at para 5.2) payable towards mobilization of resources at site on fulfillment of following conditions:
 - i) Unconditional acceptance of letter of award.
 - ii) Submission of unconditional Bank Guarantees of equivalent amount initially valid upto 3 months after the completion period from any bank listed at **Annexure-A1** and in the prescribed format placed at **Annexure-A**, which shall be extended by PMC/PEA from time to time as required by NTPC. The bank guarantee so submitted shall be reduced proportionate to the advance recovered from their fees once in every six months. The

advance will be recovered @ 10% of amount due as fee from their fee bills submitted to NTPC till such time the advance stands fully recovered.

- iii) Submission of detailed Project Schedule (PERT) conforming to the completion schedule as brought out at para 11.0 (b) later & its approval by NTPC.

“Note: In case the PMC/PEA decides not to take advance payment, the advance payment shall be proportionately adjusted in the progressive payment.”

- b) In addition to above, NTPC shall release following advance to PMC/PEA for the Direct Cost portion:

Monthly advance towards cost of execution of work and procurement of materials in accordance with the agreed fund flow chart. This advance shall be released against furnishing an Indemnity Bond by PMC/PEA. The advance for procurement of materials shall be released to PMC/PEA in stages depending upon the procurement schedule along with submission of demand after order finalization on the suppliers/Contractors.

The first installment shall be released against PMC/PEA's requisition. However, the subsequent amounts shall be released against submission of statement of accounts for expenses incurred from the advance amount released in the previous months supported by trial balance for the month, certified copies of relevant documents in support of expenses incurred by PMC/PEA in that month.

In addition, PMC/PEA shall arrange to furnish indemnity bond through the deployed contractors against owner issue materials, if any, in a Performa acceptable to NTPC.

- c) NTPC shall release interest free advances @ 10% of the consultancy fee for DPR & Detailed Engg. (referred at para 5.3) payable towards mobilization of resources at site on fulfilment of following conditions:
 - i) Unconditional acceptance of letter of award.
 - ii) Submission of unconditional Bank Guarantees of equivalent amount initially valid upto 3 months after the completion period from any bank listed at **Annexure-A1** and in the prescribed format placed at **Annexure-A**, which shall be extended by PMC/PEA from time to time as required by NTPC. The bank guarantee so submitted shall be reduced proportionate to the advance recovered from their fees once in every six months. The advance will be recovered @ 10% of amount due as fee from their fee bills submitted to NTPC till such time the advance stands fully recovered.
 - iii) Submission of detailed Project Schedule (PERT) conforming to the completion schedule as brought out at para 11.0 (b) later & its approval by NTPC.

8.2 Terms of payment for direct cost & Fees shall be as under:

- a) All materials to be used for works under contract shall be procured and paid by PMC/PEA on behalf of NTPC, out of the advance amounts received by them as brought out above.

Any payment to the Contractors shall be released by PMC/PEA directly. For this purpose, PMC/PEA shall furnish work execution statement to the Engineer-in-charge. The Owner (Engineer-in-charge) reserves the right of periodical checks/audit of bills (quarterly) and in case discrepancies/deficiencies, if any, are identified by the Owner, PMC/PEA shall

make good the same under advice to the Owner. However, in case of final payment, all regularization/reconciliation shall be done prior to release of payment.

All claims towards direct costs shall be made by PMC/PEA on the basis of actual payments made by them towards procurement of materials and execution of work.

- b) On completion of works, materials charged to the direct cost but not consumed for the works, whether serviceable or unserviceable or scrap or surplus shall be handed over to NTPC or disposed off in consultation with NTPC and necessary credit shall be given to NTPC.
- c) At the end of each month from the date of award of contract, PMC/PEA shall submit a statement of accounts in formats to be approved by NTPC, setting forth therein all costs incurred by them during that month for procurement of materials and execution of work. Along with the above statements, PMC/PEA shall also submit the invoice for fee as mentioned at para 5.2 above. The fees shall be released by NTPC upon certification by Engineer-in-charge.
- d) From every invoice/bill of PMC/PEA, claiming fees NTPC shall withhold 10% of the amount of fees claimed as Retention Money. This retention money shall become due and payable to the PMC/PEA on the expiry of 15 months after completion of works at site in all respects (including removal of construction sheds etc.) and after obtaining the completion certificate from NTPC's Engineer-in-charge in line with clause 1.20 above. However, if PMC/PEA desires, retention money shall be released on half-yearly basis against submission of a bank guarantee of equivalent amount as per the format prescribed by NTPC valid till 15 months beyond completion of entire works under the contract.
- e) All the statements of accounts and invoice / bills shall be submitted by the PMC/PEA in 'triplicate' to the respective Engineer-in-charge at site and same shall be supported by relevant documents/vouchers etc.

9.0 TERMS OF PAYMENT FOR CONSULTANCY FEE FOR DESIGN (DPR & DETAILED ENGINEERING)

Terms of Payment for consultancy fee for design (DPR and detailed engineering) are as under:

SL	ACTIVITY /STAGE	%OF CONTRACT PRICE
(a)	Mobilization advance	10 %
(b)	Revalidation of FR and its approval from Railways (if required) and Submission of draft DPR	5 %
(c)	Submission of Survey Report & Land Plan (if any) * *Amount is fully payable if land plan is not required.	5 %
(d)	Submission of ESP, Plan & L-section including Railway clearance as applicable	5 %
(e)	Submission of SIP, LOP, Station Working Rule including Railway clearance as applicable	5 %
(f)	DPR approval from Railways	5 %
(g)	Submission of Final DPR (including Railway clearance/approval)	5 %

	after incorporating Railways observations & NTPC requirements (if any) for system augmentation	
CIVIL ENGINEERING & OTHER MISC WORKS		
(h)	i. Submission of detailed specification, BOQ and cost estimates for all civil works viz. Earth work, slope stabilization, bridges, culverts, tracks, permanent way works, all buildings, workshop, FOB, ballast-less tracks, drainage system, block hut etc. and obtaining approvals from Railways, State/Central Govt. & other agencies as applicable. <small>Details of deposit works also to be submitted (as/if required by Railways)</small>	5%
	ii. Submission of Geo-Technical Investigation Report	10 %
	iii. Submission of GAD (General Arrangement Drawing), detailed design and drawing of all bridges and culverts after obtaining proof check from any IIT (Indian Institute of Technology).	10 %
	iv. Completion of detailed design & drawings for all civil works viz. rail track structure, earthwork, slope stabilization, bridges, culverts, control buildings, workshop, FOB, ballast-less tracks, drainage system, etc. and obtaining approvals from Railways, State/Central Govt. & other agencies as applicable	10 %
SIGNALLING AND TELECOMMUNICATION (S&T)		
(i)	i. Submission of detailed system design of signaling and telecom facilities and plan including approvals from Railways State/Central Govt. Dept. & other agencies as applicable.	5%
	ii. Submission of technical specifications, construction drawings, BOQ and cost estimates for signaling and telecom works, list of spares, tools and maintenance schedule etc. including approvals from Railways, State/Central Govt. Dept. and other agencies as applicable	5%
OHE & General Electrical works		
(j)	i. Submission of plan and detailed system design for OHE works including approval from Railways as applicable	5%
	ii. Submission of technical specifications, tender drawings, BOQ and cost estimates, construction drawings etc. for the complete OHE system, list of spares, tools and maintenance schedule including approval from railways as applicable	5%
(k)	General Electrical Works Submission of detailed system design & plans, technical specifications, construction drawings, BOQ and cost estimates for general electrical works as required	5%

Payment shall be released progressively on certification of Engineer-In-Charge.

10.0 RECORD OF ACCOUNTS

- a) PMC/PEA shall maintain regular records and accounts of all expenses incurred by him with respect to the direct cost of works under award. All these accounts shall be maintained in formats acceptable to NTPC and shall be subject to inspection and admittance by the engineer-in-charge and his duly appointed finance representatives.

PMC/PEA shall depute their own internal auditors from their head office to audit these accounts, at their own expenses, at regular intervals of time and shall also arrange for audit by the statutory auditing authorities.

- b) On successful completion of work at the site and on physical handing over of the Railway Siding and MGR System to NTPC, PMC/PEA shall prepare and submit to NTPC the closing accounts duly approved by NTPC and other concerned authorities.

11.0 Completion Schedule

- a) It is specifically agreed that time is the essence of the contract and shall be strictly adhered to the detailed Time Schedule stipulated as stipulated in Terms and Conditions of Contract schedule 2. Follow as,

DPR & Detailed Engg.:

Sl. No.	Activity	From LOA date (in Months)
1	Submission of draft DPR & ESP to NTPC for comments/ acceptance before submission to Railways	02
2	Submission of Survey Report and Land Plans, Finalization of DPR & ESP and Submission to Railways/ NTPC (as applicable) for approval/acceptance	02-03
3	Submission of Final DPR to NTPC including Plans and applicable approvals from Railways	04-06
4	Submission of Technical specification, tender drawings, BOQ, detailed cost estimates etc. to NTPC	06-08
5	Obtaining Railways, State/Central Govt. Dept. and other agencies approvals of detailed design & drawings for all Civil, S&T, OHE and general electrical works viz. Railtrack structure, bridges & culverts (including proofcheck from IIT), control buildings etc. as applicable	08-11
6	Submission of construction drawings to NTPC	11-12

PMC :

Sl. No.	Activity	From the date of	
		Start (In Months)	Finish (In Months)
1.0	Finalization of execution strategy and contract package list	08	10
2.0	Tendering and award of MGR & Railway Siding Packages (Earth work, Rail procurement, Formation work, rail laying, Electrical and S&T Works, Bridges & culverts, Misc. Buildings etc.	10	14
3.0	Construction of MGR & Railway Siding civil works (Earthwork, Rail laying, Formation & P-way works, Bridges & Culverts and interconnection etc.)	12	24
4.0	Construction of Miscellaneous Buildings	14	24
5.0	Tendering & Award of MGR/Railway siding Package for OHE, Electrical and S&T Works	14	18
6.0	Execution of MGR/Railway siding Package Electrical, OHE and S&T Works	16	28
7.0	Dry Engine Run		29

8.0	Completion of all facilities		30
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- b) PMC/PEA shall prepare and submit detailed project schedule with a write up on the modality of operation proposed by him for the Contract within four weeks of award of contract. The schedule shall be discussed and mutually agreed to and shall form an integral part of agreement to be entered into between NTPC and PMC/PEA. The schedule shall be strictly followed by PMC/PEA while executing the work under this contract.
- c) For any delays attributable to NTPC in execution of contract, project management consultancy (PMC/PEA) fee for the balance work beyond the end of contractual completion schedule shall be adjusted and payable/recoverable as per the formula and illustration given at **Annexure-A3**.

12.0 PMC/PEA's Personnel

- a) PMC/PEA shall depute to project site the required personnel along with necessary supporting staff as may be discussed and mutually agreed to with Engineer-in-Charge at site. Further, PMC/PEA shall ensure that persons engaged for the work shall have proven integrity, competence and overall sound reputation.

PMC/PEA shall identify 'procurement cells' in his site organization comprising of personnel to perform procurement and inspection activities as to be mutually agreed between NTPC and PMC/PEA. During the course of execution of the work, if found necessary and approved by NTPC's Engineer-in-charge, PMC/PEA shall be permitted to depute more persons as to be approved by NTPC so as to achieve the desired progress of work, if found necessary and instructed by NTPC's Engineer-in-Charge.

- b) PMC/PEA shall submit within 15 days of award of contract a detailed schedule of deployment of his manpower placement schedule in all concerned areas including quality control and safety for supervision of the work to Engineer-in-Charge for approval of NTPC.
- c) In the head office PMC/PEA shall nominate a senior officer for this project who will coordinate with NTPC corporate office at New Delhi/NOIDA for progress and monitoring the work and shall visit site from time to time for guiding and coordinating the field activities. He will be assisted by necessary technical staff at the PMC/PEA's headquarter office who are specialist in specified fields, such as earthwork, bridges, pre-stressed concrete work, track works, girder erection work etc. and will keep NTPC notified periodically about the person deployed at site for the work.
- d) PMC/PEA personnel when posted to the site, shall abide by the general instruction as may be given by the respective Engineer-in-charge from time to time and shall not involve themselves in any local politics.
- e) NTPC reserves the right to request PMC/PEA for replacement of his personnel, if not found suitable by the Engineer-in-charge, of NTPC. PMC/PEA in all such cases will replace the person within a reasonable time up-to a maximum of thirty days.

13.0 COMPLETION CERTIFICATE

- 13.1 PMC/PEA shall maintain a log book at site incorporating therein the progress of work during the execution of contract. During execution of the work, PMC/PEA shall submit monthly progress reports and on completion shall intimate the Engineer-in-charge in writing. Within 30 days of

receipt of such information the Engineer-in-charge shall physically inspect the works and log book and shall furnish PMC/PEA with a certificate of completion indicating:

- a) Date of completion;
- b) Defects to be rectified by Contractors appointed by PMC/PEA. PMC/PEA shall remain liable rectifying defects etc. in the work executed by Contractors appointed by PMC/PEA upto 12 months after issue of completion certificate.
- c) Part of work completed for which payment may be authorized towards the charges claimed by them.

For the purpose of this clause the work shall be considered completed in full on the day when PMC/PEA has completely been removed from the premises, all sheds, surplus material, rubbish, etc. stage wise/package wise. Further, PMC/PEA shall ensure that the defect liability period/warranty period of individual package awarded during execution of Contract is valid upto 12 months after completion of schedule period (as per Clause no. 11.0 above) of the entire Railway Siding Package.

The Bank Guarantee & Insurance charges of extended period on account of delays attributable to the owner shall be reimbursed at actuals based on the written request of PMC/PEA.

The reimbursement of BG charges shall be made on the basis of documentary evidence submitted by the Contractor (such as debit advice of Bank) along with a Certificate from the issuing Bank, as per the format enclosed at Form-2).

Further, the reimbursement of Insurance charges shall also be made on the basis of documentary evidence submitted by the Contractor. In addition, the Contractor should obtain Insurance Policy directly from the Insurance Company and not through Brokers.

The aforesaid reimbursement of Bank Guarantee Charges and Insurance Charges shall be inclusive of GST.

- 13.2 The Engineer or his authorized representative shall hold progress review meetings at site and the Project Manager shall be required to attend all weekly site progress meetings. The deliberations in the meetings shall inter-alia include the weekly program, progress of work (including details of manpower, tools & plants deployed by the Project Manager or his contractors vis-a-vis agreed schedule), inputs to be provided by Owner, delays, if any and recovery program, specific hindrances to work and work instructions by Engineer or his authorized representative. The minutes of the weekly meetings shall be recorded in triplicate in a numbered register available with the Engineer or his authorized representative. These recordings shall be jointly signed by the Engineer or his authorized representative and the Project Manager and one copy of the signed records shall be handed over to the Project Manager.
- 13.3 The following documents shall form the principal basis for Consideration of Time Extension with or without LD, levy of liquidated damages and settlement of extra claims during the execution of contract:
 1. The joint recordings in the weekly meetings register and Logbook.
 2. Records of Technical Coordination Meetings, if any.

3. Records of Contract Review meetings, if any.
4. Written notices issued by Engineer or his authorized representative to Project Manager in the relevant period.

14.0 LIQUIDATED DAMAGES FOR DELAYS

- 14.1 In case of any delay in execution of contract, in part or full, beyond the completion date stipulated in the Contract including any Time extension as may be granted by NTPC in writing for the reasons solely attributable to PMC/PEA, PMC/PEA shall pay to NTPC or shall permit NTPC to recover from the amounts due to PMC/PEA a sum equal to half (1/2) percent of PMC/PEA's fee towards project management for the part or work so delayed, per week of delay or part thereof. The total liability of PMC/PEA under this clause shall be subject to maximum of 10% of his fee.

15.0 RESPONSIBILITY OF PMC/PEA

- a) For the purpose of achieving the desired progress of work and for Contracting etc., the work shall be split into packages and the package list shall be finalized after approval of NTPC's Engineer-in-charge at site to enable early and quick award of packages.

The PMC/PEA shall be responsible for preparation of all tender documents including those for the material plant and equipment for the purpose of Contracting. Further, the PMC/PEA shall also perform all necessary re-engineering, which may be necessary and shall be responsible for entire field engineering co-ordination with Contractors at site. The PMC/PEA shall ensure the completeness of engineering involved and shall be responsible for all necessary detailed engineering.

For each contract, PMC/PEA shall finalize updated cost estimate before issue of NIT. The cost estimate shall be vetted by Project Finance & Execution Department of NTPC. PMC/PEA shall, however, furnish justification/basis for revision(s) with respect to corresponding DPR provision.

Each Package as identified shall be awarded by PMC/PEA as per their Procurement policy & Delegation of Power for and on behalf of NTPC. After award of each such package, PMC/PEA shall forward certified copies of Contract documents along with all supporting tender documents to NTPC's Engineer-in-charge.

PMC/PEA shall furnish the revised Cost Estimate for the entire Coal Transportation System on 6 monthly basis.

Please also refer Clauses 7.4.1, 7.4.2 & 7.4.3 above.

- b) The PMC/PEA shall be responsible for procurement of all the materials covered in the scope, including preparation of tender documents as applicable, evaluation of bids, finalization of awards of supply orders, inspection, coordination with the suppliers and necessary follow-up so as to ensure the timely receipt of all necessary materials at site.
- c) The PMC/PEA shall be responsible for the construction supervision including storage and handling of the materials, plant and equipment and measurement of works for all items of work covered under their scope of work, and shall coordinate with all agencies involved in the execution of the same and shall be responsible for achieving the scheduled completion dates.

The PMC/PEA shall co-ordinate the field work at the site with other agencies involved, including zonal Railways for necessary clearances and approvals and from local authorities (if necessary) and shall assist NTPC in issue of notices to concerned parties and local bodies for activities connected with the construction work. The PMC/PEA shall also assist NTPC in all matters pertaining to the execution of the agreement including preparation and finalization of the draft agreement with zonal Railways to be executed after legal vetting by NTPC's Law Department immediately after completion of the individual work.

- d) The PMC/PEA shall make all necessary arrangement with zonal railway for arranging the testing of railway siding system by bringing on them suitable locomotive and trailing loads (at Owner's cost) and shall obtain the fitness certificate from the competent authority of railway and handover the same to NTPC as a proof of satisfactory completion of work.
- e) Adequate land shall be made available by NTPC before scheduled start of the work under the respective contracts. Further, PMC/PEA will identify the constraints, if any in availability of adequate working space or land during execution of work and assist NTPC in resolving associated issues.
- f) The PMC/PEA shall finalize the list of tools & plants to be incorporated in the documents for contracts in consultation with Engineer-in-Charge / NTPC and tie up of the same with the contractors while finalizing the contracts. All such tools, plants and equipment will be mobilized at site within mutually agreed time schedule. No additional tools, plants and equipment will be brought to site by the PMC/PEA unless otherwise instructed by Engineer-in-Charge to achieve the desired progress of work. The PMC/PEA shall be required to keep detailed log accounts of performance of all such tools, plant and equipment and shall be responsible for operation and maintenance of the same.
- g) The PMC/PEA shall be responsible for monitoring of the progress and cost of work as per the requirement of NTPC. In this regard, the PMC/PEA shall strictly comply with NTPC's planning and budgeting systems requirement and will accordingly submit monthly progress report and other report as per NTPC's prescribed formats.
- h) The PMC/PEA shall prepare a detailed coordination procedure at site within fifteen days of the award of contract.
- i) The PMC/PEA shall prepare as constructed drawing and furnish soft copies of constructed drawings (in CDs) to NTPC. The work of preparation of "As Constructed Drawings" shall be included in the scope of the Contractors engaged for the execution of various works. The PMC/PEA shall compile the above and submit the same to the owner in totality.

Note:

1. The above provisions will not be applicable in case the PMC/PEA proposes deployment of required plant and equipment in Contractor's scope (Refer 15.0(f) above).
2. NTPC shall not issue Power of Attorney to PMC/PEA for execution of the subject package.

16.0 ASSISTANCE TO BE PROVIDED BY NTPC

- a) NTPC will render all necessary assistance to the PMC/PEA in procurement of controlled items. If, in order to maintain the construction schedule, it becomes necessary to procure such items from open market, the actual cost of such purchase will be borne by the PMC/PEA.

- b) While the PMC/PEA shall be associated with the project activities, necessary assistance shall be provided by PMC/PEA to NTPC for issue of necessary notification under the land acquisition act or any other act or institution of Government of India or the State Government.
- c) In case any compensation is required to be paid for cutting of crops, gardens, or forests or for any other reasons arising out of the construction operations claims for the same shall be settled and paid by NTPC.
- d) NTPC shall arrange for acquisition of land required for execution of works and fulfillment of formalities with respect to the same.
- e) NTPC shall make available a layout plan in the area, so that the siding connections can be suitably planned.
- f) While NTPC shall render assistance to PMC/PEA in coordinating with coal companies in obtaining data/information in connection with execution of works, the PMC/PEA shall perform all necessary follow up on NTPC's behalf in this regard.
- g) NTPC shall provide PMC/PEA's personnel assigned to site the following facilities comparable to NTPC's own personnel for similar categories.
 - (i) Access to medical facilities to the PMC/PEA's field personnel and their dependent family members who reside with them at site, during the period of assignment to the project site, on the same lines as that of NTPC personnel of equivalent status on payment for the same.
 - (ii) Transport facilities for the children of the PMC/PEA's personnel posted at site for going to school, wherever such facilities are available.
 - (iii) NTPC shall provide furnished guest house accommodation to the PMC/PEA's personnel visiting site on payment of charges laid down by NTPC for their own personnel of comparable categories subject to its availability.
 - (iv) Quarters, if available, may be provided for PMC/PEA's staff/officers on chargeable basis subject to availability at site.

17.0 TAXES, DUTIES AND INSURANCE

- 17.1 All taxes, duties & levies (including GST) and applicable surcharge/ cess on taxes, duties & levies, insurance charges, license fees, etc. including statutory variations during the currency of the contract applicable on transactions between the PMC/PEA and Contractors appointed by PMC/PEA, if any, shall be payable directly by PMC/PEA or Contractors appointed by PMC/PEA and NTPC will not have any liability whatsoever on this account.
- 17.2 All taxes, duties & levies (other than GST as applicable on direct transaction between the PMC/PEA and Owner), applicable surcharge/ cess on taxes, duties & levies, insurance charges, license fees, etc. including any statutory variations there to arising out of the contract shall be payable directly by PMC/PEA and shall be included in the project management fees for the entire scope of work. Owner will not bear any expenditure, whatsoever on this account.

- 17.3 GST as applicable on direct transaction between Owner and the PMC/PEA under this contract (tax rates as applicable on 7 days prior to date of bid opening, component of contract price on which it is applicable and the total amount) will be indicated by the bidder separately in Bill of Quantity (BOQ) and GST including statutory variations & any new cess and/or levies there upon during the currency of the contract shall be payable/reimbursable by Owner. However if bidder fails to mention GST as applicable on 7 days prior to date of bid opening on any component of the contract price and the same becomes payable by the PMC/PEA during execution, Owner will not be liable for reimbursement in this regard.
- 17.4 (a) As regards income tax, surcharge on income tax and other corporate taxes, including cess wherever applicable, the PMC/PEA shall be responsible for such payments to the concerned authorities.
- (b) The Owner is entitled to deduct TDS as per the Government policies/tax rules and regulations.
- 17.5 Tax liability, if any, on deputation of the Consultant's Personnel abroad shall also be borne by the PMC/PEA and shall be the responsibility of the PMC/PEA as per Tax Laws of India.
- 17.6 The PMC/PEA shall be liable to take/maintain all necessary insurance at its own cost as applicable to them. Further, PMC/PEA will also ensure that their Contractors shall take/maintain all necessary insurance for their respective packages.
- 17.7 The recovery of TDS shall be done by PMC/PEA on behalf of NTPC and deposited with the relevant Tax Authorities.

18.0 SUSPENSION OF WORKS

- 18.1 The PMC/PEA shall, on receipt of the order in writing of the NTPC's Engineer-in-Charge, suspend the progress of the works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary for any of the following reasons:
- i) On account of any default on part of the PMC/PEA or
 - ii) For proper execution of the works or part thereof for reasons other than default of the PMC/PEA or
 - iii) For safety of the works or part thereof.

The PMC/PEA shall, during such suspensions, properly protect and secure the works to the extent necessary and carry out the instructions given in that regard by the Engineer-in-Charge.

For the suspension being ordered for reasons (ii) and (iii) above, the PMC/PEA shall be entitled to an extension of time equal to the period of every such suspension plus 25% subject to approval of Engineer-in-Charge.

Further, PMC/PEA may reduce their resources (manpower and machinery) during the period of suspension or extended time beyond contract period for the reasons solely attributable to Owner as mutually agreed between PMC/PEA and Owner.

19.0 SETTLEMENT OF DISPUTE

19.1 Mutual Consultation

If any dispute of any kind whatsoever shall arise between the Employer and the Contractor in connection with or arising out of the Contract, including without prejudice to the generality of the foregoing, any question regarding its existence, validity or termination, or the execution of the Facilities, whether during the progress of the Facilities or after their completion and whether before or after the termination, abandonment or breach of the Contract, the parties shall seek to resolve any such dispute or difference by mutual consultation.

On reference of such a dispute by either party, the Employer shall invite the Contractor for mutual consultation, within seven (07) working days of such reference.

Without admitting the Employer's liability, the Employer may obtain, within 30 days of such reference of the dispute, further details from the Contractor and examine it relating to the dispute. Such examination (if any) by the Employer shall not be construed as or imply acceptance of the claim or liability or accuracy or completeness of the details set forth in such request or reference. The Employer may hold discussions with Contractor with an effort to resolve the dispute. If the parties fail to resolve such a dispute or difference by mutual consultation within a period of forty-five (45) days from the date of receipt of reference of such dispute or within such extended period as the parties shall agree in writing, then the dispute may be settled through Independent Engineer (if applicable) and/ or Mediation through Independent External Monitors (if applicable) and/or through Conciliation and/or Arbitration (if applicable) / other remedies available under the applicable laws.

Notwithstanding anything contained in any other law for the time being in force, the parties shall keep confidential all matters relating to the Mutual consultation proceedings. Confidentiality shall extend also to any agreement reached during Mutual consultation, except where its disclosure is necessary for purposes of implementation and enforcement.

The parties shall not rely on or treat as evidence in Independent Engineer/ Mediation/ Conciliation/ and in any way Arbitral or Judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of the Mutual consultation proceedings

- a) views expressed or suggestions made by the other party in respect of a possible settlement of the dispute;
- b) admissions made by the other party in the course of the mutual consultation proceedings;
- c) the fact that the other party had indicated his willingness to accept a proposal for mutual settlement

19.2 Deleted

19.3 Mediation through Independent External Monitors (IEMs)

If the parties fail to resolve a dispute or difference by mutual consultation and through Independent Engineer (if applicable) within a period specified at Cl. 19.1 above, the dispute, if the parties agree, may be referred to the Panel of IEMs for Mediation.

The Mediation proceedings shall be completed in a time bound manner, in not more than 45 days from the date of reference to IEMs for Mediation.

The IEMs may conduct the Mediation proceedings in the manner, they consider appropriate. In case of 3-member Panel of IEMs, 2 members will constitute a valid quorum and the meeting can take place to proceed in the matter after seeking consent from the member who is not available. However, IEMs recommendations will be signed by all the members.

The fees for such meetings shall be as specified in the SCC. The travel and stay arrangement for such meetings shall be equal to that of Independent Board Member of Employer's Organization. However, not more than five meetings shall be held for a particular dispute resolution. The fees/ expenses on dispute resolution shall be equally shared by both the parties.

If decision of IEMs is acceptable to both the parties, a Settlement Agreement will be signed to the extent agreed by the parties within 15 days of acceptance by the parties and same shall be authenticated by all the IEMs.

Notwithstanding anything contained in any other law for the time being in force, the Mediator and the parties shall keep confidential all matters relating to the Mediation proceedings. Confidentiality shall extend also to the settlement agreement, except where its disclosure is necessary for purposes of implementation and enforcement.

The parties shall not rely on or introduce as evidence in Conciliation or Arbitral or Judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of the Mediation proceedings, —

- a) views expressed or suggestions made by the other party in respect of a possible settlement of the dispute;
- b) admissions made by the other party in the course of the Mediation proceedings;
- c) proposals made by the Mediator; and
- d) the fact that the other party had indicated his willingness to accept a proposal for settlement made by the Mediator.

19.4. Resolution of Dispute through Conciliation

If the parties fail to resolve such a dispute or difference by mutual consultation and through Independent Engineer (if applicable) and/or through Mediation (if applicable) within a period as specified at Cl. 19.1 and 19.3 above, the dispute if the parties agree, may be referred to Conciliation.

- (i) For cases where the disputed amount (Claim/ Counter claim, whichever is higher) is upto Rs. 25 Cr. (excluding interest), the matter for conciliation shall be referred to Expert Settlement Council (ESC), constituted by Employer

(ii) For cases where the disputed amount (Claim/ Counter claim, whichever is higher) is above Rs. 25 Cr. (excluding interest), the matter for conciliation shall be referred to Conciliation Committee of Independent Experts (CCIE), constituted by Ministry of Power (MoP).

If the claim/Counter-claim is in foreign currency, the SBI Bills Selling Exchange rate prevailing on the date of claim shall be used for the purpose of converting the claim in Indian Rupee.

The Conciliation process shall be conducted as per Part III of the Arbitration and Conciliation Act, 1996.

19.4.1. Resolution of Dispute through Expert Settlement Council (ESC), constituted by EMPLOYER {For cases with Disputed amount (Claim/ Counter claim, whichever is higher) upto Rs. 25 Crore excl. interest}

If the parties fail to resolve such a dispute or difference by mutual consultation and through Independent Engineer (if applicable) and/or through Mediation (if applicable) within a period specified at Cl. 19.1 and 19.3 above, the dispute, if the parties agree, may be referred to Conciliation through Expert Settlement Council (ESC), in cases where the Disputed amount (Claim/ Counter claim, whichever is higher) is upto Rs.25 crore (excl. interest).

19.4.1.1 Invitation for Conciliation through ESC:

19.4.1.1.1 A party shall notify the other party in writing about such a dispute it wishes to refer for Conciliation through ESC within a period of 15 days from the date of failure to resolve the dispute through Mutual Consultation and Independent Engineer (if applicable) and/or through Mediation (if applicable) within a period as specified at Cl. 6.1, 6.2 and 6.3 above. Such Invitation for Conciliation shall contain sufficient information as to the dispute to enable the other party to be fully informed as to the nature of the dispute, amount of the monetary claim, if any, and apparent cause of action.

19.4.1.1.2 Upon acceptance of the invitation to conciliate, the other party shall submit its counter claim, if any, within a period of 15 days from the date of the invitation to conciliate. If the other party rejects the invitation or Disputed amount (Claim/ Counter claim, whichever is higher) exceeds Rs 25 crore (excl. Interest), there will be no Conciliation proceedings through ESC.

There shall be no Conciliation where disputed amount (Claim/ Counter claim, whichever is higher excl. interest) is only up to Rs 5 lakhs.

19.4.1.1.3 If the party initiating Conciliation does not receive a reply within fifteen (15) days from the date on which it sends the invitation, or within such other period of time as specified in the invitation, it shall treat this as a rejection of the invitation to conciliate from the other party.

19.4.1.2.0 Conciliation through ESC:

19.4.1.2.1 Where Invitation for Conciliation has been furnished under GCC sub clause 19.4.1.1, the parties shall attempt to settle such dispute through Expert Settlement Council (ESC) which shall be constituted by CMD/Chairman of Employer.

19.4.1.2.2 ESC will be formed from experts comprising three members from the panel of Conciliators maintained by EMPLOYER. However, there will be single member ESC for disputes involving disputed amount (Claim/ Counter claim, whichever is higher excl. interest) is up to Rs. 1 crore.

CMD/ Chairman of Employer shall have the authority to reconstitute the ESC to fill any vacancy.

19.4.1.2.3 The ESC shall be amongst Civil Servants of Govt. of India retired from the level of Joint Secretary and above, Retired Judges, Officers retired from the level of Executive Director and above of any Maharatna /Navratna company in India, other than NTPC Ltd, Retired Independent Directors who have served on the Board of any Maharatna / Navratna company in India, other than NTPC Ltd.

19.4.1.3.0 Proceedings before ESC:

19.4.1.3.1 The claimant shall submit its Statement of Claims (SOC) along with relevant documents to ESC members, and to the party(s) indicated in the appointment letter within 15 days of appointment of ESC. The respondent shall file its reply/Statement of Defence (SOD) and counter claim (if any) within 15 days of the receipt of the Statement of claims. Each party shall send a copy of such Statement along with relevant documents to the other party.

Parties may file their rejoinder/additional documents, if any in support of their Claim/Counterclaim within next 7 days. No documents shall be allowed thereafter, except with the permission of ESC.

19.4.1.3.2 The parties shall file their claim and counterclaim in the following format

- a. Chronology of the dispute
- b. Brief of the contract
- c. Brief history of the dispute
- d. Issues

Sl. No.	Description of Claims/Counter claims	Amount (in foreign currency/INR)	Relevant Contract Clause

Details of Claim(s)/Counter Claim(s)

Basis/Ground of claim(s)/counter claim(s) (along with relevant clause of contract

Note: Statement of claims shall be restricted to maximum limit of 20 pages.

19.4.1.3.3 In case of 3 members ESC, 2 members will constitute a valid quorum and the meeting can take place to proceed in the matter after seeking consent from the member who is not available. However, ESC recommendations will be signed by all the members.

If required, meetings can be conducted through video conferencing/other digital means subject to the agreement between the parties and the ESC.

19.4.1.3.4 The parties shall be represented by their in house employees. No party shall be allowed to bring any advocate or outside consultant/advisor/agent to contest on their behalf. Ex-officers of Employer's Organization who have handled the subject matter in any capacity shall not be allowed to attend and present the case before ESC on behalf of contractor. However, ex-employees of parties may represent their respective organizations. Parties shall not claim any interest on claims/counter-claims from the date of notice invoking Conciliation till execution of settlement agreement, if so arrived. In case, parties are unable to reach a settlement, no

interest shall be claimed by either party for the period from the date of notice invoking Conciliation till the date of ESC recommendations and 30 days thereafter in any further proceeding.

19.4.1.3.5 ESC will conclude its proceedings in maximum 5 meetings and give its recommendations within 90 days from the date of reference to ESC. ESC will give its recommendations to both the parties recommending possible terms of settlement. CMD/ Chairman of Employer may extend the time/number of *meetings, in exceptional cases, if ESC requests for the same with sufficient reasons and as agreed by the parties.*

19.4.1.3.6 *Depending upon the location of ESC members and the parties, the venue of the ESC meeting shall be either Delhi/Mumbai/Kolkata/Chennai or any other city whichever is most economical from the point of view of travel and stay etc. All the expenditure incurred in ESC proceedings shall be shared by the parties in equal proportion.*

19.4.1.4.0 Fees & Facilities to the Members of the ESC

The cost of Conciliation proceedings including but not limited to fees for Conciliator, Airfare, Local transport, Accommodation, cost towards conference facility etc shall be as provided herein below:

Sl. No.	Fees/ Facility	Entitlement
1	Fees	Lumpsum fee of Rs. 2,50,000 per conciliator irrespective of the no. of meetings. *
2	Secretarial expenses	Rs. 10,000 lump sum (to 1 member only).
3	Transportation in the city of the meeting	Car as per entitlement or Rs. 2,000 per day
4	Venue for meeting	Employer's conference rooms
Facilities to be provided to the out-stationed member		
5	Travel from the city of residence to the city of meeting	As per entitlement of Independent Directors. Executive class air tickets / first class AC train tickets/ Luxury car/ reimbursement of actual fare. However, entitlement of air travel by Business class shall be subject to austerity measures, if any, ordered by Govt of India.
6	Transport to and fro airport/ railway station in the city of residence	Car as per entitlement or Rs. 3,000
7	Stay for out stationed members	As per entitlement of Independent Directors.
8	Transport in the city of meeting	Car as per entitlement or Rs. 2000 per day

* Due to unavoidable circumstances, if there is requirement of more than 5 meeting to conclude the Conciliation proceedings, the same may be done at the discretion of ESC within the capping of fee of Rs 2.5 Lakhs per conciliator. However, logistic

arrangements, including travel, etc. may be provided as per the extant Policy for such additional sittings.

Aforesaid fees is subject to revision by Employer from time to time and subject to government guidelines on austerity measures, if any. All the expenditure incurred in the ESC proceedings shall be shared by the parties in equal proportions. The Parties shall maintain the account of expenditure and present to the other for the purpose of sharing on conclusion of the ESC proceedings.

19.4.1.5.0 If recommendations/ report of ESC is acceptable to both the parties, a Settlement Agreement under Section 73 of the Arbitration and Conciliation Act, 1996 will be signed to the extent agreed by the parties within 15 days of acceptance by the parties and same shall be authenticated by all the ESC members.

Parties are free to terminate Conciliation proceedings at any stage as provided under the Arbitration and Conciliation Act 1996.

19.4.1.6.0 Notwithstanding anything contained in any other law for the time being in force, the Conciliator and the parties shall keep confidential all matters relating to the Conciliation proceedings. Confidentiality shall extend also to the settlement agreement, except where its disclosure is necessary for purposes of implementation and enforcement.

The parties shall not rely on or introduce as evidence in Arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of the Conciliation proceedings,—

- a) views expressed or suggestions made by the other party in respect of a possible settlement of the dispute;
- b) admissions made by the other party in the course of the Conciliation proceedings;
- c) proposals made by the Conciliator; and
- d) the fact that the other party had indicated his willingness to accept a proposal for settlement made by the Conciliator.

19.4.2.0 Resolution of Dispute through Conciliation Committee of Independent Experts (CCIE), constituted by Ministry of Power (MoP) {For cases with Disputed amount (Claim/ Counter claim whichever is higher) above Rs. 25 Crore excl. interest}

If the parties fail to resolve such a dispute or difference by mutual consultation and through Independent Engineer (if applicable) and/or through Mediation (if applicable) within a period specified at Cl. 6.1, 6.2, 6.3 above, the dispute, if the parties agree, may be referred to Conciliation Committee of Independent Experts (CCIE), in cases where the Disputed amount (Claim/ Counter claim whichever is higher) is above Rs. 25 crore excl. interest.

19.4.2.1 Invitation for Conciliation through CCIE:

19.4.2.1.1 *A party shall notify the other party in writing about such a dispute it wishes to refer for CCIE within a period of 15 days from the date of failure to resolve the dispute through Mutual Consultation and Independent Engineer (if applicable) and/or through Mediation (if applicable) within a period as specified at Cl. 6.1, 6.2 and 6.3 above. Such Invitation for Conciliation shall contain sufficient information as to the dispute to enable the other party to be fully informed as to the nature of the dispute, amount of the monetary claim, if any, and apparent cause of action.*

19.4.2.1.2 *If the party initiating Conciliation does not receive a reply within fifteen (15) days from the date on which it sends the invitation, or within such other period of time as specified in the invitation, it shall treat this as a rejection of the invitation to conciliate from the other party.*

19.4.2.2 Conciliation Committee of Independent Experts:

19.4.2.2.1 *Where Invitation for Conciliation has been consented to under GCC sub clause 19.4.2.1, the same shall be referred to the Conciliation Committee of Independent Experts (CCIE) within 30 days.*

19.4.2.2.2 *Conciliation Committees of Independent Experts (CCIE) have been constituted and notified by MoP for settlement of disputes arising in the Contract. There are three CCIEs, as specified in Special Conditions of Contract.*

19.4.2.2.3 *The Contractor may select three CCIEs, in priority order, from the list of CCIEs enclosed with the Special Conditions of Contract, for finalization by Central Electricity Authority (CEA).*

*There shall not be any conflict of interest for the members of the CCIE due to their past assignments. **Individuals CCIE members shall submit an undertaking in this regard to the Employer, prior to appointment.** It shall be ensured that they have not been engaged for providing any services to any of the parties i.e. either Employer or the Contractor in the last five years. An Undertaking in this regard, shall also be furnished by the Contractor for the purpose of avoiding any conflict of interest.*

19.4.2.3 Proceedings before CCIE:

19.4.2.3.1 *The procedure of CCIE shall not be treated as alternate arbitration proceedings where both parties come with Statement of claims/defence, arguments/counter arguments, rejoinders, written submissions etc., aided by their respective lawyers.*

19.4.2.3.2 *The parties shall be brief and to the point before the Committee with regard to their respective stance and view the exercise in the spirit of conciliation/settlement.*

19.4.2.3.3 *The possibility of non-availability of any one of the members of CCIE in any proceedings cannot be ruled out. As such, the Committee comprising the other two members shall be competent to proceed in the matter. The proceedings of the Committee shall not be vitiated if one of the three members of CCIE is not present in the deliberations of the*

Committee. When the parties sign the settlement agreement, at least two members of CCIE shall authenticate the same. Such conciliation proceedings shall be considered valid and the settlement agreement will be binding on the parties.

19.4.2.3.4 The parties shall be represented by their in house employees. No party shall be allowed to bring any advocate or outside consultant/advisor/agent to contest on their behalf. Ex-officers of Employer's Organization who have handled the subject matter in any capacity shall not be allowed to attend and present the case before CCIE on behalf of contractor. However, ex-employees of parties may represent their respective organizations.

19.4.2.3.5 The Conciliation proceedings shall be completed in each case through 5 sittings in a period of not more than three months from the date the reference made to the CCIE. In exceptional cases, if any dispute so merits, the time period may be extended at the discretion of Conciliation Committee (with reasons to be recorded in writing), for a further period of three months.

19.4.2.3.6 The CCIE shall hold day to day sitting at a suitable place (preferably the headquarter of the Employer or New Delhi) and may hold as many sittings every month as it deems appropriate keeping in view the volume of work.

19.4.2.4 Fees & Facilities to the Members of the CCIE

Each member of CCIE would be paid a sum of Rs. 50,000/- as sitting fee per sitting. In addition, Rs. 5,000/- per sitting will be paid for local transport charges for each day of proceeding.

In case, a particular dispute requires more than 5 sittings, the same may be held at the discretion of the CCIE but with a cap on payment of fee for 5 sittings only. The local transport charges shall, however, be paid as provided for each day of sitting beyond the 5 sittings.

All expenditure incurred on the conciliation proceedings including payment of fees to the Conciliators, office space, logistic, secretarial assistance and other incidental expenses etc. shall be borne by the Employer initially. Thereafter it shall be shared equally by both parties on completion of the conciliation process.

19.4.2.5 The Parties shall maintain the account of expenditure and present to the other for the purpose of sharing on conclusion of the CCIE proceedings.

The Conciliation process shall be conducted under Part III of the Arbitration and Conciliation Act, 1996.

In case of failure of the conciliation process at the level of the Conciliation Committee, the parties may withdraw from conciliation process and take recourse to remedies as may be available to them under the applicable laws other than Arbitration.

In the event of the conciliation proceedings being successful, the parties to the dispute would sign the written settlement agreement and the conciliators would

authenticate the same. Such settlement agreement would then be binding on the parties in terms of Section 73 of the Arbitration and Conciliation Act, 1996.

After successful conclusion of proceedings, the Parties to the conciliation process, have to undertake and complete all necessary actions for implementation of the terms of settlement within a period of 30 days from execution of settlement agreement, unless a different timeline not exceeding 60 days is agreed upon in settlement agreement. All pending claims of parties, in connection with the dispute, before any other legal forum are to be withdrawn within the said 30 days in pursuance of the settlement agreement.

19.4.2.6 Notwithstanding anything contained in any other law for the time being in force, the Conciliator and the parties shall keep confidential all matters relating to the Conciliation proceedings. Confidentiality shall extend also to the settlement agreement, except where its disclosure is necessary for purposes of implementation and enforcement.

The parties shall not rely on or introduce as evidence in Arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of the Conciliation proceedings, —

- a) views expressed or suggestions made by the other party in respect of a possible settlement of the dispute;*
- b) admissions made by the other party in the course of the Conciliation proceedings;*
- c) proposals made by the Conciliator; and*
- d) the fact that the other party had indicated his willingness to accept a proposal for settlement made by the Conciliator.*

19.5.0 Arbitration

19.5.1 **If the process of mutual consultation and IE (if applicable) and/or Mediation (if applicable) and/or ESC fails to arrive at a settlement between the parties, Employer or the Contractor may, within Thirty (30) days of such failure, give notice to the other party, of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. The mechanism of settling the disputes through arbitration shall be applicable only in cases where the disputed amount (i.e. Claim/ Counter claim, whichever is higher, excluding interest) is **less than Rs. 10 crores**.*

If the claim/ counter claim is in foreign currency, the SBI Bills Selling Exchange rate prevailing on the date of claim shall be used for the purpose of converting the claim in Indian Rupee

*In case the disputed amount (Claim/ Counter claim, whichever is higher, excl. interest) is **Rs. 10 Crores or above**, the parties shall be within their rights to take recourse to remedies as may be available to them under the applicable laws other than Arbitration after prior intimation to the other party. There shall be no arbitration where the disputed amount (Claim/ counter claim, whichever is higher) is only up to Rs. 5 lakhs.*

The parties at the time of invocation of arbitration shall submit all the details of the claims and the counter-claims including the Heads/Sub-heads of the Claims/Counter-Claims and the documents relied upon by the parties for their respective claims and counter-claims. The parties shall not file any documents/details of the claims and counter-claims thereafter.

The claims and the counter claims raised by the parties at the time of invocation of the arbitration shall be final and binding on the parties and no further change shall be allowed in the same at any stage during arbitration under any circumstances whatsoever.

In case, multiple arbitrations are invoked (whether sub-judice or arbitral award passed) by any party under this contract, then the cumulative disputed amount (i.e. Claim/ Counter claim, whichever is higher, excluding interest) in all such arbitrations shall be taken into account while arriving at the total disputed amount for the subject contract. Disputes having cumulative value less than Rs 10 crores shall be resolved through arbitration. In case the disputed amount (Claim/Counter claim, whichever is higher, excluding interest) is Rs 10 crores and above, the parties shall be within their rights to take recourse to remedies as may be available to them under the applicable laws other than Arbitration after prior intimation to the other party.

19.5.2 Any dispute in respect of which a notice of intention to commence arbitration has been given, in accordance with GCC Sub Clause 6.5.1, shall be finally settled by arbitration.

19.5.3 It is agreed between the parties that the Arbitration proceedings shall be conducted as per the provisions of Fast Track Procedure as provided under The Arbitration and Conciliation Act, 1996, as amended from time to time.

