



# भारतीय प्रबंध संस्थान इंदौर

## INDIAN INSTITUTE OF MANAGEMENT INDORE

प्रबंध शिखर, राउ-पीथमपुर रोड, इंदौर- ४५३५५६ (म.प्र.), भारत

दूरभाष: ०७३१-२४३९ ६२०/४४७/६१९

Prabandh Shikhar, Rau-Pithampur Road, Indore - 453556 (M.P.), India

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### RE-TENDER

Tender Notice No.: IIMI/Project/09/2017/43

File No.353

### Technical cum Commercial Bid

Name of Work:

**Design, Manufacture, Supply, Installation, Testing & Commissioning of 3.15 MVA, 33/11kV Power Transformer at Utility-I of IIM Indore**

*Certified that the NIT Document contains 133 pages*

# INDIAN INSTITUTE OF MANAGEMENT INDORE

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सिद्धिमूलं प्रबन्धनम्  
भा. प्र. सं. इन्दौर  
IIM INDORE

## भारतीय प्रबंध संस्थान इन्दौर

प्रबंध शिखर, राऊ-पीथमपुर रोड, इन्दौर – 453 556 (म.प्र.), भारत

**INDIAN INSTITUTE OF MANAGEMENT INDORE**

Prabandh Shikhar, Rau-Pithampur Road, Indore - 453 556 (M.P.), India

Dated: June 23, 2017

### NOTICE INVITING TENDER

**Ref: Tender Notice No. IIMI/Project/09/2017/43 File No. 353  
(Re-Tender)**

IIM Indore invites item rate tender under two bid system (Part-I Earnest Money and Technical bid & Part-II Financial bid) from the original equipment manufacturer / contractors who fulfill the criteria of the eligibility for the under mentioned work. Schedule of item & quantity is attached as annexure -1 to this notice.

The tender is also e-published on Central Public Procurement Portal under url: <https://eprocure.gov.in/epublish/app> and IIM Indore website under the URL <http://www.iimdr.ac.in/tenders/>

#### **Part “A” : NIT Details**

1	NIT No.: IIMI/Project/09/2017/43 File No. 353 (Re-Tender)	
2	Name of Work	“Design, Manufacture, Supply, Installation, Testing & Commissioning of 3.15 MVA, 33/11kV power transformer at Utility-I of IIM, Indore”
3	Estimated Cost Put to Tender	Rs.30,00,000/-
4	Earnest Money Deposit (Rs.)	Rs.60,000/- by e-payment through electronic mode or DD or bankers cheque.
5	Tender Processing Fee (Rs.)	Rs. 1,000/-by e-payment through electronic mode or DD or bankers cheque. (Non-Refundable)
6	Completion period	FOUR (04) Calendar Months including monsoon period
7	Pre-Bid Meeting	At 3.00PM on June 30, 2017 at Project Department, Admin Building, IIM Indore
8	Last date & time of receipt of tender	Upto 03:00 PM on July 6, 2017
9	Date & Time of opening of	3:30PM on July 6, 2017 in the Office of

	technical bid	the Chief Engineer, Administrative Block, IIM Indore M.P. -453556
10	Date and Time of opening of financial bid of qualified bidders	Will be notified at a later date
11	Security Deposit	2.5% of tendered value from bills
12	Performance Guarantee	5% of tendered value on acceptance of bid and will be returned 1 month after completion

## **Part “B”: Tender Requirements**

### **1. Criteria of eligibility for submission of bid documents:**

In order to fulfill eligibility for acceptance, the following criteria will be followed. The original equipment manufacturer / contractors are required to submit relevant verifiable and self-attested documents.

#### **a. Performance / Work Experience**

The bidder must have experience of successfully completed works during the last 5 years ending last day of the month previous to the one in which applications are invited. *The works completed upto previous day of last date of submission of tenders shall also be considered.*

*Three similar completed works costing not less than the amount equal to 40% of estimated cost put to tender,*

**OR**

*Two similar completed works, costing not less than the amount equal to 60% of the estimated cost put to tender*

**OR**

*One similar completed work of aggregate cost not less than the amount equal to 80% of the estimated cost.*

**Important Note: Similar work shall mean:** Any manufacturer / contractor having experience in “Design & Supply and / or supply, installation, testing & commissioning of same or higher rating & voltage class of power transformers”.

Certificates of work experience (Completion Certificates) and other documents as specified in the tender document shall be submitted.

- b. **Annual Financial Turnover:** Should have had average annual financial turnover at least 100% of the estimated cost put to tender during last three years ending March 31, 2016. (Copy of last three years balance sheets or certificate from chartered accountant to be submitted along with the bid)
- c. **The bidder should have Valid 'A' Class electrical contract license or should associate with an electrical contractor having the above license**
- d. **Type Test Certificates:** (copy of certificates to be submitted)

The bidder must have successfully carried out type test of 3.15 MVA, 33/11 KV or above rating transformer from any NABL accredited laboratory. The said type test report should not be prior to 5 year from the date of opening of the technical bid. Type test is mandatory. The loss parameters of the offered transformer shall be identical to that of the one which has been type tested. Details of the type test certificates are as under:

- i. Dynamic ability to withstand short circuit test
- ii. Lightning impluse voltage withstand test.
- iii. Temperature rise test

- e. **Certificates:** (copy of certificates to be submitted)

- i. Latest IT returns for FY 15-16
- ii. PAN (Permanent Account Number)
- iii. Service Tax Registration Certificate
- iv. VAT / Sales Tax Registration Certificate
- v. Certificate of registration of firm/company
- vi. Aadhar card copy of the authorized officer of the company who will be signing agreement etc.

## 2. Mode of payment of Tender processing fee and EMD:

- i) Bidders may deposit the Tender Processing Fee and EMD through NEFT or RTGS. Details for the same are as below:

Name of beneficiary	: Indian Institute of Management Indore
Address	: Rau-Pithampur Road, Indore -453556, M.P.
Account No.	: 53018623445
Name of the Bank	: State Bank of India
Address of the bank	: IIM Indore Campus
IFSC Code	: SBIN0030525

- ii) EMD can also be furnished in DD / Bankers cheque etc. drawn in favor of 'Indian Institute of Management Indore' payable at 'Indore'.

Bidders will have to attach Payment details towards cost of tender processing fee & EMD during the submission of tender and the same will be accepted only on verification & confirmation by the Institute. Any delay in credit will not be entertained by the Institute.

3. The Tenderer is required to prepare in two sealed cover comprising of the following:

**Cover-I: Technical Bid**

- i) EMD & Tender Fee details
- ii) Documents as mentioned above in the “Criteria of eligibility for submission of bid documents”

**Cover-II: Financial Bid**

- i) Financial Bid (in the format given at Annexure-1)

Both covers should be kept in one main sealed cover super scribed as “IIM/Project/09/2017/43 File No. 353: Design, Manufacture, Supply, installation, testing & commissioning of 3.15 MVA, 33/11kV power transformer at Utility-I of IIM, Indore”

4. The tenderer has to drop the cover sealed in above manner in the Tender Box kept at the ‘Project Department, IIM Indore, Administrative Block, Rau- Pithampur Road, Indore -453556 M.P.’ on or before the due date & time positively. The tender shall not be accepted beyond the stipulated date and time under any circumstances whatsoever. Any delay happened in the transition is at the risk of the tenderer and IIM Indore will not be responsible.
5. EMD of unsuccessful bidders shall be returned after award of the contract / order to the successful bidder. No interest will be paid on the EMD.

**Part “C”: Other Terms & Conditions**

1. The bid submitted shall become invalid and tender processing fee shall not be refunded if:
  - (i) If the bidder is found ineligible.
  - (ii) If the documents submitted by the successful bidder does not match with the originals before the award of work.
2. The competent authority on behalf of the Director IIM Indore does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition

including that of conditional rebate is put forth by the bidders shall be summarily rejected.

3. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.
4. The competent authority on behalf of the Director, IIM Indore reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted or split the work between two parties or among more parties as deemed fit.
5. *The bid for the works shall remain open for acceptance for a period of ninety (90) days.* If any bidders withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the IIM Indore shall, without prejudice to any other right or remedy, be at liberty to forfeit full amount of the said earnest money as aforesaid. Further the bidders shall not be allowed to participate in the rebidding process of the work.
6. IF ANY INFORMATION FURNISHED by the applicant is found to be incorrect at a later stage, they shall be liable to be debarred from tendering/ taking up works in IIM INDORE.
7. TAXES :
  - i) This works comes under Works contract. Works contract Tax/MPVAT or other as applicable shall be deducted from each bill paid to the contractor.
  - ii) The contractor should get registered under GST (Goods & Service Tax) or any other tax as applicable as per the extent order on the subject work shall be paid by the contractor to concerned department and the same should be considered in his quoted rates.
  - iii) Labour Welfare cess @ 1 % of gross value of work done shall be recovered from each bill paid to the contractor.
  - iv) Income Tax and cess as applicable shall be deducted from each bill paid to the contractor.
  - v) Contractor should be registered under EPF & ESIC and as per law, shall pay EPF & ESIC of contract workers to concerned Department from time to time.
  - vi) Any other taxes/cess as per government directives shall be deducted from each bill paid to the contractor from time to time or as per rule in case of manufacturer.
8. The specifications, Terms & Conditions, other regulations which are not herein mentioned will be guided by relevant CPWD General Specifications for Electrical Works Part IV Sub Station - 2013 /CPWD / IS /Other Central

Govt./state Govt. norms, OEM standards applicable for IIM Indore & the decision in this regard will be guided by the decision of the respective authority of IIM Indore which shall be final and binding to the contractor.

9. The party whose tender has been accepted has to execute an agreement on non-judicial stamp paper immediately after work order is issued.
10. Performance guarantee in the form BG or FDR or DD @ 5% of tendered amount has to be furnished within 10 days of issue of LOA.
11. If called for, originals of the document submitted shall be produced.
12. General condition of contract (GCC) of CPWD will be applicable to the extent relevant to the job.
13. Any dispute is subject to the jurisdiction of Civil Court Indore.
14. This work covers Design, Manufacture, supply, installation, testing & commissioning of 3.15MVA, 33/11 KV Power Transformer including necessary statutory approvals from the Electrical Safety Department & any other department as required for replacement of the old transformer & installation, testing & commissioning of the new power transformer and other associated works as per the schedule of quantity provided in the financial bid. (Note : IIM, Indore will make available the required approved drawing of previous installation of 3.15MVA, 33/11KV Power Transformer for getting the approval of new installation from the Electrical Safety Department)
15. Location: At Utility-I at IIM Indore campus.
16. The work shall be executed as per CPWD General Specifications for Electrical Works Part IV Sub Station - 2013 with upto date amendments as per relevant IS and as per directions of Engineer-in-Charge. These additional specifications are to be read in conjunction with above. However, nothing extra shall be paid on account of these additional specifications & conditions as the same are to be read along with schedule of quantities for the work.
17. The Tenderer should in his own interest visit the site and familiarize himself with the site conditions before tendering.
18. No T&P shall be issued by the IIM Indore and nothing extra shall be paid on account of this.
19. Employer reserves the right to alter the mode of selection, accept or reject any or all bids without assigning any reason thereof.
20. Necessary clarification required by the IIM Indore shall have to be furnished by the Tenderer within the time given by the IIM Indore for the same. The Tenderer will have to depute his representative to discuss with the officer(s) of



the IIM Indore as and when so desired. In case, in the opinion of the IIM Indore a Tenderer is taking undue long time in furnishing the desired clarifications, his bid will be rejected without making any reference.

21. The Tenderer will have to fill up their rates only in the price bid in BoQ format. Tenders in which the price bids are given in any other format are liable to be rejected.
22. A tenderer will also not be allowed to withdraw or modify any condition at a time after the technical bids have been accepted and the decision to open the price bid has been taken by the IIM Indore.
23. The IIM Indore reserves the right to reject any or all the price bids and call for fresh prices/ tenders as the case may be without assigning any reason.
24. **Terms of Payment:**

Payments shall be released as per General Conditions of contract and the following conditions. All interim payments shall have deductions towards advances and other contract conditions. No advance payment will be made.

- **60 %** of material cost of the item indicated against item of work shall be made after delivery at site in good condition on pro-rata basis subject to deductions to be made against advances and security deposit and also on production of documents indicating price of the material / machine / equipment.
- **Balance on completion** of entire work, testing & commissioning and handing over to the IIM Indore for beneficiary use.

25. **Security deposit:**

The security deposit will be collected by deductions from the running bill of the contractor at the rate mentioned below. The security deposit can also be deposited in cash or in the form of Government Securities, Fixed Deposit Receipts etc.

A sum @ 2.5% of the gross amount of the bill will be deducted from each running bill *as well as final bill* of the contractor. Such deductions will be made unless the contractor has deposited the amount of security at the rate mentioned in cash or Government securities or Fixed Deposit Receipts.

This is in addition to the performance guarantee that the contractor is required to deposit as per clause mentioned in the tender document.

Security deposit can be released against bank guarantee issued by a

nationalized bank on its accumulation to a minimum amount of Rs. 5 lakhs subject to the condition that amount of any bank guarantee except last one, shall not be less than Rs. 5 lakhs.

The Bank Guarantee submitted against Security Deposit shall initially be valid up to the stipulated date of completion of the work plus Defect Liability Period.

Refund of security deposit: The Security Deposit will be released after completion of defect liability period of one year.

#### **27. Performance Guarantee:**

The tender shall guarantee among other things, the following:

- (a) Quality, strength and performance of the materials used.
- (b) Safe mechanical and stress on all parts under all specified conditions of operation.
- (c) Satisfactory operation & stability during the DLP period.

The contractor whose bid is accepted will be required to furnish performance guarantee of 5% (Five Percent) of the bid amount within Ten days of issue of LOI. This guarantee may be in the form of Banker's cheque of any nationalized bank/Demand Draft of any nationalized bank/ Fixed Deposit Receipts or Guarantee Bonds of any nationalized Bank or the State Bank of India in accordance with the prescribed form in CPWD manual. In case the contractor fails to deposit the said performance guarantee within the period as indicated above, including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited along with bid shall be returned after receiving the aforesaid performance guarantee.

**Refund of performance guarantee:** The performance guarantee shall be refunded to the contractor one month after the completion of the work and recording of the completion certificate as above.

#### **28. Rates:**

- a. Subject to the nomenclature of the item as per schedule of quantity, the specification indicated in the tender documents, the rates quoted shall include charges for Designing, manufacturing, supplying, forwarding, insurance, freight and delivery, installation, testing, commissioning at site including necessary statutory approvals from the Electrical Safety department & any other department as required for replacement of the old transformer & installation, testing & commissioning of the new power transformer and other associated works, cost of all materials including royalty & taxes if any, labor, sundry inputs, execution of work including

overhead charges and contractor's profit. Nothing extra shall be paid on this account.

- b. The Defect Liability Period (DLP) will be of 12 months from the date of handing over. Nothing extra for this period shall be paid.

**29. Completeness of tender:**

All sundry equipment, fittings, units assemblies, accessories, hardware items, foundation bolts, etc. and all other items which are useful and necessary for installation, testing & commissioning of the power transformer shall be deemed to have been included in the tender irrespectively of the whether such items are specifically mentioned in the tender document or not.

30. The Institute may on request of the contractor make available the room / proper storage space for storage of material and erection equipments as per the availability. Watch and ward of the stores and their safe custody shall be the responsibility of the contractor till the final taking over of the installation by the IIM Indore.

**31. Completion Period:**

The completion period of 04 (FOUR) months indicated in the tender document is for the entire work of Design, Manufacture, Supply, installation, testing & commissioning of 3.15 MVA, 33/11kV power transformer at Utility-I in IIM campus, Indore including necessary statutory approvals from the Electrical Safety Department & any other department as required for replacement of the old transformer & installation, testing & commissioning of the new power transformer and other associated works and handing over of the entire system to the satisfaction of the Engineer-in-Charge.