Any dispute or difference raised by a party to arbitration shall be adjudicated by an arbitral tribunal consisting of three arbitrators, in the following manner:

- a) A party willing to commence arbitration proceeding shall invoke Arbitration Clause by giving notice to the other party.*
- b) The EMPLOYER and the Contractor shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator within 30 days, who shall act as presiding arbitrator of the arbitral tribunal. If the two arbitrators do not succeed in appointing a third arbitrator within 30 days of the latter of the two arbitrators has been appointed, the third arbitrator shall be appointed by the High Court of Delhi.*

- c) *If one party fails to appoint its arbitrator within 30 days after the other party has named its arbitrator, the party which has named its arbitrator may approach the High Court of Delhi to appoint the second arbitrator.*
- d) *If any member of the arbitral tribunal dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings or his mandate is terminated by the Court, a substitute shall be appointed in the same manner as the arbitrator whose mandate has terminated as above. After substitution of new member, the arbitration tribunal shall proceed with reference from the stage where the mandate of the arbitrator has been terminated.*
- e) *Arbitrator tribunal shall be paid fees as per the Fee Schedule (presently Fourth Schedule) provided in 'The Arbitration and Conciliation Act, 1996' as amended from time to time. If the claim/ counter claim is in foreign currency, the SBI Bills Selling Exchange rate prevailing on the date of claim shall be used for the purpose of converting the claim in Indian Rupee which may be used for determining the arbitration fee.*
- f) *If after commencement of the Arbitration proceedings, the parties agree to settle the dispute mutually or refer the dispute to mediation or Conciliation, the arbitral tribunal shall put the proceedings in abeyance until such period as requested by the parties. Where the proceedings are put in abeyance or terminated on account of mutual settlement of dispute by the parties, the fees payable to the arbitrator shall be determined as under:*
40% of the fees if the Pleadings are complete.
60% of the fees if the Hearing has commenced.
80% of the fees if the Hearing is concluded but the Award is yet to be passed.
- g) *Each party shall pay its share of arbitrator's fees in stages as under or as per the directions of Arbitrator:*
40 % of the fees on Completion of Pleadings.
40% of the fees on Conclusion of the Final Hearing.
20% at the time when arbitrator notifies the date of final award.
- h) *The Claimant shall be responsible for making all necessary arrangements for the travel/ stay of the Arbitrator including venue of arbitration, hearings. The parties shall share the expenses for the same equally.*
- i) *The Arbitration shall be held at Delhi only.*
- j) *The arbitral tribunal shall give reasoned and speaking award in prompt manner and it shall be final and binding on the parties.*
- k) *Subject to the aforesaid conditions, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment thereof as amended from time to time, shall apply to the arbitration proceedings under this clause.*

19.5.4 *In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract (s) between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se and also between CPSEs and Government Departments/ Organizations (excluding disputes*

relating to Railways, Income Tax, Customs & Excise Departments), such disputes or difference shall be taken up by either party for resolution through Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD) as mentioned in DPE Office Memorandum No. 05/0003/2019-FTS-10937 dated 14.12.2022 issued by Department of Public Enterprises, Government of India and its further clarifications, modifications and amendments, issued from time to time.

The limit on disputed amount as mentioned at clause 6.5.1 above shall not be applicable and matter may be referred to AMRCD irrespective of the amount involved in dispute, if the dispute could not be resolved through Mutual Consultation and IE (if applicable) as brought out at GCC Sub Clause 19.1 and 19.2 above.

19.6.0 Notwithstanding any reference to the Independent Engineer or Mediation or Conciliation or Arbitration herein,

- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree.*
- (b) the Employer shall pay the Contractor any monies due to the Contractor.*

Settlement of Dispute clause cannot be invoked by the Contractor, if the Contract has been mutually closed or 'No Demand Certificate' has been furnished by the Contractor or any Settlement Agreement has been signed between the Employer and the Contractor.

20.0 NOT USED

21.0 TERMINATION

21.1 Termination for default:

- 21.1.1 The owner may without prejudice to any other remedy for breach of contract, by written notice of default sent to PMC/PEA, terminate the contract in whole or in part
 - a) If the PMC/PEA fails to deliver any or all of the services within the time period(s) specified in the contract or any extension thereof granted by the owner in writing.
 - b) If the PMC/PEA fails to perform any other obligation(s) under the contract or;
 - c) If the PMC/PEA in either of the above circumstances, does not cure its failure within a period of thirty (30) days after receipt of the default notice from the owner.
 - d) If the PMC/PEA, sub-contracts any part of the works in violation of the provision of Clause 45.0 "Restrictions on procurement from a Bidder of a country which shares a land border with India".

- 21.1.2 In the event the Owner terminates the Contract in whole or in part, pursuant to para 21.1.1, the owner may get the works done, upon such terms and in such manner as it deems appropriate, similar to those parts not carried out by the PMC/PEA, and the PMC/PEA shall be liable to the Owner for any excess costs for such similar works. However, the PMC/PEA shall continue performance of the Contract to the extent not terminated.

21.2 TERMINATION FOR CONVENIENCE

- 21.2.1 The Owner, may by written notice sent to the PMC/PEA, terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for owner's convenience, the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.
- 21.2.2 The items of work that is completed and ready for final inspection within thirty (30) days after the PMC/PEA's receipt of notice of termination shall be accepted by the Owner at the Contract terms and prices. For the remaining items of works the Owner may elect
- a) To have any portion completed and delivered at the contract terms and prices and/or
 - b) To cancel the remainder and pay to the PMC/PEA an agreed amount for partially completed works.

21.3 TERMINATION FOR INSOLVENCY

- 21.3.1 The owner may at any time terminate the Contract by giving written notice to the PMC/PEA, without compensation to the PMC/PEA, if the PMC/PEA becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Owner.
- 21.3.2 Upon termination of the contract at any time for whatever reason by NTPC compensation shall be payable to the PMC/PEA for all items of works performed satisfactorily until the date of termination. In addition the PMC/PEA will be paid for such of those items of work which have been partially completed as conditions stipulated under clause 21.2.2. The PMC/PEA shall provide available documentary evidence to this effect, acceptable to NTPC.
- 21.3.3 Following issuance by NTPC of a notice of termination and prior to the effective date of such termination, PMC/PEA shall:
- i) terminate performance of work in progress under the contract on the date and to the extent specified in the notice of termination;
 - ii) incur no further costs for services except as necessary to complete performance of any portion of the work under the contract not terminated by the said notice;

- iii) terminate all outstanding order, service contracts and contracts to the extent that they relate to the performance of work terminated by the notice;
- iv) transfer title and deliver to NTPC in the manner, at the times and to the extent, if any, as directed by NTPC, all completed or partially completed items of works which, if the contract had been continued, would have been required to be furnished to NTPC;

The termination of the contract shall not relieve the PMC/PEA of its responsibilities and liabilities as per the contract for the portion of the works performed prior to the effective date of termination.

22.0 SIGNING OF AGREEMENT

- 22.1 The PMC/PEA will prepare a draft contract agreement as per the format to be provided by the owner, for its review and approval within twenty eight (28) days of issue of letter of Award. Upon approval of the same, the authorized signatory of PMC/PEA will be required to sign the contract agreement. The PMC/PEA will make and submit at no extra cost to NTPC immediately after signing of it by both parties.

23.0 GOVERNING LAWS

- 23.1 The Contract shall be governed by the Indian Laws from time to time and the Delhi Courts alone shall have exclusive jurisdiction.

24.0 SUSPENSION OF THE OBLIGATION

- 24.1 The obligations stipulated in this specification can only be suspended in the case of any particular item of work, in the event of Force Majeure as defined in clause 25.0 or as the result of an agreement between the parties.
- 24.2 In the event of Force Majeure, neither of the parties may be considered in default of its obligations under the terms of the Specifications.

25.0 FORCE MAJEURE

Force majeure is hereby defined as any cause which is beyond the control of the PMC/PEA or NTPC as the case may be which they could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affects the performance of contract such as:-

- a) Natural Phenomena including but not limited to floods, draughts, earthquakes and epidemics.
- b) Acts of any government, domestic or foreign, 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 cause.

26.0 LIMITATION OF LIABILITIES

- 26.1 NTPC shall in no way be responsible for any liabilities arising out of the PMC/PEA's contractual obligation with the PMC/PEA's personnel, experts, engineers, agencies (other than the Contractors engaged by PMC/PEA for execution of the Contract), licensors, collaborators. Similarly, the PMC/PEA shall in no way be responsible for any liabilities arising out of NTPC's personnel, agency, licensors, collaborators or vendors.
- 26.2 The PMC/PEA and NTPC both agree that each shall assume full risk of damages or injury to its own properties, employees and representatives caused by any act or omission to act by their respective employees or representatives, during the performance.

27.0 ENFORCEMENT OF TERMS

The failure of Owner to enforce at any time any 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 Owner of any of its rights hereto shall not preclude or prejudice him from exercising the same or any other right it may have under the Contract.

28.0 NOTICE OF DEFAULT

- 28.1 In the event of any default by either party hereto, in respect of any of its obligations and responsibilities under the contract, the party not in default shall give notice in writing to the other party calling upon it to rectify such default within a period of thirty (30) days of the receipt thereof. Should the party remain in default within the said period, the other party shall be entitled to treat it as a breach of contract and notice to that effect shall be given forthwith.

29.0 PATENT

- 29.1 The PMC/PEA shall hold harmless and indemnify the Owner from and against loss, damage and expenses arising from any claim for infringement of patent, copyright, design and other such rights in existence or to be granted on an application published prior to the completion of this Contract with respect to or arising out of the use or supply of design, or any work in accordance with the designs, drawings or specifications furnished, approved or recommended by the PMC/PEA.
- 29.2 The PMC/PEA shall promptly notify the Owner in writing if the PMC/PEA has acquired knowledge of any patent under which a claim or suit for infringement could reasonably be brought because of the use by the owner of any information, recommendation or specifications, services rendered by the PMC/PEA.
- 29.3 The PMC/PEA, in such case, shall forthwith at its own cost make and furnish to the owner alternative designs, drawings, specifications or recommendations to avoid the same and without putting the owner to additional cost.

30.0 INSTRUCTION REGARDING EXPENDITURE

The PMC/PEA shall obtain prior approval of Engineer-in-charge before incurring any expenditure regarding enabling/infrastructure works such as office equipment, procurement/hiring of vehicle, furnishing of office/temporary quarters, etc.

31.0 INDEMNITY

The PMC/PEA shall be fully responsible for execution of the works and shall take all precautions to prevent loss or damages or to minimize loss or damage to the extent possible, and shall be liable to make good any loss or damage incurred due to negligence on his part.

The PMC/PEA shall indemnify and keep NTPC indemnified against all losses or claims for injuries or damages to any person or any property whatsoever which may arise out or in consequence of the execution of any part(s) of the work under the contract. All expenses incurred for such insurance etc. shall however be excluded from the direct cost.

The PMC/PEA shall at all times indemnify NTPC against all claims, damages or compensation under the provisions of Payment of Wages Act 1936. Minimum Wages Act, 1948, Owner's Liability Act 1938, the Workmen's Compensation Act 1923, Industrial Dispute Act 1947 and Maternity Benefit Act 1961 or any statutory notifications thereof or any other law relating thereto and rules made from time to time there under, or as a consequence of any accident or injury to any workman or other persons in or about the work.

PMC/PEA shall include necessary provisions in the bidding documents of execution contracts to comply to provisions of Indemnity.

32.0 PROGRESS REPORT

The PMC/PEA shall prepare and submit to the Engineer-in-Charge monthly progress report showing the progress and status of the 'Works being performed by him including such materials as charts, networks and photograph (if any) as per the directives of the Engineer-In-Charge. Draft formats of progress reports shall be finalised in consultation with the Engineer-In - Charge.

It is understood that submission of such reports and reviews thereof by NTPC shall not be deemed to absolve the PMC/PEA of his responsibility of timely completion of the assignment as per the time schedule indicated in the Technical Specification.

33.0 UNITS & STANDARDS/ CODES/ REGULATIONS

The International system of Units (SI) will be used for carrying out the services mentioned in the specification. Indian Standards, codes and regulations, wherever applicable shall be adopted and adhered to by the PMC/PEA. In case of such Indian Standards/Codes/Regulations being not available in particular areas, applicable and acceptable international standards shall be followed.

34.0 ASSOCIATION OF NTPC's ENGINEERS

- 34.1 NTPC/Owner may depute their engineer/representative to be present during the entire period of this Consultancy assignment/service studies or any part thereof and they would be closely associated by the PMC/PEA in all activities relating to the assignment for a fruitful interaction.
- 34.2 The PMC/PEA shall provide all facilities for NTPC/Owner's engineers/representatives to have fruitful participation in the work. The to and fro travel charges and the boarding and lodging charges of NTPC engineers/representatives shall be borne by NTPC.

35.0 NO WAIVER

If the Owner, in any instance, does not insist upon strict performance of any of the terms of the assignment, it shall not be construed as a waiver or relinquishment in the future till the assignment is enforced and shall not relieve the PMC/PEA of any of its responsibilities under the assignments.

36.0 NTPC DISCRETION

NTPC Limited does not bind themselves to accept the offer or to give reasons for their decision.

37.0 SAFETY MEASURES

The Employer has formulated Safety Rules for Construction & Erection of Power Plants and is enclosed at Annexure-D. These Safety Rules lay down the safety requirements for safe execution of project activities, responsibilities of the Contractor, and all concerned involved in Construction and Erection. The PMC/PEA, including his contractors, while executing the Works, shall strictly comply with these Safety rules and statutory requirements (including amendments thereof), as applicable, in respect of safety of personnel, equipment and materials at site area under execution of the Contractor. Quoted fee shall also include cost towards all required safety measures and necessary insurance coverages. PMC/PEA shall indemnify and shall keep NTPC indemnified against losses and damages, if any, suffered by the persons, deployed by the PMC/PEA or his Contractors, due to any cause and/or accident during working at the site.

38.0 FRAUD PREVENTION POLICY

The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to the Fraud Prevention Policy of Employer displayed on its tender website <https://ntpctender.ntpc.co.in/> and shall immediately apprise Employer about any fraud or suspected fraud as soon as it comes to their notice. If in terms of above policy it is established that the bidder/his representatives have committed any fraud while competing for this contract then the bid security of the bidder shall be forfeited.

Bidders shall certify their compliance on "**Fraud Prevention Policy**" of Employer by accepting the following GTE at the e-Tender Portal:

“Do you certify full compliance to all provisions of Bidding Document?”

Acceptance of General Technical Evaluation (GTE) of the Tender at e-Tender Portal shall be considered as bidder's confirmation that they have read the contents of the Fraud Prevention Policy as displayed on tender website at <https://ntpctender.ntpc.co.in/> under section 'policy docs' and undertake that they along with their associate/collaborator/ subcontractors / sub vendors / consultants / service providers shall strictly abide by the provisions of the Fraud Prevention Policy.

39.0 AUTHORIZATION FOR ELECTRONIC FUND TRANSFER

The initial advance payment & payments due on receipt of equipment and materials and those for the inland transportation and the erection portion shall be made directly to the PMC/PEA by the Owner. Wherever technically feasible, these payments shall be made electronically only as per details of Bank Account indicated in the contract. The PMC/PEA shall hold the Owner harmless & Owner shall not be liable for any direct, indirect or consequential loss or damage sustained by the PMC/PEA on account of any error in the information or change in Bank details provided to the Owner in the prescribed form specified at Attachment-5 without intimation to Owner duly acknowledged.

40.0 INTEGRITY PACT

Bidders are required to unconditionally accept all conditions of the "Integrity Pact (IP)" as per Attachment - 4 of Bidding Documents which has been pre-signed by the Employer.

Bidders shall certify their compliance on "**Integrity Pact** " by accepting the following General Technical Evaluation (GTE) of the Tender at e-Tender Portal:

“Do you certify full compliance to all provisions of Bidding Document?”

On Bidder's acceptance to the above GTE condition, Bidder confirms to have read, understood and unconditionally accept & commit to all the contents, terms, conditions and undertakings mentioned in the Integrity Pact which has been pre-signed by the Employer and enclosed with the Bidding Documents.

It may also be noted that subsequent to Employer's evaluation of Bids, resulting into award of Contract to a particular Bidder, the Integrity Pact so submitted shall form an integral part of the Contract.

41.0 INDEPENDENT EXTERNAL MONITORS (IEMs)

In respect of this package, the Independent External Monitors (IEMs) would be monitoring the implementation and effectiveness of the Integrity Pact Program as per the SOP issued by CVC from time to time and available in its website <https://cvc.gov.in/>

The Independent External Monitor(s) (IEMs) as mentioned at NTPC tender website(<https://ntpctender.ntpc.co.in/>) under Integrity Pact tab have been appointed by NTPC, in terms of Integrity Pact (IP) which forms part of the NTPC Tenders/Contracts.

This panel is authorized to examine /consider all references made to it under this tender. The bidder(s), in case of any representation/grievance/complaint pertaining to this package may raise the issue directly with the IEMs at following Address or through e-mail as mentioned in <https://ntpctender.ntpc.co.in/> :

“The IEMs' Secretariat,
Contracts Services, 6th Floor, EOC,
NTPC Limited, A-8A, Sector-24,
Noida-201301 (UP).”

The Independent External Monitors (IEMs) has the right to access without restriction to all Project documentations of the Employer including that provided by the Contractor. The Contractor will also grant the IEMs, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his Project Documentations. The same is applicable to Subcontractors. The IEMs are under contractual obligation to treat the information and documents of the Bidder/ Contractor/ Sub-Contractors/ JV partners/ Consortium member with confidentiality.

The Nodal Officer for necessary coordination with Independent External Monitors shall be as under:

- i) Concerned Group Head in CC&M: if the issue pertains to awarding of Contract by CC&M
- ii) Concerned Group Head of C&M under respective CPG of USSC : if the issue pertains to awarding of Contract by USSC
- iii) Concerned Head of Department: if the issue pertains to other departments
- iv) Head of Project/ Station : if the issue pertains to post-award execution or award of Contract by Project/ Station

42.0 TRAVEL EXPENSES

All the travel expenses including boarding and lodging, insurance and taxes incurred by PMC/PEA for carrying out all the works indicated in the scope of work shall be included in the bid price and the Owner shall not bear any liability on this account. All the travel expenses including boarding, lodging, taxes and insurance of the engineers of NTPC/Owner travelling to PMC/PEA's office in India shall be borne by NTPC/Owner.

43.0 ADDRESS FOR COMMUNICATION

Abhishek Kumar Jain / Lekhraj Singh
AGM (CS)/ Sr. Manager (CS)
NTPC Limited
Plot A-8A, Sector 24, Noida-201301
State of U.P. India
e-mail: abhishekjain02@ntpc.co.in/ lekrajsingh@ntpc.co.in

44.0 POLICY FOR DEBARMENT FROM BUSINESS DEALINGS

The Employer has in place a Policy for Debarment from Business dealings displayed on the website www.ntpc.co.in/ & www.ntpctender.ntpc.co.in. Business dealings may be withheld or banned with the Bidder/Contractor on account of any of the grounds and following the procedures as detailed in the said Policy for Debarment from Business Dealings.

Bidders shall certify their compliance on “**Policy for Debarment from Business Dealings**” of Employer by accepting the following General Technical Evaluation (GTE) of the Tender at e-Tender Portal.

“Do you certify full compliance to all provisions of Bid Doc?”

Acceptance of above GTE shall be considered as bidder's confirmation to the following conditions:

- (1) Bidder have read the contents of Debarment Policy (version mentioned in BDS) displayed on the website www.ntpc.co.in / ntpctender.ntpc.co.in and agreed to abide by this policy.
 - a) Bidder have not been Banned/Blacklisted as on date of submission of bid by Ministry of Power or Deptt. of Expenditure, Ministry of Finance.
 - b) Bidder have not employed any public servant dismissed/removed or person convicted for an offence involving corruption or abetment of such offences.
 - c) Bidder's Director(s)/ Owner(s)/ Proprietor/ Partner(s) have not been convicted by any court of law for offences involving corrupt and fraudulent practices including moral turpitude in relation to business dealings with Government of India or NTPC or NTPC's group companies during the last five years.
- (2) Bidder further confirms as under:

that if at any point subsequent to award of Contract, the declarations given above are found to be incorrect, NTPC Limited/ Employer shall have the full right to terminate the Contract and take any action as per applicable laws for breach of contract including forfeiture of Bid Security/Performance Bank Guarantee.

45.0 “Restrictions on procurement from a Bidder of a country which shares a land border with India”

- 45.1 Any Bidder (including its Collaborator/Associate/DJU Partner/JV partner/Consortium Member/Assignee, wherever applicable) from a country

which shares a land border with India will be eligible to bid in this tender only if bidder is registered with the Competent Authority as mentioned in Annexure-E.

Further, any bidder having specified Transfer of Technology (ToT) arrangement with an entity from a country which shares a land border with India, will be eligible to bid only if the bidder is registered with the same competent authority as mentioned in Annexure-E.

(Definition/Requirement of ToT shall be as specified in DOE OM Ref. No. F.7/10/2021-PPD(1) dated 23.02.2023, enclosed with Annexure-E)

Such registration should be valid for the entire period of bid validity or any extension thereof. However, in case the validity period of registration is less than bid validity period, the Bidder shall be required to submit the extension of the validity period of registration before the opening of price bids, failing which the bid shall be rejected.

Further the successful bidder shall not be allowed to sub-contract services/works to any “Sub-contractor” from a country which shares a land border with India unless such Sub-contractor is registered with the competent Authority as mentioned in Annexure-E.

However, the said requirement of registration will not apply to bidders/sub-contractors 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. Bidders may apprise themselves of the updated lists of such countries available in the website of the Ministry of External Affairs.

- 45.2 “Bidder” (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, 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
- 45.3 “Sub-contractor” (including the term ‘Sub-vendor’/Sub-supplier’ in certain contexts) means any person or firm or company, every artificial juridical person not falling in any of the descriptions of Sub-contractors stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- 45.4 “Bidders from a country which shares a land border with India” / “Subcontractor from a country which shares a land border with India” / “Entity from a country which shares a land border with India” mentioned in para 45.1 above 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 entity 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 joint venture where any member of the consortium or joint venture falls under any of the above.

45.5 The beneficial owner for the purpose of clause “45.4” above will be as under;

- a) In case of company of Limited Liability Partnership, the beneficial owner is the natural person(s), 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-

- i. “Controlling ownership interest” means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company;
 - ii. “Control” shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholdings or management rights or shareholders agreements or voting agreements;
- b) In case of a partnership firms, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more judicial person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
 - c) In case of an unincorporated associations or body of individuals, the beneficial owner is the natural person(s) 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;
 - d) Where no natural person is identified under (a) or (b) or (c) above, the beneficial owner is the relevant natural person who holds the position of senior managing officials;
 - e) In case of a trust, the identifications of beneficial owner(s) shall include identification of the author of 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.

45.6 An Agent for the purpose of clause “45.4” is a person employed to do any act for another, or to represent another in dealings with third person.

[Note: i. A person who procures and supplies finished goods from an entity from a country which shares a land border with India will, regardless of the nature of his legal or commercial relationship with the producer of the goods, be deemed to be an Agent.

ii. However, a bidder who only procures raw material, components etc. from an entity from a country which shares a land border with India and then manufactures or converts them into other goods will not be treated as an Agent.]

- 45.7 The Contractor shall not be allowed to sub-contract works to any sub-contractor/ sub-vendor from a country which shares a land border with India unless such sub-contractor is registered with the competent Authority. The Competent Authority for the purpose of registration shall be as mentioned in Annexure-E.

However, the said requirement of registration will not apply to subcontractors 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. The Contractor may apprise itself of the updated lists of such countries available in the website of the Ministry of External Affairs.

Procurement of raw material, components, etc. does not constitute subcontracting.

- 46.0 Bidder shall certify their compliance to Clause “Restrictions on procurement from a Bidder of a country which shares a land border with India” by accepting the following General Technical Evaluation (GTE) of the Tender at e-Tender Portal:

“Do you certify full compliance to all provisions of Bidding Document?”

Acceptance of above attribute shall be considered as Bidder's confirmation that Bidder has read and understood the Clause regarding “Restrictions on procurement from a Bidder of a country which shares a land border with India” and its bid is in compliance to this clause.

In case it is established that Bidder has provided any false information in pursuance of the aforesaid Clause, while competing for this contract, then its bid shall be rejected and bid security shall be forfeited.

In case of a successful bidder, if it is established that the Bidder has not complied with terms of aforesaid Clause, during execution of contract, this would be considered as fraudulent practices as mentioned in 5.1 (j) of “Policy for Debarment from Business Dealings” and shall be dealt accordingly.

- 47.0 **Anti-Bribery and Anti-Corruption (ABAC) Policy**

The Bidder and its employees along with its Associate/ Collaborator/ Sub Contractors / Sub-Vendors / Consultants / Service Providers and all other persons associated with business of Employer shall strictly adhere to Anti Bribery and Anti-Corruption (ABAC) Policy of Employer displayed on tender website <https://ntpctender.ntpc.co.in/>.

Bidders shall certify their compliance on “Anti-Bribery and Anti-Corruption (ABAC) Policy” of Employer by accepting the following GTE at the e-Tender Portal:

“Do you certify full compliance to all provisions of Bidding Document?”

Acceptance of General Technical Evaluation (GTE) of the Tender at e-Tender Portal shall be considered as bidder's confirmation that they and their

employees along with their associate / collaborator/ subcontractors / sub vendors / consultants / service providers shall strictly abide by “Anti-Bribery and Anti-Corruption (ABAC) Policy” of Employer as displayed on tender website at **<https://ntpctender.ntpc.co.in/>** under section ‘policy docs’ and undertake that they represent and confirm that they are aware of, understand, and will comply with all applicable laws and regulations relating to anticorruption and anti-bribery and the ABAC Policy of Employer.

- 47.1 After award PMC/PEC and its employees along with its Associate/ Collaborator/ Sub Contractors / Sub-Vendors / Consultants / Service Providers and all other persons associated with NTPC in the performance of Contract shall strictly adhere to NTPC’s Anti-Bribery and Anti-Corruption (ABAC) Policy displayed on website **<https://ntpctender.ntpc.co.in/>** under section ‘policy docs’. The PMC/PEA and its employees along with its Associate/ Collaborator/ Sub Contractors / Sub-Vendors / Consultants / Service Providers and all other persons associated with Employer in the performance of Contract shall comply with all applicable laws and regulations relating to anti-corruption and anti-bribery and the ABAC Policy of Employer.

48.0 **CONFLICT OF INTEREST**

- 48.1 A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Employer’s interests. A bidder may be considered to have a conflict of interest with one or more parties in the bidding process, if:

- a) they directly or indirectly control, or are controlled by or are under common control of another entity; or
- b) they have the same legal representative/agent for purposes of their bids; or
- c) they have relationship with each other, directly or through common third party(ies), that puts them in a position to have access to information about or influence on the bid of another Bidder; or
- d) Bidder and/or any of its allied entity(ies), which directly or indirectly control(s) or is(are) controlled by or is(are) under common control of another entity, has(ve) participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the tender; or
- e) Bidder participates in more than one bid in this bidding process.

For the purposes of this clause the term ‘control’ shall have the following meaning:

“Control” shall include the right to appoint majority of the directors or to control the management or policy decisions exercisable by a person or persons acting individually or in concert, directly or indirectly, including by virtue of their shareholding or management rights or shareholders’ agreements or voting agreements or in any other manner.

Note: If two or more CPSEs/State PSEs participate in a tender, they will not be deemed to fall under the 'Conflict of Interest' provisions solely because they are under common control of Government of India / State Government.

- 48.2 Bidders shall certify their compliance to ITB Clause “Conflict of Interest” by accepting the following General Technical Evaluation (GTE) of the Tender at eTender Portal:

“Do you certify full compliance to all provisions of Bidding Document?”

Acceptance of above GTE shall be considered as Bidder's confirmation that Bidder has read and understood the ITB Clause regarding “Conflict of Interest” and its bid is in compliance to this clause.

In case it is established that Bidder has provided any false information in pursuance of the aforesaid Clause, while competing for this contract, then its bid shall be rejected and bid security shall be forfeited.

In case of a successful bidder, if it is established that the Bidder has not complied with terms of aforesaid Clause, during execution of contract, this would be considered as fraudulent practices as mentioned in para 5.1 (j) of “Policy for Debarment from Business Dealings” and shall be dealt accordingly.

49.0 EVALUATION OF BIDS

- 49.1 The evaluation shall be carried out in full conformity with the provisions of the Bidding documents/Specifications.
- 49.2 The comparison shall be of the Project Management fee (including the Goods and Services Tax (GST)) and Consultancy Fee for DPR & Detailed Engg. (including the Goods and Services Tax (GST)) specified by the Bidder in the BOQ. Subject to fulfilment of all the conditions mentioned in the Specifications/Bidding document, the Employer will award the Contract to the Bidder whose bid has been determined to be substantially responsive to the Specifications /Bidding Documents and whose bid has been adjudged as the lowest evaluated bid price. (lowest sum of Project Management fee.(including GST) and Consultancy Fee for DPR & Detailed Engg.(including GST)).

Illustrative Method of Evaluation

Sr. No.	Description	Equivalent INR
1	Total fees for Preparation of DPR and detailed Engineering (including all taxes, duties & levies other than GST there upon as applicable on direct transaction between PMC/PEA and Owner) as per Cl. 5.3 of Terms & Conditions of Contract	N1
2.	GST on N1 (Sr. No. 1)	G1
3.	Total Project Management fee (including all taxes, duties & levies other than GST there upon as applicable on direct transaction between PMC/PEA and Owner), as per Cl. 5.2 of Terms & Conditions of Contract. *	N2
4.	GST on N2 (Sr. No. 3)	G2

	Evaluated Bid Price	N1+N2+G1+G2
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* (To be quoted in percentage(%) of Estimated Direct cost i.e. INR 24442.21 Lakhs in the BOQ, for evaluation this quoted percentage shall be converted in equivalent INR)

49.3 Bidder may note that deviations, variations and additional conditions etc. found anywhere in the bid, shall not be given effect to in evaluation and it will be assumed that the Bidder complies with all the conditions of Bidding Documents/Specifications. In case the Bidder refuses to withdraw deviations, implicit or explicit, found anywhere in the bid, without any financial implication whatsoever to the Employer, the bid shall be rejected and bid security shall be forfeited.

49.4 The Employer does not bind itself to accept the lowest evaluated bid with or any offer or to give any reasons for its decision. The participating bidders may note that the decision of Employer shall be final and binding on all matters /issues arising out the bidding process.

49.5 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at an time prior to 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.

50.0 Declaration regarding insolvency, bankruptcy and Liquidation:

The Bidder shall not be eligible for bidding, if the Bidder has become the subject of proceedings under any bankruptcy or insolvency laws either by way of voluntary insolvency initiation or upon a judicial order being passed to that effect, thereby admitting the Bidder to Corporate Insolvency Resolution Process (CIRP) or Liquidation proceedings under Insolvency and Bankruptcy Code, 2016 or has a receiver appointed over its properties under any law for the time being in force in accordance with the guidelines of the Reserve Bank of India issued under the Banking Regulation Act, 1949.

The aforesaid ineligibility provision owing to the pendency of CIRP, Liquidation, appointed receiver shall also be applicable to any Associate, Collaborator, Technology Provider or Bidder's Parent/Holding/Subsidiary company from whom the Bidder has taken, or intends to take, technical and/or financial support for qualification in the bid.

In case of a Foreign Company who is participating either as a Bidder or an Associate, Collaborator, Technology Provider which is undergoing insolvency, bankruptcy or liquidation proceedings, as per the extant laws of the respective jurisdiction, shall also not be eligible for bidding or associating or collaborating or providing Technology or partnership with the Bidder.

If, at the time of bid submission, any Bidder or its Associate, Collaborator, Technology Provider or Bidder's Parent/Holding/Subsidiary Company, from whom the Bidder has taken, or intends to take technical and/or financial support for qualification in the bid, was not undergoing CIRP , Liquidation, Bankruptcy or similar proceedings but subsequently during the period of evaluation of bids,

including but not limited to technical, commercial and financial evaluation, or any time before the work is awarded, any such application is admitted by the Adjudicating Authority under the IBC, 2016 or any similar proceedings have started by any Judicial / Quasi-Judicial Body, the Bidder shall, with immediate effect, be considered as ineligible and his bid shall be rejected forthwith.

An undertaking as per enclosed Proforma (Attachment-6) to the effect that the Bidder or its Associate, Collaborator, Technology Provider or Bidder's Parent/Holding/Subsidiary Company, from whom the Bidder has taken, or intends to take, technical and/or financial support for qualification in the bid, is not undergoing any Insolvency, Liquidation or Bankruptcy proceedings, shall be submitted by the Bidder along with its Techno Commercial bid on the letter head of the Bidder duly signed by the authorized representative of the Bidder. Further, any Foreign Company which is acting as an Associate, Collaborator or Technology Provider, shall also submit an undertaking along with the Techno-Commercial bid of the Bidder that they are not undergoing insolvency, bankruptcy or liquidation as per the relevant laws of their respective jurisdiction.

Further, the Bidder, from the submission of bid until the award of work, shall immediately inform the Employer of any proceedings / admission / orders passed for admitting the Bidder or any of its Associate, Collaborator or Technology Provider or Bidder's Parent/Holding/Subsidiary Company (from whom the Bidder has taken or intends to take technical and/ or financial support for qualification of bid) to CIRP by the Adjudicating Authority under IBC, 2016 or any similar proceedings under other applicable laws (in cases where IBC, 2016 is not applicable).

Any suppression of such material facts or false declaration shall immediately render the Bidder liable for rejection of his bid, forfeiture of bid security/EMD and banning of business dealing as per terms and conditions of the Policy & Procedure for Debarment from Business Dealings. In case of non-submission of the Attachment / Declaration with authorized seal and signature, the bid shall not be entertained.

51.0 Advance Payment Security

51.1 If the Contractor/PMC/PEA wishes to take advance payment as mentioned in the Clause 8.1 a), and 8.1 c), it shall, within twenty-eight (28) days of the Notification/Letter of Award of Contract, provide a security in an amount equal to the advance payment calculated in accordance with Terms of Payment, and in the currency or currencies of the Contract, with an initial validity of up to ninety (90) days beyond the schedule date of Completion of the last facility covered under the package. However, in case of delay in completion of the facilities under the package, the validity of this security shall be extended by the period of such delay. The advance payment security shall also cover the amount of GST as applicable on the advance payment to be paid to the contractor.

51.2 The security shall be in the form of an unconditional bank guarantee as per the proforma provided in – Annexure-A. The Advance payment Security shall be reduced pro-rata every three (3) months after First Bill/Stage Payment under the Contract based on the work completed and applicable GST. The cumulative amount of reduction at any point of time shall not exceed ninety (90%) of the advance and the amount of GST paid on the advance amount. It should be

clearly understood that reduction in the value of security for advance shall not in any way dilute the Contractor's responsibility and liabilities under the Contract including in respect of the Facilities for which the reduction in the value of security is allowed.

- 51.3 The Bank Guarantees submitted towards Advance Payment Security, shall be from any of the Banks listed at Annexure-A1.
- 51.4 **Advance BG will be mandatorily submitted in the form of e-BG, and no physical BG will be accepted.**
- 51.5 Advance Bank Guarantees/should be enforceable for minimum ninety (90 days) after expiry of its validity.

**DPR, DE & PMC for MGR and Railway Siding Works including OHE and
S&T for Singrauli STPP Stage-III (2x800MW)
For**

Singrauli STPP-III

Bidding Document No.: CS-1150-350A-9

**BIDDER TO SUBMIT BID SECURITY OF REQUIRED AMOUNT AND VALIDITY AS
PER CLAUSE NO. 2.0 OF TERMS AND CONDITIONS.**

**DPR, DE & PMC for MGR and Railway Siding Works including OHE and
S&T for Singrauli STPP Stage-III (2x800MW)**

For

Singrauli STPP-III

Bidding Document No.: CS-1150-350A-9

**BIDDER TO SUBMIT POWER OF ATTORNEY AUTHORISING THE SIGNATORY TO
SIGN THE BIDS**

Package Name
BIDDING DOCUMENT NO. *****
(ELECTRONIC FUND TRANSFER FORM)

Bidder's Name and Address:

To,
 NTPC Limited, Contract Services

Dear Sirs,

We, hereby authorize the Employer to make all our payments through Electronic Fund Transfer System. The details for facilitating the payments are given below:

(TO BE FILLED IN CAPITAL LETTERS)

1. NAME OF THE BENEFICIARY: _____

2. ADDRESS: _____

3. TELEPHONE NO. (WITH STD CODE): _____

4. BANK PARTICULARS

A. Bank Name: _____

B. Bank Telephone NO. (with STD Code): _____

C. Branch Address: _____

D. Branch Code: _____

E. 9 Digit MICR Code of the Bank Branch (Enclose copy of a cancelled cheque): _____

F. IFSC CODE: _____

G. BANK ACCOUNT NUMBER: _____

H. BANK ACCOUNT TYPE

(TICK ONE):

SAVING	CURRENT	LOAN	CASH CREDIT	OTHERS
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IF OTHERS, SPECIFY: _____

5. Permanent Account Number (PAN) (Enclose Copy): _____

6. E-mail address for intimation regarding release of payments: _____

I/We hereby declare that the particulars given above are correct and complete. If the transaction is delayed or credit is not affected at all for reasons of incomplete or incorrect information, I/We would not hold the Employer responsible. We have enclosed document as mentioned at Sl. No. 4(E) and 5 above.

DATE:

SIGNATURE:
 (AUTHORISED SIGNATORY)

Name:

Official Stamp:

BANK CERTIFICATION:

It is certified that above mentioned beneficiary holds a bank account no. with our branch and the Bank particulars mentioned above are correct.

DATE:

SIGNATURE:
 (AUTHORISED SIGNATORY)
 Authorization No.:
 Name:

Official Stamp:

INTEGRITY PACT

DPR, DE & PMC for MGR and Railway Siding Works including OHE and S&T for Singrauli STPP Stage-III (2x800MW)

Package For

Singrauli STPP-III**Bidding Document No.: CS-1150-350A-9**

Between

NTPC Ltd., a Govt. of India Enterprise
(hereinafter referred to as "The Employer")

and

.....

(hereinafter referred to as "The Bidder/Contractor")

And

.....

(hereinafter referred to as "JV Partner/ Consortium
Member(s)" (if applicable))**Preamble**

The Employer invites the bids from all eligible bidders and intends to enter into Contract for *DPR, DE & PMC for MGR and Railway Siding Works including OHE and S&T for Singrauli STPP Stage-III (2x800MW)* with the successful bidder(s), as per organizational systems and procedures. The Employer values full compliance with all relevant laws and regulations, and the principles of economical use of resources, and of fairness and transparency in its relations with its Bidder(s) and/or Contractor(s).

This Integrity Pact is an agreement between the Employer and the bidder/Contractor/JV Partners/Consortium members, committing the persons/officials of the Parties not to resort to any corrupt practices in any aspect/stage of contract.

In order to achieve these goals, the Employer will appoint Independent External Monitor(s) (IEM), who will monitor the processes as stipulated in the SOP for implementation of Integrity Pact issued by eve from time to time

Section 1 Commitments of the Employer

1. The Employer Commits itself to take all measures necessary to prevent corruption and to observe the following principles in this regard:-
 - a) No employee of the Employer, either in person or through family members including relatives, will in connection with the bidding for or the execution of a Contract, demand or accept a promise for or accept for him/herself or for a third person, any material or immaterial benefit to which he/she is not legally entitled to.
 - b) The Employer shall, during the bidding process treat all Bidders with equity and reason. The Employer will, in particular, before and during the bidding process, provide to all Bidders the same information and will not provide to any Bidder

confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the bidding process or the Contract execution.

c) The Employer will exclude from the process all known prejudiced persons.

2. If the Employer obtains information on the conduct of any of its employees which is a criminal offence under the Bharatiya Nyaya Sanhita (BNS) or the Prevention of Corruption Act (P C Act) or if there be a substantive suspicion in this regard, the Employer will inform the Chief Vigilance Officer.

Section 2 Commitments and Undertakings by the Bidder/Contractor

1. The Bidder/Contractor commits and undertakes to take all measures necessary to prevent malpractices & corruption. He commits himself to observe the following principles during his participation in the bidding process and during the execution of the contract:
 - a) The Bidder/ Contractor undertakes not to, directly or through any other person or firm offer, promise or give or influence to any employee of the Employer associated with the bidding process or the execution of the contract or to any third person on their behalf any material or immaterial benefit which he/she is not legally entitled, in order to obtain in exchange any advantage of any kind whatsoever during the bidding process or during the execution of the contract.
 - b) The Bidder/ Contractor undertake not to enter into any undisclosed agreement or understanding, whether formal or informal with other Bidders. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other action to restrict competitiveness or to introduce cartelization in the bidding process.
 - c) The Bidder/Contractor undertakes not to commit any offence under the relevant Anti-corruption Laws of India; further the Bidder/Contractor will not use improperly, any information or document provided by the Employer as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically for purposes of competition or personal gain and will not pass the information so acquired on to others.
 - d) The Bidder/ Contractor, when presenting his bid, undertakes to disclose any and all payments made, or is committed to or intends to make to agents, brokers or any other intermediaries in connection with the bidding process and / or award of the contract.
 - e) The Foreign Bidder/ Contractor, when presenting his bid, undertakes to disclose the name and address of agents and representative in India. Further, Indian Bidder/ Contractor when presenting his bid, undertakes to disclose the name and address of its foreign principals or associates.
2. The Bidder/ Contractor will not instigate and allure third persons/parties to commit offences outlined above or be an accessory to such offences.

Section 3 Disqualification from Bidding Process and Exclusion from Future Contracts

1. If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of any provisions of Section 2 so as to put his reliability or credibility as Bidder into question, the Employer shall be entitled to disqualify the Bidder(s)/ Contractor(s) from the bidding process or to terminate the contract, if signed on that ground.

2. If the Bidder/ Contractor has committed a transgression through a violation of Section 2 such as to put his reliability or credibility into question, the Employer shall be entitled to exclude including debarring the Bidder/ Contractor for any future tenders/contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the Employer taking into consideration the full facts and circumstances of each case particularly taking into account 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 period not exceeding two (02) years.
3. A transgression is considered to have occurred if the Employer after due consideration of the available evidence concludes that no reasonable doubt is possible.
4. The Bidder with its free consent and without any influence agrees and undertakes to respect and uphold the Employer's absolute rights 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.
5. Subject to full satisfaction of the Employer, the exclusion of Bidder/ Contractor could be revoked by the Employer if the Bidder/ Contractor can prove that he has restored/recouped the damage caused by him and has installed a suitable corruption prevention system in his organization.

Section 4 **Compensation for Damages including Forfeiture of Earnest Money Deposit/ Security Deposit/ Performance & Advance Bank Guarantees**

1. If the Employer has disqualified the Bidder/ Contractor from the bidding process or has terminated the contract pursuant to Section 3, the Employer shall forfeit the Earnest Money Deposit/Bid Security, encash Contract Performance Bank Guarantees in addition to excluding the bidder from the future award process and terminating the contract.
2. In addition to 1 above, the Employer shall be entitled to take recourse to the relevant provisions of the contract related to Termination of Contract due to Contractor's Default.

Section 5 **Previous Transgressions**

1. The Bidder swears on oath that no previous transgression impinging on anti-corruption principles / any malpractice as mentioned in Section-2 has occurred in the last three years reckoned from the date of bid submission in any other Public/Government organization. The date of such transgression would be the date on which cognizance of the said transgression was taken by competent authority. The transgression(s), for which cognizance was taken even before the said period of three years, but are pending conclusion, shall also be considered to fall within last three years.
2. If the Bidder makes incorrect statement on previous transgression as mentioned above in para 1, Bidder can be disqualified from the bidding process or the contract, if already awarded, can be terminated on this ground.

Section 6 **Company Code of Conduct**

Bidders are also advised to have a company code of conduct (clearly rejecting the use of bribes and other unethical behaviour) and a compliance program for the

implementation of the code of conduct throughout the company.

Section 7

Independent External Monitors (IEM)

1. The Employer will appoint competent and credible Independent External Monitor for this Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
2. The IEMs are not subject to instructions by the representatives of the parties and perform his functions neutrally and independently. He shall report to CMD of the Employer, or a person authorized by him.
3. The roles & responsibilities of the IEM shall be as per the SOPs issued by CVC from time to time and available in its website "<https://cvc.gov.in/>."
4. As soon as the IEMs notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Employer (CMD of the Employer or a person authorized by him) and request to discontinue or to take corrective action, or to take other relevant action. The IEMs can in this regard submit non-binding recommendations. Beyond this, the IEMs has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action. However, Independent External Monitor shall give an opportunity to the bidder/contractor to present its case before making its recommendations to the Employer.
5. The IEMs will submit a written report to CMD of the Employer or a person authorized by him within 30 days from the date of reference or intimation to him by the Employer and, should the occasion arise, submit proposals for correcting problematic situations.
6. The Bidder / Contractor accepts that they shall not approach courts while the matter / complaint / dispute has been referred to the IEM in terms of this pact and they shall await IEM's decision before approaching any Court.
7. The word " IEM" will include Singular or Plural.

Section 8

Pact Duration

This Pact comes into force from the date of signing by all the parties. It shall expire for the Contractor 12 months after the final payment under the respective Contract, and for all other unsuccessful bidders 6 months after the Contract has been awarded.

Section 9

Miscellaneous Provisions

1. This Pact is subject to Indian Law. The place of performance and jurisdiction shall be New Delhi.
2. Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
3. 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.


4. If the Contractor is a JV partnership / Consortium, this agreement must be signed by all the partners of JV / Consortium Partners as the case may be.

The Parties hereby sign this Integrity Pact aton this day of20....

Employer

Bidder/ Contractor

Joint Venture Partner(s)/ Consortium member(s) (As Applicable)


लेखराज सिंह / LEKHRAJ SINGH
वरिष्ठ प्रबन्धक (सी सी एण्ड एम)
Sr. Manager (CC & M)
एन टी पी सी लिमिटेड / NTPC Limited
EOC A-8A, Sector-24, NOIDA-201301 (U.P.)

Witness

Witness

Witness

1.

2.

**DPR, DE & PMC for MGR and Railway Siding Works including OHE and S&T for
Singrauli STPP Stage-III (2x800MW)
For**

Singrauli STPP-III

**Bidding Document No.: CS-1150-350A-9
(Site Visit Certificate)**

Bidder's Name and Address:

To
NTPC Limited, (CS)
6th Floor, Engineering Office Complex,
Plot A-8A, Sector 24, Noida-201301,
Distt. Gautam Budh Nagar, State of
U.P., India

Dear Sirs,

With reference to the subject package and as per Clause **2.1.3.1.2 (c) of "Terms of conditions"** regarding site visit by bidder, we confirm that we have visited and examined the Singrauli Super Thermal Power Project, site and its surroundings where the work to be executed for the subject package, on the date mentioned below:

Date :

(Bidder)

(NTPC Official)

(Signature)

(Signature)

(Printed Name)

(Printed Name)

(Designation)

(Designation)

(Common Seal)

(Common Seal)

(i) Format for declaration by the Domestic Bidder "Self-Declaration by the Bidder"

I/ We, M/s(Name of Bidder)..... hereby certify that no proceedings for insolvency or liquidation under the Insolvency and Bankruptcy Code, 2016, or any other bankruptcy proceedings under any other applicable laws (in cases where IBC, 2016 is not applicable) have been admitted or is pending against us and/or our Parent/Holding/Subsidiary Company, Associate or Collaborator or Technology Provider..... (Name of Parent/ Holding/ Subsidiary Company, Associate or Collaborator/ Technology provider company)..... from whom we have taken or intend to take technical and/ or financial support for qualification of bid.

It is understood that if any part of this declaration is found to be false, the Employer shall have the right to unconditionally, immediately and outrightly reject my/our bid and forfeit the Bid Security/ EMD.

Further, in case the bid has already culminated into a Contract, the Employer shall be entitled to terminate the Contract, without prejudice to any other rights or remedies available to the Employer.