**32. Guarantee:**

The Supply of the power transformer shall be guaranteed for a period of 12 months from the date of taking over by the institute against unsatisfactory performance and/or stability due to defective design, workmanship of material. The material or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in-Charge. In case it is felt by the institute that undue delay is being caused by the contractor in doing this, the same will be got done by the IIM Indore at the risk and cost of the contractor. The decision of the Engineer-in Charge in this regard shall be final.

**33. Power Supply:**

Electric service connection of 415V ( $\pm 10\%$ ), 3 Phase, 4 wires, 50 Hz, AC supply shall be provided by the institute for installation, testing & commissioning purpose.

**34. Water Supply:**

Water supply required for ITC work etc shall be provided by the institute.

**35. Extent of work:**

- a. The work shall comprise of design, engineering, manufacture, assembly, stage inspection, final inspection and testing before dispatch, packing and delivery at destination Sub-station by road transport, transit insurance, unloading at site , installation on the existing foundation, testing & commissioning of power transformer including necessary statutory approvals from the Electrical Safety Department & any other department as required for replacement of the old transformer & installation, testing & commissioning of the new power transformer and all materials necessary to make a complete installation as required. The work also includes the power terminations on the transformer HT & LT side, control wirings with the marshalling chamber, earthing strip connections with the transformer and other associated work required for the installation, testing & commissioning of the power transformer. The term complete installation shall not only mean major items covered by specifications but all incidental sundry components necessary for complete execution and satisfactory installation whether or not those have been mentioned in details in the technical specifications under the tender document in connection with this contract.
- b. Defect Liability Period of one year from date of completion and handing over.

**36. COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS:**

All works shall be carried out in accordance with relevant regulation, both statutory and those specified by the Indian Standards related to the works covered by these specifications.

**37. INDEMNITY:**

The successful tenderer/bidder shall at all times indemnify the IIM Indore, consequent on this works contract. The successful tenderer/bidder shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the IIM Indore shall not be responsible for any accident or damage incurred or claims arising there from during the period of installation, testing & commissioning of power transformer and putting into

operation under the supervision of the successful tenderer/bidder in so far as the latter is responsible. The successful tenderer/bidder shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer/bidder due to the above.

**38. Mobilization advance:**

No mobilization advance shall be paid for this work.

**39. Milestones:** The milestones for the subject work will be as below:

Sl. No.	Description of Milestone (Physical)	Time Allowed in days ( <u>from date of reckoning start</u> )	Amount to be with-held in case of non-achievement of milestone
1	Submission of necessary drawings etc as mentioned in the tender document for the approval of the client before putting the transformer under manufacturing.	10 Days	Rs. 50,000/-
2	Supply of power transformer at site of work at IIM Indore	3.5 Months	Rs. 2,00,000/-
3	Installation, Testing & Commissioning, getting necessary statutory approvals for beneficiary use and handing over of the power transformer to IIM Indore as per specification and satisfaction to the Engineer-in-Charge	04 Months	Rs. 1,00,000/-

**Total Time allowed for Completion of the Work: 04 (FOUR) Months including monsoon.**

**Dated: June 23, 2017  
Place: Indore (M.P.)**

Sd/-  
**(V.P. Thomas)  
Chief Engineer**

## AGREEMENT

THIS AGREEMENT made at Indore on the \_\_\_\_\_ day of \_\_\_\_\_ 2017 between Indian Institute of Management Indore Rau- Pithampur Road, Indore (hereinafter called "The IIM INDORE" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) of the one part AND \_\_\_\_\_ (herein after called "The Contractor" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) of the other part.

### WHEREAS

The IIM INDORE is desirous of carrying out the "NIT No. IIMI/Project/09/2017/43, File No. 353 for the work of "Design, Manufacture, Supply, Installation, Testing & Commissioning of 3.15 MVA, 33/11kV power transformer at Utility-I of IIM, Indore".

The Works are to be executed as per the schedules mentioned in tender document drawings and specifications describing the works to be done.

The Contractor has agreed to execute the said works subject to the provisions hereinafter contained and subject also to General Conditions of Contract, Special conditions of contract, Safety Code, Model Rules for the protection of health and Sanitary arrangements for workers, Specifications, Preambles and Schedule of Quantities and installation schedule (all of which are hereinafter collectively referred to as the 'said tender conditions') and strictly in accordance with the Scope of work annexed hereto at or for the respective rates set out in the Schedule of Quantities amounting to the sum as there under arrived at or such other sums as shall become payable there under (hereinafter referred to as the said tendered amount).

### NOW IT IS HEREBY AGREED AS FOLLOWS: -

1. In consideration of the said tendered amount to be paid by The IIM INDORE to the Contractor at the time and in the manner set forth in the said tender conditions and in accordance with the Schedule of Payments to execute and complete the work shown upon the said Drawings strictly in accordance with the specifications and Schedule of Quantities.
2. The said tender conditions, scope of work and the annexures hereto shall be read and considered as forming part of this contract and the parties hereto shall respectfully abide by to the said conditions and perform the agreement on their part respectively contained in the said conditions.

3. The approved drawings if any, notice inviting tenders technical specification etc. shall also form the basis of this contract.
4. This contract is a Lump sum Contract to be carried out and to be paid for according to the Schedule of Payments at the rates contained in the Schedule of Quantities.
5. The contract herein contained shall comprise not only the works mentioned above but all subsidiary works connected therewith within the same site as may be ordered to be done from time to time by the said Engineer In charge for the time being, even if such work may not be shown on the said Drawings or described in the said Specifications and Schedule of Quantities.
6. The IIM INDORE reserves to themselves the right of altering the drawings and the nature of the work by adding to or omitting from the scope of work any item of work or portions of the same without prejudice to this contract.
7. Time shall be considered as the essence of this contract and the Contractor hereby agrees to commence the work within 10 days from the date of work order or from the date of handing over of the site, as provided for in the said terms and conditions, whichever is later, and shall complete the entire work within the specified period, subject nevertheless the provisions for extension of time as may be agreed to by the IIM INDORE and as contained in the said conditions.
8. All payments by the IIM INDORE under this contract shall be made only at Indore.
9. All disputes arising out of or in any way connected with this contract shall be deemed to have arisen at Indore and courts in Indore only shall have jurisdiction to determine the same.
10. That the contract and several parts of this contract have been read by the contractor and fully understood by him. The contractor shall not be entitled for payment beyond tendered quantities unless ordered specifically by written instructions of Director IIM INDORE.
11. This contract shall be signed in duplicate, the original whereof shall be kept in the custody of the IIM INDORE, and the duplicate with the Contractor.

IN WITNESS WHEREOF the IIM INDORE has set his hands hereunto and two duplicates hereof through his duly authorized official and the Contractor has caused these presents and two duplicates hereof under his common seal by his duly authorized representative at the place and on the date month and year first herein above written.

SIGNED, SEALED AND DELIVERED by IIM INDORE, by the hand of

Signature:  
Name:  
Designation:

IN THE PRESENCE OF

(1) Signature:  
Name:  
Address:

(2) Signature:  
Name:  
Address:

SIGNED, SEALED AND DELIVERED BY the Contractor M/s. \_\_\_\_\_  
\_\_\_\_\_.

Signature:  
Name:  
Designation:

IN THE PRESENCE OF

(1) Signature:  
Name:  
Address:

(2) Signature:  
Name:  
Address:



## GENERAL CONDITION OF CONTRACT

### CLAUSES OF CONTRACT

#### CLAUSE 1

- (i) The contractor shall submit an irrevocable Performance Guarantee of 5% (Five percent) of the tendered amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement, (not withstanding and/or without prejudice to any other provisions in the contract) within period specified in Schedule 'F' from the date of issue of letter of acceptance. This period can be further extended by the Engineer-in-Charge up to a maximum period as specified in schedule 'F' on written request of the contractor stating the reason for delays in procuring the Performance Guarantee, to the satisfaction of the Engineer-in-Charge. This guarantee shall be in the form of Cash (in case guarantee amount is less than Rs. 10,000/-) or Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay Order of any scheduled bank (in case guarantee amount is less than Rs. 1,00,000/-) or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the form annexed hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.
- (ii) The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest. However, in case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned yearwise proportionately.
- (iii) The Engineer-in-Charge shall not make a claim under the performance guarantee except for amounts to which the Director, IIM Indore is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:
  - a. Failure by the contractor to extend the validity of the Performance Guarantee as described herein above, in which

event the Engineer-in-Charge may claim the full amount of the Performance Guarantee.

- b. Failure by the contractor to pay Director, IIM Indore any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by Engineer-in-Charge.
- (iv) In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the Director, IIM Indore.

#### **CLAUSE 1 A**

##### **Recovery of Security Deposit**

The person/persons whose tender(s) may be accepted (hereinafter called the contractor) shall permit Government at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 2.5% of the gross amount of each running and final bill till the sum deducted will amount to security deposit of 2.5% of the tendered value of the work. Such deductions will be made and held by Government by way of Security Deposit unless he/they has/have deposited the amount of Security at the rate mentioned above in cash or in the form of Government Securities or fixed deposit receipts. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the security deposit and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.

All compensations or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising therefrom, or from any sums which may be due to or may become due to the contractor by Government on any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt tendered by the State Bank of India or by Scheduled Banks or Government Securities (if deposited for more than 12 months) endorsed in favour of the Engineer-in-Charge, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof. The security deposit shall be collected from the running bills and the final bill of the contractor at the rates mentioned above.

The security deposit as deducted above can be released against bank guarantee issued by a scheduled bank, on its accumulations to a minimum of Rs. 5 lac subject to the condition that amount of such bank guarantee, except last one, shall not be less than Rs. 5 lac. Provided further that the validity of bank guarantee including the one given against the earnest money shall be in conformity with provisions contained in clause

17 which shall be extended from time to time depending upon extension of contract granted under provisions of clause 2 and clause 5.

In case of contracts involving maintenance of building and services/any other work after construction of same building and services/other work, then 50% of Performance Guarantee shall be retained as Security Deposit. The same shall be returned yearwise proportionately.

**Note-1:** Government papers tendered as security will be taken at 5% (five per cent) below its market price or at its face value, whichever is less. The market price of Government paper would be ascertained by the Executive Engineer at the time of collection of interest and the amount of interest to the extent of deficiency in value of the Government paper will be withheld if necessary.

**Note-2:** Government Securities will include all forms of Securities mentioned in Rule No. 274 of the G.F. Rules except fidelity bond. This will be subject to the observance of the condition mentioned under the rule against each form of security.

**Note-3:** Note 1 & 2 above shall be applicable for both clause 1 and 1A

## **CLAUSE 2**

### **Compensation for Delay**

If the contractor fails to maintain the required progress in terms of clause 5 or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the Government on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the authority specified in schedule 'F' (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day/month (as applicable) that the progress remains below that specified in Clause 5 or that the work remains incomplete.

This will also apply to items or group of items for which a separate period of completion has been specified.

- (i) Compensation @ 1.5 % per month of delay for delay of work to be computed on per day basis Provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given.

The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the Government. In case, the contractor does not achieve a particular milestone mentioned in schedule F, or the re-scheduled milestone(s) in terms of Clause 5.4, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of Extension of Time. With-holding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the

delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

## **CLAUSE 2A**

### **Incentive for early Completion**

In case, the contractor completes the work ahead of updated stipulated date of completion considering the effect of extra work (to be calculated on pro-rata basis as cost of extra work X stipulated period/tendered cost), a bonus @ 1% (one per cent) of the tendered value per month computed on per day basis, shall be payable to the contractor, subject to a maximum limit of 5% (five per cent) of the tendered value. The amount of bonus, if payable, shall be paid along with final bill after completion of work. Provided always that provision of the Clause 2A shall be applicable only when so provided in 'Schedule F'.

## **CLAUSE 3**

### **When Contract can be Determined**

Subject to other provisions contained in this clause, the Engineer-in-Charge may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

- (i) If the contractor having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or un-workman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.
- (ii) If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the Engineer-in-Charge (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge.
- (iii) If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.
- (iv) If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge.
- (v) If the contractor persistently neglects to carry out his obligations under the contract and/ or commits default in complying with any of the terms and

- conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge.
- (vi) If the contractor shall offer or give or agree to give to any person in Government service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract for Government.
  - (vii) If the contractor shall enter into a contract with Government in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge.
  - (vii) If the contractor had secured the contract with Government as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement.
  - (viii) If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors.
  - (ix) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
  - (x) If the contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days.
  - (xi) If the contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer, sublet or otherwise parts with the entire works or any portion thereof without the prior written approval of the Engineer -in-Charge.

When the contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in-Charge on behalf of the Director, IIM Indore shall have powers:

- (a) To determine the contract as aforesaid (of which termination notice in writing to the contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination, the Security Deposit

already recovered and Performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the Government

- (b) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, as shall be un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined as above, shall not be allowed to participate in the tendering process for the balance work.

In the event of above courses being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer-in-Charge has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

### **CLAUSE 3A**

In case, the work cannot be started due to reasons not within the control of the contractor within 1/8th of the stipulated time for completion of work or one month whichever is higher, either party may close the contract. In case contractor wants to close the contract, he shall give notice to the department stating the failure on the part of department. In such eventuality, the Performance Guarantee of the contractor shall be refunded within following time limits :

- (i) If the Tendered value of work is up to Rs. 45 lac : 15 days.
- (ii) If the Tendered value of work is more than Rs. 45 lac and up to Rs. 2.5 Crore : 21 days.
- (iii) If the Tendered value of work exceeds Rs. 2.5 Crore : 30 days.

If Performance Guarantee is not released within prescribed time limit, then a simple interest @ 0.25% per month shall be payable on Performance Guarantee amount to the contractor from the date of expiry of prescribed time limit.

A compensation for such eventuality, on account of damages etc. shall be payable @ 0.25% of tendered amount subject to maximum limit of Rs. 10 lacs.

### **CLAUSE 4**

#### **Contractor liable to pay Compensation even if action not taken under Clause 3**

In any case in which any of the powers conferred upon the Engineer-in-Charge by Clause-3 thereof, shall have become exercisable and the same are not exercised, the

non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall notwithstanding be exercisable in the event of any future case of default by the contractor and the liability of the contractor for compensation shall remain unaffected. In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding clause he may, if he so desires after giving a notice in writing to the contractor, take possession of (or at the sole discretion of the Engineer-in-Charge which shall be final and binding on the contractor) use as on hire (the amount of the hire money being also in the final determination of the Engineer-in-Charge) all or any tools, plant, materials and stores, in or upon the works, or the site thereof belonging to the contractor, or procured by the contractor and intended to be used for the execution of the work/or any part thereof, paying or allowing for the same in account at the contract rates, or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge, whose certificate thereof shall be final, and binding on the contractor, clerk of the works, foreman or other authorized agent to remove such tools, plant, materials, or stores from the premises (within a time to be specified in such notice) in the event of the contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the contractor's expense or sell them by auction or private sale on account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any such removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor

## **CLAUSE 5**

### **Time and Extension for Delay**

The time allowed for execution of the Works as specified in the Schedule 'F' or the extended time in accordance with these conditions shall be the essence of the Contract. The execution of the works shall commence from such time period as mentioned in schedule 'F' or from the date of handing over of the site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the performance guarantee absolutely

**5.1** As soon as possible after the Contract is concluded, the Contractor shall submit a Time and Progress Chart for each mile stone and get it approved by the Department. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time imposed in the Contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate programme has been agreed upon) complete the work as per mile stones given in Schedule 'F'.

(a) Project Management shall be done by using project management software for works costing more than Rs. 5 Crore.

(b) The project management shall be done using M.S. Project software for works costing more than Rs. 5 Crore and up to Rs. 20 Crore.

For works costing more than Rs. 20 Crore, project management shall be done using Primavera Software.