(Seal & Signature of Bidder)

Note: 1. This 'Declaration' should be on the letterhead of Bidder
2. The declaration shall be submitted separately as per 3L(ii) by the Parent/Holding/ Subsidiary Company, Associate, Collaborator and Technology provider from whom the Bidder has taken or intends to take technical and/or financial support for qualification of bid.

(if applicable)

(ii) Format of declaration by Parent/Holding/Subsidiary Company, Associate or Collaborator/ Technology Provider from whom the Bidder has taken or intends to take technical and/ or financial support for qualification of bid

"Self-declaration by the Parent/Holding/Subsidiary Company, Associate or Collaborator/ Technology Provider"

I/ We, M/s(Name of Parent/Holding/Subsidiary Company, Associate or Collaborator/ Technology Provider)..... from whom the Bidder has taken or intends to take technical and/ or financial support for qualification of bid, hereby certify that no proceedings for insolvency or liquidation under the Insolvency and Bankruptcy Code, 2016, or any other bankruptcy proceedings under any other applicable laws (in cases where IBC, 2016 is not applicable) have been admitted or is pending against us.

It is understood that if any part of this declaration is found to be false, the Employer shall have the right to unconditionally, immediately and outrightly reject the bid and forfeit the Bid Security/ EMD.

Further, in case the bid has already culminated into a Contract, the Employer shall be entitled to terminate the Contract, without prejudice to any other rights or remedies available to the Employer.

Date:

(Seal & Signature of Parent/Holding/
Subsidiary Company, Associate or
Collaborator, Technology provider)

Note: 1. The 'Declaration' shall be on the letterhead of Parent/Holding/Subsidiary Company, Associate or Collaborator/ Technology Provider

DELETED

**DPR, DE & PMC for MGR and Railway Siding Works including OHE and S&T for
Singrauli STPP Stage-III (2x800MW)
For**

Singrauli STPP-III

Bidding Document No.: CS-1150-350A-9

(WORK SCHEDULE)

Bidder's Name and Address:

To
Contract Services,
EOC, NTPC Limited,
Noida - 201301

Dear Sirs,

We declare that the total scope of work for **DPR, DE & PMC for MGR and Railway Siding Works including OHE and S&T for Singrauli STPP Stage-III (2x800MW) For Singrauli STPP-III** located at Shaktinagar, District Sonbhadra, Uttar Pradesh, 231222 in accordance with the provisions of the bidding documents shall be executed as per the following Work Schedule:

A) WORK SCHEDULE for DPR and Detailed Engineering

Sl. No.	Activity	From LOA date (in Months)
1	Submission of draft DPR & ESP to NTPC for comments/ acceptance before submission to Railways	02
2	Submission of Survey Report and Land Plans, Finalization of DPR & ESP and Submission to Railways/NTPC (as applicable) for approval/acceptance	02-03
3	Submission of Final DPR to NTPC including Plans and applicable approvals from Railways	04-06
4	Submission of Technical specification, tender drawings, BOQ, detailed cost estimates etc. to NTPC	06-08
5	Obtaining Railways, State/Central Govt. Dept. and other agencies approvals of detailed design & drawings for all Civil, S&T, OHE and general electrical works viz. Railtrack structure, bridges & culverts (including proofcheck from IIT), control buildings etc. as applicable	08-11
6	Submission of construction drawings to NTPC	11-12

B) WORK SCHEDULE for PMC

Sl. No.	Activity	From the date of LOA	
		Start (In	Finish (In Months)
1.0	Finalization of execution strategy and contract package list	08	10
2.0	Tendering and award of MGR & Railway Siding Packages (Earth work, Rail procurement, Formation work, rail laying, Electrical and S&T Works, Bridges & culverts, Misc. Buildings etc.	10	14
3.0	Construction of MGR & Railway Siding civil works (Earthwork, Rail laying, Formation & P-way works, Bridges & Culverts and interconnection etc.)	12	24
4.0	Construction of Miscellaneous Buildings	14	24
5.0	Tendering & Award of MGR/Railway siding Package for OHE, Electrical and S&T Works	14	18
6.0	Execution of MGR/Railway siding Package Electrical, OHE and S&T Works	16	28
7.0	Dry Engine Run		29
8.0	Completion of all facilities		30

Remarks:

- Packages including priority stream shall be identified in consultation with NTPC Singrauli & NTPC-Engineering, so that the construction fronts are made available to the prospective executing agencies & project requirement is met.
- The NIT for Earthwork Package, Bridges & Culverts and NIT for Rail Procurement; Rail Laying work; Electrical, S&T works and Serving Station shall be done in parallel so that the works are awarded & execution starts in parallel.

Yours Faithfully,

Date:

Place:

Printed Name.....

Designation.....

Form of Bank Guarantee for Advance Payment (Supply-FOB/Ex-Works)

(To be stamped in accordance with Stamp Act if any, of
the Country of the Issuing Bank)

(To be stamped in accordance with Stamp
Act if any, of the Country of the Issuing
Bank)

To,
NTPC Limited
NTPC Bhawan,
SCOPE Complex, Institutional Area, Lodhi Road,
New Delhi - 110003

Dear Sir,

In consideration of[Employer's Name]..... (hereinafter referred to as the 'Employer', which expression shall, unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s.....[Contractor's Name]..... with its Registered/Head Office at (hereinafter referred to as the 'Contractor' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a Contract, by issue of Employer's Notification of Award No. dated and the same having been unequivocally accepted by the Contractor, resulting into a Contract bearing No. dated..... valued at for[Name of Contract](hereinafter called the 'Contract') and the Employer having agreed to make an advance payment to the Contractor for performance of the above Contract amounting (in words and figures) as an Advance against Bank Guarantee to be furnished by the Contractor.

We.....[Name and address of the Bank]..... having its Head Office at (hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Employer, immediately on demand any or, all monies payable by the Contractor to the extent of[advance amount]..... as aforesaid at any time upto(@)..... without any demur, reservation, contest, recourse or protest and/ or without any reference to the Contractor. Any such demand made by the Employer on the Bank shall be conclusive and binding notwithstanding any difference between the Employer and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Employer and further agrees

that the guarantee herein contained shall be enforceable till ninety (90) days after expiry of its validity.

The Employer shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee, from time to time to vary the advance or to extend the time for performance of the Contract by the Contractor. The Employer shall have the fullest liberty without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the Employer and the Contractor or any other course or remedy or security available to the Employer. The Bank shall not be released of its obligations under these presents by any exercise by the Employer of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Employer or any other indulgence shown by the Employer or by any other matter or thing whatsoever which under law would but for this provision, have the effect of relieving the Bank.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

Notwithstanding anything contained hereinabove our liability under this guarantee is limited to[advance amount]..... and it shall remain in force upto and including(@)..... and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s.....[Contractor's Name]..... on whose behalf this guarantee has been given.

Dated this day of 20 at

(Signature).....

(Name).....

(Designation with Bank Stamp)

.....
(Official e-mail ID)

Authorized Vide Power of Attorney
No.....
Dated.....

Notes: 1. (@) This date shall be ninety (90) days beyond the date of Completion of the last Facilities covered under the package.

2. The stamp papers of appropriate value shall be purchased in the name of guarantee issuing Bank or the Party on whose behalf for BG is being issued. The Bank Guarantee shall be issued on a stamp paper of value as per

applicable Stamp Act(s).

3. While getting the Bank Guarantee issued, the contractor is required to ensure compliance to the points mentioned in Form of Bank Guarantee Verification Check List. Further, the Contractor is required to fill up this Form and enclose the same with the Bank Guarantee.
4. The Bank Guarantee shall be from a Bank as per provisions of the Bidding Documents.
5. In case, Bank Guarantee is getting issued from State Bank of India, Contractor to take note of NTPC letter ref. NTPC/FC/CS/BG/01 dated 03.09.2014 and SBI letter ref. CAG-I/AMT-1/2014-15/370 dated 04.09.2014 (attached with Section-III of Bidding Documents).
6. BG against advance payment will be mandatorily submitted in the form of e-BG, and no physical BG will be accepted.

SUBMISSION OF BANK GUARANTEE

UPDATED SCHEDULED COMMERCIAL BANK LIST

A SCHEDULED PUBLIC SECTOR BANKS

- 1 Bank of Baroda
- 2 Bank of India
- 3 Bank of Maharashtra
- 4 Canara Bank
- 5 Central Bank of India
- 6 Indian Overseas Bank
- 7 Indian Bank
- 8 Punjab National Bank
- 9 Punjab & Sind Bank
- 10 State Bank of India
- 11 UCO Bank
- 12 Union Bank of India

B SCHEDULED PRIVATE BANKS (INDIAN BANKS)

- 1 Axis Bank Limited
- 2 Bandhan Bank Limited
- 3 CSB Bank Limited
- 4 City Union Bank Limited
- 5 DCB Bank Limited
- 6 Dhanlaxmi Bank Limited
- 7 Federal Bank Limited
- 8 HDFC Bank Limited
- 9 ICICI Bank Limited
- 10 IndusInd Bank Limited
- 11 IDFC FIRST Bank Limited
- 12 Jammu & Kashmir Bank Limited
- 13 Karnataka Bank Limited
- 14 Karur Vysya Bank Limited
- 15 Kotak Mahindra Bank Limited
- 16 Nainital Bank Limited
- 17 RBL Bank Limited
- 18 South Indian Bank Limited
- 19 Tamilnad Mercantile Bank Limited
- 20 Yes Bank Limited
- 21 IDBI Bank Limited

C SCHEDULED FOREIGN BANKS

- 1 AB Bank PLC
- 2 American Express Banking Corporation
- 3 Australia & Newzealand Banking Group Limited
- 4 Barclays Bank Plc
- 5 Bank of America
- 6 Bank of Bahrain & Kuwait B.S.C.
- 7 Bank of Ceylon

- 8 Bank of China Limited
- 9 Bank of Nova Scotia
- 10 BNP Paribas
- 11 Citi Bank NA
- 12 Cooperatieve Rabobank U.A./ Coöperatieve Centrale Raiffeisen-Boerenleenbank B.A.
- 13 Crédit Agricole Corporate and Investment Bank
- 14 CTBC Bank Co Ltd
- 15 DBS Bank India Limited (Subsidiary of DBS Bank Ltd.)
- 16 Deutsche Bank A.G.
- 17 Doha Bank Q.P.S.C
- 18 Emirates NBD Bank P.J.S.C.
- 19 First Abu Dhabi Bank PJSC
- 20 FirstRand Bank Ltd
- 21 Hong Kong and Shanghai Banking Corporation Limited
- 22 Industrial & Commercial Bank of China
- 23 Industrial Bank of Korea
- 24 J.P. Morgan Chase Bank N.A.
- 25 JSC VTB Bank
- 26 KEB Hana Bank
- 27 Kookmin Bank
- 28 Mashreqbank P.S.C.
- 29 Mizuho Bank Ltd
- 30 MUFG Bank, Ltd
- 31 NatWest Markets Plc
- 32 NongHyup Bank
- 33 PT Bank Maybank Indonesia TBK
- 34 Qatar National Bank (Q.P.S.C.)
- 35 Sberbank
- 36 SBM Bank (India) Limited (Subsidiary of SBM Group)
- 37 Shinhan Bank
- 38 Societe Generale
- 39 Sonali Bank PLC
- 40 Standard Chartered Bank
- 41 Sumitomo Mitsui Banking Corporation
- 42 United Overseas Bank Ltd
- 43 UBS AG
- 44 Woori Bank

D

SMALL FINANCE BANKS

- 1 AU Small Finance Bank Limited
- 2 Capital Small Finance Bank Limited
- 3 Equitas Small Finance Bank Limited
- 4 ESAF Small Finance Bank Limited
- 5 Suryoday Small Finance Bank Limited
- 6 Ujjivan Small Finance Bank Limited
- 7 Utkarsh Small Finance Bank Limited
- 8 North East Small Finance Bank Limited
- 9 Jana Small finance Bank Limited
- 10 Shivalik Small Finance Bank Limited
- 11 Unity Small Finance Bank Limited,



एन टी पी सी लिमिटेड
(भारत सरकार का उद्यम)

NTPC Limited
(A Govt. of India Enterprise)

केन्द्रीय कार्यालय/Corporate Centre

Date : 03rd September 2014

Ref. No.: NTPC/FC/CS/BG/01

Deputy General Manager,
State Bank of India,
CAG Branch,
12 th floor, Jawahar Vyapar Bhavan, 1, Tolstoy Marg,
New Delhi 110 001

Kind Atten: Sh. Sandeep Mishra

Sub: Format of the Bank Guarantee (BG) issued by State Bank of India – reg.

Dear Sir,

NTPC Limited is India's largest Power Company and a 'Maharatna PSU' with a significant presence in the entire value chain of power generation business. The procurement process of NTPC requires its participating Bidders to submit Bank Guarantees (BGs) as Bid security/other securities in a fixed format provided by NTPC.

It has been observed recently that BGs issued by various branches of State Bank of India are inserting the following additional clause.

QUOTE

Notwithstanding anything contrary contained in any law for the time being in force or banking practice, this guarantee shall not be assignable or transferable by the beneficiary. Notice or invocation by any person such as assignee, transferee of agent of beneficiary shall not be entertained by the bank. Any invocation of guarantee can be made only by the beneficiary directly.

UNQUOTE

The inclusion of the aforesaid clause in the BGs restricts the rights of NTPC under the BG and it may not be possible for NTPC to accept the aforesaid clause in the BGs submitted to us by our Bidders. It may also be mentioned that incorporation of the above additional clause in the BG results in the BG being returned by NTPC and consequently rejection of the bids of parties that have submitted such BGs.

In view of the above, it is requested that please take up at appropriate levels so that suitable instructions are issued to all your branches not to incorporate any such additional clause and henceforth BGs may be issued strictly as per NTPC format only.

Kindly acknowledge the receipt of this letter

Yours faithfully,

(K.P.Gupta)

General Manager (Finance)

Copy for Kind information: ED(CC&M) for kind info of u.s.

एन टी पी सी भवन स्कोप कॉम्प्लेक्स, 7, इंस्टीट्यूशनल एरिया, लोधी रोड, नई दिल्ली-110003 टेल/Tel.: 24360100, फैक्स/Fax : 011-24361018
NTPC Bhawan, SCOPE Complex, 7, Institutional Area, Lodhi Road, New Delhi-110003, वेबसाइट/Website : www.ntpc.co.in



भारतीय स्टेट बैंक
State Bank of India

कॉरपोरेट लेखा समूह शाखा, जवाहर व्यापार भवन,
11-12 वां तल, 1, टॉलस्टोय मार्ग, नई दिल्ली-110 001
Corporate Accounts Group Branch, Jawahar Vyapar Bhawan,
11th & 12th Floor, 1, Tolstoy Marg, New Delhi-110 001

Tel. : 23374525, 23374505, 23374541 (AMT-1), 23353022 (DGM & COO), 23701043, 23359506 (A & A), 23352995 (CS), 23352968 (IB)
Fax : 23353101 (Sectt.), 23352793 (CS), 23353029 (IB)

Shri K.P. Gupta,
General Manager (Finance),
NTPC Limited
Scope Complex, 7, Institutional Area,
Lodhi Road,
New Delhi: 110 003.

CAG-I/AMT-1/2014-15/370

04.09.2014

Dear Sir,

Format of the Bank Guarantee (BG) issued by State Bank of India

We refer to your letter dated 3rd September 2014 wherein you have requested for excluding bidders/vendors of NTPC from insertion of additional Clause restraining assignment/transferability of BG.

Looking at our relationship with NTPC, as a very special case, we have since obtained waiver from our Authorities for excluding NTPC from insertion of the referred clause for BGs issued in your favour.

We are taking steps to issue suitable instructions to our offices for exclusion of this clause for BGs issued in favour of NTPC. In case any bidder or vendor submits to you a Bank Guarantee issued by any of our Branches containing the additional clause as mentioned above, request you to please bring it to our notice and advise us so that we can take-up with the concerned Branch for excluding it.

This is for your information and necessary action please.

Yours faithfully,


(Sandeep Mishra)

Deputy General Manager &
Relationship Manager, AMT-1

CHECKLIST

(C&M coordinator to modify the format appropriately, for RE projects where Payment on Order instrument (POI) / Letter of Undertaking (LOU), issued by Indian Renewable Energy Development Agency (IREDA)/ Power Finance Corporation Limited (PFC)/ REC Limited (REC), are acceptable as Guarantees)

Sl. No.	Details of checks	YES / NO
1	Is the BG/INSURANCE SURETY BOND on non-judicial stamp paper/e-stamp paper of appropriate value, as per Stamp Act?	
2	Whether date, purpose of purchase and name of the purchaser are indicated on the stamp paper? (The date of purchase of stamp paper should be of any date on or before the date of execution of BG/INSURANCE SURETY BOND and the stamp paper should be purchased either in the name of the executing Bank/Insurance Company or the party on whose behalf the BG/INSURANCE SURETY BOND has been issued. The stamp papers (other than e-stamp paper) should be duly signed by the stamp vendor.)	
3	In case of BG/INSURANCE SURETY BONDS from Bank/Insurance Company abroad, has the BG/INSURANCE SURETY BOND been executed on Letter Head of the Bank/Insurance Company?	
4	Has the executing Officer of BG/INSURANCE SURETY BOND indicated his name, designation and Power of Attorney No./ Signing Power no. etc., on the BG/INSURANCE SURETY BOND?	
5	Is each page of BG/INSURANCE SURETY BOND duly signed /initialed by executant and whether stamp of Bank/Insurance Company is affixed thereon? Whether the last page is signed with full particulars under seal of Bank/Insurance Company as required in the prescribed proforma?	
6	Does the Bank Guarantee/Insurance Surety Bond compare verbatim with the Proforma prescribed in the Bid Documents?	
7	Are the factual details such as Bidding Document No./Specification No., Amount of BG/INSURANCE SURETY BOND and Validity of BG/INSURANCE SURETY BOND correctly mentioned in the BG/INSURANCE SURETY BOND?	
8	Whether overwriting/cutting if any on the BG/INSURANCE SURETY BOND have been properly authenticated under signature & seal of executant?	
9	Whether the BG/INSURANCE SURETY BOND has been issued by a Bank/Insurance Company in line with the provisions of Bidding documents?	

10	In case BG/INSURANCE SURETY BOND has been issued by a Bank/Insurance Company other than those specified in Bidding Document, is the BG/INSURANCE SURETY BOND confirmed by a Bank/Insurance Company in India acceptable as per Bidding documents?	
11	In case of BG/INSURANCE SURETY BOND other than that for bid security, is the BG/INSURANCE SURETY BOND enforceable till minimum ninety (90) days of claim period after expiry of its validity?	

Determination of Project Management Consultancy (PMC/PEA) Fee for Balance Work Beyond Contractual Completion Schedule

For any delays attributable to NTPC in execution of contract, Project Management Consultancy/Project Executing Agency (PMC/PEA) Fee for the balance work beyond the end of contractual completion schedule shall be subject to adjustment as per the formula given below:

$$\text{PMC/PEA}_1 = \text{PMC/PEA}_0 (F + I \times L_1 / L_0),$$
$$\Delta \text{PMC/PEA} = \text{PMC/PEA}_1 - \text{PMC/PEA}_0$$

where

F = Fixed Component of Project Management Consultancy Fee = 0.25

I = Manday Component of Project Management Consultancy Fee = 0.75

PMC/PEA₀ = Project Management fee for the month of billing in which actual work is executed, which shall be calculated as under:

For the purpose of computing PMC/PEA₀, each bill for Project management fees (excluding Initial Advance and Retention Money) during the extended period shall be divided by a factor given below:

{Project Management Fee-(Initial Advance+ Retention Money payable on the expiry of 30 months after completion of works at site in all respects)} / Project Management Fee

L₁=All India Average Consumer Price Index for Industrial workers (Base 2016=100) (published by RBI, Govt. of India) as applicable for the month of billing in which actual work is executed.

L₀= All India Average Consumer Price Index for Industrial workers (Base 2016=100) (published by RBI, Govt. of India) as applicable for the last month of contractual completion schedule.

PMC/PEA₁=Adjusted Project Management Fee payable for each monthly billing in which actual work is executed,

ΔPMC/PEA = Adjustment in Project Management Fee payable for each monthly billing,

The Price Adjustment amount (ΔPMC/PEA) for each billing month so calculated shall be payable/recoverable after making 10% deduction towards Retention Money (i.e. 90% of ΔPMC/PEA).

**Illustrative Example for the Price Adjustment of Project Management
Consultancy/Project Executing Agency (PMC/PEA) Fee**

$$\Delta \text{PMC/PEA} = \text{PMC/PEA}_1 - \text{PMC/PEA}_0$$
$$\text{PMC/PEA}_1 = \text{PMC/PEA}_0 (F + I * L_1 / L_0),$$

Suppose the Contractual completion period is Dec'22 and 100% Project Management fees for the billing month in which actual work is executed i.e. Jan'23 is Rs. 1 Lakh, out of which Rs. 10,000/- has been paid as Initial Advance and Rs. 10,000/- has been retained towards Retention Money. Accordingly, Rs. 80,000/- (= {1,00,000-(10,000+10,000)}) is the billing amount for the month of Jan'23.

Therefore, $\text{PMC/PEA}_0 = 80000 / \{(100000 - 10000 - 10000) / 100000\} = \text{Rs. } 1,00,000/-$

Labour Index taken is All-India Average Consumer Price Index Numbers for Industrial Workers
(Base 2016=100)

Say, $L_0 = 133$ (for Dec'22), $L_1 = 134$ (for Jan'23);

$\text{PMC/PEA}_1 = \text{Adjusted PMC/PEA for the month of Jan'23} = 100000 * (0.25 + 0.75 * 134 / 133);$
 $= 100000 (0.25 + 0.755639) = \text{Rs. } 1,00,564/-$ (round off)

Adjustment in Project Management Fee payable for the month of Jan'23;

- i) $\Delta \text{PMC/PEA} = \text{PMC/PEA}_1 - \text{PMC/PEA}_0$
 $= 100564 - 100000 = \text{Rs. } 564/-$
- ii) 90% of $\Delta \text{PMC/PEA}$ shall be payable for the month of Jan'23 (pending adjustment towards Retention Money)
- iii) 90% of $\Delta \text{PMC/PEA} = 90\% \text{ of Rs. } 564 = \text{Rs. } 528/-$ (round off).

[illegible]

**DPR, DE & PMC for MGR and Railway Siding Works including OHE
and S&T for Singrauli STPP Stage-III (2x800MW)**

For

Singrauli STPP-III

Bidding Document No.: CS-1150-350A-9

**Detailed Procedure for deriving PMC fee on account of Scope Change/qty
variation for bridges and Sheds & Buildings**

- i) **In case of increase or decrease of barrel length of bridges during detailed engineering / construction:** In that case for deriving PMC fee on account of qty variation, scope change etc. cost shall be worked out proportionately based on the cost provision given in the bidding document.

For example, Br. No. 1 (ch1/350) cost of 1x4.0x3.0 M RCC box with barrel length of 17.00 M given as Rs. 41.50 lakhs. If the barrel increases to 20.00M, the cost shall be worked out as follows:

$$(41.50/17) \times 20 = \text{Rs. 48.82 Lakhs}$$

Therefore, cost increase on account of qty deviation is Rs. 48.82 - Rs. 41.50 = Rs. 7.32 Lakhs

If the barrel length reduces to 15M, the reduction in qty shall be worked out as below

$$41.50 - (41.50/17) \times 15 = \text{Rs. 4.88 Lakhs}$$

Note: In case of increase or decrease in span length of Bridges having girders and piers, the qty deviation shall be worked out proportionately on the value as given in the bidding document based on overall increase or decrease in span of the bridge.

However, if overall number of bridges increases with respect to the qty given in bidding document, for deriving PMC fee, the NIT cost worked out for the new bridge or the awarded value of the bridges whichever is less shall be considered.

- ii) **Sheds & Buildings**

The Unit of various types of buildings are considered as Sq. M.

For deriving the PMC fee on account of scope change/ qty variation, the same shall be worked out proportionately based on the cost provision as given in bidding document.

In case a new type of building / shed is added during detailed engineering or construction (which is not originally envisaged in FSR or DPR), for deriving PMC fee, the NIT cost worked out for the new building / shed or the awarded value of the building / shed whichever is less shall be considered.

Annexure-B

Form of Bank Guarantee towards Bid Security
(To be stamped in accordance with Stamp Act of India)

Bank Guarantee No.

.....
Date.....
.....

To :

NTPC Limited
NTPC Bhawan,
SCOPE Complex, Institutional Area, Lodhi Road,
New Delhi - 110003

Dear Sirs,

In accordance with Invitation for Bids under your Bid Document No.....(\$)

.....
, M/s(***)..... having its Registered/Head
Office at hereafter called the 'Bidder') wish to

participate in the said bid for DPR, DE & PMC for MGR and Railway Siding Works
including OHE and S&T for Singrauli STPP Stage-III (2x800MW) Bidding Document
No. : CS-1150-350A-9 As an irrevocable bank guarantee against Bid Security for an
amount of INR Twenty lakhs only (INR 20,00,000 /-) valid for 165 days

from.....(**).....required to be

submitted by the Bidder as a condition precedent for participation in the said bid
which amount is liable to be forfeited on the happening of any contingencies
mentioned in the Bidding Documents.

We, the[Name &
address of the Bank].....having
our Head Office
at.....(#).....guarantee and
undertake to pay immediately on demand by.....
(\$).[Name of the Employer] (hereinafter
called the 'Employer').....the amount of
.....(*)..... without any reservation, protest, demand and
recourse. Any such demand made by the 'Employer' shall be conclusive and
binding on us irrespective of any dispute or difference raised by the Bidder.

This Guarantee shall be irrevocable and shall remain valid upto(@)

.....
If any further extension of this guarantee is required, the same shall be extended

to such required period (not exceeding one year) on receiving instructions from M/s.....(**).....[Bidder's Name]..... on whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorised officer, has set its hand and stamp on this.....day of.....20.....at.....

.....
(Signature)

.....
(Name)

.....
(Designation with Bank Stamp)

.....
(Official e-mail Id)

Authorised Vide
Power of Attorney No.....
Date.....

NOTE : 1. (**)This shall be the date of opening of bids.

(#) Complete mailing address of the Head Office of the Bank to be given.

(@) This date shall be forty five (45) days beyond the validity of bid.

(**) Write the name and addresses of all the Joint Venture partners, in case the bid is submitted by a Joint Venture in terms of Qualifying Requirements.

2. The Bank Guarantee (BG) shall be from a Bank as per provisions of the bidding documents.

3. The BG shall be issued on Non-Judicial stamp paper/e-stamp paper of appropriate value as per applicable Stamp Act(s). The Stamp Paper/e-

Stamp paper shall be purchased in the name of Bidder/Bank issuing the guarantee.

4. While getting the Bank Guarantee issued, Bidders are required to ensure compliance to the points mentioned in Bank Guarantee Verification Check List in the bidding documents. Bidders are required to fill up this Check List and enclose the same along with the Bank Guarantee.
5. In case, Bank Guarantee is getting issued from State Bank of India, Bidder to take note of NTPC letter ref. NTPC/FC/CS/BG/01 dated 03.09.2014 and SBI letter ref. CAG-I/AMT-1/2014-15/370 dated 04.09.2014 (attached with Section-III of Bidding Documents).

Form of Insurance Surety Bond towards Bid Security

(To be stamped in accordance with Stamp Act of India)

Insurance Surety Bond No.

Date.....

To

NTPC Limited
NTPC Bhawan,
SCOPE Complex, Institutional Area, Lodhi Road,
New Delhi - 110003

Dear Sirs,

In accordance with Invitation for Bids under your Bid Document No.(\$)....., M/s.....[*Bidder's Name*]..... having its Registered/Head Office at (hereinafter called the 'Bidder') wish to participate in the said

bid for DPR, DE & PMC for MGR and Railway Siding Works including OHE and S&T for SINGRAULI SUPER THERMAL POWER PROJECT, STAGE-III (2X800MW), Bidding Document No.: CS-1150-350A-9. As an irrevocable Insurance Surety Bond against Bid Security for an amount of INR Twenty lakhs only valid for (INR 20,00,000 /-) 165 days from

.....(**)..... required to be submitted by the Bidder as a condition precedent for participation in the said bid which amount is liable to be forfeited on the happening of any contingencies as mentioned under the Bidding Documents.

We, the [*Name & address of the Insurer*] having our Head Office at (#) guarantee and undertake to pay immediately on demand by...(\$)..... [*Name of the Employer*] (*hereinafter called the 'Employer'*) the amount of

.....(*)..... without any reservation, protest, demand and recourse. Any such demand made by the 'Employer' shall be conclusive and binding on us irrespective of any dispute or difference raised by the Bidder and/or any right/remedy available to the bidder in terms thereof.

This Insurance Surety Bond shall be unconditional as well as irrevocable and shall remain valid upto(@)..... If any further extension of this Insurance Surety Bond is required, the same shall be extended to such required period (not exceeding one year) on receiving instructions from M/s [*Bidder's Name*]..... on whose behalf this Insurance Surety Bond is issued.

In witness where of the Insurer, through its authorised officer, has set its hand and stamp on this.....day of.....20.....at.....

.....
(Signature)

.....
(Name)

.....
(Designation with Insurer Stamp)

.....
(Official e-mail Id)

Authorised Vide
Power of Attorney No.....

Date.....

1.

NOTE : 1. (**) This shall be the date of opening of Techno-Commercial bids.

(#) Complete mailing address of the Head Office of the Insurer to be given.

(@) This date shall be forty five (45) days after the last date for which the bid is valid.

2. The Insurance Surety Bond shall be from an Insurer as per guidelines issued by Insurance Regulatory and Development Authority of India (IRDAI) as amended from time to time.
3. The Employer shall be the Creditor, the Bidder shall be the Principal debtor and the Insurance company/Insurer shall be the Surety in respect of the Insurance Surety Bond to be issued by the Insurer.
4. The Insurance Surety Bond shall be issued on Non-Judicial stamp paper/e-stamp paper of appropriate value as per applicable Stamp Act(s). The Stamp Paper/e-Stamp paper shall be purchased in the name of Bidder/Insurer issuing the guarantee.
5. While getting the Insurance Surety Bond issued, Bidders are required to ensure compliance to the points mentioned in Form of Bank Guarantee/Insurance Surety Bond Verification Check List enclosed in this Section of Bidding Documents. Further, Bidders are required to fill up this Form and enclose the same with the Insurance Surety Bond.

Format of Undertaking
(To be sent by Issuing Bank through official email-ID)

From: xxxbank@xx.in

To: xxx@ntpc.co.in

We have issued BG No. dated for an amount of Rs. on behalf of[Name of Bidder] towards Bid Security / EMD for Tender No. in favour of [Name of Employer].

Please find enclosed the soft copy of the Bank Guarantee and SFMS acknowledgement. This SFMS is sent on (date).

Any demand / claim made by the 'Employer' shall be conclusive and binding on us irrespective of any dispute or difference raised by the Bidder till the validity period mentioned in the Bank Guarantee.

However, in absence of the physical copy of aforementioned BG with the Employer, we undertake that Employer's demand / claim will be binding and conclusive on us without the physical copy of aforementioned BG till fourteen (14) days from the due date of submission of Techno-Commercial bids.

We undertake not to cancel the aforementioned BG No. without written consent / instruction from NTPC.

(Name of Bank Official)

Authority No.

Annexure-D

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NTPC SAFETY RULES

FOR CONSTRUCTION AND ERECTION OF POWER PLANTS

INTRODUCTION:

NTPC Limited is a Maharatna organization taking lead in realizing the power dreams of the Nation with a vision “To be one of the World’s largest and best power utilities, Powering India’s growth”. Safety is one of the prime concerns of NTPC and it always strives towards accident free construction, erection, commissioning, operation and maintenance of its power projects. In this process, NTPC has already formulated Safety policy and guidelines for smooth execution of all its project activities.

In order to strengthen the existing Safety Rules for Construction and Erection and thereby curbing the chances of accidents in Construction & Erection works at various projects of NTPC, the existing safety rules have been revised for strict implementation. These Safety Rules lay down the safety requirements for safe execution of project activities, responsibilities of the contracting agencies, and all concerned involved in Construction and Erection.

A. RESPONSIBILITIES OF CONTRACTORS FOR IMPLEMENTATION OF SAFETY RULES:

The Safety Rules for Construction & Erection as outlined hereunder, while setting out a broad parameter of safety norms, are not exhaustive. The contractor and his agencies are advised to refer to the following statutory provisions as amended from time to time for details and strict compliance therewith.

FOR GREENFIELD PROJECTS:

- (a) Building and Other Construction Workers (regulation of employment and conditions of service) Act, 1996 (briefly referred to as BOCW Act),
- (b) Building and other construction workers (regulation of employment and conditions of service) Central Rules, 1998 (briefly referred to as BOCW Rules) as adopted by the various State Governments,

FOR EXPANSION, MODIFICATION, ALTERATION AND, OR CONSTRUCTION ACTIVITY WITHIN AN EXISTING PLANT OPERATING AS PER APPROVED SITE PLAN UNDER THE FACTORIES ACT;

- (a) Factories Act, 1948,
- (b) Factories Rules, as adopted by the various State Governments
- (c) BOCW Act
- (d) BOCW Rules

The contractor is also required to ensure compliance with all the relevant Acts/Rules in addition to above.

It shall be incumbent on the contractor to ensure that the requirements of safety, statutory or otherwise specified, are fully met. Thus the onus of implementation of the norms so prescribed shall squarely rest with the contractor concerned or, on his behalf, his sub-contractor or any other agency deployed by him, indemnifying NTPC from all the liabilities that may arise out of any failure to comply with the above mentioned Acts/Rules or any contravention thereof by the contractor or any other sub-agency on his behalf.

Safety cannot be ensured solely through Rules and Regulations or Codes. It is the responsibility of the Contracting Agency to ensure that basic safety principles are incorporated in the planning stage of their mobilization, execution, installation of machines, equipment, storage, etc., and initiate and maintain *safety programs*. It is desirable to have a planned programme and secure adequate cooperation of senior management, EICs, sub-contracting agencies, supervisory personnel and workers involved to ensure the implementation of the provisions of these Rules in true spirit so as to achieve the ultimate goal of *accident prevention*.

It shall also be the responsibility of the contracting agency to provide amenities and safety requirements on each construction job in order to reduce or to eliminate hazards of construction activities and also to provide necessary *first aid* facilities as well as Ambulance van (in case of major agencies) for prompt transportation of injured persons to a physician or hospital.

It is also mandated that the authorized representative of NTPC, namely, the Engineer-in-charge, may, at his convenience, exercise such superintendence, supervision and, or control as may be deemed necessary, but this shall not absolve the contractor of his basic responsibility for strict compliance with the norms, standards and, or legal provisions as applicable under the Factories Act/Rules and the Building and other construction (regulation of employment and conditions of service) Act/Rules.

Section wise checklist of provisions of BOCW Act/Rules is given hereunder for ready reference of the contractor. (This list has been prepared in chronological order with primary importance to Section of Act and secondary importance to Rules)

S - Refers relevant Sections in BOCWA

R - Refers relevant Rules in BOCWR

Sl. No.	ITEMS	RELEVANT SECTIONS / RULES IN BOCWA AND BOCWR AND RBOCWR
1	Registration of establishment	S – 7, R – 23 to 27
2.	Display of registration certification at workplace	R – 26 (5)
3.	Hours of work	S – 28 R – 234 to 237
4.	Register of overtime	S – 28; S – 29 R – 241(1) Form XXII
5.	Weekly rest and payment at rest	R – 235
6.	Night shift	R – 236
7.	Maintenance of workers registers and records	S – 30 R – 238
8.	Notice of commencement and completion	S – 46 R – 239
9.	Register of persons employed as building workers	R – 240
10.	Muster roll and wages register	R – 241(1) (a); Form XVI and XVII
11.	Payment of wages	R – 248
12.	Display of notice of wages regarding	R – 249
13.	Register of damage or loss	R – 241(1)(a); Form XIX, XX, XXI
14.	Issue of wages book	R – 241(2)(a); Form XXIII
15.	Service certificate for each workers	R – 241(2)(b); Form XXIV
16.	Display an abstract of BOCWA and BOCWR	R – 241(5)
17.	Annual return	R – 242; Form XXV
18.	Drinking water	S – 32
19.	Latrines and Urinals	S – 33 R - 243
20.	Accommodation	S – 34
21.	Creches	S – 35
22.	First-aid boxes	S – 36 R – 231 and Schedule III
23.	Canteens	S – 37 R – 244
24.	Food stuff and other items served in the canteens	R – 245
25.	Supply of tea and snacks in work place	R – 246
26.	Food charges on no loss no profit basis	R - 247
27.	Delhi BOCW welfare Board Rules	R – 250 to 296
28.	Safety committee	S – 38 R – 208

29.	Safety officer	S – 38 R – 209 and Schedule VII
30.	Reporting of accidents and dangerous occurrences	S – 39,R – 210
31.	Procedure for inquiry in to the causes of accidents	R – 211
32.	Responsibility of employer	S - 44 R – 5
33.	Responsibility of Architects, Project engineer and Designers	R – 6
34.	Responsibility of workmen	R – 8
35.	Responsibility for payment of wages and compensation	S – 45
36.	Penalties and Procedures	S – 47; S – 55
37.	Excessive noise, vibration etc.	R – 34
38.	Fire Protection	R – 35
39.	Emergency action plan	R – 36
40.	Fencing of motors	R – 37
41.	Lifting of carrying of excessive weight	R – 38
42.	Health, Safety and Environmental Policy	R – 39
43.	Dangerous and Harmful Environment	R – 40
44.	Overhead protection	R – 41
45.	Slipping, Tripping, Cutting, Drowning and Falling Hazards	R – 42
46.	Dust, Gases, Fumes, etc.	R – 43
47.	Corrosive substance	R – 49
48.	Eye Protection	R – 45
49.	Head Protection and other protection apparel	R – 46; R – 54
50.	Electrical Hazards	R – 47
51.	Vehicular traffic	R – 48
52.	Stability of structure	R – 49
53.	Illumination	R – 50; R – 124
54.	Stacking of materials	R – 51
55.	Disposal of debris	R – 52
56.	Numbering and marking of floors	R – 53
57.	Lifting appliances and gears	R – 55 to 81
58.	Runways and Ramps	R – 82 to 85
59.	Working on or adjacent to water	R – 86 & 87

60.	Transport and earthmoving equipment's	R – 88 to 95
61.	Concrete work	R – 96 to 107
62.	Demolition	R – 108 to 118
63.	Excavation and Tunneling works	R – 119 to 168
64.	Ventilation	R – 153
65.	Construction, repair and maintenance of step roof	R – 169 to 171
66.	Ladders and Step ladders	R – 172 to 174
67.	Catch platform and hoardings, chutes, safety belts and nets	R – 175 to 180
68.	Structural frame and formworks	R – 181 to 185
69.	Stacking and unstacking	R – 186 & 187
70.	Scaffold	R – 188 to 205
71.	Cofferdams and Caissons	R – 206 to 211
72.	Explosives	R – 212 & 213
73.	Piling	R – 214 to 222
74.	Medical Examination for building and other construction worker, Crane operator an Transport vehicle drivers	R – 81; R – 223(a)(iii) and Schedule
75.	Medical examination for occupational health hazards	R – 233(a)(iv)
76.	Charging of workers for Medical Examination	R – 223(b)
77.	Occupational health centres and Medical officers	R – 225 and Schedule X & XI
78.	Ambulance van & room	R – 226 & 227 and Schedule IV & V
79.	Stretchers	R – 228
80.	Occupational health service for building workers	R – 229
81.	Medical examination for occupational health hazards	R – 223(a)(iv)
82.	Emergency care services and emergency treatment	R – 232
83.	Panel of experts and agencies	Central Rule 250
84.	Power of inspectors	Central rule 251

B. RESPONSIBILITIES AND DUTIES OF WORKERS

- (a) It shall be the responsibility of the worker to comply with the requirements of safety as laid down for him and the group of workers to which he belongs and fully cooperate in the discharge of the responsibility that has been assigned to the contractor.
- (b) If he discovers any defects in the lifting appliance, lifting gear, lifting device or those concerning any transport equipment or other construction equipment or tools as well as the physical work conditions, he will report such defects promptly to his employer or NTPC Engineer or other person in authority;
- (c) No building worker shall, unless duly authorized or in case of absolute necessity, remove or interfere with any fencing, guards, gangways, gear, ladder, hatch covering, life saving appliances, lighting or other things whatsoever required and provided for safety and health. If any of the aforesaid things is removed, the persons engaged in the work shall restore such thing at the end of the period during which its removal was necessary;
- (d) Every worker shall use only means of access provided in accordance with the approved norms and no person shall authorize or order another to use such means of access or method other than those approved;
- (e) Workers shall use such means of access and egress for going to and exiting from the workplace as provided.

SECTION - I

SAFETY MANAGEMENT

1.0 SAFETY MANUAL AND SAFETY POLICY:

- 1.1** The Safety policy of the contracting agency should reflect the commitment of the concerned agency towards safety and health of the workers specified for the particular site.
- 1.2** The Contractor shall have Safety Plan detailing the safety norms evolved through Safety Policy and Job Safety Analysis (JSA) or Hazard Identification & Risk Assessment (HIRA) of all package activities and constitute a Safety management program. Contracts shall also ensure POWRA (point of work risk assessment) before start of any activity.
- 1.3** The safety management programme in the form of Safety Manual shall give details of provisions proposed by the agency w.r.t. Job Safety Analysis (JSA) or Hazard Identification and Risk Assessment (HIRA) to ensure safety of the employees and elimination of health hazards. The Safety Manual including safety policy duly signed by the head/senior executive of the agency shall be submitted to the concerned Engineer-Incharge(EIC), NTPC before start of their project activities at site.
- 1.4** Each contracting agency shall have facilities for conducting the above safety management programme, commensurate with magnitude of the work under contract.

2.0 APPOINTMENT OF SAFETY OFFICER/SAFETY SUPERVISOR:

- 2.1** Each contracting Agency shall provide a sufficient number of qualified, suitable and experienced persons to manage all safety related matter on Site relating to the works. Irrespective of manpower employed by the agency whether temporary, casual, probationer, regular or permanent or on contract, Agency shall deploy a qualified Safety Officer/executive, responsible for carrying out the safety management programme before start of the work.
- 2.2** The safety officer shall create an organization, commensurate with the project activities, consisting of other staff as required for suitable deployment.
- 2.3** The schedule of requirement of safety personnel is given below.

No. of Workers	No. of Safety Supervisors	No. of Safety Officers
Up to 100	1	1
101 to 250	2	1
251 to 500	4	1
501 to 1000	6	2
1000 to 2000	6+ One additional supervisor up to every additional 250 workers	3
2000-3000	10+ One additional supervisor up to every additional 250 workers	4
3000-4000	14+ One additional supervisor up to every additional 250 workers	5
Above 4000	18 + One additional supervisor up to every additional 250 workers	5 + one safety officer up to addition 1000 workers

2.4 The qualification and experience of the safety personnel should meet the following criteria.

- a) Safety Supervisor: (i) Possesses recognized degree in any branch of Engineering. OR
(ii) Diploma in any branch of Engineering with at least one year construction experience.
- b) Safety Officer/Safety Executive: Qualification as given under BOCW Act/rules and minimum experience of three years.

2.5 In case contractor fails to employ the required safety professionals, the department may at the cost and risk of the contractor deploy additional/required safety professionals. The cost incurred towards this shall be deducted from contractor's bill at following the rates or actual whichever is higher.

- 1. Safety Engineer Rs. 1500/day.
- 2. Safety Supervisor Rs. 1000/day.

3.0 MEETING FOR SAFETY AFTER AWARD OF THE CONTRACT:

Representatives of contracting agency along with safety Officer/executive shall meet the concerned EIC of the particular activity prior to start of construction activities for the purpose of discussing safety standards and requirements applicable to the work under contract. The person representing the agency should be a responsible person for all their site activities.

4.0 PERSONAL PROTECTIVE EQUIPMENT:

4.1 The contracting agency should ensure sufficient inventory of personal protective equipment (PPEs) prior to initial mobilization as specified in the Bidding Documents. After identifying the need of the required PPEs for various activities performed at the site, an additional inventory of approx. 20% of required PPEs should be maintain during the execution of the work. A PPE plan shall be prepared which gives fair idea regarding issue of PPEs to various personnel as per the following 'PPE Selection Matrix'.

4.2 Mandatory PPEs: Wearing of Safety Helmet, Safety Shoes and reflective jacket is mandatory for all work at site and it should be ensured that all employees and project visiting personnel shall invariably wear safety helmet, safety shoes & reflective jacket.

PPE Matrix (apart from mandatory PPEs, i.e., Safety Helmet & Safety Shoes)

Activity	Type of Protection						Remarks, if any
	Hand	Eye	Ear	Body	Respiratory	Others	
Gas Welding & Cutting	LG	WG	-	LA	*SCBA/ OLBA	-	* for confined space
Electric Arc Welding	LG	HMWS	-	LA	*SCBA/ OLBA	-	* for confined space

Rigging	CG	SG	-				--
Working at Height	-	SG	-	DLFBH	-	*FAS	* for vertical columns
Grinding & Chipping	CG	FS / SG	-	LA	-	-	--
Working in High Noise	-	-	EP / EM	-	-	-	--
Handling of Cement Concrete	RG	SG	-	-	DM	-	
Blasting	CG	SG	EP*	-	-	-	* at noise area
Excavation	CG	SG	-	-	DM	-	*Gum boot in place of Safety shoe for foot
Chemical Handling	PVCG	CSG	-	PVCA	-	-	*Full body rubber suit with hood
Electrical and C&I	ERG*	SG	-	-	-	-	*For high voltages
Sand/shot blasting	CG	-	EP/EM	CA	SAMH	-	

ABBREVIATIONS: FS: Face Shield, CSG: Chemical splash goggles, HMWS: Helmet mounted welder's shield, GB: gum boot, DLFBH: Double lanyard full body harness, SG: Safety goggles, DM: Dust mask, SAMH L Supplied air mask/hood, EP/EM: Ear plug/Ear Muff, CG: Cotton hand gloves, LG: Leather hand gloves, LA: Leather apron, RG: Rubber gloves, PVCG: PVC Gloves, PVCA: PVC Apron, SCBA: Self-contained breathing apparatus, WG: Welding goggles, ERG: Electrical Rubber Gloves. OLBA : Online breathing apparatus

4.3 The above-mentioned PPEs should be made available with contractor at site and issued to the concerned workers on the day of employment. All PPEs shall comply with ISI standards with valid test certificates.

4.4 At least two breathing apparatus sets (complying requirement as per IS: 10245) shall be provided at each site where excavation/tunneling works and Welding/ Cutting operations in confined areas are being carried out, to rescue the victims under exposure to harmful gases/vapors, if any.

5.0 SAFETY COMMITTEE:

- 5.1** *Safety committee* shall be formed within each contracting agency comprising of worker representatives with equal no. of management representatives as per the provisions of BOCW Act/rules. This committee in each agency shall meet at least once in every month. The safety officer of the concerned agency shall coordinate these meetings. NTPC Safety officer shall be special invitee for Safety Committee meetings. The safety committee functioning shall be in line with the provisions of BOCW Act/Rules.
- 5.2** Apart from the above, each agency shall organize safety meetings every day before start of day's work to educate & motivate the workers about the necessity of safety. Case study of accident/ incident can be shared in these meetings.
- 5.3** The contractor shall also regularly organize safety meetings for all job supervisors/foremen.
- 5.4** Weekly meeting with agencies' Safety Officers to be organized by safety department of NTPC and minutes to be recorded, circulated and compliance status to be checked on regular basis.

6.0 SAFETY MESSAGE PROPAGATION:

- 6.1** Contracting agencies shall arrange for display of safety hoardings depicting suitable safety cartoons/messages/ cautionary notices at appropriate places of project site to remind the workers to perform their duties safely. Minimum one safety message board/hoarding of appropriate size for every 10 workers to be provided and maintained by the concerned agency.
- 6.2** Apart from safety hoardings, each agency should maintain a safety bulletin board at all their work locations. Such safety bulletin boards should depict the activities being planned for the day, good practices, permit details etc.
- 6.3** Safety suggestion boxes shall be kept at each contractor's office at site for obtaining safety suggestions from the workers. Best suggestions should be implemented and may be rewarded suitably to encourage the workers for safety.

7. COMPETENCY OF EMPLOYEES:

- 7.1** Throughout the course of the contract, persons employed by agency shall be physically fit, qualified/experienced to perform their assigned duties/ jobs.
- 7.2** Employees shall not, knowingly be permitted to work in a manner that their ability or alertness is so impaired because of fatigue, illness or any other reason, that it may expose them and or others to injury.
- 7.3** No worker, vehicle operator shall be less than 18 years of age. And the vehicle operator shall have a valid license as per requirements of Motor Vehicle Act.
- 7.4** Contractor shall comply with all applicable state/central laws and codes related to employment of operators for Hoist, Shovel, Crane, Tractor, Bull-dozer, any other howling heavy equipment/vehicle.

8.0 SAFETY INDUCTION AND TRAINING :

- 8.1** Each worker deployed by the agency shall be given 2-days induction training which shall include the medical examination and instructions related to particular job, fire fighting, first-aid and reporting of accidents. All employees shall be given safety training as per BOCW Act/Rules.
- 8.2** The contracting agency shall also impart job specific skill based safety training to all its employees (Minimum one day) on various related safety topics using internal/external safety professionals/consultants as per the matrix given below. Record of such trainings and attendance particulars shall be maintained in a register for ready reference to statutory authorities/engineer-in charge.

TRAINING MATRIX:

Name of topic	Executives	Super visors	Skilled Workmen	Other Workers
Safety Induction	Y	Y	Y	Y
Accident_ Causes, factors, cost	Y	Y	Y	-
Industrial hazards & Accident Prevention	Y	Y	Y	-
Investigating, reporting, records	Y	Y	-	-
Personal Protective Equipment	-	Y	Y	Y
Construction Safety & Role of Supervisory personnel	-	Y	-	-
Permit to Work (PTW)	-	Y	Y	y
Statutory Provisions (BOCW Act/Rules, Factories Act 1948 etc.)	Y	Y	y	y
Material handling	-	y	Y	Y
Emergency Management	Y	Y	Y	-
Electrical Safety	-	Y	Y	-
Fire safety	Y	Y	Y	Y
First Aid & CPR (cardio pulmonary resuscitation)	-	Y	Y	Y (Selected)
Safety in Welding & Cutting	-	-	Y	-
Safety Audit	Y	Y	-	-
Safety in Lifting Tools & Tackles	-	Y	Y	y
Safety in Working at height	-	Y	Y	Y
Safety in Confined space work	-	Y	Y	Y
Defensive Driving	-	Y*	Y*	Y*

*for construction vehicle operators, helpers & crane operators

Y=Yes

9.0 ID PASS

- 9.1** CLIMS (Contract Labor Information Management System) will be the criterion for entering or gate pass system if implemented at site.
- 9.2** The contractor shall ensure that all personnel working at site having a photo Identity card before they are engaged for any work and properly mentioned details like validity, Category/designation and work area etc. This ID card should be issued only after ensuring their screening test, medical fitness and safety induction training. Id card gate pass shall be indicated with 3 nos. of offence marks. With each offence the gate pass of concerned workmen/ supervisor will be punched giving on the spot indication of persons indulging in unsafe actions.
- 9.3** Drinking of Alcoholic beverages is strictly prohibited. Employees under the influence of any intoxicants, even to the slightest degree, shall not be permitted to remain at work. Each contractor should maintain 'breath analyzer' to determine the intoxicated workers at site.

10 SAFETY AUDIT

- 10.1** Internal Safety Audit once in every six months by the contracting agency and external safety audit as once in a year by third party shall be conducted, with prior intimation to EIC and NTPC Safety Deptt. The external auditing agency should be reputed safety institution or a certified Safety Auditor under any statutory legislation. The audit report along with time bound action plan should be submitted to Engineer-in-charge and NTPC Safety Dept.
- 10.2** Apart from above, Electrical Safety Audit shall be conducted quarterly by a team comprising of Electrical engineer, Safety representative of contractor and NTPC Electrical Erection representative covering the following and submit the report to EIC.
- i) Electrical incidents investigation findings and remedial measures implemented.
 - ii) Adequacy of power supply requirements
 - iii) Power distribution system in place
 - iv) Updated electrical single line diagram including the IP44 DBs arrangement.
 - v) Electrical protection devices – ELCBs, O/L protections etc.
 - vi) Earth or ground connection and earth pit maintenance details
 - vii) Education and training of electrical personnel undertaken
 - viii) Any other point appropriate to the site conditions.

11. SAFETY BUDGET

Every contracting agency should clearly estimate and allocate a separate budget head for safety requirements every year and make the safety activity plan for the year and submit to NTPC EIC & Head of Safety. Budget allocations should be practically adequate to the site safety requirements and the details shall be intimated to the concerned EIC and safety deptt. before start of the work under the contract and subsequently, every year by 15th of April. Engineer-in Charge in consultation with Head of Safety shall review and monitor the effective utilization of allocated budget for safety related activities by the Contractor.

12. REPORTING AND INVESTIGATION OF ACCIDENTS AND DANGEROUS OCCURRENCES:

- 12.1 Reporting of accidents:** Notice of any accident (the prescribed format is annexed to the manual) to a worker at the building or construction site that
- (a) Causes loss of life; or
 - (b) Disables a worker from working for a period of **48 hours** or more immediately following the accident;
- Shall forthwith be sent by Telegram, Telephone, Fax, Email or similar other means including special Messenger within **four hours** in case of **fatal accidents** and **72 hours** in case of **other accidents**, besides the Engineer-in-charge, to:
- I. The Regional Labour Commissioner (Central);
 - II. The Board with which the worker involved was registered as a beneficiary;
 - III. Director General of Building and other construction (regulation of employment and conditions of service) Act/Rules; and
 - IV. The next of kin or other relative of the worker involved in the accident;
- 12.2** Further, notice of accident shall be sent in respect of an accident which
- (a) Causes loss of life; or
 - (b) Disables the injured worker from work for more than 10 days to
 - (1) The Officer-in-charge of the nearest Police Station;
 - (2) The District Magistrate or, if the District Magistrate by order so desires, to
 - (3) The Sub-Divisional Magistrate;
- 12.3** Where any accident causing **disablement that subsequently results in death**, notice thereof in writing of such death, shall be sent the Authorities mentioned above within **72 hours** of such death.
- 12.4** In case of an accident causing minor injury, first-aid shall be administered and that resulting in disability of **48 hours or more**, the injured worker shall be given first-aid and immediately transferred to a Hospital or other place for medical treatment.
- 12.5** All near-miss accidents shall be reported to NTPC Engineer In-charge and Safety Officer as per prescribed format.
- 12.6 Reporting of dangerous occurrences:** The following classes of dangerous occurrences shall be reported to the Inspector having jurisdiction, whether or not any disablement or death caused to the worker, namely:
- (a) Collapse or failure of lifting appliances, or hoist, or conveyors, or similar equipment for handling of building or construction material or breakage or failure of rope, chain or loose gears; or overturning of cranes used in construction work;
 - (b) Falling of objects from height;
 - (c) Collapse or subsidence of soil, any wall, floor, gallery, roof or any other part of any structure, platform, staging, scaffolding or means of access including formwork;
 - (d) Contract work, excavation, collapse of transmission;
 - (e) Explosion of receiver or vessel used for storage at a pressure than atmospheric pressure, of any gases or any liquid or solid used as building material;

- (f) Fire and explosion causing damage to any place on construction site where building workers are employed;
- (g) Spillage or leakage of any hazardous substance and damage to their container;
- (h) Collapse, capsizing, toppling or collision of transport equipment;
- (i) Leakage or release of harmful toxic gases at the construction site;
- (j) In case of failure of a lifting appliance, loose gear, hoist or building and other construction work, machinery and transport equipment at a construction site, such appliances, gear, hoist, machinery or equipment and the site of such occurrence shall, as far as practicable, be kept undisturbed until inspected by the Authorities;

12.7 Every notice given for fatal accidents shall be followed by a written report to the concerned Statutory Authorities and the Engineer In-charge in the specified Form annexed as Schedule, under acknowledgement.

12.8 Incident / injury statistics shall be maintained by all agencies cause wise.

12.9 Investigation of accidents and dangerous occurrences

Besides reporting, it shall be the responsibility of the contractor to constitute a team (members as per the gravity of the incident) of responsible person to thoroughly investigate all incidents involving near-miss accidents, lost-time and reportable accidents and dangerous occurrences with a view to finding out the causative factor, taking remedial measures and fixing responsibility, and make a copy of the investigation report along with action-plan, specifying a definite time-frame for implementation of the findings, available to the Engineer in-charge forthwith.

13. MEDICAL AND FIRST AID AMENITIES:

13.1 It is the responsibility of each contracting agency to ensure the availability of suitable arrangements at their work site for rendering prompt and efficient First aid to injured persons.

13.2 Arrange one trained and certified first aid for every twenty workers in each shift.

13.3 Ambulance with proper equipment for prompt transportation of the injured persons to a physician or a hospital shall be provided before start of the work in cases where 500 or more than 500 workers are employed. For smaller contracts, where less than 500 workers are employed, Contractor shall have a tie-up with suitable Agency for providing Ambulance with proper equipment for prompt transportation of the injured persons to a physician or a hospital in case of an Accident / Emergency. Further, Contractor shall submit a proof of the same to EIC/Safety Officer of NTPC.

13.4 Deploy one full time construction medical officer (qualification as per Schedule XI of BOCW Central Rules -1998) for cases where 500 or more workers are employed (upto one thousand workers) and one additional construction medical officer for additional one thousand workers or part thereof. For smaller contracts, where less than 500 workers are employed, Contractor shall have a tie-up with suitable Hospital / Nursing home in the vicinity of the

Project/Site where work is being executed, for providing adequate medical treatment by qualified medical officers and nursing staff, as and when required. Further, Contractor shall submit a proof of the same to EIC/Safety Officer of NTPC.

Notwithstanding anything stated above, Contractor/Agency shall strictly comply with the requirements of relevant BOCW Act/ BOCW Rules/ Factory Act/Factory Rules/ any other statutory Act/Rules/Law with regards to providing suitable medical facilities to the workers.

In case contractor fails to employ the required construction medical officer alongwith Additional staff, corresponding payment for the same shall not be made and/or necessary action as per provisions of the Bidding documents shall be taken by NTPC.

- 13.5** Additional staff including one nurse, one dresser-cum compounder, one sweeper-cum-ward boy with each construction medical officer for full working hours
- 13.6** The Telephone nos. of Medical officer, Hospital(s) or ambulance shall also be conspicuously displayed at each work site.
- 13.7** First-aid kits as approved by medical officer shall be provided at accessible points in the ratio of at least one kit for every 50 employees.
- 13.8 Health Management:** The site manager shall implement health examinations for the working personnel on a regular basis.

Types of health examination	Target	Frequency
General health examination	All workers	Annual
Occupational health examination (Audiometric, PFT, Vision etc.)	Worker engaging in noise, dust, vibration, harmful light generating work	Annual
Occupational health examination (Vision)	Personnel involved in operation of Cranes, heavy vehicles	Annual
Occupational health examination (Vertigo/Height pass)	Workers engaged at Height Works	At the time of induction training and every year

14. TESTING & EXAMINATION OF LIFTING, TOOLS, TACKLES, PRESSURE VESSELS AND OTHER EQUIPMENT:

- 14.1** All the lifting equipment, tools, tackles, pressure vessels etc. shall be tested & examined as per BOCW or Factories Act and rules made there under.

- 14.2** The records & certificates of such testing & examination shall be maintained and readily available for reference to statutory authorities/engineer-in-charge.
- 14.3** Proper color coding system should be maintained and marking should be done accordingly on all lifting tackles.
- 14.4** Regular testing of ELCBs and RCCBs by competent electrician must be ensured by agencies and record should be maintained.

15. EMERGENCY MANAGEMENT PLAN

- 15.1** The contractor shall ensure that an Emergency Management Plan is prepared to deal with emergencies arising out of:
 - a. Fire and explosion;
 - b. Collapse of lifting appliances and transport equipment;
 - c. Collapse of building, sheds or structure etc.;
 - d. Gas leakage or spillage of dangerous goods or chemicals;
 - e. Drowning of workers, sinking vessels, and
 - f. Landslides getting workers buried; floods, storms and other natural calamities.
- 15.2** While arrangements shall be made for emergency medical treatment and evacuation of the victim in the event of an accident or dangerous incident occurring, the chain of command and the responsible persons of the contractor with their telephone numbers and addresses for quick communication shall be adequately publicized and conspicuously displayed in the workplace.
- 15.3** It is also required that there is a tie-up with the hospitals and fire stations located in the neighborhood for attending to the casualties promptly and emergency vehicle kept on standby duty during the working hours for the purpose.
- 15.4** It shall be the responsibility of the contractor to keep the Local Law & Order Authorities informed and seek urgent help, as the case may be, so as to mitigate the consequences of an emergency. Prompt communication to NTPC, telephonically initially and followed by a written report, shall be made by the contractor.

16. ENFORCEMENT OF SAFETY CODE, SAFETY RULES & REGULATIONS:

The Engineer-In charge shall ensure that the contractor is exercising at all times, reasonable and proper precautions for the safety of people at works and complying with the provisions of current safety rules and laws according to safety code and relevant statutes of state/central governments. In case of negligence or default, the agency shall be penalized suitably as per penal provisions of NTPC Safety Rules.

17. WORK PERMIT SYSTEM

- 17.1** The Contractor shall implement Work Permit system, which is a formal written system used to control certain types of work that are potentially hazardous. A work permit is a document, which specifies the work to be done, and the precautions to be taken. Work Permits form an essential part of safe systems of work for many construction activities. They start the work

only after safe procedures have been defined and clearance taken from respective NTPC EICs. Permits to Work are usually required in high-risk areas as identified by the Risk Assessments.

17.2 Examples of high-risk activities include but are not limited to:

- i) Entry into confined spaces
- ii) Cutting & welding
- iii) Working at Height along with checklist
- iv) Working on electrical equipment
- v) Heavy lifting operations
- vi) Removal of grating/ Handrail / floor opening
- vii) Material Shifting

The copies of recommended formats for reference is given in annexure-IV.

17.3 The permit-to-work system should be fully documented, laying down:

- i) How the system works
- ii) The jobs it is to be used for;
- iii) The responsibilities and training of those involved; and
- iv) How to check its operation;

17.4 A Work Permit authorization form shall be completed with the maximum duration period not exceeding 12 hours.

17.5 A copy of each Permit to Work (PTW) shall be displayed near to work are (on PTW Display board) in close proximity to the actual works location to which it applies.

18. ACCESS TO AND FROM THE WORKPLACE

18.1 Safe, clean, well lit, unencumbered access and egress to and from work areas shall be maintained at all times in normal operating conditions.

18.2 The number and location of accesses and egresses from and to the workplace shall be adapted to the number of people likely to be present at any time, and therefore to evacuate from the workplace in case of emergency.

18.3 If access and egress to work areas are restricted due to operational conditions (e.g. access restricted due to pressure testing, etc.), alternative access and egress ways must be implemented, so far as is reasonably practicable. If this is not reasonably practicable, all concerned organizations and persons must be informed of the access restrictions, and work scheduling must be adapted in consequence.

18.4 Temporary access to height or into ground openings shall be of purpose made material such as scaffolds, stair cases/towers and ramps, which incorporate guardrails .

19. INTERFERENCE WITH MOVING VEHICLES AND PEDESTRIANS

- 19.1** The circulation of vehicles and pedestrians must be segregated by establishing restricted areas, one way routes where possible, pedestrian crossing zones and designated parking areas.
- 19.2** The appropriate measures must be implemented in order to prevent collision between pedestrians and vehicles at pedestrian crossings. This may include, but shall not be limited to:
- Mirrors;
 - Lighting;
 - Speed bumps before the crossing point.
- 19.3** Vehicle and pedestrian ways shall be physically separated with Hard-barriers, so far as is reasonably practicable, and be indicated with signs.



- 19.4** When it is not reasonably practical to implement a physical segregation, pedestrians must maintain safety distance of at least 2 meters from moving/operating vehicles at all times.
- 19.5** Traffic rules must be made visible through signage and traffic stops, consistent with those used on public
- 19.6** Roads as per road safety requirement.
- 19.7** All pedestrians on Project sites must wear high-visibility garments.
- 19.8** Pedestrians (including banksmen) must wear high-visibility garments in all areas where trucks and other vehicles (forklifts, cranes, etc.) maneuver. These areas must be clearly signaled / marked (floor painting, Hard-barriers, signs, etc.).Additional points:
- 19.9** Competent banksmen must be used for operations involving reversing or maneuvering where space or view is restricted.
- 19.10** Drivers must only operate vehicles they are competent to drive and must follow the established traffic routes and comply with all site rules.
- 19.11** The maximum driving speed on site is 15 km per hour.
- 19.12** Drivers and passengers must not get on or off moving vehicles.
- 19.13** When driving a forklift, forks must be lowered, the mast tilted back.
- 19.14** Smoking, eating, drinking, using a mobile phone or using earbuds or headphones when driving a vehicle is strictly prohibited.
- 19.15** When the vehicle is not in use, it must be ensured that:
- The engine is stopped and prevented from unauthorized use (e.g.: starter key removed), brake applied (and with wheels chocked for heavy vehicles);
 - All raised parts are lowered to the ground or put in a safe position (cranes);
 - It does not obstruct emergency exits, other routes, fire equipment or electricity panels.

20. HOUSEKEEPING

The contractor shall ensure that their work area is kept clean, tidy and free from debris generated by their activities. All debris/scrap should be stored in separate bins. The work areas must be cleaned on a daily basis and a full cleaning session of each area shall be conducted on a weekly basis. All equipment, materials and vehicles shall be stored in an orderly manner. Access to emergency equipment, exits, telephones, safety showers, eye wash stations, fire extinguishers, pull boxes, fire hoses, etc. shall not be blocked or otherwise disturbed, restricted or delayed.

21. STACKING AND STORAGE PRACTICE

Contractor Agency shall ensure stacked material is bonded on a stable and level footing capable of carrying the mass of the stack. Adequate clearances shall be provided between the sides of the stack and top to facilitate unimpeded access to service equipment like overhead wiring, cranes, forklifts and firefighting equipment, and hoses. Circular items shall be sufficiently choked with wedges not with odd bits of materials. Free-standing stacks of gunny bags and sacks such as Cement bags shall be stacked to prescribe safe stacking heights with layers formed for stable bonding, preventing slippage causing accidents. Stacking against walls shall not be permissible.

Contractor shall maintain the premises and surrounding areas in clean and clear manner with safe access and egress. There shall be sufficient and adequate storage racks, shelving, bins and pallets and material handling equipment to stack his construction materials such as Pipes, Structural and his construction enabling materials. Unwanted materials shall be promptly moved away for efficient material movement.

Any temporary store shed will be built in conformity with fire safety requirements. The stores must be provided with adequate lighting arrangement (Flame proof / intrinsically safe depending upon the Zone category) and must be equipped with sufficient fire extinguishing arrangement. "No Smoking" and other relevant signage must be displayed conspicuously at strategic locations and safety precautions must be strictly enforced.

All material should be kept at least 150mm above from the ground by providing wooden packing below. Maximum height of material stacking should not be greater than 3 meter. All loose material must be kept in wooden box or in sharp edge protected drum and material identification details to be displayed. Materials inside store room should be kept on scaffold rack.

Gas cylinder storage area must be 30m away from the hot work zone and separate storage facility must be available for empty and full cylinder with proper shed. Storage area must be design in a way that 6 meter distance between LPG/DA and oxygen maintained

22. CONFINED SPACES

All Confined Spaces belonging to Subcontractor shall be identified and clearly signed posted as a confined space forbidden to unauthorized Personnel at every entrance. A method for preventing entry must be established and maintained for all Confined Spaces. Physical prevention system (such as locks) is preferred.

Before commencing work in a Confined Space, the Subcontractor must obtain a Permit to Work from the relevant authority.

The following requirements shall be met at any time:

- Only competent and trained workers can participate to work in confined spaces (as a minimum as per local Law). A Confined Space Entry Log (or equivalent) must be used to identify the person inside the Confined Space at any time;
- Air Analysis tests must be carried out to determine if the Confined Space is oxygen deficient and/or contains flammable substances, toxic agents, carbon monoxide and/or harmful physical agents. The air shall be analyzed before starting work, during work and after work. Adequate ventilation must be provided;
- Working in the confined space without a watcher is strictly forbidden. An adequate means of communication is required and shall enable easy and clear communication:
 - Between those inside the space,
 - Between those inside the space and those outside,
 - To summon help in case of emergency;
- Adequate emergency provisions must be in place. In particular, necessary rescue equipment must be ready, pre inspected and available. The arrangements need to be suitable and sufficient for the rescue of persons in the event of an emergency.

23. FIRE PROTECTION AND PREVENTION

Routine hot works should be described in the contractor Risk Control Plan .Non-routine hot works are submitted to daily hot works permits given by the relevant authority.

Full and unrestricted access to emergency exits, fire-fighting equipment, fire control and emergency vehicles shall be maintained at all times. The Subcontractor shall provide, install and maintain their own temporary fire protection against hazards they introduce to the Site (work areas, storage areas, and temporary facilities under their responsibilities).

Fire extinguishers shall be inspected at least annually by a certified person and visually inspected monthly and documented by the Contractor.

24. ELECTRICAL SAFETY

Personal authorization must be issued by Contractor Management (or formally designed delegates) likely to perform or supervise electrical works.

Without such an authorization validated by EIC, no Contractor's employee shall undertake electrical works.

No live work on high voltage or medium voltage is allowed. All high voltage and medium voltage electrical works must be performed on isolated equipment and only after verification of absence of voltage with suitable equipment. Low voltage and very low voltage live work is only allowed for measurement tests and checks of equipment. The below measures will be taken:

- Work practices must protect against direct or indirect body contact by means of tools or materials and be suitable for work conditions and the exposed voltage level
- A Lockout and Tagout procedure must be applied prior to commencing any electrical work. Prior to commencing works on isolated equipment, a verification of absence of voltage with suitable safety test equipment must be performed.
- Energized panels will remain locked with a specific key or tool whenever they are unattended and tagged with the signs and warnings indicating the presence of danger. If not reasonably practicable, a restricted area delimited with physical barriers and supported by warning signs must be implemented around the opened equipment.
- Only qualified electrical Contractor Personnel may enter substations and/or transformer vaults and only after being specifically authorized by NTPC EIC.
- All joints (Both terminal and intermediate) in cable should be made using lugs and joint area should be crimped using crimping tools.
- All temporary connection should be provided through 30mA ELCB/RCCB using 3 core double insulated cable and only 3 pin industrial plug top will be used for connection.
- Zero energy verification needs to be ensured before any electrical operation using only VAV before working on a live circuit which has been isolated
- Only industrial type DB to be used for connection and weather protection shed needs to be provided for every DB and shed height should not be less than man height.
- Double earthing protection must be provided for every electrical equipment and earthing value should be less than 1 Ohm
- Deployment of trained, experienced & licensed electrician as well as licensed electrical supervisor must be ensured at site as per Rule-45 of the Indian Electricity Rules, 1956 ;
- EIC May perform screening/ competency test for all contractor electrical professions i.e. electrical engineers and helpers. Selection/ rejection of the personnel who appear for the screening is sole discretion of EIC
- Electrical helper who will be engaged in helping the electrician/ engineer must have minimum ITI certificate to be eligible for working with him
- All PPE's used while being involved in electrical work must be as per IS Standards available for electrical work

25. COMPRESSED GAS CYLINDERS

Gas cylinders shall be securely stored and transported, and identified and used in line with the safety Requirements as per Gas Cylinder Rules -2106.

Hose lines shall be adequately protected, inspected and tested for leaks in line with the safety Requirements. Flash back arrestor /NRV must be used at both ends of the hoses and all hose should be free from damage and fixed properly preferably using crimping clamps. Leakage test must be done before every use by soap solution and physical inspection of hose must be carried out regularly. Only trolley attached with wheel will be used for cylinder transportation in which cylinders must be kept secured with chain. Only Industrial type regulator fitted with two stage double dial pressure gauge is allowed to be used.

26. LIFTING OPERATIONS

The Contractor shall prepare a lifting plan, checked and submit for authorization by contractor's competent authorized persons prior to any lifting operation and formally communicated to all persons undertaking the work.

All persons preparing, issuing lifting plans and all persons involved in lifting operations must be subject to formal competence checks by the contractor to ensure necessary training, experience and qualification prior to commencing work. The Subcontractor must ensure that their nominated Lifting Leader has appropriate qualifications.

Contractor lifting plans include:

The lifting methodology, step by step

The risk analysis of the operation including consideration for weather conditions and work environments (e.g.: proximity of hazards and obstructions to the load, consideration for overturning, load integrity) where appropriate and consideration for simultaneous operations and the measures taken to avoid conflicting tasks in the lifting area

The identification of the designated lifting area, the fall zone and the control measures to prevent access such as barriers, signs, etc.

The description of the type, weight, size, shape and center of gravity of the load and the method used for slinging, attaching and detaching the load with the availability of approved lifting points on load when necessary

The list of the certified and inspected equipment and lifting accessories to be used

The composition of the team required to perform the task (crane driver, rigger, etc.) with the needed qualifications and description of their roles and responsibilities including the intended communication method

Any Heavy equipment (crane, winch machine, etc.) manufactured less than 15 years from the current year shall be only allowed to be used at our project Site's. Pre-safety Inspection of the equipment by safety deptt. shall be done before mobilizing the equipment at our project site.

The contractor must ensure that a competent operational leader is formally appointed to supervise each lifting operation. All lifting plans must clearly define the specific roles and responsibilities for each person involved (e.g.: crane drivers, lifting coordinators and riggers) and must be checked and issued prior to lifting operation. Clear communication channels must be formally established and maintained between everyone involved in a lift with only authorized person giving instruction to the operator.

Special permission needs to be taken from NTPC EIC for tandem lifting and for any non-routine lifting operations must strictly adhere to the guidelines described in corresponding Standard / Procedures / Directive.

No employee of the contractor shall be positioned under a suspended load or between a suspended load and fixed objects.

All lifting equipment and accessories must have valid manufacturers certificates or thorough examination records and be uniquely identified, marked with the safe working load, listed in a register and subject to formal regular inspection as per EHS requirements and shall have valid certificates from a competent authority. Inspection before use by the operator is mandatory. All lifting hooks must have latch. All cranes shall be fitted with Automatic Safe Load Indicator (ASLI) and Anemo Meter.

The contractor shall operate and maintain cranes and hoisting equipment in accordance with manufacturers' specifications and limitations and the safety Requirements. All defective, non-inspected or unidentified (safe working load / identification number) lifting equipment or accessories must be either removed from site or physically prevented from use.

27. LOCKOUT TAGOUT (“LOTO”)

Prior to performing work on Machines or Equipment, the Subcontractor shall ensure that all energy sources are isolated and verify the absence of residual energy (e.g.: by using specific voltage detecting device for electricity).

At any time, the contractor shall follow the Site-specific LOTO and Permit to Work rules. The contractor must ensure that all of their affected Subcontractor Personnel receive the necessary training. Lockout/ Tagout must be implemented before servicing and maintenance is performed on Machines and Equipment, which could unexpectedly start-up, become energized, or release stored energy exposing persons to a risk of injury, unless the works undertaken are performed using alternative measures that provide effective protection.

Absence of residual energy must be verified using the suitable equipment or process adapted to the machine and the kind of energy to be checked before start of work. *The contractor must procure suitable VAV instrument for verification of absence of voltage before implementing LOTO all by themselves.*

When the contractor is in charge of LOTO, each authorized person must be issued with an individual lock with a unique key. The contractor shall secure areas where energy sources have been de energized, so as to prevent the access of unauthorized personnel and erect suitable signs. All affected Personnel shall be notified.

Once an item of electrical equipment has been energized, an item of mechanical plant and/or System has been erected and released for Commissioning, no work will be allowed on such item of Equipment or System unless a valid Permit to Work (PTW) has been obtained from the relevant authority.

28. MONTHLY SAFETY REPORT

Agency has to submit the monthly safety activity report in the form of Lead-Lag indicator to NTPC Safety Deptt. Sample format attached as annexure –IV.

- 29.** In case the Contractor doesn't adhere to any of the provisions of the NTPC Safety Rules for Construction and Erection of Power Plants, corresponding payment for the provisions not adhered, shall not be made and/or necessary action as per provisions of the Bidding documents shall be taken by NTPC.

SECTION-II

1. Safety at workplace and equipment

1.0 GENERAL PROVISIONS:

1.1. Housekeeping:

- a. The contractor shall be primarily responsible for maintaining Good housekeeping and safety standards in the workplace;
- b. Loose materials that are not required for use shall not be placed or left behind so dangerously as to obstruct workplaces or passageways;
- c. All projecting nails shall be removed or bent to prevent injury;
- d. Equipment, tools and small objects shall not be left lying unattended or unsecured from where they could fall or cause a person to trip;
- e. Scrap, waste or rubbish shall not be allowed to accumulate in the site as these combustibles can create serious fire hazards and affect safe working;
- f. Workplaces and passageways that become slippery owing to spillage of oil or other causes shall be cleaned up or strewn with sand, ash or the like;
- g. Portable equipment shall be returned after use to their designated storage place.

1.2. Means of access and egress shall consist of

- a. Adequate and safe means of access and egress shall be provided in all workplaces;
- b. The means of access and egress shall be maintained in a safe condition;

1.3 Lighting and ventilation

- a. All practical measures shall be taken to prevent smoke, fumes etc. from obscuring any workplace or equipment at which any worker is engaged;
- b. Adequate and suitable artificial lighting shall be provided where natural lighting is not sufficient as per IS 3646 (Part II). The artificial lighting so provided shall not cause any incidental any danger, including that of producing glare or disturbing shadows;
- c. To prevent danger to health from air contamination by dust generated during grinding, cleaning, spraying or manipulation of materials as also to provide protection against dangerous gases, fumes, vapours, mist, etc. effective arrangements shall be made for ventilation;
- d. Workers shall be provided with suitable respiratory protective equipment, if it is not technically possible to have uncontaminated air. To this end, a study by a competent person shall be made to decide on the due protection. Sufficient illumination at all times for maintaining safe working conditions shall be provided where building workers are required to work or pass, and for passageways, stairways and landings such illuminations shall not be less a than 0.5 foot candles at the floor level;
- e. Where natural lighting is not adequate to prevent danger, adequate and suitable lighting shall be provided as per IS: 3646 – Part II;
- f. Artificial lighting shall not cause any danger due to a brightness greater than 10 foot candles per square inch, except where the angle of inclination from the eye to the source or the part pf the fitting as the case may be exceeds 20⁰, including that of producing glare or disturbing shadows;
- g. Where necessary to prevent danger to health from air contamination by dust from the grinding, cleaning, spraying, or manipulating of materials or objects, arrangements shall be made to limit the concentration of the pollutants by thorough ventilation, and dust generated due to movement of earthmoving machinery and other construction equipment, by spray of water in the area from time to time;
- h. Adequate ventilation by the circulation of fresh air shall be maintained in such places where the concentration of pollutants is likely to affect the health of the workers;

- i. Special care shall be taken to ventilate the workplace where gas cutting, welding or other operations involving generation of dangerous fumes, vapours, mists, gases etc is likely;
- j. Where it is technically not possible to eliminate dust or noxious or harmful fumes or gases sufficiently to prevent injury to the health of the workers, the contractor shall provide suitable respiratory equipment like dust mask or gas/fume mask or breathing apparatus or other suitable respiratory equipment.

1.4. Dangerous and harmful environment:

- a. When an internal combustion engine exhausts into confined space or excavation or tunnel or any other workplace where neither natural ventilation nor artificial ventilation system is adequate to keep the carbon monoxide content of the atmosphere below fifty parts per million, adequate and suitable measures shall be taken at such workplace in order to avoid exposure of building workers to health hazards;
- b. No building worker shall be allowed to enter any confined space or tank or trench or excavation wherein there is given off any dust fumes or other impurities of such nature and to such extent as is likely to be injurious or offensive to the building worker or in which explosives, poisonous, noxious or gaseous material or other harmful articles have been carried or stored or in which dry ice has been used as a refrigerant, or which has been fumigated or in which there is a possibility of oxygen deficiency, unless all practical steps have been taken to remove such dust, fumes or other impurities and dangers which may be present and to prevent any further ingress thereof, from such workplace or tank or trench or excavation;
- c. No worker shall be allowed to enter any such space unless a responsible person has certified it safe and fit for the entry of such building workers.

1.5. Fumes/gases due to Welding and gas-cutting operations: When welding or cutting operations are carried out in a confined space:

- a. Adequate ventilation, by means of exhaust fans or forced draught, as the condition may require, shall be constantly provided; otherwise enough quantity of air shall be circulated by means of air compressors to dilute the contaminant within permissible limits;
- b. Workers shall take necessary precautions to prevent unburned combustible gas or oxygen from escaping inside a tank or vessel or other confined space;
- c. Welding or cutting operations on any container that has held explosives or where inflammable gases may have been generated, shall be undertaken after the container has been thoroughly cleaned by steam or other effective means; and
- d. Gas-test shall be carried out ensure that the confined space is completely free from combustible gases and vapours.

1.6. Dust, gases, fumes

- a. Concentration of dust, gases or fumes shall be prevented by providing suitable means to control their concentration within the permissible limit so that they may not cause injury or create health hazard to a building worker;

- b. For protection against such hazardous substances, besides efficient and effective means of control, personal protective equipment like dust masks, breathing apparatus, other respiratory appliances, goggles, as the case may be, shall be provided.

1.7. Excessive noise:

- a. Adequate measures shall be taken against the harmful effects of an excessive noise;
- b. Use of earplugs/muffs and anti-vibration gloves shall be ensured to protect the workers from the impact of exposure to such dangers;
- c. The noise level in no case shall exceed as prescribed in the concerned Rules and exposure in excess of 115 dBA over the period of a quarter of an hour cannot be permitted:

1.8. Corrosive substances:

- a. All corrosive substances, including alkalis and acids, shall be stored and used by a person dealing with such substances at a building or other construction work in such a manner that it does not endanger the building worker and suitable protective equipment shall be provided by the employer to a building worker during handling or use of such substances at a building or other construction work and in case of spillage of such substances on the building worker, immediate remedial measures shall be taken;
- b. While protection of the body could be ensured by use of corrosion resistant apparel/overalls, suitable goggles, gloves, apron, gum boots etc. shall be made available to all concerned personnel;
- c. To deal with an accidental spillage of a corrosive substance on the body of a worker, the facility of eyewash fountain or water shower, as the case may be, shall be installed, within the easy reach of the workplace.

1.9. Eye protection:

- a. Suitable personal protective equipment for the protection of eyes shall be provided and used by the building worker engaged in operations like welding, cutting, chipping, grinding or similar operations which may cause hazard to his eyes;
- b. Goggles or face shield or welding screen with suitable shade of glass/filters etc shall be provided for the protection of the eyes.

1.10. Overhead protection:

- a. It shall be ensured that at the building or other construction site, overhead protection is erected along the periphery of every building under construction that shall be of fifteen meters or more in height when completed;
- b. Overhead protection shall not be less than two meters wide and shall be erected at a height not more than five meters above the base of the building and the outer edge of such overhead protection shall be one hundred fifty millimeters higher than the inner edge thereof or shall be erected at an angle of not more than twenty degrees to its horizontal sloping into the building;

- c. It shall be also ensured that at the building and other construction work that any area exposed to risk of falling material, articles or objects is roped or cordoned off or otherwise suitably guarded from inadvertent entry of persons other than building workers at work in such area.

1.11. Lifting and carrying of excessive weight:

- a. No building worker lifts by hand or carries overhead or over his back or shoulders any materials, articles, tools or appliances exceeding in weight the maximum limits as set out in the following table unless aided by any other building worker or a mechanical device;
- b. No worker aided by other workers, lift by hand or carry overhead or over their back or shoulders any materials, articles, tools or other appliances exceeding in weight the sum total of the maximum limits as prescribed in the concerned Rules, unless aided by a mechanical devices:

1.12. Protections against fall of persons –

- a. All scaffolds/working platforms at height of two metres or more shall be fenced;
- b. All guard-rails for the fencing of floor openings, gangways, elevated workplaces shall be made of sound material, good construction and possess adequate strength and be between 1 m and 1.5 m above platform level, consist of two rails (two ropes or chains may be used if they are sufficiently taut) and supporting stanchions;
- c. Intermediate rails, ropes or chains shall be midway between the top and lower of edges of the top rail;
- d. Sufficient number of stanchions or standard poles or uprights shall be maintained to ensure the required stability and resistance;
- e. Guard-rails shall be free from sharp edges and be maintained in good repair;
- f. Floor openings through which persons could fall, shall be guarded by covering or fencing;
- g. If the means of protection is removed to allow the passage of persons or goods or other purpose, the same shall be replaced as soon as possible, while making temporary arrangements for reasonable degree of safety in the meanwhile;
- h. Covers for floor opening shall be safe to walk on and if vehicles operate thereon it shall be safe for the same. This will require the contractor to have prior assessment of expected loads;
- i. Cover for floor opening shall be secured by hinges, grooves, stops or other effective means against sliding, falling down or lifting out or any other inadvertent displacement;
- j. Covers for any openings shall not constitute any hindrance to traffic and, as far as practicable, be flush with the floor;
- k. If covers constitute as grids, the bars shall be spread not more than 5 cm apart;
- l. Elevated workplaces at more than 2 m above the floor or ground shall be protected on all open sides by guardrails. It is commonly observed that fragile barricade tapes are used as a substitute of a strong and dependable fencing. This practice is prohibited. The barricade tapes can be used as markers/route guide only;
- m. Elevated workplaces shall be provided with safe means of access and egress such as stairs, ramps or ladders according to suitability;
- n. Persons employed at elevated workplaces or other situations at more than 2m from which they may fall, shall be protected by means of adequate safety nets, or platforms, or be secured by

safety belts with the lanyard properly anchored above the head level of the user. All possible effort shall be made to have strong and dependable mechanical arrangement.

1.13. Protection against fall of objects and materials:

- a. Materials and objects such as scaffolding materials, waste materials or tools shall not be thrown up or down from heights, as they are liable to cause injury;
- b. If materials and other objects cannot be safely lowered from heights, adequate precautions such as the provision of fencing, lookout men or barriers shall be provided to protect any person from injury.

1.14. Protection against entry of unauthorized persons:

- a. Construction zones in the site and built up areas alongside main traffic routes shall be barricaded;
- b. Unauthorized persons shall not be allowed access to construction sites and visitors shall be provided with the required protective equipment and it be ensured that they use them effectively.

1.15. Head protection and other protection apparel:

Every building worker who is required to –

- a. Pass through or working within the areas where there is hazard of his being struck by falling objects or materials, shall be provided with safety helmets of the type approved and tested in accordance with the national standards;
- b. Work in water or in wet concrete or in other similar work, shall be provided with suitable waterproof;
- c. Work in rain or in similar wet condition, shall be provided with waterproof coat with hat;
- d. Workers using or handling of alkalis, acid or other similar corrosive substances shall be provided with appropriate protective equipment in accordance with the approved standards;
- e. Every building worker engaged in handling sharp objects or materials at a building or other constriction work, which may cause hand injury, shall be provided with suitable hand gloves in accordance with the approved standards.

1.16. Stability of structures:

- a. No wall, chimney or other structure or part of a structure shall be left unsupported in such condition that it may fall, collapse or weaken due to wind pressure, vibration or due to any other reason. Entry of persons into such locations where tall structures are being built shall be regulated without a let up.

1.17. Safety of Structures and equipment and other safety concerns

- a. Safety of structures like scaffoldings, platforms, gangways/walkways, towers, stairs, ladders, ramps, safety in excavation, formwork, falsework, demolition work, storage, handling and use of explosives, inflammable substances and hazardous materials, gas cutting and welding, use of electricity etc.; and equipment viz. construction machinery, crushers and batching plant, boiler and other pressure vessels, transport and material handling equipment, lifting appliances, vehicles etc., shall be operated and maintained as per approved norms and –
 - i. They shall be made of sound material and of good construction, free from patent defects, provided with adequate safe guards, properly maintained, periodically inspected and strong enough to withstand safely the loads and stresses to which they may be subjected;
 - ii. They shall carry enough factor of safety bearing in mind that the possibility of their abuse, which otherwise shall be prevented by constant and adequate supervision, cannot be ruled out altogether;
 - iii. It is incumbent on the contractor to ensure that only competent and authorized persons operate the equipment or attend to electrical and mechanical systems and repair of faults or breakdowns etc.
- b. Working in the confined space may involve certain serious hazards. Strict adherence to the conditions of Permit-to-work issued for the purpose is required;
- c. Control of energy sources shall be ensured through Log-out/Tag-out practices.

1.18. Slipping, tripping, cutting, drowning and falling hazards:

- a. The contractor shall keep all passageways, platforms and other places free from accumulations of dust, debris or similar material and from other obstructions that may cause tripping;
- b. Any sharp projections or protruding nails or similar projections which may cause any cutting hazard to a building workers shall be removed or otherwise made safe by taking suitable measures;
- c. No contractor shall allow any building worker at construction work to use the passageway, or a scaffold, platform or any other elevated working surface which is in slippery and dangerous condition and shall ensure that water, grease, oil or other similar substances which may cause the surface slippery, be removed or sanded/saw-dusted or covered with suitable material to make it safe from slipping hazard;
- d. Wherever building workers are exposed to the hazard of falling into water, they shall be provided with rescuing arrangement from such hazard and if it is considered necessary, well equipped boat or launch manned with trained personnel shall be provided by the contractor at the site of such work;
- e. Every open side or opening into or through which a building worker, vehicle or lifting appliance or other equipments may fall at a building or other construction work shall be covered or guarded suitably to prevent such fall except where free access is necessary by reasons of their nature of the work;
- f. Wherever building workers are exposed to the hazards of falling from height while employed on such work they shall be provided by the employer with adequate equipment or means for

saving them from such hazards, Such equipments or means shall be in accordance with the standards as laid down;

- g. Whenever there is a possibility of falling of any martial, equipment or building worker at a construction site relating to a building or other construction work, adequate and suitable safety net shall be provided in accordance with the above stipulation;

2.0 SAFETY IN MATERIAL HANDLING AND WASTE DISPOSAL

2.1. GENERAL PROVISIONS:

- a. All building materials stored in tiers shall be stacked, racked, blocked, interlocked or otherwise secured safely to prevent sliding, falling or collapse and in an orderly manner to avoid obstruction of any passageway at the place of work. Piles of materials shall be stored or stacked in such a manner as to ensure their stability;
- b. Maximum safe load limits of floors within buildings and structures in kg/cm² shall be conspicuously posted in all storage areas, except for floor or slab on gradient. Maximum safe load shall not be exceeded. Material or equipment shall not be stored upon any floor or platform in such quantity as to exceed its safe carrying capacity;
- c. Ailes and passageways shall be kept clear to provide for the free and safe movement of material handling equipment or persons. Such areas shall be kept in good repair;
- d. When a difference in road or working levels exist, means such as ramps, blocking or grading shall be used to ensure the safe movement of vehicles between two levels;
- e. Material stored inside buildings under construction shall not be placed within 2 m of any hoist way or inside floor openings nor within 3.2 m of exterior wall which does not extend above the top of material stored;
- f. Persons employed required to work on stored material in silos, hoppers and similar storage areas shall be equipped with lifelines and safety belts;
- g. Non-compatible materials shall be segregated in storage;
- h. Bagged materials shall be stacked by stepping back the layers and cross-keeping the bags at least every 10 bags high;
- i. Materials shall not be stored on scaffolds or runways in excess of supplies needed for immediate operations;
- j. Bricks stacks shall not be more than 2.2 m in height. When a loose brick stack reaches a height of 1.3 m it shall be tapered back 5 cm in every foot of height above the 1.25 m level;
- k. When masonry blocks are stacked higher than 2 m, the stack shall be tapered back on half block per tier above the 2 m level;
- l. Material or equipment shall not be stored or placed so close to any edge of a floor or platform as to endanger the safety of persons below or working in the vicinity. Where stacking, unshackling, stowing or unstaring of construction material or article, or handling in connection therewith cannot be safely carried out unaided, reasonable measures to guard against accident or dangerous occurrences shall be taken by shoring or otherwise to prevent any danger likely to be caused by such handling;
- m. Stacking of material or article shall be made on firm foundation not liable to settle and such material or article and shall not overload the floor on which such stacking is made;

- n. The material or articles shall not be stacked against partition or walls of a warehouse or stores unless it is known that such partition or the wall is of sufficient strength to withstand the pressure of such materials or articles;
- o. The materials or articles shall not be stacked to such a height and in such a manner as would render the pile of such stack unstable and cause hazards to the building workers or the public in general;
- p. Where the building workers are on stack exceeding one point five meters in height, safe means of access to the stack shall be provided;
- q. All stacking or unstacking operations shall be performed under the supervision of a responsible person for such stacking or unstacking;
- r. The stacking of construction materials or articles shall not be made near the site of excavation, shaft, pit or any other such opening;
- s. Stacks that may lean heavily or become unstable or collapse are barricaded shall be avoided;
- t. Structural steel, poles, pipe, bar stock and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent sliding, spreading or tilting.

2.2. LUMBER:

- a. Used lumber shall have all nails withdrawn before stacking;
- b. Lumber shall be stacked on level and solidly supported sills;
- c. Lumber piles shall not exceed 6 m in height provided that lumber is handled manually, shall not be stacked more than 5 m height;
- d. Lumber shall be so stacked as to be stable and self-supporting.

2.3. STACKING OF CEMENT AND BAGS CONTAINING OTHER MATERIALS:

- a. The cement or other material in bags shall be stacked in a header and stature-wise in rows alternately in not more than 10 numbers and there will be circulation of space of at least 600 mm in between two such rows;
- b. While removing bags from the stack pile the stability of such stack pile shall be ensured;
- c. Bags containing cement or lime shall be stored on a firm ground;
- d. The materials like bricks, tiles or blocks shall also be stored on a firm ground;
- e. Reinforcing steel shall be stored according to its shape, size and length and stack of reinforcing steel kept as low as possible;
- f. No pipe shall be stored on rack or in stack where such pipe is likely to fall by rolling;
- g. The angle of repose shall be maintained where loose materials are stacked;
- h. When dust laden material is to be stored or handled, measures shall be taken to suppress the dust produced by such storing or handling and suitable personal protective equipment supplied to and used by the building workers working for such storing or handling.