#### PROGRAMME CHART

- (i) The Contractor shall prepare an integrated programme chart in MS Project/Primavera software for the execution of work, showing clearly all activities from the start of work to completion, with details of manpower, equipment and machinery required for the fulfillment of the programme within the stipulated period or earlier and submit the same for approval to the Engineer-in-Charge within ten days of award of the contract. A recovery of Rs.2500/- (for works costing upto Rs. 20 Crores) / Rs. 5000/- (for works costing more than Rs. 20 Crores) shall be made on per day basis in case of delay in submission of the above programme.
- (ii) The programme chart should include the following:
  - (a) Descriptive note explaining sequence of the various activities.
  - (b) Network (PERT / CPM / BAR CHART).
  - (c) Programme for procurement of materials by the contractor.  
Programme of procurement of machinery / equipments having adequate capacity, commensurate with the quantum of work to be done within the stipulated period, by the contractor. In addition to above, to achieve the progress of Work as per programme, the contractor must bring at site adequate shuttering material required for cement concrete and R.C.C. works etc. for three floors within one month from the date of start of work till the completion of RCC work as per requirement of work. The contractor shall submit shuttering schedule adequate to complete structure work within laid down physical milestone.
- (iii) If at any time, it appears to the Engineer-in-Charge that the actual progress of work does not conform to the approved programme referred above or after rescheduling of milestones, the contractor shall produce a revised programme within 7 (seven) days, showing the modifications to the approved programme to ensure timely completion of the work. The modified schedule of programme shall be approved by the Engineer in Charge. A recovery of Rs. 2500/- (for works costing upto Rs. 20 Crores) / Rs. 5000/- (for works costing more than Rs. 20 Crores) shall be made on per day basis in case of delay in submission of the modified programme.
- (iv) The submission for approval by the Engineer-in-Charge of such programme or such particulars shall not relieve the contractor of any of the duties or responsibilities under the contract. This is without prejudice to the right of Engineer-in-Charge to take action against the contractor as per terms and conditions of the agreement.
- (v) The contractor shall submit the progress report using MS Project/Primavera software with base line programme referred above for the work done during previous month to the Engineer-in-charge on or before 5th day of each month failing which a recovery Rs. 2500/- (for works costing upto Rs. 20



Crores) / Rs. 5000/- (for works costing more than Rs. 20 Crores) shall be made on per day basis in case of delay in submission of the monthly progress report.

**5.2** If the work(s) be delayed by:-

- (i) force majeure, or
- (ii) abnormally bad weather, or
- (iii) serious loss or damage by fire, or
- (iv) civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
- (v) delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
- (vi) non-availability of stores, which are the responsibility of Government to supply or non-availability or break down of tools and Plant to be supplied or supplied by Government or
- (vii) any other cause which, in the absolute discretion of the Engineer-in-Charge is beyond the Contractor's control.

then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the authority as indicated in Schedule 'F' but shall nevertheless use constantly his best endeavours to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the works.

**5.3** Request for rescheduling of Mile stones and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form to the authority as indicated in Schedule 'F'. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.

**5.4** In any such case the authority as indicated in Schedule 'F' may give a fair and reasonable extension of time and reschedule the mile stones for completion of work. Such extension or rescheduling of the milestones shall be communicated to the Contractor by the authority as indicated in Schedule 'F' in writing, within 3 months or 4 weeks of the date of receipt of such request respectively. Non application by the contractor for extension of time/ rescheduling of the milestones shall not be a bar for giving a fair and reasonable extension/ rescheduling of the milestones by the authority as indicated in Schedule 'F' and this shall be binding on the contractor.

## **CLAUSE 6**

### **Measurements of work Done**

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement, the value in accordance with the contract of work done.

All measurement of all items having financial value shall be entered in Measurement Book and/or level field book so that a complete record is obtained of all works performed under the contract.

All measurements and levels shall be taken jointly by the Engineer-in-Charge or his authorized representative and by the contractor or his authorized representative from time to time during the progress of the work and such measurements shall be signed and dated by the Engineer in-Charge and the contractor or their representatives in token of their acceptance. If the contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties.

If for any reason the contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Engineer-in-Charge and the Department shall not entertain any claim from contractor for any loss or damages on this account. If the contractor or his authorized representative does not remain present at the time of such measurements after the contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Engineer-in-Charge or his representative shall be deemed to be accepted by the Contractor.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available, then a mutually agreed method shall be followed.

The contractor shall give, not less than seven days' notice to the Engineer-in-Charge or his authorized representative in charge of the work, before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing, the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

It is also a term of this contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

#### **CLAUSE 6A**

##### **Computerized Measurement Book**

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract.

All measurements of all items having financial value shall be entered by the contractor and compiled in the shape of the Computerized Measurement Book having pages of A-4 size as per the format of the department so that a complete record is obtained of all the items of works performed under the contract.

All such measurements and levels recorded by the contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his authorized representative. After the necessary corrections made by the Engineer-in-Charge, the measurement sheets shall be returned to the contractor for incorporating the corrections and for resubmission to the Engineer-in-Charge for the dated signatures by the Engineer-in-Charge and the contractor or their representatives in token of their acceptance.

Whenever bill is due for payment, the contractor would initially submit draft computerized measurement sheets and these measurements would be got checked/test checked from the Engineer-in-Charge and/or his authorized representative. The contractor will, thereafter, incorporate such changes as may be done during these checks/test checks in his draft computerized measurements, and submit to the department a computerized measurement book, duly bound, and with its pages machine numbered. The Engineer-in-Charge and/or his authorized representative would thereafter check this MB, and record the necessary certificates for their checks/test checks.

The final, fair, computerized measurement book given by the contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the

department. Thereafter, the MB shall be taken in the Divisional Office records, and allotted a number as per the Register of Computerised MBs. This should be done before the corresponding bill is submitted to the Division Office for payment. The contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the department.

The contractor shall also submit to the department separately his computerized Abstract of Cost and the bill based on these measurements, duly bound, and its pages machine numbered along with two spare copies of the "bill. Thereafter, this bill will be processed by the Division Office and allotted a number as per the computerized record in the same way as done for the measurement book meant for measurements.

The contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for checking of measurements/levels by the Engineer-in- Charge or his representative.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.

The contractor shall give not less than seven days' notice to the Engineer-in-Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work in order that the same may be checked and/or test checked and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of checking and/or test checking measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of hecking and/or test checking measurements without such notice having been given or the Engineer-in-Charge's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded by contractor and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

It is also a term of this contract that checking and/or test checking the measurements of any item of work in the measurement book and/or its payment in the interim, on account of final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

## **CLAUSE 7**

### **Payment on Intermediate Certificate to be Regarded as Advances**

No payment shall be made for work, estimated to cost Rs. Twenty thousand or less till after the whole of the work shall have been completed and certificate of completion given. For works estimated to cost over Rs. Twenty thousand, the interim or running account bills shall be submitted by the contractor for the work executed on the basis of such recorded measurements on the format of the Department in triplicate on or before the date of every month fixed for the same by the Engineer-in-Charge. The contractor shall not be entitled to be paid any such interim payment if the gross work done together with net payment/ adjustment of advances for material collected, if any, since the last such payment is less than the amount specified in Schedule 'F', in which case the interim bill shall be prepared on the appointed date of the month after the requisite progress is achieved. Engineer-in-Charge shall arrange to have the bill verified by taking or causing to be taken, where necessary, the requisite measurements of the work. In the event of the failure of the contractor to submit the bills, Engineer-in-Charge shall prepare or cause to be prepared such bills in which event no claims whatsoever due to delays on payment including that of interest shall be payable to the contractor. Payment on account of amount admissible shall be made by the Engineer-In-charge certifying the sum to which the contractor is considered entitled by way of interim payment at such rates as decided by the Engineer-in-Charge. The amount admissible shall be paid by 10th working day after the day of presentation of the bill by the Contractor to the Engineer-in-Charge or his Asstt. Engineer together with the account of the material issued by the department, or dismantled materials, if any. In the case of works outside the headquarters of the Engineer- in-Charge, the period of ten working days will be extended to fifteen working days. In case of delay in payment of intermediate bills after 45 days of submission of bill by the contractor provided the bill submitted by the contractor found to be in order, a simple interest @ 7.5% per annum shall be paid to the contractor from the date of expiry of prescribed time limit which will be compounded on yearly basis.

All such interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in

accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

Pending consideration of extension of date of completion, interim payments shall continue to be made as herein provided without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.

The Engineer-in-Charge in his sole discretion on the basis of a certificate from the Asstt. Engineer to the effect that the work has been completed up to the level in question make interim advance payments without detailed measurements for work done (other than foundations, items to be covered under finishing items) up to lintel level (including sunshade etc.) and slab level, for each floor working out at 75% of the assessed value. The advance payments so allowed shall be adjusted in the subsequent interim bill by taking detailed measurements thereof.

#### **Payments in composite Contracts**

In case of composite tenders, running payment for the major component shall be made by EE of major discipline to the main contractor. Running payment for minor component shall be made by the Engineer-in-Charge of the discipline of minor component directly to the main contractor.

In case main contractor fails to make the payment to the contractor associated by him within 15 days of receipt of each running account payment, then on the written complaint of contractor associated for such minor component, Engineer in charge of minor component shall serve the show cause to the main contractor and if reply of main contractor either not received or found unsatisfactory, he may make the payment directly to the contractor associated for minor component as per the terms and conditions of the agreement drawn between main contractor and associate contractor fixed by him. Such payment made to the associate contractor shall be recovered by Engineer-in-charge of major or minor component from the next R/A/ final bill due to main contractor as the case may be.

### **CLAUSE 8**

#### **Completion Certificate and Completion Plans**

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Engineer-in-Charge and within thirty days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the contractor and/or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the work be

considered to be complete until the contractor shall have removed from the premises on which the work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the work is to be executed or of which he may have had possession for the purpose of the execution; thereof, and not until the work shall have been measured by the Engineer-in-Charge. If the contractor shall fail to comply with the requirements of this Clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of work, the Engineer-in-Charge may at the expense of the contractor remove such scaffolding, surplus materials and rubbish etc., and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

#### **CLAUSE 8A**

##### **Contractor to Keep Site Clean**

When the annual repairs and maintenance of works are carried out, the splashes and droppings from white washing, colour washing, painting etc., on walls, floor, windows, etc shall be removed and the surface cleaned simultaneously with the completion of these items of work in the individual rooms, quarters or premises etc. where the work is done: without waiting for the actual completion of all the other items of work in the contract. In case the contractor fails to comply with the requirements of this clause, the Engineer-in-Charge shall have the right to get this work done at the cost of the contractor either departmentally or through any other agency. Before taking such action, the Engineer-in-Charge shall give ten days notice in writing to the contractor.

#### **CLAUSE 8B**

##### **Completion Plans to be Submitted by the Contractor**

The contractor shall submit completion plan as required vide General Specifications for Electrical works (Part-I internal) 2005 and (Part-II External) 1994 as applicable within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum equivalent to 2.5% of the value of the work subject to a ceiling of Rs.15,000 (Rs. Fifteen thousand only) as may be fixed by the Chief Engineer concerned and in this respect the decision of the Chief Engineer shall be final and binding on the contractor.

The contractor shall submit completion plan for water, sewerage and drainage line plan within thirty days of the completion of the work.

In case, the contractor fails to submit the completion plan as aforesaid, , the department will get it done through other agency at his cost and actual expenses incurred plus Rs. 15,000/- for the same shall be recovered from the contractor.

## **CLAUSE 9**

### **Payment of Final Bill**

The final bill shall be submitted by the contractor in the same manner as specified in interim bills within three months of physical completion of the work or within one month of the date of the final certificate of completion furnished by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the contractor after submission of the final bill and these shall be deemed to have been waived and extinguished. Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer-in-Charge, will, as far as possible be made within the period specified hereinunder, the period being reckoned from the date of receipt of the bill by the Engineer-in-Charge or his authorized Asstt. Engineer, complete with account of materials issued by the Department and dismantled materials.

- (i) If the Tendered value of work is up to Rs. 45 lac : 2 months
- (ii) If the Tendered value of work is more than Rs.45 lac and up to Rs. 2.5 Crore : 3 months
- (iii) If the Tendered value of work exceeds Rs. 2.5 Crore : 6 months

In case of delay in payment of final bills after prescribed time limit, a simple interest @ 7.5% per annum shall be paid to the contractor from the date of expiry of prescribed time limit which will be compounded on yearly basis, provided the final bill submitted by the contractor found to be in order.

## **CLAUSE 9A**

### **Payment of Contractor's Bills to Banks**

Payments due to the contractor may, if so desired by him, be made to his bank, registered financial, co-operative or thrift societies or recognized financial institutions instead of direct to him provided that the contractor furnishes to the Engineer-in-Charge (1) an authorization in the form of a legally valid document such as a power of attorney conferring authority on the bank; registered financial, co-operative or thrift societies or recognized financial institutions to receive payments and (2) his own acceptance of the correctness of the amount made out as being due to him by Government or his signature on the bill or other claim preferred against Government before settlement by the Engineer-in-Charge of the account or claim by payment to the bank, registered financial, co-operative or thrift societies or recognized financial institutions. While the receipt given by such banks; registered financial, co-operative or thrift societies or recognized financial institutions shall constitute a full and sufficient discharge for the payment, the contractor shall whenever possible present his bills duly receipted and discharged through his bank, registered financial, co-operative or thrift societies or recognized financial institutions.



Nothing herein contained shall operate to create in favour of the bank; registered financial, co-operative or thrift societies or recognized financial institutions any rights or equities vis-a-vis the Director, IIM Indore.

#### **CLAUSE 10**

##### **Materials supplied by IIM Indore-Deleted**

#### **CLAUSE 10A**

##### **Materials to be provided by the Contractor**

The contractor shall, at his own expense, provide all materials, required for the works other than those which are stipulated to be supplied by the Government.

The contractor shall, at his own expense and without delay, supply to the Engineer-in-Charge samples of materials to be used on the work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The contractor shall, if requested by the Engineer-in-Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply. The Engineer-in-Charge shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the Engineer-in-Charge for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the Engineer-in-Charge shall be issued after the test results are received.

The Contractor shall at his risk and cost submit the samples of materials to be tested or analyzed and shall not make use of or incorporate in the work any materials represented by the samples until the required tests or analysis have been made and materials finally accepted by the Engineer-in-Charge. The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.

The contractor shall, at his risk and cost, make all arrangements and shall provide all facilities as the Engineer-in-Charge may require for collecting, and preparing the required number of samples for such tests at such time and to such place or places as may be directed by the Engineer-in-Charge and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer-in-Charge or his authorized representative shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles or machinery are being obtained for the works and the contractor shall afford every facility and every assistance in obtaining the right to such access.

The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full powers to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to be supplied and all costs which may attend such removal and substitution shall be borne by the Contractor.

The contractor shall at his own expense, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped at least with the testing equipment as specified in schedule F.

#### **CLAUSE 10B**

##### **Secured Advance on Non-perishable Materials**

(i) The contractor, on signing an indenture in the form to be specified by the Engineer-in-Charge, shall be entitled to be paid during the progress of the execution of the work up to 90% of the assessed value of any materials which are in the opinion of the Engineer-in-Charge non-perishable, non-fragile and non-combustible and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and/or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this sub-clause are incorporated in the work, the amount of such advance shall be recovered/deducted from the next payment made under any of the clause or clauses of this contract.

Such secured advance shall also be payable on other items of perishable nature, fragile and combustible with the approval of the Engineer-in-Charge provided the contractor provides a comprehensive insurance cover for the full cost of such materials. The decision of the Engineer-in-Charge shall be final and binding on the contractor in this matter. No secured advance, shall however, be paid on high-risk materials such as ordinary glass, sand, petrol, diesel etc.

##### **Mobilisation Advance**

(ii) Mobilization advance not exceeding 10% of the tendered value may be given, if requested by the contractor in writing within one month of the order to commence the work. Such advance shall be in two or more installments to be determined by the Engineer-in-Charge at his sole discretion. The first installment of such advance shall be released by the Engineer-in-charge to the contractor on a request made by the contractor to the Engineer-in-Charge in this behalf. The second and subsequent installments shall be released by the Engineer-in-Charge only after the contractor furnishes a proof of the satisfactory utilization of the earlier installment to the entire satisfaction of the Engineer-in-Charge.