2.4. DISPOSAL OF DEBRIS AND WASTE MATERIAL:

- a. It shall be ensured that debris is
 - i. Handled and disposed of by a method, which does not cause danger to the safety of a person and not allowed to accumulate so as to constitute a hazard;
 - ii. Kept sufficiently moist to bring down the dust under control;
 - iii. Not thrown inside or outside from any height of such building or other construction work;
- b. Brought down by suitable means/chutes provided for the purpose and on completion of work, leftover building material, article or other substance or debris shall be disposed off as soon as possible to avoid any hazard to any traffic or person;
- c. Whenever materials are dropped more than 6 m to any point lying outside the exterior walls of the building an enclosed chute of wood, or equivalent material shall be used;
- d. When debris is dropped through holes in the floor without the use of chutes, the area where the material is dropped shall be completely enclosed with barricades not less than 1.1 m high and not less than 1.9 m back from the edge of the opening above. Signs warning of the hazard of falling material shall be posted at each level;
- e. All scrap lumber, waste material and rubbish shall be removed from the immediate work area as the work progresses;
- f. Disposal of waste material or debris as per the guideline issued by CPCB in compliance of Rule 10 sub-rule 1(a) of C & D Waste Management Rules, 2016).
- g. All bio-degradable material shall be disposed off in the pit for making compost. Pellets can also be made from bio-degradable material
- h. All solvent wastes, oil rags and flammable liquids shall be kept in fire resistant covered containers until removed from the work site.

2.5. HANDLING GAS CYLINDERS:

- a. Gas cylinders shall not be lifted on bare slings. For lifting the cylinders, cage of suitable size shall be used and all cylinders shall be horizontally positioned in it. Such cage shall have fencing in such a way that there is no possibility of fall of cylinders from this cage.

2.6. RIGGING EQUIPMENT FOR MATERIAL HANDLING:

- a. Rigging equipment for material handling shall be inspected prior to use in each shift as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service;
- b. Rigging equipment shall not be loaded in excess of its recommended safe working load, as prescribed in the Indian standards;
- c. Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to persons engaged in the area;

- d. Special custom designed grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be marked to indicate the safe working loads shall be proof tested prior to use 125% of their rated load;
- e. Welded alloy steel chain slings shall have permanently affixed-durable identification standing size, grade, rated capacity and manufacturer.

2.7. FENCING OF MOTORS ETC

- a. All motors, cogwheels, chains and friction gearings, flywheels, shafting and the other dangerous and moving parts of machinery (whether or not driven by mechanical power) and steam pipes shall be securely fenced and the fencing of dangerous parts of machinery not removed while such machinery is in motion or in use;
- b. No part of any machinery which is in motion and which is not securely fenced, shall be examined, lubricated, adjusted or repaired except by a person skilled and trained for such examination, lubrication, adjustment or repairs and machine parts cleaned only when such machine is stopped;
- c. When a machine is stopped for servicing or repairs, adequate measures shall be taken to ensure that such machine does not restart inadvertently and not only tag-out sign is required; it is also essential that an active system of isolating the power be applied.

2.8. PROTECTION AGAINST LIGHTNING

- a. Where necessary, installations shall be protected against lightning, provided further that;
- b. No bare conductors or bare current-carrying parts of equipment be permitted to be installed unless adequate precautions are taken to prevent direct or indirect contact;
- c. Only flame-proof equipment and conductors shall be installed at places where explosives or inflammable substances are stored, handled or used or where explosive atmosphere exists;
- d. Persons competent and authorized only shall attend to electrical breakdowns and other operational faults and give or restore power to an equipment and such persons shall be easily identifiable by their dress or special helmet worn;
- e. It will constitute a standard practice to switch off portable tools while shifting from one place to another or while leaving them behind unattended;
- f. The contractor shall ensure that a system is in place to always keep tools well maintained.

2.9. VEHICULAR TRAFFIC

- a. Whenever any building or other construction work is being carried on, or is located in close proximity to a road or any other place where any vehicular traffic may cause danger to building workers, it shall be ensured that such building or other construction work is barricaded and suitable warning signs and lights displayed or erected to prevent such danger and if necessary, a request in writing made to the concerned authorities to control such traffic;

- b. All vehicles used at construction site shall comply with the requirements of the Motor Vehicles Act, 1988 (59 of 1988) and the Rules made hereunder;
- c. The driver of a vehicle of any class or description operating at a construction site shall hold a valid driving license under the Motor Vehicles Act. 1988 (59 of 1988).

2.10. USE OF SAFETY BELT OR OTHER FALL ARREST SYSTEMS:

Wherever any work at a height of 3 m or more is carried out, use of a suitable fall arrest system is mandatory if the workplace has already not been provided with an otherwise reliable means of protection for preventing the fall of persons from that height, provided further that:

- a. Safety belt, lanyard, life lines and devices for the attachment of such life lines shall conform to the approved standards;
- b. Every building worker shall be supplied with safety belt and safety life lines for his protection and such building worker shall use such belts and life lines during the performance of his work;
- c. All building workers using safety belt and safety life lines shall have the knowledge of safe use and maintenance of such belts and life lines and shall be supplied with necessary instructions for its use;
- d. The responsible person for supervising the use of safety belts and safety lifelines shall inspect and ensure that such safety belts and lifelines are fit for use before taking them into use.

2.11. SAFETY NET AND ITS USE

- a. Every safety net shall be of adequate strength, made of sound material and suitable for use and conform to the approved standards;
- b. The responsible person for maintenance of safety nets and their use shall ensure safe fixing of such safety nets and provide such safety nets with suitable and sufficient anchorage so that the purposes for which such safety net is intended for use is served;
- c. Use of multi-layer safety net to be ensured to avoid fall of material/objects.

2.12. STORAGE OF SAFETY BELTS AND NETS, ETC:

- a. Proper arrangement shall be made for the safe storage of safety belts, safety lifelines and safety nets when they are not in use and are protected against mechanical damage, damages from chemicals and damages from biological agents.

2.13. SAFETY HELMETS AND SAFETY FOOTWEAR

- a. The Engineer in-charge may declare whole or part of a site as the hardhat area and in such an eventuality it shall be the responsibility of the contractor to provide safety helmet of the approved quality to all personnel engaged in construction and erection work, including the visitors to the site;
- b. Accordingly, wherever safety footwear is required for the safety of the personnel, the contractor shall provide the same of the approved type free of charge.

3.0 WELDING AND GAS CUTTING OPERATIONS

3.1 GAS WELDING:

3.1.1 GENERAL PROVISIONS:

- a. All welders shall be provided with fire resistant protective clothing and equipment, such as fire resistant gauntlets and aprons, helmets and goggles with suitable filter lenses and its usage shall be ensured;
- b. The welders shall not be allowed to wear clothing that is not free from grease, oil and other flammable material;
- c. Adequate precautions shall be taken to protect persons working or passing near welding operations from dangerous sparks and radiation;
- d. When welding or cutting is being done on materials containing toxic or harmful substances or liable to produce toxic or harmful fumes, adequate precautions shall be taken to protect workers from the fumes, either by
 - i) Exhaust ventilation, or
 - ii) Respiratory protective equipment;
 - iii) Arrangement shall be made so that welding sparks do not fall down on the persons working below or material, which are combustible in nature and may be damaged with such sparks.
- e. The oxygen pressure for welding shall always be high enough to prevent acetylene flowing back into the oxygen cylinder;
- f. Acetylene shall not be used for welding at a pressure exceeding 1 atmosphere gauge;
- g. Adequate precautions shall be taken to prevent:
 - i) Fire being started by sparks,
 - ii) Slag or hot metal; and
 - iii) Damage to fibre ropes from heat, sparks, slag or hot metal;
- h. Precautions shall be taken to prevent flammable vapours and substances from entering the working area;

3.2. WELDING AT PLACES WITH FIRE RISKS:

- a. Unless adequate precautions are taken, no welding or cutting operations shall be allowed near the place where combustible materials are stored, or near materials or plant where explosive or flammable dusts, gases or vapours are likely to be present or given off. If hot work permit system exists at the site, the same shall be followed;
- b. Combustible materials and structures that cannot be removed from the vicinity of welding operations shall be shielded by asbestos or protected by other suitable means.

3.3. WELDING IN CONFINED SPACE:

When welding or cutting operations are being carried out in a confined space;

- a. Adequate ventilation, by means of exhaust fans or forced draught as the condition may require, shall be constantly provided; otherwise enough quantity of air shall be blown in by means of compressors to dilute the pollutants;

- b. No blow pipe shall be left unattended inside a tank or vessel or other confined space during meal break or other interruption of the work;
- c. The worker shall take all necessary precautions to prevent unburned combustible gas or oxygen from escaping inside a tank or vessel or other confined space; and
- d. When necessary to prevent danger, an attendant shall watch the welders from outside.

3.4. WELDING ON CONTAINERS FOR EXPLOSIVE OR FLAMMABLE SUBSTANCES:

Welding or cutting operations on containers in which they are explosives or flammable substances shall not be allowed;

- i) Welding or cutting operations on any container that has held explosive or where flammable gases may have been generated, shall only be undertaken,
- ii) After the container has been thoroughly cleansed by steam or other effective means; and
- iii) Found by air tests to be completely free from combustible gases and vapours; or
- iv) After the combustible gas in the container has been completely replaced by an inert gas or by water;
- v) If an inert gas is used as laid down in clause 4.2.3, after the vessel has been filled with gas, the gas shall continue to flow slowly into it thorough out the welding or cutting operations;
- vi) Before starting any welding operations on, or otherwise applying heat to, closed or jacketed containers or other hollow parts, such containers or parts shall be adequately vented in suitable manner.

3.5. GAS CYLINDERS

- a. Gas cylinders shall be inspected, stored, handled and transported in conformity with the requirements of Gas Cylinders Rules, 1981;
- b. When in use, cylinders shall be held in upright positions by straps, collars or chains;
- c. Devices referred to in clause 6.2 shall be such that the cylinders can be rapidly removed in an emergency;
- d. Welders shall not temper with or attempt to repair safety devices and valves on gas cylinders;
- e. When acetylene cylinders are coupled, flash back arrestor shall be inserted between the cylinder and the coupler block, or between the coupler block and the regulator;
- f. Only acetylene cylinders or approximately equal pressure shall be coupled;
- g. No gas shall be taken from a cylinder unless a pressure reducing regulator has been attached to the valve;
- h. Only the right pressure reducing regulator shall be used for the gas in the cylinder;
- i. Cylinder valves shall be kept free from gases, grease, oil, dusts and dirt;
- j. Leaky cylinders charged with acetylene or liquefied fuel gas shall be taken into the open air at a safe distance from any open flame or sparks.

3.6 HOSE

- a. Only hose especially designed for welding and cutting operations shall be used to connect an oxy-acetylene torch to gas outlet;
- b. Hose lines for oxygen and for oxy-acetylene shall be of different colours and preferably of different size;
- c. Hose connections shall be sufficiently light to withstand without leakage a pressure twice the maximum delivery pressure of the pressure regulators in the system;

- d. Care shall be taken that hose does not become kinked or tangled, stepped on or run-over or otherwise damaged;
- e. Any length of hose in which a flashback has burned, shall be discarded;
- f. No hose with more than one gas passage shall be used;
- g. Only soapy water shall be used for testing hose for leaks.

3.7. TROCHES

- a. When torches are being changed, the gases shall be shut off at the pressure reducing regulators and not by crimping hose;
- b. Torches shall be lit with friction lighters or other safe source but not with matches.
- c. Electric welding equipment:
- d. Welding machines shall be controlled by a switch mounted on or near the machine framework that, when opened, immediately cuts off the power from all conductors supplying the machine;
- e. Welding circuit shall be so designed as to prevent the transmission of high potential from the source of supply to the welding electrodes;
- f. The maximum open circuit voltage shall be in accordance with Indian Standards;
- g. Electrode conductors or cables shall not be excessive in length and shall not be longer than necessary to perform the work;
- h. Return conductors shall be taken directly to work and securely connected mechanically and electrically to it or to the work bench, floor etc. and to an adjacent metallic object;
- i. Cable shall be supported so as not to create dangerous obstruction;
- j. Motors, generators, rectifiers and transformers in arc welding or cutting machines, and all current carrying parts, shall be protected against accidental contact with uninsulated live parts;
- k. Ventilating slots in transformer enclosures shall be so designed that no live part is accessible through any slot;
- l. Frames of arc welding machines shall be effectively earthed;
- m. In hand-operated arc welding machines, cables and cable connectors used in arc welding circuits shall be effectively insulated on the supply side;
- n. The outer surface electrode holders of hand-operated arc welding machines, including the jaw so far as practicable, shall be effectively insulated;
- o. Electrode holders of hand-operated arc-welding machines shall, if practicable, be provided with discs or shields to protect the operator's hands from the heat of the arcs;
- p. Only heavy-duty cable with unbroken insulation shall be used;
- q. Circuit connections shall be waterproof;
- r. When lengths of cable have to be joined, only insulated connectors shall be used on the earth line and the electrode holder line;
- s. Connections to welding terminals shall be made at distribution boxes, socket outlets, etc. by bolted joints;
- t. Welding terminals shall be adequately protected against accidental contact by enclosures, covers or other effective means;
- u. Electrode holder shall
 - i. Have adequate current capacity;
 - ii. Be adequately insulated to prevent shock, short-circuiting or flashovers.

3.8. OPERATIONS

- a. Arc welding and cutting operations that are carried on at places where persons other than the welders are working or passing shall be enclosed by means of suitable stationary or mobile screens;
- b. Walls and screens of both permanent and temporary protective enclosures shall be provided to absorb harmful rays from the welding equipment and prevent reflection, and if necessary, be painted or otherwise treated for the purpose;
- c. When arc welding is done in damp confined spaces;
 - i) Electrode holders shall be completely insulated; and
 - ii) The welding machines shall be outside the confined space;
- d. Welders shall take adequate precautions
 - i) To prevent any part of their body from completing an electric circuit
 - ii) To prevent contact between any part of the body and the exposed part of the electrode, or electrode when in contact with metal; and
 - iii) To prevent wet or damaged clothing, gloves and boots from touching any live part;
- e. Welding circuits shall be switched off when not in use;
- f. Electrodes shall only be inserted in the holder with insulating means such as insulating gloves;
- g. Electrode and return leads shall be adequately protected against damage;
- h. Live parts of electrode holders shall be inaccessible when they are not in use;
- i. Electric arc-welding equipment shall not be left unattended with current switched on.

4.0 SAFETY IN THE USE OF ELECTRICITY

4.1. GENERAL PROVISIONS

- a. Before commencement of any building or other construction work, adequate measures shall be taken to prevent any worker from coming into physical contact with any electrical equipment or apparatus, machines or live electrical circuit which may cause electrical hazard during the course of his employment and suitable warning signs shall be displayed and maintained at conspicuous places in Hindi and in local language understood by the majority of the building workers;
- b. In workplaces where the exact location of underground electric power line is not known, the building workers using jack hammers, crow bars or other hand tools which may come in contact with a live electrical line shall be provided with approved insulated protective gloves and footwear;
- c. As far as practicable, no wiring or cable, which may come in contact with water or which may be mechanically damaged or which may result in electric shock shall be left on ground or;
- d. All electrical appliances and current carrying equipment used shall be made of sound material and adequately earthed;
- e. All temporary electrical installations shall be provided with earth leakage circuit breakers;
- f. It is required that all portable power-driven hand tools are provided with double insulation to secure a high degree of protection from electrical hazards;
- g. Electrical installations shall comply with the requirements of any law for the time being in force, especially the Indian Electricity Act/Rules in particular with specific reference to the following:
 - i) All parts of installations shall be of standard construction not lower, from the safety point of view, than the national standards, as applicable. All parts of electrical installations shall be so constructed, installed and maintained so as to prevent electrical fires, explosion and shock;
 - ii) Earthing of metal work of electrical equipment, other than the parts which carry current, shall be provided and will conform to Electricity Act and IS: 3042 – 1966 (code of practice for earthing);
- h. All parts of electrical installation shall be adequate size and characteristics for the work they may be called upon to do and in particular they shall:
 - i) Be of adequate mechanical strength to withstand working conditions in construction operations; and
 - ii) Be not liable to damage by water, dust or electrical, thermal or chemical action to which they are subjected to in construction operations;
- i. All parts of electrical installations shall be so constructed, installed and maintained as to prevent the danger of electric shock; fire and external explosion;
- j. It shall be made impossible for circuit breakers to be opened or closed inadvertently, by gravity or by mechanical impact;

- k. Before operation of OCBs, oil level must be checked and the event of short, extra quantity must be filled;
- l. Use of rubber gloves and rubber gum boots of tested quality where electric shock is likely to occur shall be provided, but these shall not be considered as providing adequate protection against the risk of electric shock in lieu of inbuilt safety arrangement in the system;
- m. First-aid boxes, instruction for restoration of persons affected by electric shock shall be made;
- n. Arrangement shall be made for sufficient number of CO₂/chemical powder type fire extinguishers/sand buckets etc.;
- o. No electrical circuits shall ever be overloaded to the dangerous extent or beyond the rated capacity;
- p. In confined areas, only 24 volt supply shall be used for every equipment, including hand-held portable tools and hand lamps;
- q. All electrical appliances and outlets shall be clearly marked to indicate their purpose and voltage.

4.2. FUSES

- a. Fuses shall bear markings indicating their rated current, whether they are of the fast or slow-breaking type and, as far as practicable, and their rated breaking capacity. Fuses as per need and of correct rating shall be used in the circuit;
- b. Effective measures shall be taken to ensure that persons removing or inserting fuses will not be endangered, in particular by any adjacent live parts;
- c. In case of blow of fuses only after finding out and correcting of the fault, new fuses shall be provided in the circuit.

4.3. SWITCHES

- a. All switches shall be of enclosed type and so installed and earthed as to prevent danger in their operation;
- b. Use of switches, which may connect or disconnect circuit through gravity, shall not be used.

4.4. MOTORS

- a. All motors shall be equipped with a switch;
- b. When a motor can be cut off from more than one place, where practicable, a stopping device shall be installed in the immediate vicinity of the motor;
- c. Motors shall be so installed as to ensure that they can be adequately cooled;
- d. Motors shall be effectively protected against over current;
- e. Whenever the motors installed are in the open area where there is the possibility of fall of liquid corrosives or otherwise, it shall be suitably protected with covering;
- f. Earthing shall be connected to all motors, generators etc. as prescribed in the Indian Electricity Rules, amended from time to time.

4.5. CONNECTIONS

- a. At points where conductors are joined, branched or led into apparatus, they shall be:
 - i. Mechanically protected, and
 - ii. Properly maintained;

- b. Conductors shall be joined, branched or led into an apparatus through junction boxes, bushings, glands or equivalent connecting devices;
- c. Junction boxes or plug-out-socket couplings shall be used for joining cables wherever practicable;
- d. When parts of conductors are joined together, or conductors are joined to one another or to an apparatus, the attachment shall be made by screwing, clamping, soldering, riveting, brazing, crimping, or equivalent means. Loose connections shall not be provided in any case;
- e. Cable joints, junction boxes and connectors shall be protected as far as practicable, against traffic, fall of ground, water and other sources of damage;
- f. Whenever armoured cables are joined, the junction boxes shall be bridged by a suitably conductive bond between the armouring of the cables.

4.6. TRANSPORTABLE AND PORTABLE ELECTRICAL EQUIPMENT:

- a. The supply of electricity to portable apparatus shall not exceed 250v;
- b. Hand-held and portable machines shall be equipped with a built-in switch to switch off power in case of emergency;
- c. Hand-held electrically operated tools shall be provided with built-in switch to disconnect the circuit when the tool is not being used;
- d. Portable electrical tools, unless flameproof, shall not be used in flammable or explosive atmosphere;
- e. Only three-core cable shall be used for single-phase operated tools with the third core connected to earth

4.7. HAND LAMPS

- a. Hand lamps shall be equipped with strong cover of glass or other transparent material;
- b. Portable lamp holders shall have:
 - i) All current –carrying parts enclosed;
 - ii) Insulated handle; and
 - iii) They shall operate at 24 v;

4.8. INSPECTION, MAINTENANCE

- a. All electrical equipment shall be inspected before it is taken into use to ensure that it is suitable for its purpose of use;
- b. At the beginning of every shift every person using electrical equipment shall make a careful external examination of the equipment and conductors for which he is responsible, especially flexible cables;

- c. Periodic inspections, testing, maintenance of all electrical equipment is to be made and record of test of transformer oil and pit earthing shall be maintained;
- d. Electrical conductors and equipment shall be repaired by the electrician only as far as practicable, no work shall be done live conductors or equipment;
- e. Before any work is begun on conductors or equipment that does not have to remain live;
 - i) The current shall be switched off;
 - ii) Adequate precautions shall be taken to prevent the current from being switched on again;
 - iii) The conductors or the equipment shall be tested to ascertain that they are dead;
 - iv) The conductor and equipment shall be earthed and short-circuited; and
 - v) Neighbouring live parts shall be adequately protected against accidental contact;
- f. After work on conductors and equipment, the current shall only be switched on again on the orders of a competent person;
- g. Electricians shall be provided with adequate tools, and person protective equipment, such as rubber gloves, mats etc.;
- h. All conductors and equipment shall be considered to live unless there is certain proof to the contrary.

4.9. WORK IN THE VICINITY OF ELECTRICAL INSTALLATION

- a. When work is to be done in the neighborhood of electrical conductors or installations, the contractor shall ascertain the voltage carried and the works shall not be allowed to reach to unsafe distance from them;
- b. When any excavation is to be made or any bore-holed sunk, the contractor shall ascertain whether there are any underground conductors, in or in dangerous proximity to, the zone of operations;
- c. No work shall be done in dangerous proximity to a conductor or an installation until it has been made dead;
- d. Before work begins, work permit shall be obtained from the Engineer in-charge if live electricity lines/circuit are passing in close vicinity;
- e. Before the current is restored, the contractor shall ensure that no work remain on the work site;
- f. If conductor or an installation in the neighbourhood of which work is to be done can not be made dead, special precautions shall be taken and special instructions given to the workers so as to prevent danger by adequately enclosing or fencing;
- g. If mobile equipment has to be employed in the neighbourhood of conductors or installations that cannot be made dead, its movement shall be so controlled as to keep it at a safe distance from them.

5.0 SAFETY IN THE USE OF HAND TOOLS AND POWER-OPERATED TOOLS

5.1 GENERAL PROVISIONS

- a. All hands and power tools and similar equipment, shall be maintained in safe condition.
- b. When power operated tools are designed to accommodate guards, they shall be equipped with such guards, when in use;
- c. Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains and other reciprocating, rotating or moving parts of the equipment shall be similarly guarded;
- d. Personnel using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapours, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazards;
- e. All hand-held powered platen sanders, grinders, grinders with wheels of 5 cm or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks of 0.5 cm wide or less shall be equipped with only a positive **on-off control**.
- f. All hand-held powered drills, tappers, fastener drivers, horizontal, vertical or angle grinders with wheels greater than 5 cm in diameter, disc sanders, belt sanders, reciprocating saws, saber saws and other operating powered tools shall be equipped with a momentary contact on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

5.2. HAND TOOLS

- a. The contractor shall not issue or permit the use of unsafe hand tools;
- b. Wrenches including adjustable pipe end and socket wrenches shall not be used when saws are sprung to the point that slippage occurs;
- c. Impact tools such as drift pins, wedges and chisels shall be kept free of mushroomed heads;
- d. The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight on the tools.

5.3. POWER OPERATED TOOLS

- a. Electric power operated tools shall be either of the approved double-insulated type or shall be grounded;
- b. The use of electric cords for hoisting or lowering loads shall not be permitted;
- c. Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected;
- d. Safety clips or retainers shall be securely installed or maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled;
- e. All pneumatically riveting machine staplers and other similar equipment provided with automatic fastener feed, which operate at more than 7 kg/cm² pressure at the tool a safety device on the

muzzle to prevent the tool from ejecting the fasteners unless the muzzle is in contact with the work surface;

- f. Compressed air shall not be used for cleaning purposes except when the pressure is reduced to less than 2 kg/cm² and that too with effective chip guarding. The 2 kg/cm² pressure requirement does not apply to concrete form, mill scale and similar cleaning purposes;
- g. The manufacturer's safe operating for hoses, pipes, valves, filters and other fittings shall not be exceeded;
- h. Only personnel who has been trained in the operation of the particular tool shall be allowed to operate power-actuated tools;
- i. The tool shall be tested each day before loading to see that the safety devices are in proper working condition. The method of testing shall be accordance with the manufacturer's recommended procedure;
- j. Any tool found not in proper working order, or that which develops a defect during use, shall be immediately removed from service and not used until properly repaired;
- k. Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any other person. Hands shall be kept clear of the open barrel end;
- l. Loaded tools shall not be left unattended;
- m. Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tiles, surface hardened steel, glass block, live rock, face brick or hollow tiles;
- n. Driving into materials that can be easily penetrated shall be avoided unless backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side;
- o. No fastener shall be driven into a palled area caused by an unsatisfactory fastening;
- p. Only non-sparking tools shall be used in an explosive or flammable atmosphere;
- q. All tools shall be used with the correct shield, guard or attachment as recommended by thee manufacturer.

5.4. ABRASIVE WHEELS AND TOOLS

- a. All grinding machines shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operation;
- b. Grinding machines shall be equipped with suitable safety guards;
- c. The maximum angular exposure of the grinding wheel periphery and sides shall not be more than 90⁰, except that when the work requires contact with the wheel below the horizontal plane of the spindle, the angular exposure shall not exceed 120⁰. In either case, the exposure shall begin not more than 65⁰ above the horizontal plane of the spindle. Safety guards shall be strong enough to withstand the bursting of the wheel;
- d. Floor and bench-mounted grinders shall be work-rests, which shall be rigidly supported and readily adjustable. Such work-rests shall be kept at a distance not to exceed 5 mm from the surface of the wheel;

- e. Cup type wheels used for external grinding shall be protected by either revolving cup guard or a band type guard;
- f. When safety guards are required, they shall be mounted as to maintain proper alignment with the wheel and the guard and the guard and its fastening shall be adequate strength to retain the fragments of the wheel in case of accidental breakage. The maximum angular exposure of the grinding wheel periphery and sides shall not exceed 180°;
- g. Portable abrasive wheel used for internal grinding shall be provided with suitable safety flanges;
- h. When safety flanges are required, they shall be used only with wheels designed to fit the flanges. Only safety flanges, of a type and design and properly assembled so as to ensure that the pieces of the wheel will be retained in case of accidental breakage, shall be used;
- i. All abrasive wheels shall be closely inspected and ring tested before mounting to ensure that they are free from cracks or defects;
- j. Grinding wheels shall fit freely on the spindle and shall not be forced on. The spindle nut shall be tightened only enough to hold the wheel in place;
- k. All employees using abrasive wheels shall be protected by suitable eye protection equipment.

5.5. WOODWORKING TOOLS

- a. All fixed power driven woodworking tools shall be provided with a disconnect switch that can either be locked or tagged in the **off-position**;
- b. The operating speed shall be attached or otherwise permanently marked on all circular saws over 0.5 m in diameter or operating at over 3000 peripheral rpm. Any saw so marked shall not be operated at a speed other than that marked on the blade. When a marked saw is retensioned for a different speed, the marking shall be corrected to show the new speed;
- c. Automatic feeding devices shall be installed on machines wherever the nature of the work will permit. Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points;
- d. All portable power driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

6.0 SAFETY IN THE USE OF LADDERS AND STAIRS

6.1. GENERAL ASPECTS OF SAFETY RELATED TO USE OF LADDERS

- a. Every ladder or step-ladder used in building or other construction work shall be of good construction, made of sound material and of adequate strength for the purpose for which such ladder or step-ladder is used;
- b. When a ladder is used as a means of communication, such ladder shall be lashed to a fixed structure so that while working on such ladder it does not slip;
- c. A ladder or step ladder shall not stand on loose bricks or other loose packing and have a level and firm footing;
- d. No ladder shall be used which has a missing or defective rungs or rungs, which depend for support solely on nails, spikes or other similar fixing.

6.2. MATERIALS FOR LADDERS

- a. Shall be constructed with upright of adequate strength and are made of straight-grained wood, free from defects and having the grain of such wood running length wise;
- b. Shall have rungs made of straight-grained wood free for defects and mortised or securely notched into the upright, reinforcing metal ties, if wedges shall not secure the tenors of such ladders;
- c. Where it is required, in case of use of fixed ladders, sufficient foot-hold and hand-hold shall be provided for use by the building worker;
- d. Every ladder shall be -
 - i. Secured so as to prevent undue swaying;
 - ii. Equally and properly supported on each of its upright;
 - iii. So used as not to cause undue sagging; and
 - iv. Placed as nearly as possible at an inclination of four in one;
- e. The use of all ladders and stepladders shall conform to the approved standards;
- f. Wooden ladders shall be constructed with uprights of adequate strength as well as rungs made of wood free from visible defects and having the grains of the wood in the ladders running lengthwise and rungs mortised or rebuted into the uprights;
- g. Uprights and rungs of metal ladders shall have a cross-section adequate to prevent dangerous deflection, shall be equal and not less than 25 cm or more than 35 cm;
- h. Rungs of metal ladders shall be kept clean so as to prevent them from becoming slippery;
- i. Portable ladders shall not exceed 9 m in length;
- j. Every ladder or run of ladders rising to a height exceeding 9 m shall be provided with an intermediate landing, providing further that the intervals between landings shall not exceed 9 m. The landings shall be of suitable size and protected by railings;
- k. Defective ladders that cannot be satisfactorily repaired shall be tagged Not Fit For Use and destroyed;
- l. Wooden ladders shall not be painted, but oiled or covered with clean varnish or other transparent preservatives;
- m. Metal ladders shall be protected against corrosion by being coated with rust-proof paint or by other means unless they are made of non-corrosive metals;

- n. Every ladder shall rise at least 1 m above the highest point to be reached and have one of the uprights continued to that height to serve as a hand-rail at the top;
- o. Ladders shall not stand on loose bricks or other loose packing but have a level and firm footing so that they are equally supported on each upright;
- p. Every ladder shall be securely fixed so that it cannot move from its top and bottom points of rest and if it cannot be secured at the top, it shall be securely fastened at the base and if fastening at the top is also impracticable, it shall have a man stationed at the foot holding the end to prevent it from slipping;
- q. Where a run of two or more ladders connects different floors, the ladders shall be staggered and a protective landing with the smallest practicable opening shall be provided at each floor;
- r. A ladder having only one upright or a missing or dangerously defective rung shall not be used;
- s. When a ladder is placed in position, the distance between the foot of a ladder and the base of the structure against which it rests shall be about one-quarter of its length;
- t. Workers using ladders shall leave at least one hand free for climbing up and down, face the ladder, avoid wearing slippery footwear and avoid carrying heavy or bulky loads;
- u. A ladder shall not be placed in front of a door that opens towards it unless the door is fastened or locked or guarded;
- v. A ladder shall not be placed against a window frame unless the ladder is fitted with a board at the top so that the applied load is safely distributed over the frame;
- w. Metal ladders shall not be used in the vicinity of live electrical equipment;
- x. Adequate means shall be provided to prevent displacement of the ladder set up in public thoroughfare or where persons, vehicles etc. may accidentally collide with it.

6.3. PORTABLE STEPLADDERS

- a. The length of portable stepladders shall not exceed 6 m and their back legs shall be adequately braced;
- b. Stepladders exceeding 1.5 m in length shall have two or more cross-ties;
- c. The spread between the front and back legs shall be restricted by means of hinged metal flat bars or high-grade fibre or other effective means;
- d. When in the open position, treads of stepladders shall be horizontal.

6.4. PORTABLE TRESTLE LADDERS

- a. The height of the trestle ladders shall not exceed 5.5 m;
- b. The spread between the front and back legs shall be restricted by means of hinged metal flat bars or high-grade fibre or other effective means;
- c. The front and back legs shall be joined at the top by bolted steel hinges of adequate dimensions or other effective means;
- d. Both legs of trestle ladders shall be equipped with sufficient number of steel crossties.

6.5. EXTENSION LADDERS

- a. The length of extension ladders shall not exceed 15 m;
- b. Extension ladders shall be equipped with an effective lock and guide brackets by which the ladder can be extended, retracted or locked in any position;

- c. The rungs of overlapping sections shall coincide so as to form double treads and shall be equipped with one or more extension ropes;
- d. Extension ropes shall be securely anchored and run over suitable pulleys.

6.6 MECHANICAL LADDERS

- a. Mechanical ladder is that ladder, which is a mechanically extendable ladder, mounted on a wheeled frame;
- b. Mechanical ladder shall be equipped with guard-rails and toe-boards and a cage of heavy-gauge steel mesh;
- c. If mechanical ladder has no railed platform or cage, workers using it shall be secured by suitable safety belt;
- d. Mechanical ladders shall not be moved, while a person is on them, unless they have specially designed to ensure that perfect stability is maintained during movement.

6.7. FIXED LADDERS

- a. Uprights of fixed ladders shall be at least 40 cm and shall be set an angle of 15° to the vertical;
- b. Clearance at the back of the rungs shall be at least 15 cm and no obstruction within 75 cm of the face of the ladder;
- c. There shall be at least 7.5 cm clearance between the ladder and the nearest fixed object;
- d. When it is necessary for a ladder to pass closely through a hole in a platform or a floor, the edges of the hole shall be padded so as to prevent injury to the users;
- e. The length of the runs of fixed ladder shall not exceed 9 m;
- f. Landing platform shall be provided for each 9 m or fraction thereof;
- g. As far as practicable, runs shall be staggered;
- h. Runs from which a person could fall from more than 6 m shall be enclosed in a cage of heavy-gauge mesh or hoops;
- i. Fixed ladders shall be firmly bolted or welded in position.

6.8. STAIRS

- a. Stairs shall be of adequate strength to withstand safely the loads that they will have to carry;
- b. Stairs used for the purpose of construction work shall have a clear width of at least 60 cm;
- c. Stairs made of perforated material shall not have openings exceeding 1.2 cm in width;
- d. No step of a stairway shall depend for its support solely on nails, spikes, screws or other similar fixing;
- e. No stairway with missing or dangerously defective steps shall be used;
- f. Every stairway that is at an angle of less than 30° from the vertical shall be provided with a secure handhold at the top landing place, either by extending one upright for at least 1 m or by other effective means;
- g. Movable and removable stairs shall be adequately secured in the position of use;
- h. In all building structures permanent stairs shall be constructed as soon as practicable;
- i. When work on a building has progressed to a height of more than 18 m above the ground and it has not been practical to construct the permanent stairs, sufficient number of stairs shall be provided to ensure safe access to the working levels.

7.0 SAFETY IN THE USE OF LIFTING APPLIANCES & GEARS

7.1. CONSTRUCTION AND MAINTENANCE OF LIFTING APPLIANCES:

All lifting appliances, including their parts and working gear, whether fixed or movable, and any plant or gear used in anchoring or fixing of such appliances -

- a. Shall be of sound construction, sound material, and of adequate strength to serve the purpose for which these are to be used and all such appliances shall be free from patent defects, and
- b. Maintained in good repair and working condition;
- c. Every drum or pulley around which the rope of any lifting appliance is carried, shall be of adequate diameter and sound construction in relation to such rope;
 - i. Any rope that terminates at the winding drum of lifting appliance shall be securely attached to such drum and at least three dead turns of such rope remain on such drum in every operating position of such lifting appliance;
 - ii. The flange of a drum projects twice the rope diameter beyond the last layer of such rope and if such rope and if such projection is not available, other measures like anti-slackness guards shall be provided to prevent such rope from coming off such drum;
- d. Every lifting appliance shall be provided with adequate and efficient brakes which shall be:
 - i) Capable of preventing fall of suspended load (including any test load),
 - ii) Effectively controlling such load while it is being lowered, acting without shock and shall be attached with shoes that can be easily removed for running and which shall be simple and have easily accessible means of adjustment;
- e. Provided that nothing contained above shall apply to **steam-winch** that can be operated as safely as with brakes.

7.2. CONTROLS OF EVERY LIFTING APPLIANCE SHALL BE SO;

- a. Situated that the driver of such appliance at his stand or seat has ample room for operating and has an unrestricted view of building or other construction work, as far as practicable, and that he remains clear of the load and the ropes, and that no load passes over him;
- b. Positioned with due regard to ergonomic considerations for proper operation of such appliance;
- c. Located that the driver of such appliance remains above the appliance and shall have upon them or adjacent to them clear markings to indicate their purpose and mode of operations;
- d. Provided, where necessary, with a suitable locking device to prevent accidental movement or displacement and shall move, as far as practicable, in the direction of the resultant load movement;
- e. Wherever automatic brakes are provided, they shall automatically come to the neutral position in case of power failure.

7.3. TEST AND PERIODICAL EXAMINATION

7.3.1 Test: all lifting appliances including all parts and gears thereof, whether fixed or movable, shall be tested and examined by a competent person before being taken into use for the first time or after it

has undergone any alteration or repairs liable to affect its strength or stability or after erection on a site and also once at least in every five years, in the manner as specified;

7.3.2. Examination: all lifting appliances shall be thoroughly examined by a competent person at least in every twelve months and where the competent person making such examination forms the opinion that the lifting appliance cannot continue to function safely, he shall forthwith give notice in writing of his opinion to the contractor.

7.4. AUTOMATIC LOAD INDICATOR

- a. Cut-out shall be provided which automatically arrests the movement of the lifting parts of every crane if the load exceeds the safe working load, wherever possible;
- b. Wherever the above provisions cannot be applied and if it is not possible to install an automatic safe load indicator, in that case, provision of a table showing the safe working loads at the corresponding inclinations or radii of the jib on the crane shall be considered sufficient.

7.5. INSTALLATION:

Fixed lifting appliances shall be installed by a competent person in a manner that

- a. Such appliances cannot be displaced by the load, vibration or other influences;
- b. The operator of such appliance is not exposed to danger from loads, ropes or drums;
- c. The operator can either see over the zone of operation or communicate with all loading and unloading points by signal, or other communication system;
- d. Adequate clearance is provided between parts or loads of lifting appliances and between the fixed objects such as walls and posts, or electrical conductors;
- e. The lifting appliances; when exposed to wind loading, are given sufficient additional strength, stability and rigidity to withstand such loading safely;
- f. No structural alterations or repairs are made on any part of the lifting appliances that affect the safety of such appliances without obtaining the opinion of the competent person to this effect.

7.6. WINCHES

- a. Winches shall not be used if their control levers operate with excessive friction or play;
- b. Double gear winches shall not be used unless a positive means of locking the gearshift is provided;
- c. There shall be no load other than the fall and the hook assembly on the winch while changing gears on a two-gear winch;
- d. Adequate protection shall be provided to the winch operator against abnormal weather;

- e. Temporary seats or shelters for winch operators that may pose hazard to the winch operator or any other building workers shall not be allowed to be used;
- f. Control levers shall be secured in the neutral position and, whenever possible, the power shall shut off if the winch is left unattended.

7.7. IN USE OF EVERY STEAM-WINCH

- a. Measures shall be taken to prevent escaping steam from obscuring any part of the construction site or other workplace or from otherwise hindering or injuring any building worker;
- b. Extension control levers which tend to fall off their own weight shall be counter-balanced;
- c. Winch operators shall not be permitted to use the which control extension levers except for short handles on wheel type controls and that such levers shall be of adequate strength, secure and fastened with metal connections at the fulcrum and at the permanent control lever;
- d. In use of every electric winch, no building worker shall be permitted to transfer, alter or adjust electric control circuits in case of any defect in such winch;

7.8. ELECTRIC WINCHES SHALL NOT BE USED FOR BUILDING WORK WHERE

- a. The electromagnetic brake is unable to hold the load; or
- b. One or more control points either hoisting or lowering are not operating properly.

7.9. BUCKETS:

It shall be ensured that tip-up buckets are equipped with a device that effectively prevents accidental tipping.

7.10. IDENTIFICATION AND MARKING OF SAFE WORKING LOAD:

- a. Every lifting appliance and loose gear shall be clearly marked for its safe working load and identification by stamping or other suitable means;
- b. Every derrick (**other than derrick crane**) shall be clearly marked for its safe working load when such derrick is used either in single purchase with lower block or in union purchases in all possible block positions;
- c. The lowest angle to the horizontal, to which the derrick may be used, shall be legibly marked;
- d. Every lifting appliance having more than one working load shall be fitted with effective means to enable the operator to determine safe working load at each point under all conditions of use;
- e. Means to ascertain the safe working load for lifting gears under such conditions in which such gears may be used shall be provided to enable a worker using such gears and such means safely, which shall comprise:
 - i) Marking of the safe working load in plain figures or letters upon the sling or upon a tablet or ring of durable material attached securely thereto in case of chain slings; and

- ii) The means specified or notices so exhibited as can be easily read by any concerned building worker stating the safe working load for the various sizes of the wire rope slings used.

7.11 LOADING OF LIFTING APPLIANCES AND LIFTING GEARS

- a. No lifting appliance, lifting gear or wire rope shall be used in an unsafe way and in such a manner as to involve risk to life of building workers and they are not loaded beyond their safe working load except for testing purposes under the direction of a **competent person** in the manner as specified in schedule;
- b. No lifting appliance and lifting gear, or any other material-handling appliance shall be used if the Inspector having jurisdiction under the Building and Other construction (regulation of employment and conditions of service) Act/Rules is not satisfied with reference to a certificate of test or examination or to an authenticated record maintained as provided under the Rules or if in his view the lifting appliance, lifting gear or any other material handling appliance is not safe for use in building or other construction work;
- c. No pulley block shall be used unless the safe working load and its identification are clearly marked on such block.

7.12. OPERATOR'S CAB OR CABIN SHALL

- a. Be made of fire resistant material;
- b. Have a suitable seat, a foot rest and protection from vibration;
- c. Afford the operator an adequate view of the area of operation;
- d. Afford the necessary access to working parts in the cab;
- e. Afford the operator adequate protection against the weather;
- f. Be adequately ventilated; and
- g. Be provided with a suitable fire extinguisher.

7.13. OPERATION OF LIFTING APPLIANCES:

Operator of every crane or lifting appliance shall possess adequate skill and training in the operation of the particular lifting appliances, provided further that

- a. No person under eighteen years of age shall be in control of any lifting machine, scaffold winch, or give signals to the operator;
- b. Precaution shall be taken by the trained operator to prevent lifting appliance from being set in motion inadvertently;
- c. The operation of lifting appliances shall be governed by signals in conformity with the approved standards;
- d. The operator's attention shall not be distracted while he is working;
- e. No crane, hoist, winch or other lifting appliance or any part of such crane, hoist, winch or other lifting appliance shall, except for testing purposes, be loaded beyond the safe working load;
- f. During the hoisting operation, effective precaution shall be taken to prevent any person from standing or passing under the load in such operation;

- g. Operator shall not leave lifting appliance unattended while power is on or the load is suspended to such appliance;
- h. No person shall ride on a suspended load of any lifting appliance;
- i. Every part of a load in course of being hoisted or lowered shall be adequately suspended and supported to prevent danger;
- j. Every receptacle used for hoisting bricks, tiles, slates or other material shall be suitably enclosed as to prevent the fall of any such material;
- k. The hoisting platform shall be enclosed when loose material or loaded wheel barrows are placed directly on such platform or lowering such materials or wheel barrows;
- l. No material shall be raised, lowered or slewed with any lifting appliance in such a way as to cause sudden jerks to such appliance;
- m. In hoisting a barrow, any wheel of such barrow shall not be used as a means of support unless adequate steps have been taken to prevent the axle of such wheel from slipping out of its bearing;
- n. Long objects like planks or girders shall be provided with tag line to prevent any possibility of danger while raising or lowering such objects;
- o. During the process of landing or material, a building worker shall not be permitted to lean out into empty space for finding out the loading and unloading of such material;
- p. When hoisting of load is done in an enclosed space, neither the lifting material nor the boom shall project outside the enclosed space;
- q. Adequate steps shall be taken to prevent a load, in the course of being hoisted or lowered from coming into contact with any object to avoid any displacement of such load and appropriate appliances provided and used for guiding heavy loads when raising or lowering heavy loads to avoid crushing of hands of building workers during such raising or lowering of loads.

7.14. HOISTS

- a. Hoist towers shall be designed according to the relevant national standards;
- b. Hoist shafts shall be provided with rigid panels or other adequate fencing at the ground level on all sides of such shafts and at all other levels on all sides of the access to such shafts while the walls of hoist shafts, except at approaches, extend at least two meters above the floor or platform of access to such shafts;
- c. Approaches to hoist shall be adequately lit and provided with gates that shall be guarded to maintain visibility at least of two meters height; and equipped with a device, which requires such gate to be closed before the platform of such hoist can leave the landing, and prevents the gate from being opened unless such platform is at the landing;
- d. The guides of hoist platforms shall offer sufficient resistance to bending and to buckling in the case of jamming, by providing a safety catch;
- e. Overhead beams and their supports are capable of holding the total maximum live and dead loads that such beams and supports will be required to carry, with a safety factor of at least five;

- f. A clear space shall be provided –
- i. Above the highest stopping place of a cage or platform to allow sufficient unobstructed travel of such cage or platform in case of over-winding and
 - ii. Below the lowest stopping place of such cage or platform;
- g. Adequate covering shall be provided above the top of hoist shafts to prevent materials from falling into such shafts;
- h. Outdoor hoist towers shall be erected on adequately firm foundations and securely braced, guyed and anchored;
- i. A ladder way shall extend from the bottom to the top of every outdoor hoist tower in case no other ladder way exists within easy reach and such ladder way shall comply with the relevant national standards;
- j. The rated capacity of a hoisting engine shall at least be one and a half times the maximum load that such engine will be required to move;
- k. All gearing on a hoisting engine shall be securely enclosed;
- l. Steam piping of hoisting engine shall be adequately protected against accidental contact of such piping with a building worker;
- m. Electrical equipment of a hoisting engine shall be effectively earthed;
- n. A hoist shall be provided with suitable devices to stop a hoisting engine as soon as the platform of such hoist reaches its highest stopping place;
- o. A hoisting engine shall be protected by suitable cover against weather and falling objects;
- p. A hoisting engine set up in a public thoroughfare shall be completely enclosed;
- q. All exhaust steam pipes shall discharge steam in such a manner that the steam so discharged does not scald any person or obstruct the operator's view;
- r. The motion of a hoist shall not be reversed without first bringing it to rest to avoid any harm from such reverse motion;
- s. A hoist not designed for the conveyance of persons shall not be set in motion from the platform of such hoist;
- t. Pawls and ratchet wheels of a hoist, requiring disengagement of such pawls from such ratchet wheels, before the platform of such hoist is lowered, shall not be used;
- u. A platform of a hoist shall be capable of supporting such maximum load that such platform may carry with a safety factor of at least three;
- v. A platform of a hoist shall be equipped with suitable safety gear which can hold such platform with its maximum load in case its hoisting rope breaks;
- w. On platform of a hoist, the wheel barrows or truck shall be efficiently blocked in safe positions;

- x. A cage of a hoist or platform where the building workers are required to enter into such cage or to go on such platform at landing levels, shall be provided with a locking arrangement to prevent such cage or platform from moving during the time a worker enters or leaves such cage or platform;
- y. The sides of platform of a hoist which are not used for loading or unloading, shall be provided with toe-board and enclosures of a wire mesh or any other suitable means to prevent the fall of any part of a load from such platform, further provided that
 - i. The platform of a hoist, which has any probability of falling of any part of a load from it, shall be provided with an adequate covering to prevent such fall;
 - ii. The counter weights of a hoist consisting of an assemblage of several parts shall be so constructed that such parts shall be rigidly connected together;
 - iii. The counter weights of a hoist shall run between guides;
 - iv. At every level of work the building workers shall be provided with adequate platforms for performing such work;
 - v. A legible notice in Hindi as well as in a local language shall be displayed in a conspicuous place of the platform of a hoist and that such notice shall state the maximum carrying capacity of such hoist in kilograms on the hoisting engine;
 - vi. On a hoist authorized and certified for the conveyance of the persons on the platform or in the cage and such notice shall state the maximum number of persons to be carried on such hoist at one time;
 - vii. On a hoist carrying goods and other materials such notice shall state that such hoist is not meant for carriage of persons.

7.15. FENCING AND MEANS OF ACCESS TO LIFTING APPLIANCES

- a. Safe means of access shall be provided to every part of lifting appliances;
- b. The operator's platform on every crane or tip driven by mechanical power shall be securely fenced and provided with safe means of access and where access to such platform is by a ladder, the sides of such ladder shall extend to a height reasonable beyond such platform or some other suitable handhold shall be provided in the platform;
- c. The handling place on such platform shall be maintained free from obstruction and slipping; and
- d. In case the height of such ladder exceeds six meters, the resting platforms shall be provided on such ladder at every six meters of its height and where the distance between last platform so provided and the top end of such ladder is more than two meters then on such top end.

7.16. RIGGING OF DERRICKS:

Every derrick shall have current and relevant rigging plans and any other information necessary for the safe rigging of such derrick and its gear.

7.17. SECURING OF DERRICK FOOT:

Appropriate measures shall be taken to prevent the foot of a derrick from being lifted out of its socket or supports.

7.18. CONSTRUCTION AND MAINTENANCE OF LIFTING GEAR

- a. Every lifting gear shall be –
 - i. of good design and construction, sound material and adequate strength to perform the work for which it is used;
 - ii. free from patent defects; and
 - iii. properly maintained in good repair and working order;
- b. Components of the loose gear, at the time of its use, shall be renewed if one of its dimensions at any point has decreased by ten per cent or more;
- c. A chain shall be withdrawn from use when it is stretched and increased in length which exceeds five per cent of its length or when a link of such chain is deformed or is otherwise damaged or defects in the welds have appeared on it;
- d. Rings, hooks, swivels and end links attached to a chain shall be of the same materials as that of such chain;
- e. The voltage of electric supply to any magnetic lifting device shall not fluctuate by more than **plus** or **minus** 10%.

7.19. TEST AND PERIODICAL EXAMINATION OF LIFTING GEARS

- a. A lifting gear shall be initially tested for the manufacturer by a competent person in a manner specified as per schedule annexed before taking into use or after undergoing any substantive alterations which renders its any part liable to affect its safety and such gear after such test shall subsequently be retested for the use of its owner at least once in every five years;
- b. A lifting gear in use shall thoroughly examined once at least in every twelve months by a competent person;
- c. A chain in use shall be thoroughly examined at least once every month by a responsible person for its use;
- d. Certificates of initial and periodical test and examinations of loose gears shall be obtained in the form annexed.

7.20. ROPES

- a. No rope shall be used for building or other construction work unless -
 - i) It is of good quality and free from patent defects; and
 - ii) In the case of wire rope, it shall be tested and examined by a competent person in the manner annexed;
 - iii) Every wire rope of lifting appliance or lifting gear used for building or other construction work shall be inspected by a responsible person for such use, once at least in every three month;

- b. Provided that after if any such wire is broken in such rope, the responsible person shall thereafter inspect it once at least in every month and ensure that;
- c. No wire rope shall be used for building or other constructing work if in any length of eight diameters of such wires, the total number of visible broken wires exceed ten per cent of the total number of wires in such rope, or such rope shows signs of excessive wear, corrosion or other defects which in the opinion of the person who inspects it, is unfit for use;
- d. Eye splices and loops of ropes for the attachment of hooks, rings and other such parts to wire rope shall be made with suitable thimble;
- e. A thimble or loop splice made in any wire rope sling shall conform to the following standards, namely:
 - i) Wire rope sling shall have at least three tucks with full strand of rope and two tucks with one-half of the wires cut out of each of such strand in all cases, such strands shall be tucked against the lay of the rope;
 - ii) Protruding ends of such strands in any splice of wire rope slings shall be covered or treated so as to leave no sharp points;
 - iii) A fiber rope or a rope sling shall have at least four tucks, tail of such tuck being whipped in a suitable manner; and
 - iv) A synthetic fiber rope or rope sling shall have at least four tucks with full strands followed by further tuck with one-half filaments cut out of each of such strand and final tuck with one-half of the remaining filaments cut out from such strands. Any portion of the splices containing such tucks, with reduced number of filaments, shall be securely covered with suitable tape or other materials;
 - v) Provided further that nothing contained above shall apply where any other form of splice, which may be shown to be as efficient as the splice with above standards, shall be used.

7.21. HEAT TREATMENT OF LIFTING GEARS

- a. All chains other than bridle chains attached to derricks and all rings, hooks, shackles and swivels used in hoisting or lowering of such derricks shall be effectively annealed under supervision of a competent person and at the following intervals, namely:
 - i) Such chains, rings, hoods, shackles and swivels which are not more than twelve and a half millimeter of length annealed at least once in every six months; and
 - ii) All other such chains rings hooks shackles and swivels shall be so annealed at least once in every twelve months;
- b. Provided that the clause (a) above shall not apply to -
 - i) Pitched chins, working on sprocket or sprocket wheels;
 - ii) Rings, hooks and swivels permanently attached to pitched chains, pulley blocks or weighing machines, and
 - iii) Hooks and swivels having ball bearings or other case hardened parts;

- c. A chain or a loose gear made of high tensile steel or alloy steel shall be plainly marked with a mark indicating that it is so made;
- d. No chain or loose gear made of high tensile steel or alloy steel shall be subjected to any form of heat treatment except where such treatment is necessary for the purpose of repair of such chain or loose gear and that such repair shall be made under the direction of the competent person;
- e. That the wrought iron gear, the past history of which is not traceable, shall be suspected of being heat treated at incorrect temperature shall be normalized before using it on any building or other construction work.

7.22. CERTIFICATE TO BE ISSUED AFTER ACTUAL TESTING AND EXAMINATION ETC:

A competent person shall issue a certificate after actual testing or examination of the apparatus specified and record of such test or examination shall be maintained for inspection.

7.23. REGISTER OF PERIODICAL TEST, EXAMINATION AND CERTIFICATION THEREOF

- a. A register in the form annexed shall be maintained and particulars of such test and examination of lifting appliances, lifting gears and heat treatment as required shall be entered in such register;
- b. Certificate in respect of each of the following shall be obtained from a competent person:
 - i) In cases of initial and periodical test and examination of the lifting appliances such as Winches, Derricks and their accessory gears, Cranes or Hoists and their accessory gears;
 - (ii) In case of test, examination and re-examination of loose gears;
 - (iii) In case of test and examination of wire ropes;
 - (iv) In case of heat treatment and examination of loose gears;
 - (v) In case of annual thorough examination of the loose gears, except where required particulars of such exemption have been enclosed in the register referred to in Form annexed and such certificates are attached to the register referred to as above and certificates kept at such construction site in case such register and certificate relate to lifting appliances, loose gear and wire ropes and
- c. Produced on demand and retained for at least five years after the date of the last entry made in such register;
- d. No lifting appliance or lifting gear in respect of which an entry is required to be made in register referred to above and certificate of test and examination are required to be attached in such register in the manner as specified, shall be used for building or other construction work unless the required entries have been made in such register and certificates.

7.24. VACUUM AND MAGNETIC LIFTING GEAR

- a. No vacuum lifting gear, magnetic lifting gear or any other lifting gear where the load on it is held by adhesive power, shall be used while workers are performing operations beneath such gear;
- b. A magnetic lifting gear used in connection with building or other construction work shall be provided with an alternative supply of power, such as batteries, which may come into operation immediately in the event of failure of the main power supply;

- c. No building worker shall work within the swinging zone of the lifting gear or load or building or other construction material suspended to such lifting gear.

7.25. KNOTTING OF CHAINS AND WIRE ROPES:

No chain or wire rope with a knot in it shall be used in building or other construction work.

7.26. CARRYING OF PERSONS BY MEANS OF LIFTING APPLIANCES ETC.

- a. No building worker shall be raised, lowered or carried by a power driven lifting appliance, except
 - i. On the drive's platform in the cage of a crane; or
 - ii. On as hoist; or
 - iii. On an approved suspended scaffold;
- b. Provided that a building worker may be raised, lowered or carried by a power driven lifting appliance:
 - i. In circumstances where the use of a hoist or of a suspended scaffold shall not reasonably be practicable, or
 - ii. On an aerial cableway or aerial ropeway, provided further that the following requirements are met:
 - iii. That the appliance referred to above can be operated from one position only and that
 - iv. Any winch used in connection with the appliance shall also comply with the requirements as laid down above.
- c. The appliance referred to above shall not carry any person except:
 - i. In a chair or cage,
 - ii. In a skip or other receptacle at least three feet deep which shall be suitable for safe carriage of a person and any such chair, cage, skip or other receptacle shall be made of good construction, sound material, and adequate strength and properly maintained with suitable means to prevent any occupant therein from falling out of it and shall be free from any material or tools which may interfere with the handhold or foothold of such occupant or otherwise endanger him; and
 - iii. Those suitable measures shall be taken to prevent the chair, cage skip or other receptacle from spinning or tipping in a manner dangerous to any occupant therein.

7.27. HOISTS CARRYING PERSONS

- a. No building worker shall be carried with the help of a hoist unless it is provided with a cage which:
 - i) Is so constructed as to prevent, when its gates are shut, any building worker carried by such hoist from falling out of it or from being trapped between any part of such cage and any fixed structure or other moving part of such hoist or from being struck by articles or materials falling down the hoist way on which such hoist is moving; and
 - ii) Is fitted on each of its side from which access is provided to a landing place with a gate which has efficient interlocking or other devices to secure so that such gate cannot be opened except when such cage is at a landing place and that such cage cannot be moved away from any such place until such gate is closed;

- b. Every gate in the hoist way enclosure of such hoist used for carrying persons shall be fitted with efficient interlocking or other devices to secure so that such gate cannot be opened except when the cage of such gate is at the landing place and that such cage cannot be moved away from the landing place until such gate is closed;
- c. In every hoist used for carrying building workers there are provided with suitable and efficient automatic devices to ensure that the cage of such hoist comes to rest at a point above the lowest point to which such cage may travel.

7.28. ATTACHMENT OF LOADS

- a. When a sling is used to hoist long materials, a lifting beam shall be used to space the sling legs for proper balance and when a load is suspended at two or more points with slings, the eyes of the lifting legs of such slings shall be shackled together and such shackled eyes of the shackled slings shall be placed on the hook or the eyes of such lifting legs shall be shackled directly to the hoisting block, ball or balance beam, as the case may be;
- b. Every container or receptacle used for raising or lowering stone, bricks tiles, slates or other similar objects shall be so enclosed with the hoist as to prevent the fall of such objects;
- c. A loaded wheel barrows placed directly on a platform of a hoist for raising or lowering of such wheel barrows shall be so secured that such wheel barrows cannot move and such platform shall be enclosed to prevent the fall of the contents kept in such wheel barrows;
- d. Landings of hoists shall be so designed and arranged that building workers on such hoist be not required to lean out into empty space for loading and unloading on any material from such hoist

7.29. TOWER CRANES

- a. No person other than the operator trained and capable to work at heights shall be employed to operate tower cranes;
- b. The ground on which a tower crane stands shall have adequate bearing capacity;
- c. Bases for tower cranes and trucks for rail mounted tower cranes shall be firm and leveled and such cranes erected at a reasonably safe distance from excavations and operated within gradient limits as specified by the manufacturer of such cranes;
- d. Tower cranes shall be sited where there is a clear space available for erection, operation and dismantling of such cranes;
- e. Tower cranes shall be sited in such a way that the loads on such cranes shall not be handled over any occupied premises, public thoroughfares, railways or near power cables, other than construction works for which such cranes are used;
- f. Where two or more tower cranes are sited and operated, every care shall be taken to ensure positive and proper communication between operators of such cranes to avoid any danger or dangerous occurrences;
- g. Tower cranes shall not be used for loading magnet, or demolition ball service, piling operation or other similar operations which could impose excessive load stresses on the crane structure of such cranes;

- h. The instruction of the manufacturer of a tower crane and standard safe practices regarding such cranes shall be followed while operating or using such cranes.

7.30. QUALIFICATION OF OPERATOR OF LIFTING WINCHES AND OF SIGNALER ETC.

- a. No person shall be employed to drive or operate a lifting appliance whether driven by mechanical power or otherwise or to give signals to driver of operator of such lifting appliance or to work as an operator of a rigger or derricks unless he is
 - i) Sufficiently competent and reliable;
 - ii) Possesses the knowledge of the inherent risks involved in the operation of lifting appliance;
 - iii) Medically examined periodically as specified and
 - iv) Is above eighteen years of age.

8.0 SAFETY IN THE USE OF TRANSPORT, EARTHMOVING EQUIPMENT & OTHER CONSTRUCTION MACHINERY

8.1 EARTHMOVING EQUIPMENT AND VEHICLES

- a. All vehicles and earthmoving equipment shall be made of good material, proper design and sound construction and be sufficiently strong for the purpose for which such equipment are properly used in accordance with standard safe operating practices;
- b. Provided that the truck or trailer employed for transporting freight containers shall be of the size sufficient to carry the containers, without over hanging and provided with twist locks conforming to approved standards, at all the four corners of each of such use by an authority under the relevant law for the time being in force and is inspected by a responsible person, at least once in a month and record of such inspection shall be maintained:
- c. All transport or earth moving equipment and vehicles shall be inspected at least once a week by a responsible person and in case any defect is noticed in such equipment or vehicle it shall be immediately taken out of use;
- d. Power trucks and tractors shall be equipped with effective brakes, headlights and tail lamps and maintained in good repair and working order;
- e. Side stanchions on power trucks and trailers for carrying heavy and long objects shall be
 - i. Of sound construction and free from defects;
 - ii. Provided with tie chains attached to the top across the loads for preventing such stanchions from spreading out; and
 - iii. Kept in position while loading and unloading;
 - iv. Safe gangways provided for to and fro movement of building workers engaged in loading and unloading of lorries, trucks, trailers and wagons;
 - v. Trucks and other equipment shall not be loaded beyond their safe capacity and carry workers engaged in loading and unloading of lorries, trucks trailers and wagons in an unsafe condition;
 - vi. Handles of trucks shall be so designed as to protect the hands of the building workers working on such trucks, or such handles provided with knuckle guards;
 - vii. No unauthorized person shall ride the transport equipment employed in such work;
 - viii. A driver of a transport equipment shall maneuver such equipment under the direction of a signaler;
 - ix. Adequate precaution such as isolating the electric supply or erecting overhead barriers of a safe height shall be taken when earth moving equipment or vehicles are required to operate in dangerous proximity to any live electric conductor;
 - x. Vehicles and earth moving equipment shall not be left on a slope with the engine of such vehicles or equipment running;

- xi. All earth moving equipment, vehicles or other transport equipment shall be operated only by such person who are adequately trained and possess such skills as required for safe operation of such equipment, vehicle or other transport equipment.

8.2. POWER SHOVELS AND EXCAVATOR

- a. A shovel or an excavator whether operated by steam or electric or by internal combustion, shall be constructed, installed, operated, tested and examined as per approved standards;
- b. Excavator equipped for use as a mobile crane shall be examined and tested in accordance with the requirements for such mobile cranes as laid down by the manufacturer; and
- c. Fitted with an automatic safe working load indicator;
- d. Buckets or grabs of power shovels shall be propped to restrict the movement of such buckets or grabs while being repaired or while the teeth of such buckets or grabs are being changed.

8.3. BULLDOZER

- a. Operator of every such bulldozer before leaving the dozer shall take the following steps:
 - i) Apply the brakes;
 - ii) Lower the blade and sipper and
 - iii) Put the shift lever into neutral;
 - iv) Dozer left on level ground at the close of the work for which such bulldozer is used;
 - v) The blade of a bulldozer kept low when such bulldozer is moving uphill;
 - vi) The bulldozer blades not used as brakes except in an emergency.

8.4. SCRAPERS

- a. A tractor and scraper shall be joined by safety line at the time of its operation;
- b. The scraper bowls shall be propped while blades of such scraper are being replaced;
- c. A scraper moving downhill shall not be left in gear.

8.5. MOBILE ASPHALT LAYERS & FINISHERS

- a. A mixture elevator shall be located within a wooden or sheet metal enclosure with a window for observation, lubrication and maintenance;
- b. Bitumen scoops shall have adequate covers;
- c. When asphalt plants are working on public road, adequate traffic control shall be established on such road and the building workers working with such plant provided with reflective jackets;
- d. A sufficient number of fire extinguishers shall be kept in readiness at such workplace where fire hazards may exist;
- e. The materials shall be loaded on the elevator after the drying drain has warmed up of such elevator;
- f. No open light shall be used for ascertaining the level of asphalt;

- g. Inspection opening shall not be opened till there is a pressure in the boiler, which may cause injury to building workers.

8.6. PAVERS:

Pavers shall be equipped with guards suitable to prevent building workers from walking under the skip of such pavers.

8.7. Road rollers: Before a road roller is used on the ground, such ground shall be examined for its bearing capacity and general safety, especially at the edges of slopes such as embankment on such grounds and shall not be moved downhill with the engine out of gear.

8.8. GENERAL SAFETY IN RESPECT OF POWERED CONSTRUCTION MACHINERY

- a. Every vehicle or earthmoving equipment shall be equipped with -
 - i) Silencers;
 - ii) Tail lights
 - iii) Power and hand brakes;
 - iv) Reversing alarm; and
 - v) Search light for forward and backward movement, which are required for safe operation of such vehicle or earthmoving equipment;
- b. The cab of vehicle or earthmoving equipment shall be kept at least one meter from the adjacent face of a ground being excavated;
- c. When cranes or shovel are traveling, the boom of such crane or shovel shall be in the direction of such travel and the bucket or scoop attached to such crane or shovel raised and without load except when such traveling is downhill.

9.0 SAFETY IN THE PROVISION OF RUNWAYS AND RAMP

9.1. USE OF RUNWAYS AND RAMPS:

- a. Runway or ramps shall not be less than 430 mm in width and constructed of not less than 25 mm thick planking or any other material of adequate strength to withstand the required load, supported substantially in relation to the span and braced with such runway or ramp, and design and construction of such runway or ramp shall be in accordance with the approved standards;
- b. Every runway or ramp located more than 3 m above the floor or ground shall be on open sides and provided with a guardrail of adequate strength and height of not less than 1 m.
- c. Use of runways and ramps by vehicles:
 - i. All runways and ramps shall be of sound construction, strength and securely braced and supported;
 - ii. Every runway or ramp for the use of transport equipment like trailers, trucks or heavier vehicles shall have a width of not less than 3.7 m and provide with timber curbs or any other material of adequate strength with not less than 200 mm by 200 mm in width placed parallel to, and secured to, the sided of such runway or ramp and such runways or ramps or ramps shall be designed in accordance with the approved standards.

9.2. SLOPE OF RAMPS:

Every ramp shall have a slope not exceeding one in four and the total rise of a continuous ramp used by building workers carrying material or using wheelbarrows shall not exceed 3.7 m, unless broken by horizontal landing of at least 1.2 m in length.

9.3. USE OF RUNWAYS OR RAMPS BY WHEELBARROWS, ETC.

- a. Every runway or ramp used for wheelbarrows and carts or hand trucks shall not be less than 1 m width and constructed of not less than 50 mm thick planking, and supported and braced suitably for such use;
- b. Every runway or ramp located more than 3 m above the floor or ground shall be provided on the open sides with suitable guardrails of adequate strength.

10. SAFETY IN HANDLING AND USE OF EXPLOSIVES

10.1 GENERAL PROVISIONS:

- a. The use of explosives shall be carried out in a safe manner to avoid injury to any person and under the direct supervision of a responsible person;
- b. No person other than authorized and competent one shall be allowed to handle and use explosives;
- c. Before using any explosive, necessary warning and danger signals shall be erected, at conspicuous places of such use to warn the building workers and the general public of the danger involved in such use.
- d. No person other than authorized and competent one shall be allowed to handle and use explosives.
- e. Smoke, open lamps, other type of hot or heat producing items and sparks shall be prohibited in or near explosives magazines or while explosives are being handled, transported or used.
- f. No person shall be allowed to handle or use explosives while under the influence of intoxicating liquors or dangerous drugs.
- g. The explosives shall be accounted for at all times. No explosives or blasting agents shall be abandoned.
- h. No fire shall be fought where the fire is in the imminent danger of contact with explosives. All employees shall be removed to a safe area and the fire area shall be guarded against intruders.
- i. Employees authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution including but not limited to visual and audible warning signals, flags, or barricades to ensure employee safety.
- j. Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by induced voltage, lightning, adjacent power lines, dust storms, or other sources of extraneous electricity or otherwise. These precautions shall include:
- k. Short-circuiting of detonators in holes, which have been primed and shunted until wired into the blasting circuit.
- l. The suspension of all blasting operations and removal of persons from the blasting area during the approach and progress of an electric storm.
- m. The prominent display of adequate signs, warning against the use of radio transmitters, on all roads within 1000 ft of blasting operations. Whenever adherence to the 1000 ft distance would create an operational handicap, a competent and expert person shall be consulted to evaluate the particular situation, and an alternative provided, which are adequately designed to prevent any premature firing of electric blasting of caps. A description of any such blasting shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection.

- n. Empty boxes and paper and fiber packing materials, which have previously contained high explosives, shall not be used again for any purpose, but shall be destroyed by burning at an approved location.
- o. Explosives, blasting agents and blasting supplies that are obviously deteriorated or damaged shall not be used.
- p. Delivery and issue of explosives shall only be made authorized persons into authorized magazines or approved temporary storage or handling areas.
- q. Blasting operations in the proximity of overhead power lines, communication lines, utility services, or other services and structures shall not be carried on until the operators and/or owners have been notified and measures for safe control have been taken. In such situations controlled blasting shall be restored to.
- r. All loading and firing shall be directed and supervised by competent persons thoroughly experienced in this field.
- s. Loaded boreholes shall not be left unattended after the end of the shift.
- t. Suitable and sufficient means of egress to ground level shall be provided in all cases of excavations, trenches, all other places where explosives are handled above or below ground level.
- u. At an appropriate time before the final blasting warnings, workers in the area shall be removed to a designated safe place.
- v. An unmistakable, audible, final warning shall be sounded one minute prior to the detonation of explosives; after completion, when the person in charge has established that safe conditions prevail, an "all clear" shall be sounded.
- w. To prevent persons entering any danger zone during blasting operations notices shall be given to all concerned.
- x. Notices referred above shall indicate:
 - i. that explosives are in use;
 - ii. the audible warning sound and the "all clear" and state when they will be sounded; and
 - iii. the warning flags in use, including an "all clear" flag.
- y. Precautions against lightning shall be provided in accordance with the Indian Electricity Act and Indian Explosives Act and Rules and regulations framed there under.
- z. Package containing explosives shall not be dragged, dropped or handled roughly.
 - aa. Non-sparking tools shall be used to open keys.
 - bb. The explosives shall not be carried in the box or otherwise on any individual.
 - cc. Nothing shall be inserted in the open end of the blasting cap except fuses.

- dd. Deteriorated or damaged explosives shall not be used but shall be disposed or destroyed strictly in accordance with the approved methods and in the doing so the manufacturers or the appropriate authority's instructions shall be followed.
- ee. lightning shall be in accordance with Indian Electricity Act/Rules

10.2. TRANSPORTATION OF EXPLOSIVES

- a. Keep safe distance and to use non-sparking tools while opening packages containing explosives;
- b. Stop the use of explosives and handling thereof while the weather conditions are not suitable for such use or handling;
- c. Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by induced voltage, lightning, adjacent power-lines, dust storms or other sources of extraneous electricity or otherwise. These precautions shall include –
 - i. Suspension of all blasting operations and evacuation of persons;
 - ii. All warning signs shall be displayed within 200 m of blasting operations and in case putting up a sign at 200 m is impractical, the contractor shall consult the Engineer-in-charge for alternatives;
 - iii. All loading and firing shall be directed and supervised by competent persons thoroughly experienced in the field;
 - iv. To prevent persons entering any danger zone during blasting operations, notices shall be given to all concerned;
- d. In addition to these provisions, all measures and precautions that are required to be observed for use, handling, storing or transportation of explosives under the Rules framed under the Explosives Act, 1884 (4 of 1884) shall be observed;
- e. All the relevant statutory provisions, local laws and rules and regulations shall be complied with.
- f. Where the magazine is located near the construction site and blasting operation continues daily, actual requirement of explosives shall be drawn from the magazine and transported to the site. Any leftovers shall be returned to the magazine each time after the blast. In case of work at scattered places and for a small duration, portable magazines shall be used and kept within a fence in safe place and properly guarded.
- g. For carrying higher quantity (more than 5 kg of explosives) specially designed insulated containers shall be used. These containers shall be constructed of finished wood not less than 5cm thick or plastic not less than 6mm thick or pressed fibre not less than 10mm thick. There shall be no metal parts (not even nails, bolts, screws etc.) and the containers shall be provided with suitable non-conductive carrying device, such as rubber, leather or canvas handle or strap.
- h. Vehicles to be used for transportation explosives shall be in good working condition and shall have a tight wooded or non-sparking metal (copper, brass and the like) floor with sides and

ends high enough to prevent the explosives from falling off the vehicle. In open bodied vehicles, the explosives shall be covered with a waterproof and fibre tarpaulin.

- i. Electrical wiring in vehicle shall be fully insulated so as to prevent the danger of short-circuiting and at least two fire extinguishers of carbon dioxide type shall be carried. The vehicle shall be properly marked indicating adequate warning to the public in regard to the nature of cargo.
- j. No metals except approved metal truck shall be allowed to come in contact with cases of explosives, metal, flammable, or corrosive substance shall not be transported with explosives. As far as possible, transportation of any material along with explosives shall be prohibited.
- k. Smoking shall be prohibited in the vehicle carrying explosives.
- l. No unauthorized person shall be allowed in the vehicle, carrying explosives.
- m. Loading and unloading of explosives shall be done carefully.
- n. Explosives and detonators or blasting caps shall not be permitted to be transported in the same vehicle.
- o. Detonators and other explosives for blasting shall be transported to the site of work in the original containers or in securely locked separate non-metallic containers and shall not be carried loose or mixed with other materials.

10.3. STORAGE OF EXPLOSIVES AND BLASTING AGENTS

- a. Explosives and related materials shall be stored in approved facilities.
- b. Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents.
- c. Smoking and open flames shall not be permitted within 50 feet of explosives and detonators storage magazine.
- d. No Explosives or blasting agents shall be permanently stored in any underground area until the area has been developed to the point where at least two modes of exit have been provided.
- e. Permanent underground storage magazine shall be at least 300 feet from any shaft or other active under ground working area.
- f. Permanent underground magazines containing detonators shall not be located closer than 50 feet to any magazine containing other explosives or blasting agents.

10.4. DRILLING AND LOADING

- a. Before planning out the drilling operations for blasting purposes, nature of stratum and the over burden shall necessarily be examined to avoid possibilities of landslides after blasting.
- b. The face or rock shall be carefully examined before drilling to determine the presence of unfired explosives. No attempt shall be made to drill at a site if un-detonated explosives are suspected. In such case the boreholes shall be thoroughly cleaned before a cartridge is

inserted. Wooden tamping rods (not pointed, but cylindrical throughout) shall be used in the charging the holes. The cartridge will be on the top.

- c. The borehole shall be carefully checked for length, presence of water dust, etc. with a wooden tamping pole or a measuring tape before loading.
- d. Surplus explosives shall not be stacked near working areas during loading/unloading.
- e. The line of detonating fuse extending into a borehole shall be cut from the spool before loading the remainder of the charge.
- f. A bore shall not be loaded with explosives after springing (enlarging the hole with explosives) or upon completion of drilling without making sure it is cool and it does not contain any hot smoldering material. Temperatures in excess of 65° C are dangerous.
- g. A bore near another hole loaded with explosives shall not be sprung.
- h. No force shall be used for inserting cartridges or any explosives into a bore hold or pass any obstruction in a borehole.
- i. No force shall be used for inserting a blasting cap or an electric blasting cap into explosive. The cap shall be inserted into a hole made with a pickers designed for the purpose. A hitch of the electric blasting cap leading wire shall be made on the primer cartridge so as to prevent pulling out the electric blasting cap from the explosive charge. In case of fuse, the fuse shall be tied to the explosive cartridge so that the blasting cap is not pulled out. Care shall be taken so that the blasting cap is not pulled out. Care shall be taken so that the electric blasting cap, leading wire or the length of the fuse does not get damaged during loading of the charge.
- j. No attempt shall be made to slit, drop, deform or abuse the primer.
- k. Blasting caps or electric blasting caps shall not be connected to detonating fuse except by methods recommended by the manufacturers of caps.
- l. Explosive cartridge shall not be cut, nor explosive removed from the cartridge for use.
- m. Metallic devices of any kind shall not be used in tamping. Wooden tamping tools with not exposed metal parts except non-sparking metal connectors for jointed poled shall be used. Violent tamping shall be avoided. Primer shall not be tamped.
- n. Care shall be taken to confine the explosives in the bore hold with sand, earth clay or other suitable combustible stemming material.
- o. Kinking or injuring of fuse or electric blasting cap wires shall be avoided when tamping.

10.5. ELECTRICAL SHOT-FIRING CIRCUIT

- a. In deciding the sizes of wires, fuses, circuits, blasting switches, etc., instructions issued by the manufacturers of these articles shall be followed, if they do not contradict with Indian Explosives Act or framed under it.
- b. No person shall attempt to uncoil the wires and open out the short-circuited bare leading wires of the electric blasting cap during approach of dust storm or near any source of large

charge of static electricity or near a radio transmitter. The manufacturer of the cap or the Inspectorate of Explosives shall be consulted regarding the distance from the transmitter beyond which electric short firing shall be conducted.

- c. Firing circuit shall be kept completely insulated from the ground of the other conductors, such as wires, rails, pipes or other paths or stray current.
- d. There shall not be any electric live wires or cables of any kind near electric blasting caps or other explosives except at the time and for the purpose of firing the blast.
- e. All electric blasting caps shall be tested singly and also when connected in a circuit in series using only an approved type of circuit continuity tester or ohmmeter.
- f. No attempt shall be made to use in the same circuit either electrical blasting caps made by more than one manufacturer or electric blasting caps of different design or function even if made by the same manufacturers unless such use is approved by the manufacturers.
- g. No attempt shall be made to fire a circuit of electric blasting caps with less than the minimum current specified by the manufacturer of that electric blasting cap.
- h. Care shall be taken to ensure that all wire ends to be connected are bright and clean.
- i. The electric cap wires or leading wires shall be kept short circuited until ready to fire.
- j. When energy for blasting is taken from power circuits the voltage shall not exceed 220v. The wiring controlling arrangements shall conform to the following:
- k. The blasting switch shall be strictly according to the specifications, externally operated double-throw switch, which when locked in the open position will short circuit and ground the leading wires. The switch shall be installed at the location where the firing is to be controlled.
- l. A 'safety' switch of the same type as the blasting switch shall be installed between the blasting switch and the firing circuit and lead lines, at a distance not to exceed 180cm from the blasting switch.
- m. Both the safety switch and the blasting switch shall be locked in the open position immediately after the shot and before any person is permitted to return to the blasting area. Key to the switches shall remain in the possession of the blaster at all times.
- n. Rubber covered or other adequately insulated copper wires in good condition shall be used for firing lines and shall have solid cores of appropriate gauge. Sufficient firing line shall be provided to permit the blaster to be located at a safe distance from the blast. Single conductor lead lines shall be used.
- o. Blasting operations in the proximity of overhead power lines, communication lines, utility lines, or other structures shall not be carried on until the operator or the owner, or both of such lines as been notified and precautionary measures deemed necessary, have been taken.
- p. All holes loaded on a shift shall be fired on the same shift.
- q. As far as possible, blasting shall be carried out using suitable exploder with 25 per cent excess capacity. Electric power from the mains shall be used only when it is absolutely necessary.

10.6. SHOT-FIRING WITH SAFETY FUSE

- a. The fuse shall be carefully handled to avoid damaging the covering. In very cold weather the fuse shall be slightly warmed before using so as to avoid cracking the waterproofing.
- b. Short fuse shall not be used. The length of a fuse shall not be less than 120cm. The rate of burning of the fuse shall be known and it would be necessary to make sure that it will take sufficient time in burning so as to enable all persons to reach a place of safety. The burning rate of the fuse shall not be more than 60 cm/min.
- c. The fuse shall not be cut until the operation to insert the fuse into a blasting cap is ready. The fuse shall be cut off about 2.5 to 5 cm to ensure a dry end. It shall be cut squarely across with a clean and sharp blade. The fuse shall be seated lightly against the cap charge and care shall be taken to avoid twisting after it has been placed in position.
- d. Blasting caps shall not be crimped by any means except by a cap crimper designed for the purpose. It shall be necessary to make sure that the cap is squarely crimped to the face.
- e. The fuse shall be lighted with a fuse lighter designed for the purpose. If a match is used, the fuse shall be slit at the end and the match head held in then slit against the power core and then the match head rubbed against an abrasive surface to light the fuse.
- f. The fuse shall not be lighted until sufficient stemming has been placed over the explosives to prevent sparks of live match heads from coming into contact with the explosives.
- g. The explosives shall not be held in hands when lighting the fuse.

10.7. UNDERGROUND WORK

- a. Only permissible explosives and in the manner as specified by the appropriate authority shall be used.
- b. Excessive quantities of explosives shall not be taken underground at any time. Black blasting powder or pellet powder shall not be used with any other explosive in the same borehole.

10.8. BEFORE AND AFTER FIRING

- a. Before firing, sufficient warning shall be given to enable the people working in the area to get off the danger zone. The danger zone shall be suitable cordoned off and flag men posted at important points.
- b. No loose materials, such as tools, drilling implements etc. Shall be left on the rock surfaces to be blasted.
- c. Blasting in the open shall be carried out during the fixed hours every day or on fixed days in the week. This information shall be amply publicized and the following precautions observed:
- d. On the project sites, where blasting operations are carried out, daily blasting hours shall be clearly printed on the sign-boards on all the roads approaching that area.
 - i. Road closing barriers should be provided to close the traffic on these roads, at least 400 meters away when the firing is to take place.

- ii. The beginning of the firing shall follow loud sirens and similarly loud sirens shall succeed the completion of the firing.
- e. The shot-firer shall not be allowed to return to the blasting site after firing, until at least 5 min have elapsed. In case of electric shot firing, the shot holes shall be examined after firing and in case of misfire no person shall be allowed to approach the blasting site for at least 5 min. In case of shot firing with safety fuse, utmost care shall be taken to count the number to ensure that all the shots have fired and in the event of misfire, no person shall be allowed to approach the blasting site for at least 30 min. In any case, a careful inspection for the remaining un-detonated explosive shall be made after firing the shots. All misfired shot holes shall be cross-marked. No other person than those duly authorized shall approach the holes until one of the following operations has been performed in respect of each of the misfired holes:
 - f. If the misfire is due to a faulty cable or faulty electrical connection the defect shall be remedied and the shot fired.
 - g. The stemming shall be floated out by use of water or air jet from hose until the hole has been opened to within 60 cm of the charge, whereupon water will be siphoned or pumped out, then a fresh new charge placed and duly detonated. Or
 - i. A careful search shall be made of unexploded material in the debris of the charge.
 - ii. If a shift charge is unavoidable, the person in-charge of one shift before leaving the work shall inform the person relieving him for the next shift of any cases misfired and shall point out their position duly cross marked and also state clearly what action has to be taken in the matter.

Note: The rules are made considering statutory provisions and other National/International standards. However, if any statutory provision overruling these laws is made, the statutory provisions shall overrule the NTPC Rules.

11.0 SAFETY IN EXCAVATION & TUNNELING WORK

SAFETY IN EXCAVATION

11.1 GENERAL PROVISIONS

- a. Before undertaking any activity, the soil shall be tested and in case of availability of any explosive gas, necessary arrangements must be made to remove/dilute such gases and in case they are found to be toxic or poisonous, the workplace must be purged and continuous ventilation maintaining the contamination below the permissible level ensured;
- b. The position of underground installations such as sewers, water pipes and electrical cables shall be verified and in case of their existence, they must be isolated;
- c. If they cannot be isolated or removed or shutdown, they shall be fenced, hung up or otherwise protected. On every part likely to be visited by persons or where transport vehicles ply, the area shall be suitably fenced, guarded or barricaded to prevent fall of persons, vehicles or livestock into the excavated area;
- d. Warning signs shall be erected and the in the night hours the area shall be illuminated to warn pedestrians and vehicular traffic;
- e. Arrangements shall be made to prevent external vibrations due to rail/road traffic;
- f. Blasting shall be carried out in accordance with the norms applicable in this regard. Special care shall be taken to control the impact of vibrations/tremor caused by blasting to protect excavations from cave-ins;
- g. Arrangements shall be made to save other buildings/structures in the affected zone or in the vicinity of the area of excavation, from collapse;

11.2 SHORING AND TIMBERING

- a. Site of excavations, where workers are exposed to danger from moving ground, shall be made safe by maintaining due slope not exceeding the angle of repose of different types of soil or otherwise by shoring, portable shields or other effective means;
- b. All trenches in the soil, other than rock or hard compact soil more than 1.5 m deep into which men enter, shall be securely shored and timbered under the supervision of a competent person and only the trained workers shall be allowed to substantially alter or dismantle the shoring or timbering;
- c. All struts, braces and walls in excavation shall be adequately secured so as to prevent their accidental displacement;
- d. In all excavations in soft or fissured rock or hard soil exceeding 2 m in depth, except those which are sloped to within 1.5 m of the bottom into which men enter, shall be securely shored and timbered;
- e. Where the sides of the excavations are sloped as outlined above, but not within the 1.5 m of the bottom, vertical sides shall be shored and the shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe-board shall be provided to prevent material rolling down the slope and falling into the excavated.

11.3. SHEATHING

- a. The sheathing should be placed against the side of the trench so that length of each piece of sheathing is vertical. It should be held securely in place against the wales by ensuring that sheathing is kept firmly pressed against the wall of the trench. Where the trench excavated is loose, sandy or soft soil or soil which has been previously excavated or soil which is under hydrostatic pressure, each piece of sheathing shall be driven into the bottom of the trench so as to firmly hold it in place;
- b. Where two or more pieces of sheathing are used one above another, the sheathing shall be so arranged that the lower pieces of sheathing shall overlap the lowest wales supporting the piece of sheathing next above it. These pieces of sheathing shall be firmly driven into the soil and securely supported by wales and struts, as the trench is made deeper.

11.4. WALES

- a. The wales shall be parallel to the bottom or the proposed bottom of the trench. Each wale shall be supported on cleats spiked to the sheathing or by posts set on the wales next below it and in the case of the lowest wale on the bottom of the trench itself. Where necessary, wedges may be provided between a wale and the sheathing it supports so that roughly uniformity is given to all individual pieces of sheathing.

11.5. STRUTS

- a. Struts shall be horizontal and at right angles to the wales or sheathing supported thereby. Struts shall be cut to the proper length required to fit in tightly between the wales. Where necessary, the struts shall be held securely in place by wedges, driven between the struts and the wales;
- b. Struts shall be placed on cleats spiked or bolted to the posts supporting the Wales.

11.6. LOOSE SITE MATERIALS:

No loose material shall be kept very close to the excavation creating possibility of its fall into the excavated area. A safe distance of at least 1 m shall be maintained.

11.7. PLANT & MACHINERY:

Movement of vehicles and heavy equipment shall be kept at a distance least equal to the depth of the excavation or at least 6 m for excavation deeper than 6 m and the workers shall be provided with proper tools.

11.8. MEANS OF ACCESS

- a. For trenches deeper than 1.5 m, safe means of access and egress shall be provided at intervals of every 15 m. Where it is not possible to provide safe means of access and egress as above, ladders shall extend from the bottom of the trench to at least 90 cm above the ground;
- b. Walkways, runways and sidewalks shall be kept clear of excavated materials or other obstructions and no side walls shall be undermined-undercut unless it is capable of carrying a minimum live load of 125 lbs per square feet;

- c. If planks are used for raising walkways, runways or sidewalks, they should be parallel to the length of the walk and fastened together against displacement;
- d. Lone worker shall not be allowed to work in the excavated area.

11.9. INSPECTIONS:

A competent person shall make inspections every day and necessary measures shall be taken to safeguard against possible cave-ins or slide or collapse of the excavations.

11.10. NOTIFICATION OF INTENTION TO CARRY OUT EXCAVATION AND TUNNELING WORK

- a. Within thirty days, prior to the commencement of such excavation or tunneling work, the contractor shall inform in writing the detailed layout plans, method of construction and schedule of such excavation or tunneling work to the Engineer in-charge of NTPC;
- b. In case compressed air is used in such excavation or tunneling work or any work incidental to or required for such excavation or tunneling work, the technical details and drawings of all man-locks and medical-locks together with names and addresses of all construction medical officers duly qualified and so appointed by such contractor for the purpose of such excavation or tunneling work shall be sent to the Engineer in-charge.

11.11. PROJECT ENGINEER

- a. The contractor undertaking any excavation or tunneling work shall appoint a Project Engineer for safe operation of such projects;
- b. Such Project Engineer shall exercise overall control of the operations and the activities at such project and be responsible for carrying out the activities safely.

11.12. RESPONSIBLE PERSON

- a. The contractor undertaking excavation or tunneling work at construction site of a building or other construction work shall appoint a responsible person for safe operation of such excavation or tunneling work;
- b. The name and addresses of such responsible persons shall be forwarded to the Engineer in-charge;
- c. Duties and responsibilities of the responsible person referred to above person shall include
 - i. To carry out smoothly such excavation or tunneling work;
 - ii. To inspect and rectify any hazardous situation relating to such excavation or tunneling work;
 - iii. To take remedial measures to avoid any unsafe practice or conditions relating to such excavation or tunneling work.

11.13. WARNING SIGNS AND NOTICES

- a. Suitable warning signs or notices, required for the safety of building workers carrying out the work of an excavation or tunneling, shall be displayed or erected at conspicuous places in Hindi

and in language understood by the majority of such building workers at such excavation or tunneling work;

- b. Such warning signs and notices with regard to compressed air working shall include:
 - i) The danger involved in such compressed air work;
 - ii) Fire and explosion hazards;
 - iii) The emergency procedures for rescue from such danger or hazards.

11.14. REGISTER OF EMPLOYMENT

- a. The contractor shall ensure that at a construction site of a building or other construction work where an excavation or tunneling work is being carried on, a register of employment of building workers carrying out such excavation or tunneling work is maintained and produced on demand;
- b. Periods of work of such excavation or tunneling work shall be maintained in a register on day-to-day basis and such register shall be produced on demand

11.15. ILLUMINATION

- a. All contractors carrying out excavation or tunneling work at a construction site of a building or other construction work shall provide for emergency generators on such construction site to ensure adequate illumination at all work places where such excavation or tunneling work is being carried out;
- b. In case of power failure, all workplaces where excavation or tunneling works are carried out shall be adequately illuminated

11.16. PNEUMATIC TOOLS:

Supply lines to pneumatic tools used within a tunnel are fitted with water trap or safety chain or safety wire, as the case may be.

11.17. STABILITY OF STRUCTURE DURING GENERAL EXCAVATION & TUNNELING:

The contractor shall ensure that where there is any doubt as to the stability of any structure adjoining the workplace or other areas to be excavated or where tunneling work is to be carried out –

- a. The Project Engineer shall arrange for measures like underpinning, sheet piling, shoring, bracing or other similar means to support such structure and to prevent injury to any building worker working adjacent to such structure or damage to property or equipment adjacent to such structure;
- b. Where any building worker engaged in excavation is exposed to hazard of falling or sliding material or article from any bank or side of such excavation which is more than 1.5 m above his footing, such worker shall be protected by adequate piling and bracing against such bank or side;

- c. The excavation and its vicinity shall be checked by a responsible person after every rain, storm or other occurrences carrying hazards and in case a hazard is noticed at such checking, adequate protection against slides and cave-in to prevent such hazard shall be provided;
- d. Temporary sheet piling installed for the construction of a retaining wall after excavation shall not be removed, except on the advice of the responsible person after an inspection carried out by such responsible person;
- e. Where banks of an excavation are undercut, adequate shoring shall be provided to support the material or article overhanging such bank;
- f. Excavated material shall not be stored at least 0.5 m from the edge of an open excavation or trench and the banks of such excavation or trench shall be stripped of loose rocks and other materials which may slide, roll or fall upon a building worker working below such bank;
- g. Adequate and suitable warning signs shall be put-up at conspicuous places at the excavation work to avoid any person falling into the excavations or trenches;
- h. The responsible person shall ensure at the excavation that no building worker is permitted to work where such building worker may be struck or endangered by the excavation machinery or material or article used in such excavation.

11.18. SAFE ACCESS AND EGRESS:

Ladders, staircases or ramps are provided, as the case may be, for safe access to and egress from excavation where the depth of such excavation exceeds one point 1.5 m and such ladders, staircases or ramps comply with the relevant national standards.

11.19. TRENCHES

- a. A trench or excavation shall be protected against falling of a person by suitable measures if the depth of such trench or excavation exceeds 1.5 m and such protection shall be an improved protection in accordance with the design and drawing of a Professional Engineer, where such depth exceeds 4 m;
- b. Where the depth of a trench requires two lengths of sheet piling, one above the other, the lower piling shall be set inside the bottom strings or wales of the upper piling and such sheet piling shall be driven down and braced as the excavation continues;
- c. All metal sheet piles used in excavation or a trench shall be welded end-to-end and secured by other similar means.

11.20. POSITIONING AND USE OF MACHINERY:

Any machinery used in excavation and tunneling work shall be positioned and operated in such a way that such machinery will not endanger the operator of such machinery or any other person in the vicinity.

11.21. BREATHING APPARATUS:

Suitable breathing apparatus shall be provided to a building worker while working in compressed air environment for his use at excavation or tunneling work and such breathing apparatus shall be maintained in good working condition at all times.

11.22. SAFETY MEASURES FOR TUNNELING OPERATIONS

- a. Where there is a danger of falling or sliding of material from the roof face or wall of a tunnel, adequate measures such as shoring, supporting by means of rock bolts, segments or steel sets shall be taken for the safety of building workers;
- b. The excavated areas shall be made safe by use of suitably designed and installed steel sets, rock bolts or similar other safe means;
- c. The responsible person shall examine and inspect the workplaces in a tunnel before the commencement of work in such tunnel and at regular intervals thereafter to ensure safety of the building workers in such tunnel;
- d. The portal areas of a tunnel with loose soil or rock, likely to cause injury to a person shall be adequately protected with supports.