Before any installment of advance is released, the contractor shall execute a Bank Guarantee Bond from Scheduled Bank for the amount equal to 110% of the amount of advance and valid for the contract period. This (Bank Guarantee from Scheduled Bank for the amount equal to 110% of the balance amount of advance) shall be kept renewed from time to time to cover the balance amount and likely period of complete recovery Provided always that provision of Clause 10 B (ii) shall be applicable only when so provided in 'Schedule F'.

#### **Plant Machinery & Shuttering Material Advance**

(iii) An advance for plant, machinery & shuttering material required for the work and brought to site by the Contractor may be given if requested by the contractor in writing within one month of bringing such plant and machinery to site. Such advance shall be given on such plant and machinery which in the opinion of the Engineer-in-charge will add to the expeditious execution of work and improve the quality of work. The amount of advance shall be restricted to 5% percent of the tender value. In the case of new plant and equipment to be purchased for the work, the advance shall be restricted to 90% of the price of such new plant and equipment paid by the contractor for which the contractor shall produce evidence satisfactory to the Engineer-in-Charge. In the case of second hand and used plants and equipment, the amount of such advance shall be limited to 50% of the depreciated value of plant and equipment as may be decided by the Engineer-in-Charge. The contractor shall, if so required by the Engineer-in-Charge, submit the statement of value of such old plant and equipment duly approved by a Registered Valuer recognized by the Central Board of Direct Taxes under the Income- Tax Act, 1961. No such advance shall be paid on any plant and equipment of perishable nature and on any plant and equipment of a value less than Rs. 50,000/- Seventy five per cent of such amount of advance shall be paid after the plant & equipment is brought to site and balance twenty five percent on successfully commissioning the same.

Leasing of equipment shall be considered at par with purchase of equipment and shall be covered by tripartite agreement with the following:

1. Leasing company which gives certificate of agreeing to lease equipment to the contractor.
2. Engineer in Charge, and
3. The contractor.

This advance shall further be subject to the condition that such plant and equipment (a) are considered by the Engineer-in-Charge to be necessary for the works; (b) and are in working order and are maintained in working order; (c) hypothecated to the Government as specified by the Engineer-in-Charge before the payment of advance is released. The contractor shall not be permitted to remove from the site such hypothecated plant and equipment without the prior written permission of the Engineer-in-Charge. The contractor shall be responsible for maintaining such plant and equipment in good working order during the entire period of hypothecation failing which such advance shall be entirely recovered in lump sum. For this purpose, steel scaffolding and form work shall be treated as plant and equipment.

The contractor shall insure the Plant and Machinery for which mobilization advance is sought and given, for a sum sufficient to provide for their replacement at site. Any amounts not recovered from the insurer will be borne by the contractor.

### **Interest & Recovery**

(iv) The mobilization advance and plant and machinery advance in (ii) & (iii) above bear simple interest at the rate of 10 per cent per annum and shall be calculated from the date of payment to the date of recovery, both days inclusive, on the outstanding amount of advance. Recovery of such sums advanced shall be made by the deduction from the contractors bills commencing after first ten per cent of the gross value of the work is executed and paid, on pro-rata percentage basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time eighty per cent of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount up to the date of recovery of the installment.

(v) If the circumstances are considered reasonable by the Engineer-in-Charge, the period mentioned in (ii) and (iii) for request by the contractor in writing for grant of mobilization advance and plant and equipment advance may be extended in the discretion of the Engineer-in-Charge.

### **CLAUSE 10C**

#### **Payment on Account of Increase in Prices/Wages due to Statutory Order(s)**

If after submission of the tender, the price of any material incorporated in the works (excluding the materials covered under Clause 10CA and not being a material supplied from the Engineer-in-Charge's stores in accordance with Clause 10 thereof) and/or wages of labour increases as a direct result of the coming into force of any fresh law, or statutory rule or order (but not due to any changes of rate in sales tax/VAT, Central/State Excise/Custom Duty) beyond the prices/wages prevailing at the time of the last stipulated date of receipt of tenders including extensions, if any, for the work during contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, then the amount of the contract shall accordingly be varied and provided further that any such increase shall be limited to the price/wages prevailing at the time of updated stipulated date of completion considering effect of extra work (extra time to be calculated on prorata basis only as cost of extra work x stipulated period/tendered amount).

If after submission of the tender, the price of any material incorporated in the works (excluding the materials covered under Clause 10CA and not being a material supplied from the Engineer-in-Charge's stores in accordance with Clause 10 thereof) and/or wages of labour as prevailing at the time of last stipulated date of receipt of tender including extensions, if any, is decreased as a direct result of the coming into force of any fresh law or statutory rules or order (but not due to any changes of rate in sales tax/VAT, Central/State Excise/Custom Duty), Government shall in respect of

materials incorporated in the works (excluding the materials covered under Clause 10CA and not being material supplied from the Engineer-in-Charge's stores in accordance with Clause 10 hereof) and/or labour engaged on the execution of the work after the date of coming into force of such law statutory rule or order be entitled to deduct from the dues of the contractor, such amount as shall be equivalent to the difference between the prices of the materials and/or wages as prevailed at the time of the last stipulated date for receipt of tenders including extensions if any for the work and the prices of materials and/or wages of labour on the coming into force of such law, statutory rule or order. This will be applicable for the contract period including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2.

Engineer-in-Charge may call books of account and other relevant documents from the contractor to satisfy himself about reasonability of increase in prices of materials and wages.

The contractor shall, within a reasonable time of his becoming aware of any alteration in the price of any such materials and/or wages of labour, give notice thereof to the Engineer-in-Charge stating that the same is given pursuant to this condition together with all information relating thereto which he may be in position to supply.

For this purpose, the labour component of the work executed during period under consideration shall be the percentage as specified in Schedule F, of the value of work done during that period and the increase/decrease in labour shall be considered on the minimum daily wages in rupees of any unskilled adult male mazdoor, fixed under any law, statutory rule or order.

#### **CLAUSE 10 CA**

##### **Payment due to variation in prices of materials after receipt of tender**

If after submission of the tender, the price of materials specified in Schedule F increases/ decreases beyond the base price(s) as indicated in Schedule F for the work, then the amount of the contract shall accordingly be varied and provided further that any such variations shall be effected for stipulated period of Contract including the justified period extended under the provisions of Clause 5 of the Contract without any action under Clause 2.

However for work done/during the justified period extended as above, it will be limited to indices prevailing at the time of updated stipulated date of completion considering the effect of extra work (extra time to be calculated on pro-rata basis only as cost of extra work x stipulated period/tendered cost).

The increase/decrease in prices of cement, steel reinforcement, structural steel and POL shall be determined by the Price indices issued by the Director General, CPWD. For other items provided in the Schedule 'F', this shall be determined by the All India Wholesale Price Indices of materials as published by Economic Advisor to Government

of India, Ministry of Commerce and Industry. Base price for cement, steel reinforcement, structural steel and POL shall be as issued under the authority of Director General CPWD applicable for Delhi including Noida, Gurgaon, Faridabad & Ghaziabad and for other places as issued under the authority of Zonal Chief Engineer, CPWD and base price of other materials issued by concerned Zonal chief Engineer and as indicated in Schedule 'F'. In case, price index of a particular material is not issued by Ministry of Commerce and Industry, then the price index of nearest similar material as indicated in Schedule 'F' shall be followed.

The amount of the contract shall accordingly be varied for all such materials and will be worked out as per the formula given below for individual material:-

Adjustment for component of individual material

$$V = P \times Q \times \frac{C1 - C1_0}{C1_0}$$

where,

V = Variation in material cost i.e. increase or decrease in the amount of rupees to be paid covered.  
P = Base Price of material as issued under authority of DG, CPWD or concerned Zonal Chief Engineer and as indicated in Schedule "F".

For Projects and Original Works

Q = Quantity of material brought at site for bonafide use in the works since previous bill excluding any such quantity consumed in the deviated quantity of items beyond deviation limit and extra /substituted item, paid/to be paid at rates derived on the basis of market rate under clause 12.2.

For Maintenance Works

Q = Quantity of material brought at site for bonafide use in the works since previous bill including any such quantity consumed in the deviated quantity of items beyond deviation limit paid at agreement rate and extra /substituted item being scheduled items, but excluding non schedule extra /substituted item paid/to be paid at market rate under clause 12.2.

C<sub>10</sub> = Price index for cement, steel reinforcement bars structural steel and POL as issued by the DG, CPWD and corresponding to the time of base price of respective material indicated in Schedule 'F'. For other items, if any, provided in Schedule 'F', All India Wholesale Price Index for the material as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce and corresponding to the time of base price of respective material indicated in Schedule 'F'.

C<sub>1</sub> = Price index for cement, steel reinforcement bars, structural steel and POL as issued under the authority of DG, CPWD for period under consideration. For other items, if any, provided in Schedule 'F', All India

Wholesale Price Index for the material for period under consideration as published by Economic Advisor to Government of India, Ministry of Industry and Commerce.

Note: (i) In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the index prevailing at the time of updated stipulated date of completion considering the effect of extra work (extra time to be calculated on prorata basis only as cost of extra work x stipulated period/ tendered cost) shall be considered.

Provided always that provisions of the preceding Clause 10 C shall not be applicable in respect of Materials covered in this Clause.

- (ii) If during progress of work or at the time of completion of work, it is noticed that any material brought at site is in excess of requirement, then amount of escalation if paid earlier on such excess quantity of material shall be recovered on the basis of cost indices as applied at the time of payment of escalation or as prevailing at the time of effecting recovery, whichever is higher.
- (iii) Cement mentioned wherever in this clause includes Cement component used in RMC brought at site from outside approved RMC plants, if any.
- (iv) The date wise record of ready mix concrete shall be kept in a register and the cement consumption for the same shall be calculated accordingly.
- (v) If built-up steel items are brought at site from workshop, then the variation shall be paid for the structural steel up to the period when the built up item/finished product is brought at site.

#### **CLAUSE 10 CC**

##### **Payment due to Increase/Decrease in Prices/Wages (excluding materials covered under clause 10 CA) after Receipt of Tender for Works**

If the prices of materials (not being materials supplied or services rendered at fixed prices by the department in accordance with clause 10 & 34 thereof) and/or wages of labour required for execution of the work increase, the contractor shall be compensated for such increase as per provisions detailed below and the amount of the contract shall accordingly be varied, subject to the condition that that such compensation for escalation in prices and wages shall be available only for the work done during the stipulated period of the contract including the justified period extended under the provisions of clause 5 of the contract without any action under clause 2. However, for the work done during the justified period extended as above, the compensation as detailed below will be limited to prices/wages prevailing at the time of updated stipulated date of completion considering the effect of extra work ( extra time to be calculated on pro-rata basis only as cost of extra work x stipulated period/tendered cost).No such compensation shall be payable for a work for which the stipulated period of completion is equal to or less than the time as specified in

Schedule F. Such compensation for escalation in the prices of materials and labour, when due, shall be worked out based on the following provisions:-

(i) The base date for working out such escalation shall be the last stipulated date of receipt of tenders including extension, if any.

(ii) The cost of work on which escalation will be payable shall be reckoned as below :

- |  |     |
|--|-----|
| (a) Gross value of work done up to this quarter :  | (A) |
| (b) Gross value of work done up to the last quarter :  | (B) |
| (c) Gross value of work done since previous quarter(A-B) ;   | (C) |
| (d) Full assessed value of Secured Advance (excluding materials Covered under Clause 10 CA) fresh paid in this quarter : | (D) |
| (e) Full assessed value of Secured Advance (excluding materials Covered under Clause 10 CA) recovered in this quarter :  | (E) |
| (f) Full assessed value of Secured Advance for which escalation Payable in this quarter (D-E):                           | (F) |
| (g) Advance payment made during this quarter:  | (G) |
| (h) Advance payment recovered during this quarter:   | (H) |
| (i) Advance payment for which escalation is payable in this Quarter(G-H):  | (I) |
| (j) Extra items/deviated quantities of items paid as per Clause 12 Based on prevailing market rates during this quarter: | (J) |

$$\text{Then, } M = C+F+I-J$$

$$N = 0.85 M$$

- |  |     |
|--|-----|
| (k) Less cost of material supplied by the department as per Clause 10 and recovered during the quarter | (K) |
| (l) Less cost of services rendered at fixed charges as per Clause 34 and recovered during the quarter  | (L) |

**Cost of work for which escalation is applicable:**

$$W = N - (K + L)$$

(iii) Components for materials (except cement, reinforcement bars, structural steel, POL or other materials covered under clause 10 CA) labour, etc. shall be pre-determined for every work and incorporated in the conditions of contract attached to the tender papers included in Schedule 'F'. The decision of the Engineer-in-Charge in working out such percentage shall be binding on the contractors.

(iv) The compensation for escalation for other materials (excluding cement, reinforcement bars, structural steel, POL or other materials covered under clause 10 CA) shall be worked as per the formula given below:-

(a) Adjustment for civil component (except cement, structural steel, reinforcement bars, POL and other materials covered under clause 10CA) / electrical component of construction 'Materials'

$V_m$  = Variation in material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

$W$  = Cost of Work done worked out as indicated in sub-para (ii) of Clause 10CC.



Xm = Component of 'materials' (except cement, structural steel, reinforcement bars POL and other materials covered under clause 10CA) expressed as percent of the total value of work.

Ml = All India Wholesale Price Index for civil component/electrical component\* of construction material as worked out on the basis of All India Wholesale Price Index for Individual Commodities/ Group Items for the period under consideration as published by Economic Advisor to Govt. of India, Ministry of Industry & Commerce and applying weightages to the Individual Commodities/Group Items. (In respect of the justified period extended under the provisions of clause 5 of the contract without any action under clause 2, the index prevailing at the time of updated stipulated date of completion considering the effect of extra work (extra time to be calculated on prorata basis only as cost of extra work x stipulated period/tendered cost, shall be considered.)

Mlo = All India Wholesale Price Index for civil component/electrical component\* of construction material as worked out on the basis of All India Wholesale Price Index for Individual Commodities/Group Items valid on the last stipulated date of receipt of tender including extension, if any, as published by the Economic Advisor to Govt. of India, Ministry of Industry & Commerce and applying weightages to the Individual Commodities/Group items.

**\*Note:** relevant component only will be applicable.

(v) The following principles shall be followed while working out the indices mentioned in para

(iv) above.

(a) The compensation for escalation shall be worked out at quarterly intervals and shall be with respect to the cost of work done as per bills paid during the three calendar months of the said quarter. The dates of preparation of bills as finally entered in the Measurement Book by the Assistant Engineer/ date of submission of bill finally by the contractor to the department in case of computerised measurement books shall be the guiding factor to decide the bills relevant to the quarterly interval. The first such payment shall be made at the end of three months after the month (excluding the month in which tender was accepted) and thereafter at three months' interval. At the time of completion of the work, the last period for payment might become less than 3 months, depending on the actual date of completion.

(b) The index (MI/FI etc.) relevant to any quarter/period for which such compensation is paid shall be the arithmetical average of the indices relevant to the three calendar months. If the period up to date of completion after the quarter covered by the last such installment of payment, is less than three months, the index MI and FI shall be the average of the indices for the months falling within that period.

(vi) The compensation for escalation for labour shall be worked out as per the formula given

below:-

VL : Variation in labour cost i.e. amount of increase or decrease in rupees to be paid or recovered.

W : Value of work done, worked out as indicated in sub-para (ii) above.

Y : Component of labour expressed as a percentage of the total value of the work.

LI : Minimum wage in rupees of an unskilled adult male mazdoor, fixed under any law, statutory rule or order as applicable on the last date of the quarter previous to the one under consideration. (In respect of the justified period extended under the provisions of clause 5 of the contract without

any action under clause 2, the minimum wage prevailing on the last date of quarter previous to the quarter pertaining to updated stipulated date of Completion considering the effect of extra work (extra time to be calculated on prorata basis only as cost of extra work x stipulated period/tendered cost, shall be considered.)