11.23. SURROUNDINGS OF A SHAFT

- a. Surroundings of a shaft used in excavation or tunnel work shall be protected from being washed away by construction of sufficient height;
- b. Where a building worker is required to enter a shaft at an excavation or tunneling work, safe means of access shall be provided for such entry;
- c. Every shaft at excavation or tunneling work shall be provided with a steel casing, concrete piping, timber shoring or other materials of adequate strength for the safety of building workers working in such shaft;
- d. Such casing and bracing shall be provided to shafts at an excavation or tunneling work according to the appropriate design for such casing and bracing;
- e. A reinforced concrete raft and beam shall be provided around the opening of a shaft at an excavation or tunneling work if the ground surrounding such opening is unstable or unsafe.

11.24. LIFT FOR SHAFT:

Lift shall be provided for transport of building workers and materials or articles at an excavation or tunneling work required to descend more than 50 m in a shaft.

11.25. MEANS OF COMMUNICATION

Reliable and effective means of communication such as telephone or walkie-talkie shall be provided and maintained in working order for arranging better and effective communication at an excavation or tunneling work at the following locations, namely:

- i. Working chamber of an excavation;
- ii. Intervals of hundred meters along the tunnel;
- iii. Working chamber side of a man lock near the door of such man lock;
- iv. Interior or each chamber of a man lock;
- v. Location conspicuous lock attendant's situation;
- vi. A compressor plant;

- vii. A first-aid station, and
- viii. Outside the portal or the top of a shaft;
- ix. Such number of bells and whistles shall be made available at all times at the locations as are necessary for the safety of persons at such locations.

11.26. SIGNALS:

The standard audio or video signals shall be used in excavation or tunneling work and conspicuously located or displayed near entrance to the workplace and in such other locations as may be necessary to bring such signals to notice of all building workers employed in such excavation or tunneling work.

11.27. CLEARANCES

- a. The minimum lateral clearances of 0.5 m shall be maintained between any part of a vehicle and any fixture or any equipment used in an excavation or tunneling work after allowing the throw or swing of such fixture or equipment;
- b. The overhead clearance for a locomotive drive at excavation or tunneling work shall not be less than 1.20 m above the seat of such driver and not less than 2 m above the platform where such driver stands or of any other dimension in accordance with the approved standard.

11.28. SHELTERS:

The adequate number of shelters for the safeguard of the building workers are provided where, in the course of working, they are liable to be struck by a moving vehicle or other material handling equipment in a tunnel.

11.29. USE OF INTERNAL COMBUSTION ENGINE:

No internal combustion engine shall be used underground in excavation or tunneling work unless such engine is so constructed that the air entering the engine gets cleared before entry and the engine emits no fumes or sparks.

11.30. INFLAMMABLE OILS:

Inflammable oils with the flash point below the working temperature that is likely to be encountered in a tunnel shall not be used in excavation or tunneling work.

11.31. COUPLING AND HOSES:

All high-pressure hydraulic hoses and couplings shall be adequately protected against any possible damage in excavation or tunneling work.

11.32. HOSE INSTALLATION:

All hydraulic lines and plants working at a temperature exceeding 750 c shall be protected by adequate insulation or otherwise against accidental human contact in excavation or tunneling work.

11.33. FIRE RESISTANT HOSES:

No fire hydraulic hoses other than fire resistant hydraulic hoses are used when hydraulically activated machinery and equipment are employed in tunnels.

11.34. FLAMEPROOF EQUIPMENT:

Only flameproof equipment of appropriate type as per approved standards shall be used where there is a danger of flammable or explosive atmosphere being prevalent inside the tunnel.

11.35. STORING OF OIL AND FUEL UNDERGROUND:

All oils, greases or fuels stored underground in excavation or tunneling work shall be kept in tightly sealed containers and in fire resistant areas at safe distances away from explosive and other flammable chemical and appropriate flameproof installation shall be used in such storage areas.

11.36. USE OF GASES UNDERGROUND

- a. Petrol or liquefied petroleum gas or any other flammable substances shall not be used or stored inside the tunnel except with the prior approval of the Project Engineer;
- b. After the use of the petroleum or liquefied petroleum gas, or highly inflammable substances, all remaining petroleum or liquefied petroleum gas or highly inflammable substances shall be removed immediately from such tunnel;
- c. No oxy-acetylene gas shall be used in a compressed air environment in excavation or tunneling work.

11.37. WATER FOR FIRE FIGHTING

- a. Adequate number of water outlets shall be provided on excavation or tunneling work and readily made accessible throughout the tunnel for fire fighting purposes and such water outlets shall be maintained for effective fire fighting;
- b. All air locks shall be equipped with fire fighting facilities at excavation or tunneling work;
- c. An audible fire alarm shall be provided to warn the building workers whenever a fire breaks out on an excavation or tunneling work;
- d. Adequate number and types of fire extinguishers, in accordance with relevant national standards, shall be provided and made readily available to fight any outbreak of fire at an excavation or tunneling work;
- e. Fire extinguishers with vaporizing liquids and high pressure carbon dioxide shall not be used in tunnels or other confined spaces;
- f. The instructions regarding steps to be followed to fight outbreak of fire, at an excavation or tunneling work, written in Hindi or local language understood by the majority of the building workers employed on such excavation or tunneling work, shall be displayed at conspicuous and vulnerable places of such excavation or tunneling work.

11.38. FLOODING

- a. Water tight bulkhead doors shall be installed at the entrance of a tunnel to prevent flooding during a tunneling work where more than one tunnel is driven from a shaft;
- b. All necessary measures shall be taken to ensure that no building worker is trapped in any isolated section of a tunnel when any bulkhead door of such tunnel is closed;
- c. Where there is likelihood of flooding or water rushing into a tunnel during a tunneling work, arrangements shall be made for immediate starting of water pumps to take out water of such flooding or water rushing and for giving alert signals to the building workers and other persons to keep them away from danger.
- d. Airtight steel curtains shall be provided in areas liable to flooding at tunneling work and in case of descending tunnels, such curtains shall be provided in the top half of such tunnels to ensure the retention of pockets of air for rescue purpose.

11.39. REST SHELTERS

- a. Where building workers employed in a compressed air environment in a tunneling work are required to remain at the work site for one hour or more after de-compression from pressure exceeding one bar, adequate and suitable facilities shall be provided for such building workers to rest;
 - a. Every man-lock, medical-lock and any other facility inside these locks in a tunneling work shall be maintained in a clean state and in good repairs;
 - b. A first-aid room shall be provided and readily available at a construction site of a tunneling work;
 - c. Each man-lock attendant at the station shall be provided with a first-aid box.

11.40. PERMISSIBLE LIMIT OF EXPOSURE OF CHEMICALS

- a. The working environment in a tunnel or a shaft in which building workers are employed shall not contain any of the hazardous substances in concentrations beyond the permissible limits;
- b. The responsible person referred to shall conduct necessary test before the commencement of a tunneling work for the day and at suitable intervals as fixed by the Engineer in-charge, to ensure that the permissible limits of exposure are not exceeded and a record of such test shall be maintained and made available for inspection.

11.41. VENTILATION:

All working areas in a free air tunnel shall be provided with the approved ventilation system and the fresh air supplied in such tunnel shall not be less than 6 m³ per minute for each building worker employed underground in such tunnel and the free air-flow movement inside such tunnel not less than 9 m³ per minute.

11.42. AIR SUPPLY INTAKE POINT:

The air intake points for all air compression shall be located at places where such intake air does not get contaminated with dust, fumes, vapor and exhaust gases or other contaminants.

11.43. EMERGENCY GENERATORS

- a. Every compressed air system in a tunnel shall be provided with emergency power supply system for maintaining continued supply of compressed air in such compressed air system, which shall be capable of operating air compressor and ancillary systems of such compressed air system;
- b. The emergency power supply system shall be maintained and made readily available at all times.

11.45. AIR MAINS:

Every air-main supplying air to the working chamber, man-lock or medical-lock used at an excavation or tunneling work shall be protected against accidental damage and where it is not practicable to provide such protection, a stand-by air-main shall be provided.

11.46. BULKHEAD AND AIR LOCKS

- a. A bulk head or air tight diaphragms retaining compressed air, when used within a tunnel or a shaft, shall be constructed to withstand the maximum pressure at 1.25 the maximum working pressure of such bulk head or diaphragm and such bulk head or diaphragm shall be tested before its each use by a responsible person to ensure that such bulk head or diaphragm is in proper working order;
- b. Such responsible person shall keep the record of each test and such record shall be produced for inspection.
- c. The bulk head or diaphragm shall be made of sound material of adequate strength, which shall be able to withstand the maximum pressure on which they are subjected to at any time of their use;
- d. A bulkhead anchorage and air lock shall be tested at its work place at an excavation or tunneling work immediately after their installation at such place.

11.47. DIAPHRAGM:

All diaphragms, which are in the form of horizontal decks across a shaft used at excavation or tunneling work, shall be securely anchored

11.48. PORTABLE ELECTRICAL HAND TOOLS:

All portable electrical hand tools and inspection lamps used underground or in a confined space shall be operated at a voltage not exceeding 24 V.

11.49. CIRCUIT BREAKER

- a. Adequate numbers of differential ground fault circuit breakers shall be installed for every electrical distribution system and its sub-systems used at an excavation or tunneling;
- b. Work and the sensitivity of each of circuit breaker shall be adjusted in accordance with the requirement set out in accordance with the approved standards;
- c. No semi-enclosed fuse unit shall be used in underground place.

11.50. TRANSFORMER:

The contractor shall ensure no transformer is used in any section of a tunnel under compressed air unless such transformer is of the dry type and conforms to the approved standards.

11.51. LIVE WIRES:

There shall be no exposed live wire in working areas at an excavation or tunneling work which are accessible to building workers other than those authorized to work on such live lines.

11.52. WELDING SETS:

All welding sets used in a tunnel shall be of adequate capacity and of suitable type, duly approved.

11.53. QUALITY AND QUANTITY

- a. Every working chamber at an excavation or tunneling work where compressed air is used, the supply of such air shall be maintained at not less than 0.3 m³ per minute per person working therein;
- b. A reserve supply of compressed air shall be made available at all times for man-locks and medical locks used at a tunneling work;
- c. The air supplied in a compressed air environment at a tunneling work shall be, as far as practicable, free from contaminants, namely, dust, fumes and other toxic substances.

11.54. WORKING TEMPERATURE:

The temperature in any working chamber at an excavation or tunneling work where building workers are employed shall not exceed 29° c and the arrangement shall be maintained for kipping records in which the temperatures measured by dry bulb and wet bulb inside such working chamber once in every hour and for producing such records for inspection on demand.

11.55. MAN-LOCKS AND WORKING IN COMPRESSED AIR ENVIRONMENT

- a. Man-locks used at a tunneling work shall be of adequate strength, made of sound material and designed to withstand any pressure, internal or external, to which it may be subjected in the normal use or in an emergency;
- b. Doors of man-locks at an excavation or tunneling work shall be made of steel and used at a tunneling work for keeping the work airtight and devices shall be provided for sealing the doors when such locks are under pressure. The anchorage of a man-lock used at tunneling work shall have adequate strength to withstand the pressure exerted by air on the man-lock. There shall be adequate room available for the workers for working in the man-locks;
- c. Where work is carried out in any compressed air tunnel, a Man-lock in accordance with the approved standards shall be used;
- d. Where a man-lock is used, safety Instructions in Hindi and in local language understood by majority of building workers employed there, shall be displaced at conspicuous places;
- e. Except in an emergency, compression and de-compression operations shall be carried out in a man-lock and in an emergency any material-lock may be used;
- f. A record of compression and de-compression shall be kept in writing and produced for inspection on demand;
- g. Material lock shall be used with the permission of the Engineer in-charge where it is impracticable to install both the man-lock and the material-lock at;
- h. The man-lock at tunneling work shall not be used for any purpose

- i. other than compression or de-compression of building workers;
- j. No de-canting of building workers at tunneling work shall be carried
- k. out without prior approval of the Engineer in-charge except in an emergency;
- l. In case a building worker collapses or is taken ill during his de-compression in a man-lock, the lock attendant of such man-lock shall raise the pressure to a level equal to the maximum pressure which that building worker was exposed to in the working chamber prior to such de-compression and such lock attendant shall immediately report the matter relating to such collapse to the medical lock attendant and medical officer on duty;
- m. A building worker who had previously received training with a trained building worker to work in a compressed air environment at tunneling work shall be employed to work independently in such a compressed air environment;
- n. A building worker who had undergone three de-compressions from a pressure exceeding one bar in a period of eight hours at tunneling work shall not be allowed to enter a compressed air environment except for the purpose of carrying out rescue work;
- o. A building worker employed in a compressed air environment for a period of eight hours in a day at tunneling work shall not be employed again in such environment unless he has spent not less than twelve consecutive hours of rest at atmospheric pressure;
- p. No building worker shall be engaged in a compressed air environment at a pressure, which exceeds three bars at a tunneling work unless prior permission, in writing, has been obtained from the Engineer in-charge;
- q. No building worker shall be employed in a compressed air environment for more than fourteen consecutive days in a month;
- r. A register of employment of all building workers in compressed air environment shall be maintained;
- s. An identification badge shall be supplied to a building worker employed in compressed air environment;
- t. The badge of a building worker shall contain particulars of his name, location of the medical-lock allotted to him for work, the telephone number of the Construction Medical Officer concerned for his treatment and the instructions in case of his illness of unknown and doubtful causes;
- u. Record of all identification badges supplied to building shall be kept in a register;
- v. Every building worker whose name appears in the register shall wear the badge supplied to him at all times during his duty hours;
- w. Suitable warning signs shall be displayed in the compressed air for the prohibition of the following, namely:
 - i) Use of alcoholic drinks;
 - ii) Use and carrying of lighters, matches or other sources of ignition;
 - iii) Smoking; and

iv) No entry to person who has consumed alcoholic drink

11.56.SAFETY INSTRUCTION:

All building workers employed in compressed air environment at tunneling work shall follow the instructions issued for their safety in the course of such employment.

11.57.MEDICAL-LOCK

- a. A suitably constructed medical lock shall be maintained at tunneling work where building workers are employed in a working chamber at a pressure exceeding one bar;
- b. Where more than one hundred building workers are employed in a compressed air working environment exceeding one bar at tunneling work, one medical-lock is provided for every one hundred building workers or part thereof and such medical lock shall be situated as near as possible to the main-lock used at such tunneling work.

12.0. SAFETY IN PILING WORK

12.1. GENERAL PROVISIONS

- a. All pile driving equipment shall be of good design and sound construction, taking into account the ergonomic principles and properly maintained;
- b. A pile driver shall be firmly supported on a heavy timber sill, concrete bed or other secured foundation;
- c. In case a pile driver is required to be erected in dangerous proximity to an electrical conductor, all necessary precautions shall be taken to ensure safety;
- d. The hoses of steam and air hammer shall be securely lashed to such hammer so as to prevent them from whipping in case of connection or break;
- e. Adequate precaution shall be taken to prevent the pile driver from over turning and hammer from missing the pile;
- f. A responsible person for inspecting pile-driving equipment shall inspect such equipment before taking it into use and takes all appropriate measures as required for the safety of building workers before commencing piling work by such equipment;
- g. Where there is any question of stability of a structure for its adjoining areas to be piled, such structure shall be supported, where necessary, by underpinning, sheet piling, shoring, and bracing or by other means to ensure safety and stability of such structure and to prevent injury to any person.

12.2. PROTECTION OF OPERATOR:

The operator of every pile driving equipment shall be protected from falling objects, steam, cinders or water by substantially covering or otherwise or by other means.

12.3. INSTRUCTION TO AND SUPERVISION OF BUILDING WORKERS WORKING ON PILE-DRIVING EQUIPMENT:

Every building worker working on a pile driving equipment shall be given instructions regarding safe work procedure to be followed in piling operation and shall be supervised by a responsible person throughout such work.

12.4. ENTRY OF UNAUTHORIZED PERSON:

The contractor shall ensure at a construction site of a buildings or other construction work that all piling areas where pile-driving equipment is in use are effectively cordoned off to prevent entry of unauthorized persons.

12.5. INSPECTION AND MAINTENANCE OF PILE DRIVING EQUIPMENT

- a. Pile-driving equipment shall not be taken into use until it has been inspected by a responsible person and found to be safe for such use;
- b. A responsible person for such inspection at suitable intervals to ensure safety to the building worker working on such equipment shall inspect pile driving equipment in use;

- c. All pile lines and pulley blocks shall be inspected by a responsible person before the beginning of each shift of piling operations.

12.6. OPERATION OF PILE-DRIVING EQUIPMENT

- a. Only experienced and trained building worker shall operate pile driving so as to avoid any probable danger from such operation;
- b. Pile-driving operations shall be governed generally prevalent and accepted signals so as to prevent any probable danger from such operations;
- c. Every building worker employed in pile driving operation or in the vicinity of such pile driving operation shall wear ear protection and safety helmet or hardhat and safety shoes;
- d. Piles shall be prepared at a distance, at least equal to twice the length of the longest pile, from the place of pile-driving operations;
- e. When a pile driver is not in use, the hammer of such pile driver shall be blocked at the bottom of the heads of such pile driver.

12.7. WORKING PLATFORM ON PILING FRAMES:

Where a structural tower supports the lead of a pile driver, leads at which it is necessary for the building workers to work and such platforms except on the hammer of such pile driver or lead sides of such platform and where such platforms cannot be provided with such railing and toe boards, a safety belt shall be provided to each such building worker.

12.8. PILE TESTING

- a. The testing of pile shall be conducted under the supervision of a responsible person for such testing;
- b. All practicable measures like displaying of warning notices, barricading the area and other similar measures shall be taken to protect the area where the pile testing is carried out;
- c. Entry to a pile testing area shall be prohibited to general public to ensure safety.

12.9. PILING, SHORING AND BRACING

- a. Planks used for sheet piling in excavation or tunneling work shall be of sound material with adequate strength;
- b. Shores and braces used in excavation or tunneling work shall be of adequate dimensions and so placed as to be effective for their intended purposes;
- c. Earth supported shores or braces used in excavation or tunneling work shall bear against a footing of sufficient area and stability to prevent the shifting of such shores or braces.

13.0. SAFETY IN THE ERECTION, USE AND DISMANTLING OF SCAFFOLDS

13.1. SCAFFOLD CONSTRUCTION

- a. Every scaffold and every component thereof shall be of adequate construction, made of sound material and free from defects and safe for the purposes for which it is intended for use;
- b. In case bamboo is used for scaffolding, such bamboo shall be of suitable quality, good condition, free from protruding knots and stripped off to avoid any injury to building workers during handling such bamboo;
- c. All metal scaffolds used in building or other construction work shall conform to the approved standards;

13.2. SUPERVISION BY A RESPONSIBLE PERSON: No scaffold shall be erected, added, altered or dismantled except under the supervision of a responsible person.

13.3. Maintenance

- a. The scaffold used in building or other construction work shall be maintained in good repairs and the measures taken against its accidental displacement or any other hazard;
- b. No scaffold or part thereof shall be partly dismantled and allowed to remain in such a condition unless –
 - i) The stability or safety of the remaining portion of such scaffold has been ensured by a responsible person for the safety of such scaffolds;
 - ii) In case the remaining part of such scaffold cannot be used by the building workers, necessary warning notice written in Hindi and in a language understood by the majority of the building workers that such scaffold is unfit for use, shall be displayed at the place where such scaffold is erected.

13.4. STANDARDS, LEDGERS, PUTLOGS

- a. Standards of a scaffold shall be plumb, where practicable, fixed sufficiently close together to secure the stability of such scaffold having regard to all the possible working situations and conditions for the intended use of such scaffold, spaced, as close as practicable, to ensure safety and stability of such scaffold;
- b. Adequate measures are taken to, prevent displacement of a standard of a scaffold either by providing sole plate or a base plate, as necessary;
- c. Ledgers of metal scaffold are placed at vertical intervals with due regard to safety and stability of such scaffold;
- d. Bamboo ledgers are kept as nearly as possible and are placed and fastened to the standards of a scaffold with due regard to the stability of such scaffold.

13.5. WORKING PLATFORM

- a. Working platform shall be provided around the face or edge of a building adjoining at every upper most permanent floor of such building under construction and at any level where construction work of such building is carried out;
- b. A platform shall be designed to suit the number of building workers to be employed on each bay of a scaffold work on such platform and the materials or articles and tools to be carried with them in such bay;
- c. The safe working load and the number of building workers to be employed in each bay of a scaffold shall be displayed for the information of all the building workers employed at such construction site.

13.6. BOARD, PLANK AND DECKING

- a. Board, plank and decking used in the construction of a working platform shall be of uniform size and strength and shall be capable of supporting the load and number of building workers keeping in view the safety of such building workers;
- b. Metal decking, which forms part of a working platform, shall be provided with non-skid surface;
- c. No board or plank which forms the working platform shall be projected beyond its end support unless it is effectively prevented from tripping or lifting and board, plank or decking shall be fastened and secured;
- d. At any one time, not more than two working platforms per bay, shall be used to support building workers or materials or articles at such bay;
- e. Adequate measures shall be taken to prevent injury which may be caused by falling material and objects by using safety nets or other suitable means;
- f. Concrete, other debris or materials shall not be allowed to accumulate at any platform on a scaffold;
- g. Where a work is to be done at the end of a wall, working platform at such workplace shall be faced or, wherever practicable, at least 0.6 m beyond the end of such wall.

13.7. REPAIR OF DAMAGED SCAFFOLD

- a. No building worker shall be permitted to work on a scaffold that has been damaged or weakened unless adequate safety measures have been taken to ensure the safety of such building worker;
- b. Necessary warning signs shall be displayed at such places where repairs of scaffold are undertaken.

13.8. OPENING

- a. There shall be no opening in any working platform except for allowing access to such working platform;
- b. Wherever opening on a platform is unavoidable, necessary measures for protection against falling of objects or building workers from such platform shall be taken by providing suitable safety nets, belts or any other similar means;
- c. Access from one working platform to another platform on a scaffold, if required, shall be provided with suitable and safe ladder for the use of building workers working on such platforms;

- d. Every opening or shaft in the floor shall be provided with suitable means to protect the fall of a person or material by providing suitable fencing or railing of height not less than 900 mm.

13.9. GUARDRAILS: Every side of a working platform from which a person is liable to fall shall be provided with suitable and safe guardrails and toe board of adequate strength to prevent fall of any building worker, material or tools from such platform.

13.10. SCAFFOLD USED BY BUILDING WORKERS OF DIFFERENT EMPLOYERS

- a. Where a scaffold or a part of a scaffold is used, which has previously been used by another employer for his building workers, such scaffold or part thereof shall be used only after its inspection and examination by a responsible person for ensuring that such scaffold or part thereof is safe and fit for such use;
- b. If any rectification, alteration or modification in a scaffold or part thereof, needed to suit its use, shall be made in consultation with the responsible person.

13.11. PROTECTION AGAINST ELECTRIC POWER LINE:

The contractor shall ensure that all necessary and practical measures for protection are taken to prevent any building worker, working on a scaffold, from coming into contact with the electric wires or dangerous equipment.

13.12. SCREENING NET AND WIRE NETS:

Where a scaffold is erected in an area where the construction activities may pose hazards to pedestrians or vehicular traffic nearby from the falling of objects, wire nets or screening nets shall be used to envelope such scaffold.

13.13. TOWER SCAFFOLD

- a. The height of every tower scaffold used in building or other construction work shall not be more than eight times the lesser to the base dimension of such scaffold;
- b. A tower scaffold shall be lashed to a building or a fixed structure before being used by the building workers;
- c. Any tower scaffold which can be moved or castered shall be –
 - i) Constructed with due regard to the stability and, if necessary, adequately weighted at the base;
 - ii) Used only on plain and even surface; and
 - iii) Has casters provided with positive locking devices to hold such scaffold in position;
- d. No building worker shall remain on board scaffold or leave behind tools and material when it is being shifted from one position to another position.

13.14. GEAR FOR SUSPENSION OF SCAFFOLD

- a. Chains, ropes or lifting gears used for suspension of a scaffold shall be of adequate strength, made of sound material and suitable for the purpose of their use and maintained in good repairs;
- b. Chains, wires, ropes or metal tubes used for the suspension of a scaffold shall be:

- i) Properly and securely fastened to every anchorage point and to the scaffold ledgers of other main supporting members used for the support of such scaffold; and
- ii) So positioned as to ensure stability of the scaffold.

13.15. TRESTLE SCAFFOLD AND CANTILEVER SCAFFOLD

- a. No trestle scaffold shall be constructed with more than three tiers or if its working platform is more than 4.5 m above the ground or floor or other surface upon which such scaffold is erected;
- b. Trestle scaffold shall be designed by professional engineer and shall have the approval of the Engineer in-charge before being taken into use.
- c. No trestle scaffold shall be erected on a suspended scaffold;
- d. No cantilever or jib scaffold shall be used unless it is adequately supported, fixed and anchored on opposite side of its support and have out triggers of adequate length and, where necessary sufficiently, supported and braced to ensure safety and stability of such scaffold;
- e. No working platform resting on bearers let into a wall at one end and without other support shall be used unless such bearers are of adequate strength, braced through the wall and securely fastened on the other side.

13.16. SCAFFOLD SUPPORTED BY BUILDING

- a. No part of a building shall be used as support or part of a scaffold unless such part of the building is made of sufficient strength and made of sound material to afford safe support;
- b. Overhanging eaves gutters shall not be used for supporting scaffold;
- c. Suspended scaffold shall be made of in accordance with the approved standards before being used by the building workers.

13.17. USE OF WINCHES AND CLIMBERS FOR SUSPENDED SCAFFOLD

- a. No scaffold shall be raised or lowered by winches or climbers unless such scaffold is made of sound material, adequate strength and has been tested and certified safe for use of winches or climber by a competent person before being taken into use;
- b. All suspended scaffolds counter-balanced by counter weights shall be of approved types before being taken into use for building or other construction work;
- c. The working platform of a suspended scaffold shall be securely fastened to the building or structure as to be safe and to prevent such platform from swing;
- d. The safe working load that a suspended scaffold can carry, shall be displayed where such scaffold is being used

13.18. SAFETY DEVICES FOR SUSPENDED SCAFFOLD

- a. Every suspended scaffold, raised or lowered by the winches or climbers, shall be provided at each of its suspension point with a safety rope with automatic safety device mounted on each of such rope so that such safety rope with such automatic safety device support the platform of such

scaffold in the event of failure of the primary suspension wire ropes, winches, climbers or any part of the mechanism used for raising or lowering such suspended scaffold;

b. Provided that the clause (a) shall not apply -

- i) Where the platform of such scaffold is supported at two independent suspension wire rope at or near each end of such platform so that in the event of failure of one of such suspension wire rope, the other wire rope is capable of sustaining the weights of such platform and its load and prevent it from tilting; or
- ii) Where a system is incorporated which operates automatically to support the platform of such scaffold and its load in the event of failure of the primary suspension wire rope of such scaffold.

14.0. SAFETY IN THE ERECTION OF STRUCTURAL FRAME & FORMWORK

14.1. GENERAL PROVISION

- a. The trained building worker under the direct supervision of a person, responsible for structural frame and formwork, shall be employed for erection of such structural frame or formwork, dismantling of building and structure and performance of and engineering work formwork, false work and shoring work;
- b. Adequate measures shall be taken to guard against hazards arising from any temporary state of weakness or unsuitability of a structure.

14.2. FORMWORK, FALSE WORK AND SHORING

- a. Formwork and false work shall be so designed, constructed and maintained that such formwork and false work are able to support the load that may be imposed on them;
- b. Such formwork shall be so erected that working platform, means of access, bracings, means of handling and stabilizing could easily be fixed with such formwork.

14.3. ERECTION OR DISMANTLING OF STEEL AND PREFABRICATED

- a. Erection or dismantling of any pre-fabricated structure shall be made safe against danger by using appropriate means such as ladders, gangways or fixed platforms, buckets, boatswains chair or other appropriate means suspended from lifting appliances, safety harness, life lines, catch nets or catch platforms, power-operated mobile working platforms etc.;
- b. The work of erection or dismantling of buildings or structures or formwork or false work or shoring or any other civil engineering work shall be carried out by trained building workers under the supervision of a person responsible for such work;
- c. Steel or prefabricated structures shall be so designed and made that such structures can be safely transported or erected; and weight of each unit of such structures shall be clearly marked on such unit;
- d. The design of each such part shall maintain stability of each part of the structures referred to in clauses above when erected, and to prevent danger, the design shall explicitly take into account –
 - i) The relevant conditions and methods of attachment in the operations of stripping, transport, storing and temporary support during erection of such parts;
 - ii) Safeguards, such as provision of railings with working platforms, and for mounting such railings and platforms easily on the structural steel or prefabricated parts;
- e. The hooks and softer devices built in or provided on the structural steel or prefabricate parts that are required for lifting and transporting such parts shall be so shaped, dimensioned and positioned to withstand the stresses to which such hooks or other devices are subjected;

- f. Prefabricated parts made of concrete shall not be stripped or erected before such concrete has set and hardened sufficiently to the extent provided for in the plans, and such parts are examined by the responsible person for any sign of damage before their use;
- g. Store-places shall be so constructed that –
 - i) There shall be no risk of structural steel or prefabricated parts falling or overturning;
 - ii) Storage conditions shall generally ensure stability and avoid damage having regard to the method of storage and atmospheric conditions; and
 - iii) Racks shall be set on firm ground and designed so that units cannot move accidentally in such store-places;
- h. Structural steel or pre-fabricated parts shall not be subjected to stresses prejudicial to their stability while they are stored or transported or raised or set down;
- i. Tongs, clamps and other appliances for lifting structural steel and prefabricated part shall be:
 - i) In such shape and dimensions as to ensure a secure grip without damaging and marked with the maximum permissible load in the most unfavourable lifting conditions; and
 - ii) Structural steel or pre-fabricated parts shall be lifted by such methods and appliances that prevent them from spinning accidentally;
- j. Structural steel or pre-fabricated parts shall be provided with railings and working platforms before raising such parts to prevent any danger of falling of building workers, materials or articles at the time of any work with such parts;
- k. All reasonably practical measures shall be taken to avoid injury to building workers, building structure or equipment while structural steel or pre-fabricated parts are handled or stored or transported or raised or lowered;
- l. Structures shall not be worked on during violent storms or high winds or any other such hazardous situation;
- m. The risk of falling to which building workers, moving on high or sloping girders, may be exposed is limited by all means of adequate collective protection or by the use of a safety harness which shall be well secured to a sufficiently strong supports;
- n. Structural steel parts, which are to be erected at a great height, shall, as far as practicable, be assembled on the ground;
- o. When structural steel or pre-fabricated parts are being erected, a sufficiently extended area underneath the workplace shall be barricaded or guarded;
- p. Steel trusses, which are being erected, shall be adequately shored, braced or guyed until they are permanently secured in position;
- q. Structural members shall not be forced into place by the hoisting machine while any building worker is in such a position that he is likely to be injured by such operation.

14.4. FORMWORK

- a. All formwork shall be properly designed keeping in view the safety of building workers, buildings or structures;
- b. A responsible person for structural frame and formwork shall –
 - i. Inspect and examine the material, timber, structural steel and scaffolding for its strength and suitability before being taken into use;
 - ii. Lay-down procedures to cover all stages of such structural frame and formwork;
 - iii. Supervise such structural frame and formwork;
 - iv. Take all necessary steps or measure to correct any situation with a view to prevent accident or dangerous occurrence during performances of such structural frame and formwork.

14.5. DE-SHORING

- a. When shoring is removed, sufficient props shall be left in place of such shoring to prevent any possible hazard; and
- b. Deshoring shall be adequately braced and tied together with support to prevent any hazard.

15.0. SAFETY IN CONCRETE WORK

15.1. GENERAL PROVISIONS REGARDING USE OF CONCRETE

- a. All construction with the use of concrete or reinforced concrete shall be based on plans including specification of steel and concrete and other material to be used in such construction –
 - i. Giving technical details regarding methods for safe placing and handing of such materials and indicating the type, quality and arrangement of each part of a structure of such construction; and
 - ii. Explaining the sequence of steps to be taken for completion of such construction;
- b. Formwork and shores used for concrete work shall be structurally safe and properly braced or tied together so as to maintain position and shape of formwork or shores;
- c. Formwork structure used shall have sufficient catwalks and other secure access for inspection of such structure if such structure is in two or more tiers;
- d. No machinery or any object should fall below by using wire nets, screen nets etc.

15.2. PREPARATION AND POURING OF CONCRETE AND ERECTION OF CONCRETE STRUCTURE

- a. A building worker handling cement or concrete shall –
 - i) Wear close-fitting clothing, gloves, helmet or hardhat, safety goggles, proper footwear and respirator or mask to protect himself from danger in such handling;
 - ii) Keep as much of his body covered as is required to protect himself from danger in such handling;
 - iii) Take all necessary precautions to keep cement and concrete away from his skin in such handling;
- b. Lime pits shall be fenced or enclosed and filled and emptied by such devices, which do not require workers to go into the pit;
- c. Moving parts of the elevators, hoists screens bunkers, chutes, grouting equipment used for concrete work and of other equipment used for storing, transport and other handling ingredients of concrete shall be securely fenced to avoid contact of building workers with such moving parts;
- d. Screw conveyors used for cement, lime and other dusty materials shall be completely enclosed.

15.3. BUCKETS

- a. Concrete buckets used with cranes or aerial cableways shall be free from projections from which accumulations of concrete could fall;
- b. Movements of concrete buckets shall be governed by signals necessary to avoid any danger by such movements.

15.4. PIPES AND PUMPS

- a. A scaffolding carrying a pipe for pumped concrete shall be strong enough to support such pipe at a time when such pipe is filled with concrete or water or any other liquid and carry the combined load of the all the building workers who may be on such scaffold at such time, safely;
- b. Every pipe for carrying pumped concrete shall be –
 - i) Securely anchored at its end point and at each curve on it;
 - ii) Provided near the top of such pipe with an air release valve;
 - iii) Securely attached to a pump nozzle by a bolted collar or other adequate means;
- c. The operation of concrete pumps shall be governed by standard signals;
- d. Building workers employed around a concrete pump shall wear safety goggles;

15.5. MIXING AND POURING OF CONCRETE

- a. The concrete mixture shall not contain any material, which may unduly affect the setting of such concrete, weaken such concrete or corrode steel used with such concrete;
- b. When dry ingredients of concrete are being mixed in confined spaces such as silos –
 - i) The dust shall be exhausted at the time of such mixing and
 - ii) In case the dust the dust cannot be exhausted, as specified, the workers shall wear respirators at the time of such mixing;
- c. When concrete is being tipped from buckets, building workers shall be kept out of the range of any kickbacks of such buckets;
- d. Loads shall not be dumped or placed on settling concrete.

15.6. CONCRETE PANELS AND SLABS

- a. All parts of a concrete panel or concrete slab shall be hoisted uniformly;
- b. Concrete panels shall be adequately braced in their final positions and such bracings shall remain in such positions until such panels are adequately supported by other parts of the construction for which such panels are used;
- c. Temporary bracings of concrete panels shall be securely fastened to prevent any part of such panels from falling when such panels are being moved.

15.7. STRESSED AND TENSIONED ELEMENTS

- a. Building workers shall not stand directly over jacking equipment while stressing of concrete girders and beams is being done;
- b. A pre – stressed concrete unit shall not be handled except at points on such unit and by the devices specified for such work by the manufacture of such devices;
- c. During transport, pre-stressed concrete girders or concrete beams shall be kept upright by bracing or other effective means;

- d. Anchor fittings for pre-tensioned strands of pre-stressed concrete girders of concert beams are kept in a safe condition in accordance with the instruction of manufacturer of such anchor fittings;
- e. Building workers shall not stand behind jacks or in line with tensioning elements and jacking equipment during tensioning operations of pre-stressed concrete girders of concrete beams;
- f. Building workers do not cut wires of pre – stressed concrete girders or concrete beams under tension before such concrete used of such girder or beams is sufficiently hardened.

15.8. VIBRATORS

- a. A building worker, who is in good physical condition, shall operate vibrators used in concreting work;
- b. All practical measures shall be taken to reduce the amount of vibration transmitted to the operators working in concreting work and
- c. When electric vibrators are used in concreting work
 - i) Such vibrators shall be earthed;
 - ii) The leads of such vibrators shall be heavily insulated; and
 - iii) The current shall be switched off when such vibrators are not in use.

15.9. INSPECTION AND SUPERVISION

- a. A person responsible for a concreting work shall supervise the erection of the formwork, shores, braces and other supports used for such concreting work, make a through inspection of every formwork to ensure that such formwork is safe, regularly inspect the formwork, shores, braces, reshores and other supports during the placing of concrete, keep all records of inspections referred to above at the workplace relating to such inspection and produce them for inspection upon the demand.
- b. Any unsafe condition, which is discovered during the inspections, shall be remedied immediately.

15.10. BEAMS, FLOORS AND ROOFS

- a. Horizontal and diagonal bracings shall be provided in both longitudinal and transverse direction as may be necessary to provide structural stability to formwork used in concreting work and shores used in such concreting work shall be properly seated on top and bottom and secured in their places;
- b. Where shores used in concreting work rest upon the ground, base plates shall be provided for keeping such shores firm and in level;
- c. Where the floor to ceiling height of a concreting work exceeds 9 m or where the formwork deck used in such concreting work is supported by shores constructed in two or more tiers, or where the dead, live and impact loads on the formwork used in such concreting work exceed 700 kilogram per m², the structure of such formwork shall be designed by a professional engineer in the relevant field and the specifications and drawings of such formwork kept at such construction site and produced on demand.

- d. Where a professional engineer designs the structure of the formwork used in concreting work, such engineer shall be responsible for the supervision of construction and the stability of such structure.

15.11. STRIPPING

- a. Stripping of formwork used in concreting work shall not commence until the concrete on such formwork is fully set, examined and certified to this effect by the responsible person and record of such examination and certification is maintained;
- b. Stripped forms in concreting work shall be removed or stock piled promptly after stripping from all areas in which building workers are required to work or pass;
- c. Protruding nail, wire ties and other formwork accessories not required for subsequent concreting work shall be pulled, cut or otherwise made safe.

15.12. RE-SHORING

- a. Re-shoring used in concreting work shall be provided to a slab or beam for its safe support after its stripping or where such slab or beam is subjected to superimposed loads due to construction above such slab or beam;
- b. The provisions applicable to shoring in a concreting work shall also be applicable to reshoring in such work or pass.

16.0. SAFETY IN CONSTRUCTION, REPAIR & MAINTENANCE OF STEEP ROOFS

16.1.WORK ON STEEP ROOFS:

All practicable measures shall be provided to protect the building workers against sliding when carrying outwork on steep roofs.

16.2. CONSTRUCTION AND INSTALLATION OF ROOFING BRACKETS

- a. Roofing brackets shall be constructed to fit the pitch of steep roof and such brackets shall be used to provide level working platform;
- b. Roofing bracket shall be secured in its place by nailing pointed metal projections attached to the underside of such bracket and securely driven into a steep roof on which it is used or secured by a rope passed over the ridgepole and tie of such roof.

16.3. CRAWLING BOARDS

- a. All crawling boards used for work on steep roofs shall be of adequate strength, made of sound material and of the type approved for the purpose of their use;
- b. Crawling boards shall be kept in good repairs and inspected by a responsible person before being taken into use;
- c. Crawling boards shall be secured to a steep roof on which it is used by ridge hooks or other effective means;
- d. A firmly fastened lifeline of adequate strength shall be strung beside each crawling board throughout its length while using such crawling boards.

17.0. SAFETY IN CATCHES PLATFORMS, HOARDINGS & CHUTES

17.1. CATCH PLATFORM

- a. Catch platform shall not be used for storage of material or as a working platform;
- b. Catch platform shall at least be of 2 m wide and inclined so that the position of outer edge of such platform is 1500 mm higher than the inner edge;
- c. The open end of catch platform shall be properly fenced to the height not less than 1 m.

17.2. HOARDINGS:

Hoardings shall be constructed when the Registering Authority / Assistant Labour Commissioner considers it necessary for protection of building workers and directs such employer to construct such hoardings.

17.3. CHUTES, ITS CONSTRUCTION AND USE

- a. Wooden or metal chutes which are at an angle of more than 45° to the horizontal and used for the removal of materials shall be closed on all sides except at their openings used for receiving or discharging of materials or articles;
- b. All openings of chutes except their top openings shall be closed when not in use;
- c. Every chute –
 - i. Shall be constructed of sound material, adequate strength and suitable for the purpose it is intended for use;
 - ii. Exceeding 12 m in height shall be constructed in accordance with the design and drawings of professional engineer for such;
 - iii. A suitable warning notice shall be displayed at conspicuous locations, written in Hindi and in a local language, at the discharge end of every chute;
 - iv. Shall be cleared when debris has accumulated to a height, which can pose danger to building worker, but such clearance shall be done in no case less frequently than once a day.

18.0. SAFETY IN WORK ON OR ADJACENT TO WATER

18.1. TRANSPORT OF WORKERS BY WATER

- a. When any building worker has to proceed to or from any workplace by water for purposes of carrying on a building or other construction work, proper measures shall be taken to provide for his safe transportation and vessels used for such purpose shall be in charge of a responsible person, properly equipped for safe navigation and maintained in good condition;
- b. Maximum number of persons which can be safely carried in a vessel shall be marked plainly and conspicuously on such vessel and such number shall not be exceeded during use of such vessel for carrying persons;
- c. Adequate protecting shall be provided to the building workers in such vessel from inclement weather;
- d. Such vessel shall be manned by adequate and experienced crew;
- e. In case the bulwarks of such vessel are lower than 60 cm from the level of the deck of such vessel, the open edge of such bulwarks shall be fitted with suitable fencing to a height of at least 1 m above such deck and the post and stanchions and similar parts used in such fencing shall not be spaced more than 2 m;
- f. The number of life buoys on deck of such vessel shall at least be equal to the number of crew members of such vessel and shall not be less than two;
- g. All life buoys on deck of such vessel shall be kept in good state of maintenance and so placed that if such vessel sinks then they will remain afloat and one of such buoys shall be within the immediate reach of the Steersman of such vessel and another is situated after part of such vessel; and
- h. The position of the steersman of the vessel shall be such that he has a reasonably free view of all sides.

18.2. PREVENTION FROM DROWNING

- a. Where, on or adjacent to the workplace of any contraction site, there is water into which a building worker employed for work on such site, in the course of his employment, may fall and has the risk of drowning, suitable rescue equipment shall be provided and kept in an efficient state of ready use and measures shall be taken to arrange for the prompt rescue of such building worker from the danger of drowning and where there is a special risk of such fall from the edge of adjacent land or from a structure adjacent to or above the water, or from floating stage on such water, secure fencing shall be provided near the edge of such land, structure or floating stage, as the case may be, to prevent such fall, and such fencing may be removed or allowed to remain unerected for the time and to the extent necessary for the access of building workers to such work or the movement of material for such work;
- b. For handling rescue equipment, at least two persons knowing diving should be available at such sites.

19.0 SAFETY IN COFFERDAMS & CAISSONS

19.1 EVERY COFFERDAM AND CAISSON SHALL BE

- 19.1.1 Of good construction, sound material and of adequate strength, provided with adequate means for workers to reach safely at the top of such cofferdam or caisson in the event of an in rush of water and safe means of access to every place where workers shall be employed;
- 19.1.2 Work relating to construction, positioning, modification, dismantling of cofferdams or caissons shall be carried out under the supervision of a responsible person and inspected by the responsible person at the specified intervals;
- 19.1.3 A worker shall be allowed to work in a cofferdam or caisson after such cofferdam or caisson has been inspected and found safe by responsible person within such preceding period as approved and a record of such inspection maintained.

19.2 WORK IN COMPRESSED AIR IN A COFFERDAM OR CAISSON SHALL BE

- 19.2.1 Carried out in accordance with the procedure laid down;
- 19.2.2 Carried out by such building workers who have completed eighteen years of age and are medically examined and found fit for the work;
- 19.2.3 Carried out under the supervision of a responsible person;
- 19.2.4 If the work in cofferdam or caisson is carried out in shifts, a record of the time spent by each worker in each such shift for carrying out the work shall be maintained in a register with particulars or time taken for the compression of such building worker, if any;
- 19.2.5 At every work site or project in a cofferdam or caisson, where workers are employed to work in compressed air environment, a construction medical officer assisted by a nurse or trained first-aid attendant, shall be available at all times and there shall be one standby reserve compressor to meet the emergency.

19.3 PRESSURE PLANT AND EQUIPMENT

- 19.3.1 Pressure plant and equipment for which it is used shall be –
- 19.3.2 Properly maintained in good repairs and working condition and fitted with a suitable safety valve or other effective device to provide maximum safe discharge pressure from being exceeded at any time; a suitable pressure gauge with a dial range not less than 1.5 time and not exceeding twice the maximum working pressure, easily visible and designed to show at all times, the internal pressure in kilogram per square centimeter and marked with the maximum safe working pressure, a suitable stop valve or valves by which the pressure plant or the system of the pressure plant may be isolated from the source supply of pressure or otherwise;
- 19.3.3 Every pressure plant or equipment shall be thoroughly examined by the competent person, externally, once in every period of six months; internally, once in every period of twelve months; and by hydraulic test, once in a period of four years.

20. SAFETY IN DEMOLITION WORK

20.1 PREPARATION

- 20.1.1 All glass or similar material or article in exterior openings shall be removed before commencing any demolition work and all water, steam, electric, gas and other similar supply lines put off and suitably capped and the concerned department of the appropriate authority informed and permission obtained wherever required before commencing;
- 20.1.2 Wherever it is necessary to maintain water, gas or electric line or power during such demolition, such line shall be so located or protected with substantial coverings so as to protect it from damage and to afford safety to the building workers and the general public.

20.2 PROTECTION OF ADJACENT STRUCTURES

20.2.1 Examination of walls etc. of adjacent structures –

- i) During demolition process, the contractor shall examine the walls of all structures adjacent to the structure to be demolished to determine the thickness, method of support to such adjacent structures and;
- ii) In case, such employer has reason to believe that any of such adjacent structure is unsafe or may become unsafe during such demolition process, he shall not perform demolition activity unless stability to such unsafe adjacent structure from collapsing has been taken. All roads and open spaces adjacent to the site of demolition work shall be closed or suitably protected by bracketing.

20.3 DEMOLITION OF WALLS, PARTITIONS, ETC.

- 20.3.1 Any demolition of walls or partitions shall be proceeded in a systematic manner as per the standard safe operating practices approved and all work above each tier of any floor beams shall be completed before the safety of the supports of such beam is impaired;
- 20.3.2 Masonry shall be neither loosened nor permitted to fall in such masses or volume or weight as to endanger the structural stability of any floor or structural supports;
- 20.3.3 No wall chimney or other structure or part of a structure shall be left unguarded in such a condition that it may fall, collapse or weaken due to wind pressure or vibration;
- 20.3.4 In the case of demolition of exterior walls by hand, safe footing shall be provided for the workers employed in, such walls or partitions, which are to be demolished by hand shall be not left standing more than one storey high above the uppermost floor on which persons are working.

20.4 METHOD OF OPERATION: The contractor shall ensure that debris, bricks and other materials or articles are removed by means of chutes, buckets or hoists and through openings in the floors.