Llo : Minimum daily wage in rupees of an unskilled adult male mazdoor, fixed under any law, statutory rule or order as on the last stipulated date of receipt of tender including extension, if any.

(vii) The following principles will be followed while working out the compensation as per subpara (vi) above.

(a) The minimum wage of an unskilled male mazdoor mentioned in sub-para (vi) above shall be the higher of the wage notified by Government of India, Ministry of Labour and that notified by the local administration both relevant to the place of work and the period of reckoning.

(b) The escalation for labour also shall be paid at the same quarterly intervals when escalation due to increase in cost of materials is paid under this clause. If such revision of minimum wages takes place during any such quarterly intervals, the escalation compensation shall be payable at revised rates only for work done in subsequent quarters;

(c) Irrespective of variations in minimum wages of any category of labour, for the purpose of this clause, the variation in the rate for an unskilled adult male mazdoor alone shall form the basis for working out the escalation compensation payable on the labour component.

(viii) In the event the price of materials and/or wages of labour required for execution of the work decrease/s, there shall be a downward adjustment of the cost of work so that such price of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard the formula herein before stated under this Clause 10CC shall mutatis mutandis apply, provided that:

(a) no such adjustment for the decrease in the price of materials and/or wages of labour aforementioned would be made in case of contracts in which the stipulated period of completion of the work is equal to or less than the time as specified in Schedule 'F'.

(b) the Engineer-in-Charge shall otherwise be entitled to lay down the procedure by which the provision of this sub-clause shall be implemented from time to time and the decision of the Engineer-in-Charge in this behalf shall be final and binding on the contractor.

(ix) Provided always that:-

(a) Where provisions of clause 10CC are applicable, provisions of clause 10C will not be applicable but provisions of clause 10CA will be applicable.

(b) Where provisions of clause 10CC are not applicable, provisions of clause 10C and 10CA will become applicable.

Note: Updated stipulated date of completion (period of completion plus extra time for extra work for compensation under clause 10C, 10CA and 10CC, the factor of 1.25 taken into account for calculating the extra time under clause 12.1 for extra time shall not be considered while calculating the updated stipulated date of completion for this purpose in clause 10C, clause 10CA, and clause 10CC.

#### **CLAUSE 10 D**

##### **Dismantled Material Govt. Property**

The contractor shall treat all materials obtained during dismantling of a structure, excavation of the site for a work, etc. as Government's property and such materials shall be disposed off to the best advantage of Government according to the instructions in writing issued by the Engineer-in-Charge.

#### **CLAUSE 11**

##### **Work to be Executed in Accordance with Specifications, Drawings, Orders etc.**

The contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the specifications. The contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer-in-Charge and the contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the standard specifications of Central Public Works Department specified in Schedule 'F' or in any Bureau of Indian Standard or any other, published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the contract.

The contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

#### **CLAUSE 12 :**

##### **Deviations/Variations Extent and Pricing**

The Engineer-in-Charge shall have power (i) to make alteration in, omissions from, additions to, or substitutions for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work, and (ii) to omit a part of the works in case of non-availability of a portion of the site or for any other reasons and the contractor shall be bound to carry out the works in accordance with any instructions given to him in writing signed by the

Engineer-in-Charge and such alterations, omissions, additions or substitutions shall form part of the contract as if originally provided therein and any altered, additional or substituted work which the contractor may be directed to do in the manner specified above as part of the works, shall be carried out by the contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.

The completion cost of any agreement for Maintenance works including works of upgradation, aesthetic, special repair, addition/ alteration shall not exceed 1.25 times of Tendered amount.

12.1 The time for completion of the works shall, in the event of any deviations resulting in additional cost over the tendered value sum being ordered, be extended, if requested by the contractor, as follows :

(i) In the proportion which the additional cost of the altered, additional or substituted work, bears to the original tendered value plus

(ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

12.2 A. For Project and original works:

#### **Deviation, Extra Items and Pricing**

In the case of extra item(s) (items that are completely new, and are in addition to the items contained in the contract), the contractor may within fifteen days of receipt of order or occurrence of the item(s) claim rates, supported by proper analysis, for the work and the engineer-in-charge shall within prescribed time limit of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

B. For Maintenance works including works of upgradation, aesthetic, special repair, addition/ alteration: In the case of Extra Item(s) being the schedule items (Delhi Schedule of Rates items), these shall be paid as per the schedule rate plus cost index (at the time of tender) plus/minus percentage above/ below quoted contract amount.

Payment of Extra items in case of non-schedule items (Non-DSR items) shall be made as per the prevailing market rate.

A. For Project and original works:

#### **Deviation, Substituted Items, Pricing**

In the case of substituted items (items that are taken up with partial substitution or in lieu of items of work in the contract), the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the following para.

(a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so

increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

(b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted), the rate payable to the contractor for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

B. For Maintenance works including works of upgradation, aesthetic, special repair, addition/ alteration: In the case of Substitute Item(s) being the schedule items (Delhi Schedule of Rates items), these shall be paid as per the schedule rate plus cost index (at the time of tender) plus/minus percentage above/ below quoted contract amount. Payment of Substitute in case of non-schedule items (Non-DSR items) shall be made as per the prevailing market rate.

### **Deviation, Deviated Quantities, Pricing**

#### **A. For Project and original works:**

In the case of contract items, substituted items, contract cum substituted items, which exceed the limits laid down in schedule F, the contractor may within fifteen days of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis for the work in excess of the above mentioned limits, provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities, the Engineer-in-Charge shall within prescribed time limit of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the contractor, determine the rates on the basis of the market rates and the contractor shall be paid in accordance with the rates so determined.

#### **B. For Maintenance works including works of upgradation, aesthetic, special repair, addition/ alteration:**

In the case of contract items, which exceed the limits laid down in schedule F, the contractor shall be paid rates specified in the schedule of quantities.

The prescribed time limits for finalising rates for Extra Item(s), Substitute Item(s) and Deviated Quantities of contract items are as under:

- |   |          |
|---|----------|
| (i) If the Tendered value of work is up to Rs. 45 lac :                             | 30 days. |
| (ii) If the Tendered value of work is more than Rs 45 lac and up to Rs. 2.5 Crore : | 45 days. |
| (iii) If the Tendered value of work exceeds Rs. 2.5 Crore :                         | 60 days. |

#### **12.3 A. For Project and original works:**

The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Schedule F, and the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the rates for the work in

question within one month of the expiry of the said period of fifteen days having regard to the market rates.

**B. For Maintenance works including works of upgradation, aesthetic, special repair, addition/ alteration:**

In case of decrease in the rates prevailing in the market of items for the work in excess of the limits laid down in Schedule F, the Engineer-in-Charge shall after giving notice to the contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the rates for the work in question within one month of the expiry of the said period of fifteen days having regard to the market rates.

**12.4** The contractor shall send to the Engineer-in-Charge once every three months, an up to date account giving complete details of all claims for additional payments to which the contractor may consider himself entitled and of all additional work ordered by the Engineer-in-Charge which he has executed during the preceding quarter failing which the contractor shall be deemed to have waived his right. However, the Chief Engineer may authorise consideration of such claims on merits.

**12.5** For the purpose of operation of Schedule “F”, the following works shall be treated as works relating to foundation unless & otherwise defined in the contract:

(i) For Buildings : All works up to 1.2 metres above ground level or up to floor 1 level whichever is lower.

(ii) For abutments, piers and well staining : All works up to 1.2 m above the bed level.

(iii) For retaining walls, wing walls, compound walls, chimneys, over head reservoirs/ tanks and other elevated structures : All works up to 1.2 metres above the ground level.

(iv) For reservoirs/tanks (other than overhead reservoirs/tanks) : All works up to 1.2 metres above the ground level.

(v) For basement: All works up to 1.2 m above ground level or up to floor 1 level whichever is lower.

(vi) For Roads, all items of excavation and filling including treatment of sub base.

**12.6** Any operation incidental to or necessarily has to be in contemplation of tenderer while filing tender, or necessary for proper execution of the item included in the Schedule of quantities or in the schedule of rates mentioned above, whether or not, specifically indicated in the description of the item and the relevant specifications, shall be deemed to be included in the rates quoted by the tenderer or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations.

## **CLAUSE 13**

### **Foreclosure of contract due to Abandonment or Reduction in Scope of Work**

If at any time after acceptance of the tender, Engineer-in-charge shall decide to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works to be carried out, the Engineer-in-Charge shall give notice in writing to that effect to the contractor and the contractor shall

act accordingly in the matter. The contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full but which he did not derive in consequence of the foreclosure of the whole or part of the works.

The contractor shall be paid at contract rates, full amount for works executed at site and, in addition, a reasonable amount as certified by the Engineer-in-Charge for the items hereunder mentioned which could not be utilized on the work to the full extent in view of the foreclosure;

(i) Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labour huts, staff quarters and site office; storage accommodation and water storage tanks.

(ii) Government shall have the option to take over contractor's materials or any part thereof either brought to site or of which the contractor is legally bound to accept delivery from suppliers (for incorporation in or incidental to the work) provided, however Government shall be bound to take over the materials or such portions thereof as the contractor does not desire to retain. For materials taken over or to be taken over by Government, cost of such materials as detailed by Engineer-in-Charge shall be paid. The cost shall, however, take into account purchase price, cost of transportation and deterioration or damage which may have been caused to materials whilst in the custody of the contractor.

(iii) If any materials supplied by Government are rendered surplus, the same except normal wastage shall be returned by the contractor to Government at rates not exceeding those at which these were originally issued, less allowance for any deterioration or damage which may have been caused whilst the materials were in the custody of the contractor.

In addition, cost of transporting such materials from site to Government stores, if so required by Government, shall be paid.

(iv) Reasonable compensation for transfer of T & P from site to contractor's permanent stores or to his other works, whichever is less. If T & P are not transported to either of the said places, no cost of transportation shall be payable.

(v) Reasonable compensation for repatriation of contractor's site staff and imported labour to the extent necessary.

The contractor shall, if required by the Engineer-in-Charge, furnish to him, books of account, wage books, time sheets and other relevant documents and evidence as may be necessary to enable him to certify the reasonable amount payable under this condition.

The reasonable amount of items on (i), (iv) and (v) above shall not be in excess of 2% of the cost of the work remaining incomplete on the date of closure, i.e. total stipulated cost of the work as per accepted tender less the cost of work actually executed under the contract and less the cost of contractor's materials at site taken

over by the Government as per item (ii) above. Provided always that against any payments due to the contractor on this account or otherwise, the Engineer-in-Charge shall be entitled to recover or be credited with any outstanding balances due from the contractor for advance paid in respect of any tool, plants and materials and any other sums which at the date of termination were recoverable by the Government from the contractor under the terms of the contract.

A compensation for such eventuality, on account of damages etc. shall be payable @ 0.5% of cost of work remaining incomplete on date of closure i.e. total stipulated cost of the work less the cost of work actually executed under the contract shall be payable.

#### **Clause 14**

##### **Carrying out part work at risk & cost of contractor**

If contractor:

- (i) At any time makes default during currency of work or does not execute any part of the work with due diligence and continues to do so even after a notice in writing of 7 days in this respect from the Engineer-in-Charge; or
  - (ii) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Engineer-in-Charge; or
- Fails to complete the work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge.

The Engineer- in-Charge without invoking action under clause 3 may, without prejudice to any other right or remedy against the contractor which have either accrued or accrue thereafter to Government, by a notice in writing to take the part work / part incomplete work of any item(s) out of his hands and shall have powers to:

- (a) Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or
- (b) Carry out the part work / part incomplete work of any item(s) by any means at the risk and cost of the contractor.

The Engineer-in-Charge shall determine the amount, if any, is recoverable from the contractor for completion of the part work/ part incomplete work of any item(s) taken out of his hands and execute at the risk and cost of the contractor, the liability of contractor on account of loss or damage suffered by Government because of action under this clause shall not exceed 10% of the tendered value of the work.

In determining the amount, credit shall be given to the contractor with the value of work done in all respect in the same manner and at the same rate as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's materials taken over and incorporated in the work and use of plant and



machinery belonging to the contractor. The certificate of the Engineer-in-Charge as to the value of work done shall be final and conclusive against the contractor provided always that action under this clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the department are less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

Any excess expenditure incurred or to be incurred by Government in completing the part work/ part incomplete work of any item(s) or the excess loss of damages suffered or may be suffered by Government as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to Government in law or per as agreement be recovered from any money due to the contractor on any account, and if such money is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract.

In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

## **CLAUSE 15**

### **Suspension of Work**

(i) The contractor shall, on receipt of the order in writing of the Engineer-in-Charge, (whose decision shall be final and binding on the contractor) 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 so as not to cause any damage or injury to the work already done or endanger the safety thereof for any of the following reasons:

(a) on account of any default on the part of the contractor or;

(b) for proper execution of the works or part thereof for reasons other than the default of the contractor; or

(c) for safety of the works or part thereof.

The contractor shall, during such suspension, properly protect and secure the works to the extent necessary and carry out the instructions given in that behalf by the Engineer-in-Charge.

(ii) If the suspension is ordered for reasons (b) and (c) in sub-para (i) above:

(a) the contractor shall be entitled to an extension of time equal to the period of every such suspension PLUS 25%, for completion of the item or group of items of work

for which a separate period of completion is specified in the contract and of which the suspended work forms a part, and;

(b) If the total period of all such suspensions in respect of an item or group of items or work for which a separate period of completion is specified in the contract exceeds thirty days, the contractor shall, in addition, be entitled to such compensation as the Engineer-in-Charge may consider reasonable in respect of salaries and/or wages paid by the contractor to his employees and labour at site, remaining idle during the period of suspension, adding thereto 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within fifteen days of the expiry of the period of 30 days.

(iii) If the works or part thereof is suspended on the orders of the Engineer-in-Charge for more than three months at a time, except when suspension is ordered for reason (a) in subpara (i) above, the contractor may after receipt of such order serve a written notice on the Engineer-in-Charge requiring permission within fifteen days from receipt by the Engineer-in-Charge of the said notice, to proceed with the work or part thereof in regard to which progress has been suspended and if such permission is not granted within that time, the contractor, if he intends to treat the suspension, where it affects only a part of the works as an omission of such part by Government or where it affects whole of the works, as an abandonment of the works by Government, shall within ten days of expiry of such period of 15 days give notice in writing of his intention to the Engineer-in-Charge. In the event of the contractor treating the suspension as an abandonment of the contract by Government, he shall have no claim to payment of any compensation on account of any profit or advantage which he might have derived from the execution of the work in full but which he could not derive in consequence of the abandonment. He shall, however, be entitled to such compensation, as the Engineer-in-Charge may consider reasonable, in respect of salaries and/or wages paid by him to his employees and labour at site, remaining idle in consequence adding to the total thereof 2% to cover indirect expenses of the contractor provided the contractor submits his claim supported by details to the Engineer-in-Charge within 30 days of the expiry of the period of 3 months.

#### **CLAUSE 15 A**

##### **Compensation in case of Delay of Supply of Material by Govt.-Deleted**

This clause 15 A will not be applicable for works where no material is stipulated.

#### **CLAUSE 16**

##### **Action in case Work not done as per Specifications**

All works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-Incharge, his authorized subordinates in charge of the work and all the superior officers, officer of the Quality Assurance Unit of the Department or any organization engaged by the Department for Quality Assurance and of the Chief

Technical Examiner's Office, and the contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the contractor himself.

If it shall appear to the Engineer-in-charge or his authorized subordinates in charge of the work or to the Chief Engineer in charge of Quality Assurance or his subordinate officers or the officers of the organization engaged by the Department for Quality Assurance or to the Chief Technical Examiner or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the contractor shall, on demand in writing which shall be made within twelve months (six months in the case of work costing Rs. 10 Lac and below except road work) of the completion of the work from the Engineer-in-Charge specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the contractor shall be liable to pay compensation at the same rate as under clause 2 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the authority specified in schedule 'F' may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the contractor. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the contractor

## **CLAUSE 17**

### **Contractor Liable for Damages, defects during defect liability period**

If the contractor or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within twelve months (six months in the case of work costing Rs. Ten lacs and below except road work) after a certificate final or

otherwise of its completion shall have been given by the Engineer-in-Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of twelve months (six months in the case of work costing Rs. Ten lacs and below except road work) after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later. Provided that in the case of road work, if in the opinion of the Engineer-in-Charge, half of the security deposit is sufficient, to meet all liabilities of the contractor under this contract, half of the security deposit will be refundable after six months and the remaining half after twelve months of the issue of the said certificate of completion or till the final bill has been prepared and passed whichever is later.

In case of Maintenance and Operation works of E&M services, the security deposit deducted from contractors shall be refunded within one month from the date of final payment or within one month from the date of completion of the maintenance contract whichever is earlier.

## **CLAUSE 18**

### **Contractor to Supply Tools & Plants etc.**

The contractor shall provide at his own cost all materials (except such special materials, if any, as may in accordance with the contract be supplied from the Engineer-in-Charge's stores), machinery, tools & plants as specified in schedule F. In addition to this, appliances, implements, other plants, ladders, cordage, tackle, scaffolding and temporary works required for the proper execution of the work, whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or referred to in these conditions or not, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and from the work. The contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out works, and counting, weighing and assisting the measurement for examination at any time and from time to time of the work or materials. Failing his so doing, the same may be provided by the Engineer-in-Charge at the expense of the contractor and the expenses may be deducted, from any money due to the contractor, under this contract or otherwise and/or from his security deposit or the proceeds of sale thereof, or of a sufficient portions thereof.

## **CLAUSE 18 A**

### **Recovery of Compensation paid to Workmen**

In every case in which by virtue of the provisions sub-section (1) of Section 12, of the Workmen's Compensation Act, 1923, Government is obliged to pay compensation to a workman employed by the contractor, in execution of the works, Government will recover from the contractor, the amount of the compensation so paid; and, without prejudice to the rights of the Government under sub-section (2) of Section 12, of the said Act, Government shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Government to the contractor whether under this contract or otherwise. Government shall not be bound to contest any claim made against it under sub-section (1) of Section 12, of the said Act, except on the written request of the contractor and upon his giving to Government full security for all costs for which Government might become liable in consequence of contesting such claim.

#### **CLAUSE 18 B**

##### **Ensuring Payment and Amenities to Workers if Contractor fails**

In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, Government is obliged to pay any amounts of wages to a workman employed by the contractor in execution of the works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Act and the rules under Clause 19H or under the C.P.W.D. Contractor's Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by C.P.W.D. Contractors, Government will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of the Government under sub-section(2) of Section 20, and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, Government shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by Government to the contractor whether under this contract or otherwise Government shall not be bound to contest any claim made against it under sub-section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the contractor and upon his giving to the Government full security for all costs for which Government might become liable in contesting such claim.

#### **CLAUSE 19**

##### **Labour Laws to be complied by the Contractor**

The contractor shall obtain a valid licence under the Contract Labour (R&A) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, before the commencement of the work, and continue to have a valid license until the completion of the work. The contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) Act, 1986.

The contractor shall also comply with the provisions of the building and other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and the building and other Construction Workers Welfare Cess Act, 1996.

Any failure to fulfil these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

**CLAUSE 19A**

No labour below the age of fourteen years shall be employed on the work.

**CLAUSE 19 B**

**Payment of Wages**

Payment of wages:

(i) The contractor shall pay to labour employed by him either directly or through subcontractors, wages not less than fair wages as defined in the C.P.W.D. Contractor's Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

(ii) The contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wage to labour indirectly engaged on the work, including any labour engaged by his sub-contractors in connection with the said work, as if the labour had been immediately employed by him.

(iii) In respect of all labour directly or indirectly employed in the works for performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with the Central Public Works Department contractor's Labour Regulations made by Government from time to time in regard to payment of wages, wage period, deductions from wages recovery of wages not paid and deductions unauthorisedly made, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and the Contract Labour (Regulation and Abolition) Central Rules, 1971, wherever applicable.

(iv) (a) The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfilment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of the Regulations.

(b) Under the provision of Minimum Wages (Central) Rules, 1950, the contractor is bound to allow to the labours directly or indirectly employed in the works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the contractor by the Engineer-in-Charge concerned.

In the case of Union Territory of Delhi, however, as the all inclusive minimum daily wages fixed under Notification of the Delhi Administration No.F.12(162)MWO/DAB/43884-91, dated 31-12-1979 as amended from time to time are inclusive of wages for the weekly day of rest, the question of extra payment for weekly holiday would not arise.

(v) The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contractor's Labour (Regulation and Abolition) Act 1970, or the modifications thereof or any other laws relating thereto and the rules made thereunder from time to time.

(vi) The contractor shall indemnify and keep indemnified Government against payments to be made under and for the observance of the laws aforesaid and the C.P.W.D. Contractor's Labour Regulations without prejudice to his right to claim indemnity from his sub-contractors.

(vii) The laws aforesaid shall be deemed to be a part of this contract and any breach thereof shall be deemed to be a breach of this contract.

(viii) Whatever is the minimum wage for the time being, or if the wage payable is higher than such wage, such wage shall be paid by the contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise.

(ix) The contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

#### **CLAUSE 19C**

In respect of all labour directly or indirectly employed in the work for the performance of the contractor's part of this contract, the contractor shall at his own expense arrange for the safety provisions as per C.P.W.D. Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the contractor fails to make arrangement and provide necessary facilities as aforesaid, he shall be liable to pay a penalty of Rs.200/- for each default and in addition, the Engineer-in- Charge shall be at liberty to make arrangement and provide facilities as aforesaid and recover the costs incurred in that behalf from the contractor.

#### **CLAUSE 19 D**

The contractor shall submit by the 4th and 19th of every month, to the Engineer-in-Charge, a true statement showing in respect of the second half of the preceding month and the first half of the current month respectively:-

(1) the number of labourers employed by him on the work,

- (2) their working yours,
- (3) the wages paid to them,
- (4) the accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them, and
- (5) the number of female workers who have been allowed maternity benefit according to Clause 19F and the amount paid to them.

Failing which the contractor shall be liable to pay to Government, a sum not exceeding Rs.200/- for each default or materially incorrect statement. The decision of the Executive Engineer shall be final in deducting from any bill due to the contractor, the amount levied as fine and be binding on the contractor.

#### **CLAUSE 19 E**

In respect of all labour directly or indirectly employed in the works for the performance of the contractor's part of this contract, the contractor shall comply with or cause to be complied with all the rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by the Central Public Works Department and its contractors.

#### **CLAUSE 19 F**

Leave and pay during leave shall be regulated as follows:-

##### 1. Leave :

- (i) in the case of delivery - maternity leave not exceeding 8 weeks, 4 weeks up to and including the day of delivery and 4 weeks following that day,
- (ii) in the case of miscarriage - upto 3 weeks from the date of miscarriage.

##### 2. Pay :

(i) in the case of delivery - leave pay during maternity leave will be at the rate of the women's average daily earnings, calculated on total wages earned on the days when full time work was done during a period of three months immediately preceding the date on which she gives notice that she expects to be confined or at the rate of Rupee one only a day whichever is greater.

(ii) in the case of miscarriage - leave pay at the rate of average daily earning calculated on the total wages earned on the days when full time work was done during a period of three months immediately preceding the date of such miscarriage.

##### 3. Conditions for the grant of Maternity Leave:

No maternity leave benefit shall be admissible to a woman unless she has been employed for a total period of not less than six months immediately preceding the date on which she proceeds on leave.

4. The contractor shall maintain a register of Maternity (Benefit) in the Prescribed Form as shown in appendix -I and II, and the same shall be kept at the place of work.



#### **CLAUSE 19 G**

In the event of the contractor(s) committing a default or breach of any of the provisions of the Central Public Works Department, Contractor's Labour Regulations and Model Rules for the protection of health and sanitary arrangements for the workers as amended from time to time or furnishing any information or submitting or filing any statement under the provisions of the above Regulations and' Rules which is materially incorrect, he/they shall, without prejudice to any other liability, pay to the Government a sum not exceeding Rs.200/- for every default, breach or furnishing, making, submitting, filing such materially incorrect statements and in the event of the contractor(s) defaulting continuously in this respect, the penalty may be enhanced to Rs.200/- per day for each day of default subject to a maximum of 5 per cent of the estimated cost of the work put to tender. The decision of the Engineer-in-Charge shall be final and binding on the parties. Should it appear to the Engineer-in-Charge that the contractor(s) is/are not properly observing and complying with the provisions of the C.P.W.D. Contractor's Labour Regulations and Model Rules and the provisions of the Contract Labour (Regulation and Abolition) Act 1970, and the Contract Labour (R& A) Central Rules 1971, for the protection of health and sanitary arrangements for work-people employed by the contractor(s) (hereinafter referred as "the said Rules") the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said Rules be complied with and the amenities prescribed therein be provided to the work-people within a reasonable time to be specified in the notice. If the contractor(s) shall fail within the period specified in the notice to comply with and/observe the said Rules and to provide the amenities to the work-people as aforesaid, the Engineer-in-Charge shall have the power to provide the amenities hereinbefore mentioned at the cost of the contractor(s). The contractor(s) shall erect, make and maintain at his/their own expense and to approved standards all necessary huts and sanitary arrangements required for his/their work-people on the site in connection with the execution of the works, and if the same shall not have been erected or constructed, according to approved standards, the Engineer-in-Charge shall have power to give notice in writing to the contractor(s) requiring that the said huts and sanitary arrangements be remodelled and/or reconstructed according to approved standards, and if the contractor(s) shall fail to remodel or reconstruct such huts and sanitary arrangements according to approved standards within the period specified in the notice, the Engineer-in-Charge shall have the power to remodel or reconstruct such huts and sanitary arrangements according to approved standards at the cost of the contractor(s).

#### **CLAUSE 19 H**

The contractor(s) shall at his/their own cost provide his/their labour with a sufficient number of huts (hereinafter referred to as the camp) of the following specifications on a suitable plot of land to be approved by the Engineer-in-Charge.

(i) (a) The minimum height of each hut at the eaves level shall be 2.10m (7 ft.) and the floor area to be provided will be at the rate of 2.7 sq.m. (30 sq.ft.) for each member of the worker's family staying with the labourer.

(b) The contractor(s) shall in addition construct suitable cooking places having a minimum area of 1.80m x 1.50m (6'x5') adjacent to the hut for each family.

(c) The contractor(s) shall also construct temporary latrines and urinals for the use of the labourers each on the scale of not less than four per each one hundred of the total strength, separate latrines and urinals being provided for women.

(d) The contractor(s) shall construct sufficient number of bathing and washing places, one unit for every 25 persons residing in the camp. These bathing and washing places shall be suitably screened.

(ii) (a) All the huts shall have walls of sun-dried or burnt-bricks laid in mud mortar or other suitable local materials as may be approved by the Engineer-in-Charge. In case of sun-dried bricks, the walls should be plastered with mud gobri on both sides. The floor may be kutcha but plastered with mud gobri and shall be at least 15 cm (6") above the surrounding ground. The roofs shall be laid with thatch or any other materials as may be approved by the Engineer-in-Charge and the contractor shall ensure that throughout the period of their occupation, the roofs remain water-tight.

(b) The contractor(s) shall provide each hut with proper ventilation.

(c) All doors, windows, and ventilators shall be provided with suitable leaves for security purposes.

(d) There shall be kept an open space of at least 7.2m (8 yards) between the rows of huts which may be reduced to 6m (20 ft.) according to the availability of site with the approval of the Engineer-in-Charge. Back to back construction will be allowed.

(iii) Water Supply - The contractor(s) shall provide adequate supply of water for the use of labourers. The provisions shall not be less than two gallons of pure and wholesome water per head per day for drinking purposes and three gallons of clean water per head per day for bathing and washing purposes. Where piped water supply is available, supply shall be at stand posts and where the supply is from wells or river, tanks which may be of metal or masonry, shall be provided. The contractor(s) shall also at his/ their own cost make arrangements for laying pipe lines for water supply to his/ their labour camp from the existing mains wherever available, and shall pay all fees and charges therefore.

(iv) The site selected for the camp shall be high ground, removed from jungle.

(v) Disposal of Excreta - The contractor(s) shall make necessary arrangements for the disposal of excreta from the latrines by trenching or incineration which shall be according to the requirements laid down by the Local Health Authorities. If trenching or incineration is not allowed, the contractor(s) shall make arrangements for the removal of the excreta through the Municipal Committee/authority and inform it about the number of labourers employed so that arrangements may be made by such

Committee/authority for the removal of the excreta. All charges on this account shall be borne by the contractor and paid direct by him to the Municipality/authority. The contractor shall provide one sweeper for every eight seats in case of dry system.

(vi) Drainage - The contractor(s) shall provide efficient arrangements for draining away sullage water so as to keep the camp neat and tidy.

(vii) The contractor(s) shall make necessary arrangements for keeping the camp area sufficiently lighted to avoid accidents to the workers.

(viii) Sanitation - The contractor(s) shall make arrangements for conservancy and sanitation in the labour camps according to the rules of the Local Public Health and Medical Authorities.

#### **CLAUSE 19 I**

The Engineer-in-Charge may require the contractor to dismiss or remove from the site of the work any person or persons in the contractors' employ upon the work who may be incompetent or misconduct himself and the contractor shall forthwith comply with such requirements. In respect of maintenance/repair or renovation works etc. where the labour have an easy access to the individual houses, the contractor shall issue identity cards to the labourers, whether temporary or permanent and he shall be responsible for any untoward action on the part of such labour. AE/JE will display a list of contractors working in the colony/Blocks on the notice board in the colony and also at the service centre, to apprise the residents about the same.

#### **CLAUSE 19J**

It shall be the responsibility of the contractor to see that the building under construction is not occupied by any body unauthorizedly during construction, and is handed over to the Engineer-in-Charge with vacant possession of complete building. If such building though completed is occupied illegally, then the Engineer-in-Charge shall have the option to refuse to accept the said building/buildings in that position. Any delay in acceptance on this account will be treated as the delay in completion and for such delay, a levy upto 5% of tendered value of work may be imposed by the Chief Engineer whose decision shall be final both with regard to the justification and quantum and be binding on the contractor.

However, the Chief Engineer, through a notice, may require the contractor to remove the illegal occupation any time on or before construction and delivery.

#### **CLAUSE 19K**

##### **Employment of skilled/semi-skilled workers**

The contractor shall, at all stages of work, deploy skilled/semi-skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute/Industrial Training Institute/National Institute of construction Management and Research (NICMAR)/ National Academy of Construction, CIDC or any similar

reputed and recognized Institute managed/ certified by State/Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled/semi skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer in charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in- Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs. 100 per such tradesman per day. Decision of Engineer in Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding.

Provided always, that the provisions of this clause, shall not be applicable for works with estimated cost put to tender being less than Rs. 5 crores.

#### **CLAUSE 19L**

##### **Contribution of EPF and ESI**

The ESI and EPF contributions on the part of employer in respect of this contract shall be paid

by the contractor. These contributions on the part of the employer paid by the contractor shall

be reimbursed by the Engineer-in-charge to the contractor on actual basis.

#### **CLAUSE 20**

##### **Minimum Wages Act to be Complied With**

The contractor shall comply with all the provisions of the Minimum Wages Act, 1948, and Contract Labour (Regulation and Abolition) Act, 1970, amended from time to time and rules framed thereunder and other labour laws affecting contract labour that may be brought into force from time to time.

#### **CLAUSE 21**

##### **Work not to be sublet. Action in case of insolvency**

The contract shall not be assigned or sublet without the written approval of the Engineer-in -Charge. And if the contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence any insolvency proceedings or make any composition with his creditors or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise, shall either directly or indirectly, be given, promised or offered by the contractor, or any of his servants or agent to any public officer or person in the employ of Government in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer-in-Charge on behalf of the Director, IIM Indore shall have power to adopt the course specified in Clause 3 hereof in the interest of Government and in the event of such course being adopted, the consequences specified in the said Clause 3 shall ensue.