20.5 ACCESS TO FLOOR

- 20.5.1 Safe access to and egress from every building shall be provided at all times in the course of demolition by means of entrances hallways, stairways or ladder runs which shall be so protected as to safeguard the workers using such means from falling material or articles;

- 20.5.2 Demolition of structural steel etc. shall be demolished column by column and tier by tier and every structural member, which is being demolished, shall not be under any stress, and such structural member shall be suitably lashed to prevent it from any uncontrolled swinging, dropping or falling or falling;
- 20.5.3 Large structural members shall not be thrown or dropped from the building, but carefully lowered by adopting suitable safe method;
- 20.5.4 Where a lifting appliance like a derrick is used for demolition, the floor on which such lifting appliance rests shall be completely planked over or supported and such floor shall be of adequate strength to sustain bearing load for such lifting appliance and its operation.

20.6 STORAGE OF MATERIAL OR ARTICLE

- 20.6.1 No materials or articles shall be not stored or kept on platform, floor or stairways of a building being demolished, provided that this clause shall not apply to the floor of a building when such floor is of such strength as to support safely the load to be superimposed by storing such material or articles;
- 20.6.2 No access to any stairway or passageway shall be affected or blocked by storing any material or article;
- 20.6.3 Suitable barricades shall be provided so as to prevent materials or articles from sliding or rebounding into any space used by the workers.

20.7 FLOOR OPENINGS:

Every opening used for the removal of debris from every floor which is not closed to access, except the top or working floor, shall be provided with an enclosure from such floor to its ceiling, or such opening is so barricaded that no building worker shall access to within a horizontal distance of 6.0 m from such opening through which debris is being dropped.

20.8 INSPECTION:

A person responsible for demolition work shall make continuous inspections during demolition process so as to detect any hazard resulting from weakened or deteriorated floors or walls or loosened materials or articles, and that no building worker shall be permitted to work where such hazard exist unless remedial measures like shoring or bracing shall be taken to prevent such hazards.

20.9 WARNING SIGNS, BARRICADES, ETC.

- 20.9.1 Barricades and warning sign shall be erected along every side throughout the length and breadth of a building or other construction work to be demolished to prevent unauthorized persons from entering into the during demolition operations;
- 20.9.2 During the demolition of an exterior masonry wall or a roof from a point more than 12 m above the adjoining ground level of such wall or roof, if persons below such wall or roof are exposed to falling objects, suitable and safe catch platform shall be provided and maintained at a level not more than 6 m below the working level except where an exterior built-up scaffold is provided for safe and adequate protection of such persons;
- 20.9.3 Suitable and standard warning signs shall be displayed or erected at conspicuous places or position at the workplace;

20.10 MECHANICAL METHOD OF DEMOLITION

20.10.1 The following requirements shall be fulfilled in case the mechanical method of demolition like use of swinging weight, clamshell bucket, power shovel, bulldozer or other similar mechanical methods are used for the purpose of demolition namely –

- i) The building or structure or structure or remaining portion thereof shall be not more than 12 m in height;
- ii) Where a swinging weight is used for demolition, a zone of such demolition having a radius of at least 1.5 times the height of the structure of portion thereof being demolished shall be maintained around the points of impact of such swinging weight;
- iii) Where a clamshell bucket is being used for demolition, a zone of demolition shall be maintained within eight metres of the liner of travel of such bucket;
- iv) Where other mechanical methods are being used to affect total or partial collapse of a building or other construction work, there shall be maintained, in the area into which the affected portion of such building or other construction work may fall, a zone of demolition at least 1.5 times the height of such affected portion thereof; and
- v) No person other than building workers or other persons essential to the operation of demolition work shall be permitted to enter a zone of demolition, which shall be provided with substantial barricades.

21. FIRE EXTINGUISHERS & OTHER APPLIANCES OF FIRE FIGHTING

21.1 FIRE EXTINGUISHERS & OTHER MEANS OF PREVENTION AND PROTECTION

21.1.1 Every contractor shall have a fire protection and prevention plan developed and implemented keeping in view the following:

- i) The specific work practices requiring fire control measures;
- ii) Response measures to be taken in case of fire;
- iii) Equipment required;
- iv) Personnel requirements and responsibilities;
- v) Schedules of daily and weekly inspection;
- vi) Open flames and fires are prohibited in all underground construction;
- vii) Readily visible signs to be posted in the fire prone/inflammable/explosive areas prohibiting smoking use of open flames and other hot work.
- viii) A system of Permit-to-Work.

27.1.2 For the protection of the workers from the outbreak of fire, the contractor shall Provide, maintain and regularly inspect the Fire extinguishing equipment, which shall be sufficiently provided to extinguish any probable fire;

Suitability of portable fire extinguishers			
Class of fire	Type of extinguisher		
	Water	DCP	CO ₂
A	Yes	Yes	Yes
B	No	Yes	Yes
C	No	Yes	Yes
D	No	Yes	Yes
Electrical	No	Yes	Yes

27.1.3 Ensure availability of an adequate supply of water at ample pressure;

27.1.4 Make available

- i. Adequate number of trained persons required to operate the fire extinguishing equipment;

- ii. Properly maintain Fire extinguishing equipment and inspect them at regular intervals of not less than once in a year by the responsible person and a record of such inspections maintained;
- 27.1.5 Portable fire extinguishers provided in the operator's cabin of earthmoving machinery, material handling systems, construction equipment etc. shall be regularly inspected, maintained and replenished/refilled;
 - 27.1.6 The operators and the helpers of such equipment shall be trained in the methods operating the equipment and fighting the fire effectively;
 - 27.1.7 All combustion engine power equipment shall be so located that the exhausts are well away from combustible material;
 - 27.1.8 No smoking shall be allowed at or in the vicinity of operations, which constitute fire hazards and shall be conspicuously posted with No smoking or open flame **signs**;
 - 27.1.9 In the flammable environment as described in IS: 9570, the electrical fittings and equipment shall be of flame proof type conforming to IS: 2206 & IS: 2148;
 - 27.1.10 Arrangements shall be made to contain sparks generated during welding, cutting or other operations and spark shall not be allowed to fall down on combustible material kept below; All means of exit shall be kept free of obstruction at all times;
 - 27.1.11 Appropriate type of fire extinguishers according to IS: 5698 shall be kept in fully charged condition at the places which have potential risk of fire;
 - 27.1.12 The contractor shall educate his or his sub-contractors' men working in the vicinity of fire risk, on how to operate these equipment and know in particular circumstances which type of extinguishers is to be used;
 - 27.1.13 The contractor shall take full responsibility for the upkeep and replenishment/refilling of the fixed and portable fire extinguishers.

APPENDIX

Annexure I

IMPORTANT INDIAN STANDARDS RELATED TO SAFETY

Personal Protection

- IS: 1179-1967 Equipment for eye and face protection during welding
- IS: 4770-1991 Rubber gloves for electrical purposes
- IS: 8519-1977 Guide for selection of industrial safety equipment for body protection
- IS: 8520-1977 Guide for selection of industrial safety equipment for eye, face & ear protection
- IS: 8807-1978 Guide for selection of safety equipment for protection of arms and hands
- IS: 1224-1985 Safety shoes
- IS: 2925-1984 Safety helmets
- IS: 8940-1978 Code of practice for maintenance and care of industrial safety equipment eye and face protection
- IS: 8990-1978 Code of practice for maintenance and care of industrial safety clothing
- IS: 10667-1983 Guide for selection of industrial safety for protection of foot and leg
- IS: 816-1969 Code of practice for safety and health requirements in electric and gas welding and cutting operations
- IS: 818-1968 Code of practice for safety and health requirements in electric and gas welding and cutting operations
- IS: 7194-1994 Assessment of noise exposure during work for hearing conservation purposes

Civil Engineering Construction

- IS: 2750- 1967(Part II) Steel scaffolds
- IS: 875-1987 Structural safety of building: loading standards
- IS: 4014-1967 Code of practice for steel tubular scaffolding
- IS: 3696 Safety code of scaffolds and ladders
- IS: 4138-1977 Safety code for working in compressed air
- IS: 4912-1978 Safety requirements for floor and wall openings, railings and toe boards
- IS: 7293-1974 Safety code for working with construction machinery
- IS: 9944-1992 Recommendations on safe working load for natural and man-made rope slings
- BS: 1129 Portable timber ladders, steps, Trestles & lightweight staging
- BS: 1139 Metal scaffolds
- BS: 5973 Code of practice for access & working scaffolds
- BS: 5974 Code of practice for temporary installed scaffolds and access equipment
- BS: 5975 Code of practice for falsework

Fire Protection

- IS: 2190-1992 Code of practice for selection, installation and maintenance of portable first-aid fire extinguishers
- IS: 5896 Code of practice for selection, operation and maintenance of fire-fighting appliances

IS: 8433-1984 Code of practice for dissolved acetylene cylinders

Electrical

IS: 3043-1987 Code of practice for earthing

IS: 5424-1969 Rubber mats for electrical purposes

IS: 3646 (Part II) Artificial lightings

IS: 2148 & IS: 2206 Flame proof electrical fittings

Machinery

IS: 1860-1980 Code of practice for installation, operation and maintenance of electric passenger and goods lifts

IS: 1991-1987 Safety requirements for the use, care and protection of abrasive grinding wheels

IS: 5903-1970 Safety devices for gas cylinders

IS: 8216-1976 Guide for inspection of lift wire ropes

IS: 8964-978 Recommendations for safety conditions for woodworking machines

IS: 9474-1980 Principles of mechanical guarding of machinery

IS: 11461-1985 Code of practice for compressors safety

IS: 13367-1992 Code of practice for safe use of cranes

BASIC STRUCTURE OF SAFETY PLAN

- 01- Safety Policy
- 02- When was the Safety Policy last reviewed
- 03- Details of implementation procedure / methods to implement Safety Policy / Safety Rules
- 04- Qualification & Experience of Safety Officers
- 05- Review of Accidents analysis - Methods to ensure safety & health and steps identified for prevention of accidents
- 06- Unit/site Executive responsible for ensuring safety at various levels in the workplace
- 07- List of Employees trained in safety at the commencement of execution of the job; details of training – its module and contents
- 08- Safety Training Targets, Schedules, Methods to be adopted for providing safety training to all employees
- 09- Details of checklists for different jobs/ work & responsible persons to ensure Compliance
- 10- Regular Safety Inspection Methods and Periodicity and the list of members authorized
- 11- Risk Assessment, Safety Audit by professional agencies, their Periodicity
- 12- Implementation of recommendations of Audit / Inspections. - Procedures for implementation & follow-up
- 13- Provision for treatment of Injured persons at work site
- 14- Review of overall safety by top Management and Periodicity
- 15- System for implementation of statutory provisions.
- 16- Issue of PPE to employees, Periodicity / stock on hand, etc.

Signature

Head of Organization

With Date & Stamp

Annexure - III

CONFINED SPACE WORK PERMIT

Date of Work :		Initiator:		Permit No.:	
Description of work :					
Name of person supervising:			Dept./Function:		
Names of workmen involved in the job :					
1		2			
3		4			
Exact Location of Work:					
JSA Referance No.					
Job Instruction & Confirmation Sheet Ref. No					
Valid From : Time Date: To Time: Date:					
Other relevant information (if any)					
Initiated by Engineer / Supervisor of Agency			Checked by Agency Safety Representative		
Name		Name			
Signature		Signature			
Date		Date			
Check list for Authorization of Work Permit					
Minimum and Mandatory Precautions					Y/ N / NA
1	Permit form filled in completely?				
2	Have wind, atmospheric, and work area conditions (e.g. cold, hot, snow, poor lighting & Ventilation etc.) been considered throughout the job so that work can be done safely?				
3	All necessary Personnel Protective Equipment like Breathing Set, Waist Rope, Light Mounted Helmet etc. is put on by all the workmen?				
4	A lifeline, a rope tied on the safety belt of the person entering the confined space is provided?				
5	All practicable measures are taken to ensure that the atmosphere inside is not deficient in oxygen and does not contain flammable vapors and no hazardous gases like H ₂ S. (Open at least 2 manholes & keep for 2 hours)?				
6	One fully trained person is stationed at ground level/outside to assist the inside workers and emergency contact No's available?				
7	All the workers trained for emergency?				

8	Safe means of access and egress provided?		
9	Is the suitable fire extinguisher available at work location?		
10	Are they Using only 24V lamps & working tools inside the confined space?		
Following additional precautions need to be taken before the start of the work			
Permit Issued By:			
	Approved by Principal Agency work in charge		Endorsed by Principal Agency HSE Dept
Name			
Signature			
Date			
Permit Close Out by: Name & Signature (Principal Agency)			
Date :		Time :	
Note: All extra information on preparation and precautions to be provided on the reverse side of this PTW.			

HOT WORK PERMIT

Date of Work :		Initiator:		Permit No.:	
Description of work :					
Name of person supervising:			Dept./Function:		
Names of workmen involved in the job :					
1		2			
3		4			
Exact Location of Work:					
JSA Reference No.					
Job Instruction & Confirmation Sheet Ref. No					
Valid From : Time Date: To Time: Date:					
Other relevant information (if any)					
Initiated by Engineer / Supervisor of Agency			Checked by Agency Safety Representative		
Name		Name			
Signature		Signature			
Date		Date			
Exact location of work					
Relevant information					
Check list for Authorization of Work Permit					
Minimum and Mandatory Precautions					Y/ N / NA
1	Permit form filled in completely?				
2	Form filled in correctly and in full.				
3	Has the work area been inspected for any abnormalities - specify on wind, atmosphere, surroundings, etc.				
4	Are the necessary PPE provided and do the workmen know their use?				
5	Is the fitter, experienced and knowledgeable enough to carry out the job?				
6	Area has to be cleared of any flammables and combustible material.				
7	Electrical equipment to be protected and grounded.				
8	Are fire-fighting equipment - extinguishers, water, sand buckets etc, located nearby for ready in case of any mishap?				
9	Gas cylinders in upright state/ trolleys/ flash-back arrestors/ hose condition/ NRVs, etc.				
10	Is the area easily accessible?				

Additional precautions to be taken:		
This permit is valid only for one week. A fresh hot work permit has to be taken for continued works for the next week.		
Permit Issued By:		
	Approved by Principal Agency work in charge	Endorsed by Principal Agency HSE Dept
Name		
Signature		
Date		
Permit Close Out by: Name & Signature (Principal Agency)		
Date :		Time :
Note: All extra information on preparation and precautions to be provided on the reverse side of this PTW.		

PERMIT FOR LIFTING OF MATERIAL

Date of Work :	Initiator:	Permit No.:
Description of work:		
Name of person supervising:		Dept./Function:
Names of workmen involved in the job :		
Exact Location of Work:		
JSA Reference No.		
Job Instruction & Confirmation Sheet Ref. No		
Valid From : Time Date: To Time: Date:		
Other relevant information: (If any)		
Initiated by Engineer / Supervisor of agency		Checked by Agency Safety Representative
Name		Name
Signature		Signature
Date		Date
Check list for Authorization of Work Permit		
1	Details of type of crane(s) to be used?	
2	Name of Lift Co-ordinator, Rigger/Crane Operator?	
3	Adequate and suitable lifting gears available and in good condition	
4	Have soil, wind, atmospheric, and work area conditions (e.g. cold, hot , snow, poor lighting & Ventilation etc.) been considered throughout the job so that work can be done safely?	
5	Lifting Equipments, Lifting gears and Slings are tested and certified?	
6	Are all operators trained, competent and healthy (Having Licenses / Experience Certificate)?	
7	Are all the examinations and tests carried out on the equipment (Crane) and certified by competent persons?	
8	Is the safe working load (SWL) marked on all lifting tools & tackles?	
9	Lifting area cordoned off?	
10	Tag lines provided to control the swing of load?	
11	Load tied properly and secured against toppling and falling?	
12	Signalman/Rigger is provided and competent?	
13	Proper communication available between operator and rigger?	
14	Is the vehicle for transportation adequate for the load?	

Following additional precautions need to be taken before the start of the work:			
Permit Issue b By:			
Approved by Principal agency work incharge		Endorsed by main agency HSE Dept	
Name		Name	
Signature		Signature	
Date		Date	
Permit Close Out by: Name & Signature (Main agency)			
Date :		Time :	
Note: All extra information on preparation and precautions to be provided on the reverse side of this PTW.			

WORKING AT HEIGHT PERMIT

Date of Work :	Initiator:	Permit No.:	
Description of work :			
Name of person supervising:		Dept./Function:	
Names of workmen involved in the job :			
1	2		
3	4		
Exact Location of Work:			
JSA Reference No.			
Job Instruction & Confirmation Sheet Ref. No			
Valid From : Time Date: To Time: Date:			
Other relevant information			
Initiated by Engineer / Supervisor		Checked by Agency Safety Representative	
Name		Name	
Signature		Signature	
Date		Date	
Check list for Authorization of Work Permit			
Minimum and Mandatory Precautions			Y/ N / NA
1	Permit form filled in completely?		
2	Work area below is temporarily cordoned/barricaded		
3	The scaffold erected has pipes and clamps in good condition.		
4	Diagonal / lateral bracings pipes are provided to ensure stability		
5	Access ladder is provided to reach the work location		
6	Planks / sheet used in temporary platform are in good condition		
7	Planks / sheets are tied properly using binding wire		
8	Temporary platform is having temporary side railing		
9	Workers are wearing Helmet, Shoes & Safety belt in good condition.		
10	For Anchoring of safety belt at height rigid support / life rope line is provided		
11	Experienced workers are engaged for work		
12	Portable elect equip/fibre body checked for its healthiness including earthing		
13	The sling / pulley blocks / ropes are tested for fitness		

14	Workers are briefed on Safety Precautions to be taken	
	Power hand tools used at eight are connected through 30mA ELCB.	
Following additional precautions need to be taken before the start of the work		
Permit Issued By:		
	Approved by Principal Agency work in charge	Endorsed by Principal Agency HSE Dept
Name		
Signature		
Date		
Permit Close Out by: Name & Signature (Principal Agency)		
Date :		Time :
Note: All extra information on preparation and precautions to be provided on the reverse side of this PTW.		

DEFINITIONS

1. **Building or other construction work:** means the construction, alteration, repairs, maintenance or demolition, of or, in relation to, buildings, streets, roads, railways, tramways, airfields, generation, transmission and distribution of power, water works, oil and gas installations, electric lines, tunnels, bridges, viaducts, pipelines, towers, cooling towers and such other work as may be specified.
2. **Building worker:** means a person who is employed by a contractor to do any skilled, semi-skilled or manual, supervisory, technical or clerical work for hire or reward, whether the terms of employment be expressed or implied, in connection with any building or other construction work;
3. **Establishment:** means an establishment who or which employs building workers in any building or other construction work, and includes an establishment belonging to a contractor;
4. **Contractor:** means a person who undertakes to produce a given result for any establishment, other than a mere supply of goods or articles of manufacture by the employment of building workers or who supplies building workers for any work of the establishment, and includes a sub-contractor or any other agency engaged on his behalf;
5. **Employer:** in relation to an establishment, means the owner thereof that is the contractor himself.
6. **Competent Person:** means a person so approved by the Central Government who belongs to a testing establishment in India possessing adequate qualification, experience and skill for the purpose of testing, examination or annealing and certification of lifting appliances, lifting gears, wire ropes or pressure plant or equipment;
7. **Responsible Person:** means a person appointed by the employer to be responsible for the performance of specific duty or duties and who has sufficient knowledge and experience and the requisite authority for the proper performance of such duties;
8. **Danger:** means danger of accident or of injury or danger to health;
9. **Hazard:** means danger or potential danger;
10. **Hazardous substance:** means any substance, which due to its explosiveness, inflammability, radioactivity, toxic or corrosive properties and similar hazardous characteristics may Cause injury; or Affect adversely the human system; or Cause loss of life or damage to property or environment;
11. **Hazardous Process:** comprises roof work, steel erection, and work under and over water, demolition and work in confined space;

- 12. National Standard:** means standards as approved by the Bureau of Indian Standards (BIS) and in the absence of such standards, the standards approved by the Central Government for a specific purpose;
- 13. Lifting Appliance:** means a crane, hoist, derrick, winch, jack, pulley block or other equipment used for lifting materials, objects or building workers;
- 14. Lifting gear:** means ropes, chains, hooks, slings and other accessories of a lifting appliance;
- 15. Safe Operating Practice:** Means the practice followed in building and construction activities for the safety of workers and for safe operation of machinery and equipment used in such activities. Such practices shall conform to all or any of the following:
Relevant Standards approved by BIS;
National Building Codes;
Manufacturer's instruction on safe use of equipment and machinery;
Code of practice on safety in construction industry published by International Labour Organization .
- 16. Safe working load:** in relation to an article of lifting gear or lifting appliance, means the load which is the maximum load that may be imposed on such article or appliance with safety in the normal conditions as assessed and certified by a competent person;
- 17. Workplace:** means all places where building workers are required to be present or to go for work and which are under the control of an employer;
- 18. Personal Protective Equipment (PPE):** are the protective devices made available for individual or collective use of the workers likely to be affected by the hazards of the workplace or process;
- 19. Construction & Erection Manual (E&C) Rules:** all references to E&C Manual shall mean the Construction & Erection Rules that are detailed hereunder;
- 20. Engineer in-charge:** All references to the Engineer in-charge shall mean the person in-charge of a building and construction of the NTPC.
- 21. Interpretation of words not defined:** words and expressions not defined or used in this Manual shall have the same meaning as generally assigned in common engineering practices

ANNEXURE-E

F. No. DPE/7(4)/2017-Fin.
Government of India
Ministry of Finance
Department of Public Enterprises

Block No. 14, CGO Complex,
Lodi Road, New Delhi-110003
Dated the 24th February, 2023

To,

Chief Executives of all CPSEs

Subject:- Restrictions under Rule 144(xi) of the General Financial Rules
(GFRs), 2017 - regarding

Sir/Madam,

The undersigned is directed to reiterate the instructions as contained in Department of Expenditure O.M. No. 7/10/2021-PPD(1) dated 23rd February, 2023 (copy enclosed) to all CPSEs for their information and strict compliance.

Encl : As stated


(Kailash Bhandari)
Deputy Director
Tel : 2436-6247

Copy to :- Shri Kanwalpreet, Director (PPD), Department of Expenditure, Room No. 264-C, North Block, New Delhi.

No.F.7/10/2021-PPD (1)
Government of India
Ministry of Finance
Department of Expenditure
Procurement Policy Division

264-C, North Block, New Delhi.
23.02.2023.

Order (Public Procurement No. 4)

Subject: Restrictions under Rule 144(xi) of the General Financial Rules (GFRs), 2017.

Attention is invited to Order (Public Procurement No. 1) issued vide F.6/18/2019-PPD dated 23.07.2020, Order (Public Procurement No. 2) issued vide F.6/18/2019-PPD dated 23.07.2020, Order (Public Procurement No. 3) issued vide F.6/18/2019-PPD dated 24.07.2020, Office Memorandum (OM) No. F.18/37/2020-PPD dated 08.02.2021, OM No. F.12/1/2021-PPD(Pt.) dated 02.03.2021 and OM No. F.7/10/2021-PPD dated 08.06.2021. In this regard, the following is hereby ordered under Rule 144(xi) (as amended vide OM No. F.7/10/2021-PPD dated 23.02.2023) on the grounds stated therein, in supersession to all of the above mentioned Orders/ clarifications:

Requirement of registration:

2. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority, specified in **Annexure I**.

3. Any bidder (including an Indian bidder) who has a Specified Transfer of Technology (ToT) arrangement with an entity from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority, specified in **Annexure I**.

4. The requirement of registration for cases covered by paragraph 2 above has been applicable since 23.07.2020. The requirement of registration for bidders covered by paragraph 3 above will be applicable for all procurements where tenders are issued/ published after 01.04.2023.

5. In tenders issued after 23.07.2020 or 01.04.2023, as the case may be, the provisions of requirement of registration of bidders and of other relevant provisions of this Order shall be incorporated in the tender conditions.

Applicability:

6. Apart from Ministries/ Departments, attached and subordinate bodies, notwithstanding anything contained in Rule 1 of the GFRs 2017, the Order shall also be applicable

- a) to all Autonomous Bodies;
- b) to all public sector banks and public sector financial institutions;
- c) to all Central Public Sector Enterprises;
- d) to all procurement in Public Private Partnership projects receiving financial support from the Government or public sector enterprises/ undertakings; and
- e) Union Territories, National Capital Territory of Delhi and all agencies/ undertakings thereof.

7. This order will not be applicable for cases falling under **Annexure II**.

Definitions:

8. "*Bidder*" for the purpose of the Order (including the term 'tenderer', 'consultant' 'vendor' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (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.

9. "*Tender*" for the purpose of the Order will include other forms of procurement, except where the context requires otherwise.

10. "*Transfer of Technology*" means dissemination and transfer of all forms of commercially usable knowledge such as transfer of know-how, skills, technical expertise, designs, processes and procedures, trade secrets, which enables the acquirer of such technology to perform activities using the transferred technology independently. (Matters of interpretation of this term shall be referred to the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade, and the interpretation of the Committee shall be final.)

11. "*Specified Transfer of Technology*" means a transfer of technology in the sectors and/ or technologies, specified in paragraph 15, occurring on or after 23.07.2020.

12. "*Bidder (or entity) from a country which shares a land border with India*" for the purpose of the 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 entity 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 joint venture where any member of the consortium or joint venture falls under any of the above

13. *Beneficial owner* for the purposes of Para 12 (d) will be as under:

(i) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person(s), 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 per cent of shares or capital or profits of the company;
- b. "Control" shall include the right to appoint the 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;

(ii) 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;

(iii) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), 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;

(iv) Where no natural person is identified under (i) or (ii) or (iii) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

(v) 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.

14. "*Agent*" for the purpose of the Order is a person employed to do any act for another, or to represent another in dealings with third persons.

[Note:

- i. A person who procures and supplies finished goods from an entity from a country which shares a land border with India will, regardless of the nature of his legal or commercial relationship with the producer of the goods, be deemed to be an Agent for the purpose of this Order.
- ii. However, a bidder who only procures raw material, components etc. from an entity from a country which shares a land border with India and then manufactures or converts them into other goods will not be treated as an Agent.]

Sensitive Sectors/ Technologies (relevant only for the provisions on ToT arrangements):

15. (i) Certain sectors and technologies have been identified as sensitive from the national security point of view. The sectors listed in Schedule I to this Order are considered Category-I sensitive sectors. The sectors listed in Schedule II to this Order are considered Category-II sensitive sectors. The technologies listed in Schedule III are considered sensitive technologies.

(ii) For Category-I sensitive sectors, bidders with ToT arrangement in any technology with an entity from a country which shares a land border with India shall require registration.

(iii) For Category-II sensitive sectors, bidders with ToT arrangement in the sensitive technologies listed in Schedule III, with an entity from a country which shares a land border with India shall require registration.

(iv) In Category-II sensitive sectors, the Secretary (or an officer not below the rank of Joint Secretary to Government of India, so authorized by the Secretary) of the Ministry/ Department of the Government of India is empowered, after due consideration, to waive the requirement of registration for a particular item/ application or a class of items/ applications from the requirement of registration, even if included in Schedule III. The Ministry/ Department concerned shall intimate the Department for Promotion of Industry and Internal Trade (DPIIT) and National Security Council Secretariat (NSCS) of their decision to waive the requirement of registration. Ministries/ Departments of the Government of India are not required to consult the DPIIT/ NSCS before deciding and are only required to intimate the decision to DPIIT/ NSCS. If any point is raised by DPIIT/ NSCS, it should be considered in future procurements; ongoing procurement for which the waiver was granted need not be interrupted or altered.

16. Based on security considerations, a Ministry/ Department in a Category II sensitive sector or other Ministries/ Departments may recommend to DPIIT inclusion of any other technology in the list of sensitive technologies, either generally or for their Ministry/ Department.

Sub-contracting in works contracts

17. In works contracts, including turnkey contracts, contractors shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority. The definition of "contractor from a country which shares a land border with India" shall be as in paragraph 12 above. This shall not apply to sub-contracts already awarded on or before 23.07.2020.

[Note: Procurement of raw material, components, etc. does not constitute sub-contracting.]

Certificate regarding compliance

18. An undertaking shall be taken from bidders in the tender documents (**Annexure III**) that the extant guidelines for participation in the tenders (which should include conditions for implementation of this Order) have been complied with. If such certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for debarment and further legal action in accordance with law.

Validity of registration

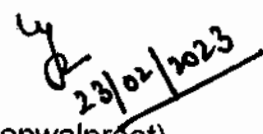
19. In respect of tenders, registration should be valid at the time of submission of bids and at the time of acceptance of bids. In respect of supply otherwise than by tender, registration should be valid at the time of placement of order. If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be a relevant consideration during contract execution.

Government e-Marketplace (GeM)

20. GeM shall remove non-compliant entities from GeM unless/ until they are registered in accordance with this Order.

Model Clauses/ Certificates

21. Model Clauses and Model Certificates which may be inserted in tenders/ obtained from Bidders are given at Annexure-III. While adhering to the substance of the Order, procuring entities are free to appropriately modify the wording of these clauses based on their past experience, local needs etc.


(Kanwalpreet)
Director(PPD)

Tel.No. 2309 3811; email: kanwal.irss@gov.in

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 to public enterprises.
3. Secretary, Department of Financial Services with a request to immediately reiterate these orders in respect to public sector and public sector financial institutions.
4. Secretary DPIIT with a request to take action as provided under Annexure I.
5. Chief Secretaries/ Administrators of Union Territories/ National Capital Territory of Delhi.
6. CEO/ GeM with a request to ensure implementation of this order on GeM.

List of Category-I Sensitive sectors:

Sr.No.	Sector
(i)	Atomic Energy
(ii)	Broadcasting/ Print and Digital Media
(iii)	Defence
(iv)	Space
(v)	Telecommunications

List of Category-II Sensitive sectors:

Sr.No.	Sector
(i)	Power and Energy (including exploration/ generation/ transmission/ distribution/ pipeline)
(ii)	Banking and Finance including Insurance
(iii)	Civil Aviation
(iv)	Construction of ports and dams & river valley projects
(v)	Electronics and Microelectronics
(vi)	Meteorology and Ocean Observation
(vii)	Mining and extraction (including deep sea projects)
(viii)	Railways
(ix)	Pharmaceuticals & Medical Devices
(x)	Agriculture
(xi)	Health
(xii)	Urban Transportation

List of Sensitive Technologies:

Sr.No.	Sensitive Technologies
(i)	Additive Manufacturing (e.g. 3D Printing)
(ii)	Any equipment having electronic programmable components or autonomous systems (e.g. SCADA systems)
(iii)	Any technology used for uploading and streaming of data including broadcasting, satellite communication etc.
(iv)	Chemical Technologies
(v)	Biotechnologies including Genetic Engineering and Biological Technologies
(vi)	Information and Communication Technologies
(vii)	Software

Competent Authority and Procedure for Registration

- A. The Competent Authority for the purpose of registration under this order shall be/ continue to be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT)*. [This Committee was already constituted under Order (Public Procurement) No.1].
- 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.
 - iv. With effect from 01.04.2023, an officer (ordinarily not below the rank of Joint Secretary) representing the National Security Council Secretariat.
- C. DPIIT shall lay down the method of application, format etc. for such bidders as covered by the Order.
- D. On receipt of an application seeking registration from a bidder covered by Para 2 and 3 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 granted by the Competent Authority of the Government of India shall be valid not only for procurement by the Central Government and its bodies specified in para 6 of this order, but also for procurement by State Governments and their agencies/ public enterprises etc. No fresh registration at the State level shall be required.
- H. 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.

- I. For national security reasons, the Competent Authority shall not be required to give reasons for rejection/cancellation of registration of a bidder.

[*Note:

(i) In respect of application of the 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. 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.]

Special Cases

- A. In projects which receive international funding with the approval of the Department of Economic Affairs (DEA), Ministry of Finance, the procurement guidelines applicable to the project shall normally be followed, notwithstanding anything contained in this order and without reference to the Competent Authority. Exceptions to this shall be decided in consultation with DEA.
- B. This order shall not apply to procurement by Indian missions and by offices of government agencies/ undertakings located outside India.
- C. This order will not apply to bidders (or entities) 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. Updated lists of countries to which lines of credit have been extended or in which development projects are undertaken are given on the website of the Ministry of External Affairs.
- D. Procurement of spare parts and other essential service support like Annual Maintenance Contract (AMC)/ Comprehensive Maintenance Contract (CMC), including consumables for closed systems, from Original Equipment Manufacturers (OEMs) or their authorized agents, shall be exempted from the requirement of registration.

Model Clause/ Certificate/ Undertaking to be inserted in tenders etc.

[While adhering to the substance of the Order, procuring entities and GeM are free to appropriately modify the wording of the clause/ certificate based on their past experience, local needs etc.

The conditions relating to specified ToT (as shown in italics) should be incorporated only in the tenders which attract the restrictions due to specified ToT.]

A. Model Clauses for Tenders (including tenders issued manually or any electronic portal including GeM):

I. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority. *Further, any bidder (including bidder from India) having specified Transfer of Technology (ToT) arrangement with an entity from a country which shares a land border with India, shall also require to be registered with the same 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 joint venture (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 (or entity) 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 entity 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 joint venture where any member of the consortium or joint venture 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 person(s), 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 per cent. 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 person(s), 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 (2) 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.

VI. [To be inserted in tenders for Works contracts, including Turnkey contracts] The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

VII. The registration shall be valid at the time of submission of bid and at the time of acceptance of bid.

VIII. If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be a relevant consideration during contract execution

Model Certificate for Tenders:

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Model Certificate for Tenders for Works involving possibility of sub-contracting:

"I 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 certify that this bidder is not from such a country or, if from such a country, has 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 this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Model additional certificate by Bidders in the cases of specified ToT:

"I have read the clause regarding restrictions on procurement from a bidder having Transfer of Technology (ToT) arrangement. I certify that this bidder does not have any ToT arrangement requiring registration with the competent authority."

OR

"I have read the clause regarding restrictions on procurement from a bidder having Transfer of Technology (ToT) arrangement. I certify that this bidder has valid registration to participate in this procurement."

B. Model Certificate for GeM (to be taken by the GeM from seller during registration on GeM. GeM should also obtain this certificate from all existing bidders as soon as possible):

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this vendor/ bidder is not from such a country and does not have any specified Transfer of Technology (ToT) from such a country or, if from such a country or if having specified ToT from such a country has been registered with the Competent Authority. I hereby certify that this vendor/ bidder fulfills all requirements in this regard and is eligible to be considered for procurement on GeM. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

F. No. 11/22/2021-Th.II
Government of India
(Bharat Sarkar)
Ministry of Power
(Vidyut Mantralay)

Shram Shakti Bhawan, Rafi Marg
New Delhi, the 22nd March, 2022

OFFICE MEMORANDUM

Subject: Constitution of Conciliation Committee of Independent Experts for resolution of contractual disputes in respect of the projects implemented by CPSUs / Statutory Bodies under administrative control of Ministry of Power – regarding.

With the approval of Hon'ble Minister of Power and New & Renewable Energy, Ministry of Power, vide OM of even number dated 29.12.2021 (**Annex-I**), introduced a conciliation mechanism for settlement of contractual disputes in contracts of CPSUs / Statutory Bodies under Ministry of Power executing power projects. For this purpose, it was decided to constitute three numbers of Conciliation Committees of Independent Experts (CCIEs).

2. Accordingly, a Notification of even number was issued on 07.01.2022 inviting Expression of Interest from the eligible candidates for empanelment as Independent Expert for constitution of the CCIEs. Consequently, with the approval of Hon'ble Minister of Power, a Search-cum-Selection Committee was also constituted for scrutiny of the EoIs as well as screening of the candidates.

3. Based on the recommendations of the Search-cum-Selection Committee, following three nos. of Conciliation Committee of Independent Experts are hereby constituted for settlement of contractual disputes in contracts of CPSUs / Statutory Bodies under Ministry of Power executing power projects:-

CCIE	Members of CCIE
CCIE-1	Shri Anup Wadhawan, Ex-Secretary (Commerce), GoI
	*Shri Ravinder Kumar Sharma, Ex-MD, HBSEBL
	Shri Mrinal Kanti Bhattacharya, Ex-Executive Director, Indian Bank
CCIE-2	Ms. Rashmi Verma, Ex-Secretary (Tourism), GoI
	*Shri Dharendra Veer Singh, Ex-CMD, THDC (India) Ltd.
	Shri Naveen Bhushan Gupta, Ex-Director (Finance), PFC Ltd.
CCIE-3	Shri P. S. Kharola, Ex-Secretary (Civil Aviation), GoI
	*Shri Anil Kumar Jha, Ex-Director (Technical), NTPC Ltd.
	Shri Chinmaya Gangopadhyaya, Ex-Director (Projects), PFC Ltd.

4. The aforementioned CCIEs shall function as per the Standard Operating Procedure enumerated in this Ministry's Office Memorandum of even number dated 29.12.2021. Moreover, the tenure, remuneration and other terms and conditions of the engagement of above Members of CCIEs shall also be governed by the aforesaid OM.

This issues with the approval of Hon'ble Minister of Power and New & Renewable Energy.

Encl: as above.



(Vikrant S. Dhillon)

Deputy Director

Email: hydro2-mop@gov.in

***Second member in the CCIE(s) shall stand substituted by coal-mining expert Member (presently, Shri Tapas Kumar Nag, Ex-CMD, NCL), as notified by Ministry of Power from time to time, in case of disputes relating to captive coal mines**

-(2)-
F. No. 11/22/2021-Th.II

To

1. Chairperson, CEA
2. CMDs – PGCIL, REC, PFC, NTPC, NHPC, SJVN, THDC, NEEPCO, POSOCO
3. Chairman - BBMB, DVC
4. Director General – BEE, NPTI, CPRI

Copy to:

1. PS to Hon'ble Minister of Power & NRE
2. APS to Hon'ble MoS for Power
3. Sr. PPS to Secretary (Power)
4. Sr. PPS to AS(SKG) / Sr. PPS to AS&FA / Sr. PPS to AS(VKD)
5. All Joint Secretaries of Ministry of Power
6. All Directors / Deputy Secretaries of Ministry of Power.
7. Members of the CCIEs

Copy also to:

In-charge, NIC Cell, MoP with request to publish the OM on the website of Ministry of Power.

(Vikrant S. Dhillon)
Deputy Director

BG forwarding letter from Bank to Unified Treasury in Bank's letterhead.

To :
Unified Treasury (BG Group)
Administrative Building, NCPS, Dadri
NTPC Limited,
PO. Vidyut Nagar
Distt: Gautam Budh Nagar,
Uttar Pradesh- 201008.

Sub: Submission of Bank Guarantee No.

Bank Guarantee No.	
Date of Issue	dd.mm.yyyy
Guarantee Amount	Currency Amount
Date of Expiry of BG	dd.mm.yyyy
Last date of lodgement of claim	dd.mm.yyyy
Name, Address and IFSC code of BG issuing Bank	Name: Address: IFSC code:
Contract/Letter of Award/PO No.	
Name & Address of the Applicant / Contractor	Name: Address:

We confirm that SFMS has been sent to your beneficiary bank as below:

ICICI Bank Limited, Connaught Place Branch,
9A, Phelps Building, Inner Circle, New Delhi - 110001
IFSC Code: ICIC0000007

We also confirm the genuineness of the signatures appearing on the said guarantee/extension and further also confirm that the same has been signed by the competent authority of the bank.

Date : Signature.....

Place : Printed Name.....

(Designation)

(Common Seal)

TO WHOMSOEVER IT MAY CONCERN

This is to certify that we have issued/ extended/ amended Bank Guarantee (BG) Number..... amounting to (in number and words in Contract Currency) in favour of NTPC Limited on behalf of M/S (Contractor name) vide their request reference..... dated..... (DD/MM/YYYY) for the period (from)..... (to).....

We confirm that the bank commission (excluding Stamp paper, Out of Pocket Expenses (OPE) and GST on OPE) amounting to (amount and currency) for issuance/ extension/ amendment of the aforesaid BG have been recovered from M/s (Contractor name).

We further confirm that the commission charged on issuance/ extension/ amendment of the aforesaid BG is as per the prescribed rates of the Bank. Further the commission charged by the Bank as per card rates / sanctioned rates is customer/ borrower specific and is uniform for all BGs issued at the request of said customer/ borrower irrespective of beneficiary.

Chief Manager/Branch Manager

SS No: -

.....(Name of Bank)

.....(Place)

(With Seal of Bank Official)

**DECLARATION OF ABSENCE OF CONFLICT OF INTEREST WITH
CONCILIATION COMMITTEES OF INDEPENDENT EXPERTS (CCIE)**

Dear Sirs,

- 1.0 We, M/s (Name of the PMC/PEA Contractor) have been awarded the contract for (Name of the package) vide Notification (s) of Award No..... dated.....
- 2.0 As per the provisions of the contract, we hereby propose the following CCIEs, in priority order, as per the list enclosed in the Special Conditions of Contract, as amended from time to time by Ministry of Power, for finalization of CCIE by CEA:
- 1.....
- 2.....
- 3.....
- 3.0 We confirm that we do not have any conflict of interest with the aforesaid experts and they have not been engaged for providing any services to us in the last five years.
- 4.0 We confirm that in case of any form of conflict of interest (possible or actual) which may inadvertently emerge during the conciliation proceedings by CCIE, the same will be duly reported to you.
- 5.0 We understand that NTPC may withdraw from the conciliation proceedings, if any conflict of interest with us is found out which have been intentionally concealed, and the matter may be referred to Ministry of Power. Further, action may be taken against us in respect of Fraud Prevention Policy of NTPC.

Date : (Signature).....

Place : (Printed Name).....

(Designation).....

(Common Seal).....

**UNDERTAKING REGARDING ABSENCE OF CONFLICT OF INTEREST WITH
EMPLOYER/CONTRACTOR**

To :
[Employer's Name and Address]*

Dear Sirs,

- 1.0 I,*(Name of the selected CCIE member), understand that conflict of interest refers to situations in which financial or other personal considerations may compromise my recommendations in relating to resolution of disputes between NTPC Limited and M/s*(Name of the Contractor).
- 2.0 I confirm that I do not have any conflict of interest with NTPC Limited and M/s*(Name of the Contractor/PMC/PEA) and I have not been engaged for providing any services to them in the last five years.
- 3.0 I confirm that in case of any form of conflict of interest (possible or actual) which may inadvertently emerge during my tenure as CCIE member, the same will be duly reported to NTPC/CEA/Ministry of Power.
- 4.0 I understand that NTPC may withdraw from the conciliation proceedings, if any conflict of interest with me is found out which have been intentionally concealed, and the matter may be referred to Ministry of Power.

Date :	(Signature).....
Place :	(Printed Name).....
	(Designation).....
	(Common Seal).....

REF NO: CS-

CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT is made on the _____ day of

BETWEEN

- (1) NTPC Limited, a Corporation incorporated under the laws of India and having its principal place of business at NTPC Bhawan, SCOPE Complex, 7 Institutional Area, Lodi Road, New Delhi-101003 (hereinafter called "the Owner")
- and
- (2), a Corporation incorporated under the laws of India and having its principal place of business at, (hereinafter called "the Project Management Consultant, PMC / Project Executing Agency, PEA")

WHEREAS the Owner desires to engage the PMC / PEA for the work of "(hereinafter referred as "Contract") as per provisions of Bidding Document no..... and its amendments/Clarifications/Errata there of as referred to in para 1.0 of Letter of Award (LOA) and the PMC/ PEA have agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

**Article 1,
Contract
Documents**

1.1 Contract Documents (Reference GCC Clause 2)

The following documents shall constitute the Contract between the Owner and the PMC/ PEA, and each shall be read and construed as an integral part of the Contract.

- (a) This Contract Agreement
- (b) Letter of Award bearing reference no:
*-Enclosed at **VOLUME – I***
- (c) Amendments/ Clarifications/Errata, if any, to the bidding documents issued by NTPC
*-Enclosed at **VOLUME- I***
- (d) Terms and Conditions of Contract and other bidding documents
*-Enclosed at **VOLUME- I***
- (e) Technical Specifications and drawings to be read in conjunction with Amendments/ Clarifications/ Errata
*-Enclosed at **VOLUME- I***
- (f) Techno-commercial Bid Proposal submitted by Ref No..... and opened on Price Bid proposal submitted by and opened on
*-Enclosed at **VOLUME – I***

1.2 Order of Precedence

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

1.3 Definitions (Reference Terms & Conditions Clause 1.1 to 1.24)

Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the Terms and Conditions of Contract.

**Article 2
Contract Price
and Terms of
Payment**

2.1 Contract Price (Reference Clause of LOA)

The Owner hereby agrees to pay to PMC/ PEA the following in consideration of the performance by PMC/ PEA of its obligations under the Contract:

Sl. No.	Particulars	Amount (INR)
1.	Consultancy Fee for DPR & DETAILED ENGG. (Excl. GST)	
2.	Project management fee (Excl. GST)	

2.2

Terms of Payment

The terms and procedures of payment according to which the Owner will reimburse PMC/ PEA are specified in Clause 8.0 and 9.0 of Terms and conditions of the contract.

**Article 3.
Effective Date for
Determining Time
for Completion**

3.1 Effective Date (Reference LOA Clause)

The Time of Completion of the Facilities shall be determined from the date of Letter of Award i.e.

Article 4

It is expressly understood and agreed by and between the PMC/PEA and the Owner that the Owner is entering into this Agreement solely on its own behalf and not on behalf of any other person or entity. In particular it is expressly understood and agreed that the Government of India is not a party to this Agreement and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that the Owner is an Independent legal entity with power and authority to enter into contracts solely on its own behalf under the applicable laws of India and the general principles of Contract Law. PMC/PEA expressly agrees, acknowledges and understands that the Owner is not an Agent, Representative or Delegate of the Govt. of India. It is further understood and agreed that the Govt. of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of the Contract. Accordingly, the PMC/PEA expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Government of India arising out of this Contract and covenants not to sue the Government of India as to any manner, claim,

cause of action or thing whatsoever arising of or under this Agreement.

IN WITNESS WHEREOF the Owner and PMC/PEA have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by for and on behalf of the **Owner**

(Signature)

(Title)

In the presence of -----

Signed by for and on behalf of the **PMC/ PEA**

(Signature)

(Title)

In the presence of -----

FORM OF EXTENSION OF BANK GUARANTEE/ INSURANCE SURETY BOND

Ref. No.:

Date:

@ _____

Dear Sirs,

Subject : Extension of Bank Guarantee/Insurance Surety Bond No. _____ dated _____ for
[indicate
 value of Bank Guarantee/Insurance Surety Bond].....favouring yourselves
 expiring on _____
 on account of M/s..... (Name of Bidder).....in respect of Contract for
 (Insert Package name)_____ (Insert Project Name)_____ project,
 Contract No. _____ dated _____
 (hereinafter called original Bank Guarantee/Insurance Surety Bond)

At the request of M/s _____ we _____ Bank/Insurer
 branch
 office at _____ and having its Head office at _____ do
 hereby extend our liability under the above mentioned guarantee No. _____
 _____ dated for a further period of _____ year/months from
 _____ to expire on _____.

Except as provided above, all other terms and conditions of original Bank
 Guarantee/Insurance Surety Bond No. _____ dated _____ shall remain unaltered and
 binding.

Please treat this as an integral part of the original guarantee to which it would be deemed
 to have been attached.

.....
 (Signature)

.....
 (Name)

.....
 (Designation with Bank/Insurer Stamp)

.....
 (Official e-mail Id)

Authorised vide
 Power of Attorney No.....
 Date.....

Dated _____

SEAL OF BANK/INSURANCE COMPANY

Note:

1. @ The extension of the Bank Guarantee/Insurance Surety Bond should be forwarded to the Unit/ Project/Corporate Centre, from where the extension has