## **CLAUSE 22**

All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Government without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

## **CLAUSE 23**

### **Changes in firm's Constitution to be Intimated**

Where the contractor is a partnership firm, the previous approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the constitution of the firm. Where the contractor is an individual or a Hindu undivided family business concern, such approval as aforesaid shall likewise be obtained before the contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If previous approval as aforesaid is not obtained, the contract shall be deemed to have been assigned in contravention of Clause 21 hereof and the same action may be taken, and the same consequences shall ensue as provided in the said Clause 21.

## **CLAUSE 24**

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects of the Engineer-in-Charge who shall be entitled to direct at what point or points and in what manner they are to be commenced, and from time to time carried on.

## **CLAUSE 25**

### **Settlement of Disputes & Arbitration**

Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:

(i) If the contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-Charge on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable, he shall promptly within 15 days request the Chief Engineer in writing for written instruction or decision. Thereupon, the Chief Engineer shall give his written instructions or decision within a period of one month from the receipt of the contractor's letter.

If the Chief Engineer fails to give his instructions or decision in writing within the aforesaid period or if the contractor is dissatisfied with the instructions or decision of the Chief Engineer, the contractor may, within 15 days of the receipt of Chief Engineer's decision, appeal to the Director, IIM Indore who shall afford an opportunity to the contractor to be heard, if the latter so desires, and to offer evidence in support of his appeal. The Director, IIM Indore shall give his decision within 30 days of receipt of contractor's appeal. If the contractor is dissatisfied with the decision of the Director, IIM Indore, the contractor may within 30 days from the receipt of the decision from the Director, IIM Indore, appeal before the Dispute Redressal Committee (DRC) along with a list of disputes with amounts claimed in respect of each such dispute and giving reference to the rejection of his disputes by the Director, IIM Indore. The Dispute Redressal Committee (DRC) shall give his decision within a period of 90 days from the receipt of Contractor's appeal. The constitution of Dispute Redressal Committee (DRC) shall be as indicated in Schedule 'F'. If the Dispute Redressal Committee (DRC) fails to give his decision within the aforesaid period or any party is dissatisfied with the decision of Dispute Redressal Committee (DRC), then either party may within a period of 30 days from the receipt of the decision of Dispute Redressal Committee (DRC), give notice to the Director IIM Indore for appointment of arbitrator on prescribed proforma as per Appendix XV, failing which the said decision shall be final binding and conclusive and not referable to adjudication by the arbitrator.

It is a term of contract that each party invoking arbitration must exhaust the aforesaid mechanism of settlement of claims/disputes prior to invoking arbitration.

(ii) Except where the decision has become final, binding and conclusive in terms of Sub Para (i) above, disputes or difference shall be referred for adjudication through arbitration by a sole arbitrator appointed by the Director IIM Indore. If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever, another sole arbitrator shall be appointed in the manner aforesaid. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the rejection by the Chief Engineer of the appeal.

It is also a term of this contract that no person, other than a person appointed by such Director IIM Indore, as aforesaid, should act as arbitrator and if for any reason that is not possible, the matter shall not be referred to arbitration at all.

It is also a term of this contract that if the contractor does not make any demand for appointment of arbitrator in respect of any claims in writing as aforesaid within 120 days of receiving the intimation from the Engineer-in-charge that the final bill is ready for payment, the claim of the contractor shall be deemed to have been waived

and absolutely barred and the Government shall be discharged and released of all liabilities under the contract in respect of these claims.

The arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 (26 of 1996) or any statutory modifications or re-enactment thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceeding under this clause.

It is also a term of this contract that the arbitrator shall adjudicate on only such disputes as are referred to him by the appointing authority and give separate award against each dispute and claim referred to him and in all cases where the total amount of the claims by any party exceeds Rs. 1,00,000/-, the arbitrator shall give reasons for the award.

It is also a term of the contract that if any fees are payable to the arbitrator, these shall be paid equally by both the parties

It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties calling them to submit their statement of claims and counter statement of claims. The venue of the arbitration shall be such place as may be fixed by the arbitrator in his sole discretion. The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any, of the arbitrator) shall be in the discretion of the arbitrator who may direct to any by whom and in what manner, such costs or any part thereof shall be paid and fix or settle the amount of costs to be so paid.

## **CLAUSE 26**

### **Contractor to indemnify Govt. against Patent Rights**

The contractor shall fully indemnify and keep indemnified the Director, IIM Indore against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under or action brought against Government in respect of any such matters as aforesaid, the contractor shall be immediately notified thereof and the contractor shall be at liberty, at his own expense, to settle any dispute or to conduct any litigation that may arise there from, provided that the contractor shall not be liable to indemnify the Director, IIM Indore if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer-in-Charge in this behalf

## **CLAUSE 27**

### **Lump sum Provisions in Tender**

When the estimate on which a tender is made includes lump sum in respect of parts of the work, the contractor shall be entitled to payment in respect of the items of

work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the Engineer-in-Charge payable of measurement, the Engineer-in-Charge may at his discretion pay the lump-sum amount entered in the estimate, and the certificate in writing of the Engineer-in-Charge shall be final and conclusive against the contractor with regard to any sum or sums payable to him under the provisions of the clause.

#### **CLAUSE 28**

##### **Action where no Specifications are Specified**

In the case of any class of work for which there is no such specifications as referred to in Clause 11, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there are no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers' specifications, if not available then as per District Specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in-Charge.

#### **CLAUSE 29**

##### **Withholding and lien in respect of sum due from contractor**

(i) Whenever any claim or claims for payment of a sum of money arises out of or under the contract or against the contractor, the Engineer-in-Charge or the Government shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any deposited by the contractor and for the purpose aforesaid, the Engineer in- Charge or the Government shall be entitled to withhold the security deposit, if any, furnished as the case may be and also have a lien over the same pending finalisation or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the Engineer-in-Charge or the Government shall be entitled to withhold and have a lien to retain to the extent of such claimed amount or amounts referred to above, from any sum or sums found payable or which may at any time thereafter become payable to the contractor under the same contract or any other contract with the Engineer-in-Charge of the Government or any contracting person through the Engineerin-Charge pending finalization of adjudication of any such claim.

It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or Government will be kept withheld or retained as such by the Engineer-in-Charge or Government till the claim arising out of or under the contract is determined by the arbitrator(if the contract is governed by the arbitration clause) by the competent court, as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm or a limited company, the Engineer-in-Charge or the Government shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found



payable to any partner/limited company as the case may be, whether in his individual capacity or otherwise.

(ii) Government shall have the right to cause an audit and technical examination of the works and the final bills of the contractor including all supporting vouchers, abstract, etc., to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the contractor under the contract or any work claimed to have been done by him under the contract and found not to have been executed, the contractor shall be liable to refund the amount of over-payment and it shall be lawful for Government to recover the same from him in the manner prescribed in sub-clause (i) of this clause or in any other manner legally permissible; and if it is found that the contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by Government to the contractor, without any interest thereon whatsoever. Provided that the Government shall not be entitled to recover any sum overpaid, nor the contractor shall be entitled to payment of any sum paid short where such payment has been agreed upon between the Chief Engineer or Executive Engineer on the one hand and the contractor on the other under any term of the contract permitting payment for work after assessment by the Chief Engineer or the Executive Engineer.

#### **CLAUSE 29A**

##### **Lien in respect of claims in other Contracts**

Any sum of money due and payable to the contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in-Charge or the Government or any other contracting person or persons through Engineer-in-Charge against any claim of the Engineer-in-Charge or Government or such other person or persons in respect of payment of a sum of money arising out of or under any other contract made by the contractor with the Engineer-in-Charge or the Government or with such other person or persons.

It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge or the Government will be kept withheld or retained as such by the Engineer-in-Charge or the Government or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the arbitration clause or by the competent court, as the case may be and that the contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

#### **CLAUSE 30**

##### **Employment of coal mining or controlled area labour not permissible**

The contractor shall not employ coal mining or controlled area labour falling under any category whatsoever on or in connection with the work or recruit labour from

area within a radius of 32 km (20 miles) of the controlled area. Subject as above the contractor shall employ imported labour only i.e., deposit imported labour or labour imported by contractors from area, from which import is permitted.

Where ceiling price for imported labour has been fixed by State or Regional Labour Committees

not more than that ceiling price shall be paid to the labour by the contractor.

The contractor shall immediately remove any labourer who may be pointed out by the Engineer-in-Charge as being a coal mining or controlled area labourer. Failure to do so shall render the contractor liable to pay to Government a sum calculated at the rate of Rs.10/- per day per labourer.

The certificate of the Engineer-in-Charge about the number of coal mining or controlled area labourer and the number of days for which they worked shall be final and binding upon all parties to this contract.

It is declared and agreed between the parties that the aforesaid stipulation in this clause is one in which the public are interested within the meaning of the exception in Section 74 of Indian Contract Act, 1872.

**Explanation:-** Controlled Area means the following areas:

Districts of Dhanbad, Hazaribagh, Jamtara - a Sub-Division under Santhal Pargana Commissionery, Districts of Bankuara, Birbhum, Burdwan, District of Bilaspur.

Any other area which may be declared a Controlled Area by or with the approval of the Central Government

## **CLAUSE 31**

### **Unfiltered water Supply**

The contractor(s) shall make his/their own arrangements for water required for the work and nothing extra will be paid for the same. This will be subject to the following conditions.

(i) That the water used by the contractor(s) shall be fit for construction purposes to the satisfaction of the Engineer-in-Charge.

(ii) The Engineer-in-Charge shall make alternative arrangements for supply of water at the risk and cost of contractor(s) if the arrangements made by the contractor(s) for procurement of water are in the opinion of the Engineer-in-Charge, unsatisfactory.

## **CLAUSE 31 A**

### **Departmental water supply, if available**

Water if available may be supplied to the contractor by the department subject to the following

conditions:-

(i) The water charges @ 1 % shall be recovered on gross amount of the work done.

(ii) The contractor(s) shall make his/their own arrangement of water connection and laying of pipelines from existing main of source of supply.

(iii) The Department do not guarantee to maintain uninterrupted supply of water and it will be incumbent on the contractor(s) to make alternative arrangements for water

at his/ their own cost in the event of any temporary break down in the Government water main so that the progress of his/their work is not held up for want of water. No claim of damage or refund of water charges will be entertained on account of such break down.

## **CLAUSE 32**

### **Alternate water Arrangements**

(i) Where there is no piped water supply arrangement and the water is taken by the contractor from the wells or hand pump constructed by the Government, no charge shall be recovered from the contractor on that account. The contractor shall, however, draw water at such hours of the day that it does not interfere with the normal use for which the hand pumps and wells are intended. He will also be responsible for all damage and abnormal repairs arising out of his use, the cost of which shall be recoverable from him. The Engineer-in-Charge shall be the final authority to determine the cost recoverable from the contractor on this account and his decision shall be binding on the contractor.

(ii) The contractor shall be allowed to construct temporary wells in Government land for taking water for construction purposes only after he has got permission of the Engineer-in- Charge in writing. No charges shall be recovered from the contractor on this account, but the contractor shall be required to provide necessary safety arrangements to avoid any accidents or damage to adjacent buildings, roads and service lines. He shall be responsible for any accidents or damage caused due to construction and subsequent maintenance of the wells and shall restore the ground to its original condition after the wells are dismantled on completion of the work.

## **CLAUSE 33**

### **Return of Surplus materials**

Notwithstanding anything contained to the contrary in this contract, where any materials for the execution of the contract are procured with the assistance of Government either by issue from Government stocks or purchase made under orders or permits or licences issued by Government, the contractor shall hold the said materials economically and solely for the purpose of the contract and not dispose of them without the written permission of the Government and return, if required by the Engineer-in-Charge, all surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination for any reason whatsoever on being paid or credited such price as the Engineer-in-Charge shall determine having due regard to the condition of the materials. The price allowed to the contractor however shall not exceed the amount charged to him excluding the element of storage charges. The decision of the Engineer-in-Charge shall be final and conclusive. In the event of breach of the aforesaid condition, the contractor shall in addition to throwing himself open to action for contravention of the terms of the licence or permit and/or for criminal breach of trust, be liable to Government for all moneys, advantages or profits resulting or which in the usual course would have resulted to him by reason of such breach.

## **CLAUSE 34**

### **Hire of Plant & Machinery**

(i) The contractor shall arrange at his own expense all tools, plant, machinery and equipment (hereinafter referred to as T&P) required for execution of the work except for the Plant & Machinery listed in Schedule 'C' and stipulated for issue to the contractor. If the contractor requires any item of T&P on hire from the T&P available with the Government over and above the T&P stipulated for issue, the Government will, if such item is available, hire it to the contractor at rates to be agreed upon between him and the Engineer-in-Charge. In such a case, all the conditions hereunder for issue of T&P shall also be applicable to such T&P as is agreed to be issued.

(ii) Plant and Machinery when supplied on hire charges shown in Schedule 'C' shall be made over and taken back at the departmental equipment yard/shed shown in Schedule 'C' and the contractor shall bear the cost of carriage from the place of issue to the site of work and back. The contractor shall be responsible to return the plant and machinery with condition in which it was handed over to him, and he shall be responsible for all damage caused to the said plant and machinery at the site of work or elsewhere in operation and otherwise during transit including damage to or loss of plant and for all losses due to his failure to return the same soon after the completion of the work for which it was issued. The Divisional Engineer shall be the sole judge to determine the liability of the contractor and its extent in this regard and his decision shall be final and binding on the contractor.

(iii) The plant and machinery as stipulated above will be issued as and when available and if required by the contractor. The contractor shall arrange his programme of work according to the availability of the plant and machinery and no claim, whatsoever, will be entertained from him for any delay in supply by the Department.

(iv) The hire charges shall be recovered at the prescribed rates from and inclusive of the date the plant and machinery made over upto and inclusive of the date of the return in good order even though the same may not have been working for any cause except major breakdown due to no fault of the contractor or faulty use requiring more than three working days continuously (excluding intervening holidays and Sundays) for bringing the plant in order. The contractor shall immediately intimate in writing to the Engineer-in-Charge when any plant or machinery gets out of order requiring major repairs as aforesaid. The Engineer-in-Charge shall record the date and time of receipt of such intimation in the log sheet of the plant or machinery. Based on this if the breakdown before lunch period or major breakdown will be computed considering half a day's breakdown on the day of complaint. If the breakdown occurs in the post lunch period of major breakdown will be computed starting from the next working day. In case of any dispute under this clause, the decision of the Chief Engineer shall be final and binding on the contractor.

(v) The hire charges shown above are for each day of 8 hours (inclusive of the one hour lunch break) or part thereof.

(vi) Hire charges will include service of operating staff as required and also supply of lubricating oil and stores for cleaning purposes. Power fuel of approved type,

firewood, kerosene oil etc. for running the plant and machinery and also the full time chowkidar for guarding the plant and machinery against any loss or damage shall be arranged by the contractor who shall be fully responsible for the safeguard and security of plant and machinery. The contractor shall on or before the supply of plant and machinery sign an agreement indemnifying the Department against any loss or damage caused to the plant and machinery either during transit or at site of work.

(vii) Ordinarily, no plant and machinery shall work for more than 8 hours a day inclusive of one hour lunch break. In case of an urgent work however, the Engineer-in-Charge may, at his discretion, allow the plant and machinery to be worked for more than normal period of 8 hours a day. In that case, the hourly hire charges for overtime to be borne by the contractor shall be 50% more than the normal proportionate hourly charges (1/8th of the daily charges) subject to a minimum of half day's normal charges on any particular day. For working out hire charges for over time, a period of half an hour and above will be charged as one hour and a period of less than half an hour will be ignored.

(viii) The contractor shall release the plant and machinery every seventh day for periodical servicing and/or wash out which may take about three to four hours or more. Hire charges for full day shall be recovered from the contractor for the day of servicing/ wash out irrespective of the period employed in servicing.

(ix) The plant and machinery once issued to the contractor shall not be returned by him on account of lack of arrangements of labour and materials, etc. on his part, the same will be returned only when they are required for major repairs or when in the opinion of the Engineer-in-Charge, the work or a portion of work for which the same was issued is completed.

(x) Log Book for recording the hours of daily work for each of the plant and machinery supplied to the contractor will be maintained by the Department and will be countersigned by the contractor or his authorized agent daily. In case the contractor contests the correctness of the entries and/or fails to sign the Log Book, the decision of the Engineer-in-Charge shall be final and binding on him. Hire charges will be calculated according to the entries in the Log Book and will be binding on the contractor. Recovery on account of hire charges for road rollers shall be made for the minimum number of days worked out on the assumption that a roller can consolidate per day and maximum quantity of materials or area surfacing as noted against each in the annexed statement (see attached annexure).

(xi) In the case of concrete mixers, the contractors shall arrange to get the hopper cleaned and the drum washed at the close of the work each day or each occasion.

(a) In case rollers for consolidation are employed by the contractor himself, log book for such rollers shall be maintained in the same manner as is done in case of departmental rollers, maximum quantity of any items to be consolidated for each

roller-day shall also be same as in Annexure to Clause 34(x). For less use of rollers, recovery for the less roller days shall be made at the stipulated issue rate.

(xii) The contractor shall be responsible to return the plant and machinery in the condition in which it was handed over to him and he shall be responsible for all damage caused to the said plant and machinery at the site of work or elsewhere in operation or otherwise or during transit including damage to or loss of parts, and for all losses due to his failure to return the same soon after the completion of the work for which it was issued. The Divisional Engineer shall be the sole judge to determine the liability of the contractor and its extent in this regard and his decision shall be final and binding on the contractor.

(xiii) The contractor will be exempted from levy of any hire charges for the number of days he is called upon in writing by the Engineer-in-Charge to suspend execution of the work, provided Government plant and machinery in question have, in fact, remained idle with the contractor because of the suspension

(xiv) In the event of the contractor not requiring any item of plant and machinery issued by Government though not stipulated for issue in Schedule 'C' any time after taking delivery at the place of issue, he may return it after two days written notice or at any time without notice if he agrees to pay hire charges for two additional days without, in any way, affecting the right of the Engineer-in-Charge to use the said plant and machinery during the said period of two days as he likes including hiring out to a third party

## **CLAUSE 35**

**Condition relating to use of asphaltic materials-Deleted**

## **CLAUSE 36**

**Employment of Technical Staff and employees**

Contractors Superintendence, Supervision, Technical Staff & Employees

(i) The contractor shall provide all necessary superintendence during execution of the work and all along thereafter as may be necessary for proper fulfilling of the obligations under the contract.

The contractor shall immediately after receiving letter of acceptance of the tender and before commencement of the work, intimate in writing to the Engineer-in-Charge, the name(s), qualifications, experience, age, address(s) and other particulars along with certificates, of the principal technical representative to be in charge of the work and other technical representative(s) who will be supervising the work. Minimum requirement of such technical representative(s) and their qualifications and experience shall not be lower than specified in Schedule 'F'. The Engineer-in-Charge shall within 3 days of receipt of such communication intimate in writing his approval or otherwise of such a representative(s) to the contractor. Any such approval may at any time be withdrawn and in case of such withdrawal, the contractor shall appoint another such representative(s) according to the provisions of this clause. Decision of the tender accepting authority shall be final and binding on the contractor in this respect. Such a principal technical representative and other technical

representative(s) shall be appointed by the contractor soon after receipt of the approval from Engineer-in-charge and shall be available at site before start of work.

All the provisions applicable to the principal technical representative under the Clause will also be applicable to other technical representative(s) The principal technical representative and other technical representative(s) shall be present at the site of work for supervision at all times when any construction activity is in progress and also present himself/themselves, as required, to the Engineer-in-Charge and/or his designated representative to take instructions. Instructions given to the principal technical representative or other technical representative(s) shall be deemed to have the same force as if these have been given to the contractor. The principal technical representative and other technical representative(s) shall be actually available at site fully during all stages of execution of work, during recording/checking/test checking of measurements of works and whenever so required by the Engineer-in-Charge and shall also note down instructions conveyed by the Engineer-in-Charge or his designated representative(s) in the site order book and shall affix his/their signature in token of noting down the instructions and in token of acceptance of measurements/ checked measurements/ test checked measurements. The representative(s) shall not look after any other work. Substitutes, duly approved by Engineer-in-Charge of the work in similar manner as aforesaid shall be provided in event of absence of any of the representative(s) by more than two days. If the Engineer-in-Charge, whose decision in this respect is final and binding on the contractor, is convinced that no such technical representative(s) is/are effectively appointed or is/are effectively attending or fulfilling the provision of this clause, a recovery (nonrefundable) shall be effected from the contractor as specified in Schedule 'F' and the decision of the Engineer-In-Charge as recorded in the site order book and measurement recorded checked/test checked in Measurement Books shall be final and binding on the contractor. Further if the contractor fails to appoint suitable technical Principal technical representative and/or other technical representative(s) and if such appointed persons are not effectively present or are absent by more than two days without duly approved. Substitute or do not discharge their responsibilities satisfactorily, the Engineer-in-Charge shall have full powers to suspend the execution of the work until such date as suitable other technical representative(s) is/are appointed and the contractor shall be held responsible for the delay so caused to the work. The contractor shall submit a certificate of employment of the technical representative(s) (in the form of copy of Form-16 or CPF deduction issued to the Engineers employed by him) alongwith every on account bill final bill and shall produce evidence if at any time so required by the Engineer-in-Charge.

(ii) The contractor shall provide and employ on the site only such technical assistants as are skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to give proper supervision to the work. The contractor shall provide and employ skilled, semiskilled and unskilled labour as is necessary for proper and timely execution of the work. The Engineer-in-Charge shall be at liberty to object to and require the contractor to remove from the works any person who in his opinion misconducts himself, or is incompetent or negligent in the

performance of his duties or whose employment is otherwise considered by the Engineer-in-Charge to be undesirable. Such person shall not be employed again at works site without the written permission of the Engineer-in-Charge and the persons so removed shall be replaced as soon as possible by competent substitutes.

#### **CLAUSE 37**

##### **Levy/Taxes payable by Contractor**

(i) Sales Tax/VAT (except Service Tax), Building and other Construction Workers Welfare Cess or any other tax or Cess in respect of this contract shall be payable by the contractor and Government shall not entertain any claim whatsoever in this respect. However, in respect of service tax, same shall be paid by the contractor to the concerned department on demand and it will be reimbursed to him by the Engineer-in-Charge after satisfying that it has been actually and genuinely paid by the contractor.

(ii) The contractor shall deposit royalty and obtain necessary permit for supply of the red bajri, stone, kankar, etc. from local authorities.

If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of India and does not any time become payable by the contractor to the State Government, Local authorities in respect of any material used by the contractor in the works, then in such a case, it shall be lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from dues of the contractor.

#### **CLAUSE 38**

##### **Conditions for reimbursement of levy/taxes if levied after receipt of tenders**

(i) All tendered rates shall be inclusive of all taxes and levies (except Service Tax) payable under respective statutes. However, if any further tax or levy or cess is imposed by Statute, after the last stipulated date for the receipt of tender including extensions if any and the contractor thereupon necessarily and properly pays such taxes/levies/cess, the contractor shall be reimbursed the amount so paid, provided such payments, if any, is not, in the opinion of the Chief engineer (whose decision shall be final and binding on the contractor) attributable to delay in execution of work within the control of the contractor.

(ii) The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the Government and/or the Engineer-in-Charge and shall also furnish such other information/document as the Engineer-in-Charge may require from time to time.

(iii) The contractor shall, within a period of 30 days of the imposition of any such further tax or levy or cess, give a written notice thereof to the Engineer-in-charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

#### **CLAUSE 39**

##### **Termination of Contract on death of contractor**



Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Executive Engineer on behalf of the Director, IIM Indore shall have the option of terminating the contract without compensation to the contractor

#### **CLAUSE 40**

##### **If relative working in IIM INDORE then the contractor not allowed to tender**

The contractor shall not be permitted to tender for works / responsible for award and execution of contracts if his near relative is posted as Accountant or as an officer in any capacity between the grades of the Chief Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Officer in the IIM. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Department. If however the contractor is registered in any other department, he shall be debarred from tendering in IIM for any breach of this condition.

NOTE: By the term “near relatives” is meant wife, husband, parents and grandparents, children and grandchildren, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

#### **CLAUSE 41**

##### **No Gazetted Engineer to work as Contractor within one year of retirement**

No engineer of gazetted rank or other gazetted officer employed in engineering or administrative duties in an engineering department of the Government of India shall work as a contractor or employee of a contractor for a period of one year after his retirement from government service without the previous permission of Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found at any time to be such a person who had not obtained the permission of Government of India as aforesaid, before submission of the tender or engagement in the contractor's service, as the case may be.

#### **CLAUSE 42**

##### **Return of material & recovery for excess material issued.**

(i) After completion of the work and also at any intermediate stage in the event of nonreconciliation of materials issued, consumed and in balance - (see Clause 10), theoretical quantity of materials issued by the Government for use in the work shall be calculated on the basis and method given hereunder: -

(a) Quantity of cement & bitumen shall be calculated on the basis of quantity of cement & bitumen required for different items of work as shown in the Schedule of Rates mentioned in Schedule 'F'. In case any item is executed for which standard constants for the consumption of cement or bitumen are not available in the above mentioned schedule/statement or cannot be derived from the same shall be calculated on the basis of standard formula to be laid down by the Engineer-in-Charge.

(b) Theoretical quantity of steel reinforcement or structural steel sections shall be taken as the quantity required as per design or as authorized by Engineer-in-Charge, including authorized lappages, chairs etc. plus 3% wastage due to cutting into pieces,

such theoretical quantity being determined and compared with the actual issues each diameter wise, section wise and category wise separately

(c) Theoretical quantity of G.I. & C.I. or other pipes, conduits, wires and cables, pig lead and G.I./M.S. sheets shall be taken as quantity actually required and measured plus 5% for wastage due to cutting into pieces (except in the case of G.I./M.S. sheets it shall be 10%), such determination & comparison being made diameter wise & category wise.

(d) For any other material as per actual requirements.

(ii) Over the theoretical quantities of materials so computed a variation shall be allowed as specified in Schedule 'F'. The difference in the net quantities of material actually issued to the contractor and the theoretical quantities including such authorized variation, if not returned by the contractor or if not fully reconciled to the satisfaction of the Engineer-in-Charge within fifteen days of the issue of written notice by the Engineer-in-charge to this effect shall be recovered at the rates specified in Schedule 'F', without prejudice to the provision of the relevant conditions regarding return of materials governing the contract. Decision of Engineer-in-Charge in regard to theoretical quantities of materials, which should have been actually used as per the Annexure of the standard schedule of rates and recovery at rates specified in Schedule 'F', shall be final & binding on the contractor. For non scheduled items, the decision of the Chief Engineer regarding theoretical quantities of materials which should have been actually used, shall be final and binding on the contractor.

(iii) The said action under this clause is without prejudice to the right of the Government to take action against the contractor under any other conditions of contract for not doing the work according to the prescribed specifications.

### **CLAUSE 43**

#### **Compensation during warlike situations**

The work (whether fully constructed or not) and all materials, machines, tools and plants, scaffolding, temporary buildings and other things connected therewith shall be at the risk of the contractor until the work has been delivered to the Engineer-in-Charge and a certificate from him to that effect obtained. In the event of the work or any materials properly brought to the site for incorporation in the work being damaged or destroyed in consequence of hostilities or warlike operation, the contractor shall when ordered (in writing) by the Engineer-in-Charge to remove any debris from the site, collect and properly stack or remove in store all serviceable materials salvaged from the damaged work and shall be paid at the contract rates in accordance with the provision of this agreement for the work of clearing the site of debris, stacking or removal of serviceable material and for reconstruction of all works ordered by the Engineer-in-Charge, such payments being in addition to compensation upto the value of the work originally executed before being damaged or destroyed and not paid for. In case of works damaged or destroyed but not already measured and paid for, the compensation shall be assessed by the Executive Engineer upto Rs.5,000/- and by the Chief Engineer concerned for a higher amount. The contractor shall be paid for the damages/destruction suffered and for restoring the material at the rate based on analysis of rates tendered for in accordance with the provision of

the contract. The certificate of the Engineer-in-Charge regarding the quality and quantity of materials and the purpose for which they were collected shall be final and binding on all parties to this contract.

Provided always that no compensation shall be payable for any loss in consequence of hostilities or warlike operations (a) unless the contractor had taken all such precautions against air raid as are deemed necessary by the A.R.P. Officers or the Engineer-in-Charge (b) for any material etc. not on the site of the work or for any tools, plant, machinery, scaffolding, temporary building and other things not intended for the work.

In the event of the contractor having to carry out reconstruction as aforesaid, he shall be allowed such extension of time for its completion as is considered reasonable by the Executive Engineer.

#### **CLAUSE 44**

##### **Apprentices Act provisions to be complied with**

The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued thereunder from time to time. If he fails to do so, his failure will be a breach of the contract and the Chief Engineer may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

#### **CLAUSE 45**

##### **Release of Security deposit after labour clearance**

Release of Security Deposit of the work shall not be refunded till the contractor produces a clearance deposit after labour certificate from the Labour Officer. As soon as the work is virtually complete the contractor shall apply for the clearance certificate to the Labour Officer under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the Labour Officer to intimate if any complaint is pending against the contractor in respect of the work. If no complaint is pending, on record till after 3 months after completion of the work and/or no communication is received from the Labour Officer to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate and the Security Deposit will be released if otherwise due.

## PROFORMA OF SCHEDULES (For General Condition of Contracts : GCC)

### SCHEDULE 'A'

Schedule of quantities (as per Financial Bid).

### SCHEDULE 'B'

Schedule of materials to be issued to the contractor. - Deleted.

### SCHEDULE 'C'

Tools and plants to be hired to the contractor - Deleted.

### SCHEDULE 'D'

Extra schedule for specific requirements/document for the work, if any. - To be intimated later if required.

### SCHEDULE 'E'

Reference to General Conditions of contract laid down in the tender document.

Name of Work: **“Design, Manufacture, Supply, Installation, Testing & Commissioning of 3.15 MVA, 33/11kV power transformer at Utility-I of IIM, Indore”**

Estimated cost of work: Rs. 30,00,000/-

- (i) Earnest money Deposit: Rs. 60,000/- (to be returned after receiving performance guarantee)
- (ii) Performance Guarantee: 5% of tendered value.
- (iii) Security Deposit: 2.5% of tendered value.

or

2.5% of tendered value plus 50% of PG for contracts involving maintenance of the building and services/ other work after construction of same building and services/ other work.

### SCHEDULE 'F'

GENERAL RULES :                      Officer inviting tender- The Chief Engineer, IIM  
& DIRECTIONS                      Indore on behalf of the Director IIM Indore.

Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with

Clauses 12.2 & 12.3.

See below

Definitions:

2(v)	Engineer-in-Charge	Chief Engineer
2(viii)	Accepting Authority	Director
2(x)	Percentage on cost of materials and labour to cover all overheads and profits.	15%
2(xi)	Standard Schedule of Rates	CPWD DSR 2016
2(xii)	Department	Project Department, IIM Indore.
9(ii)	Standard CPWD contract Form GCC 2014, CPWD Form 7/ 8 as modified & corrected.	Upto date.

#### Clause 1

- (i) Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance 10 Days
- (ii) Maximum allowable extension with late fee @ 0.1% per day of Performance Guarantee amount beyond the period provided in (i) above ..... 15 days

#### Clause 2

Authority for fixing compensation under clause 2. Chief Engineer/ Director, IIM Indore

#### Clause 2A

Whether Clause 2A shall be applicable Yes

#### Clause 5

Number of days from the date of issue of letter of acceptance for reckoning date of start 10 Days or date of work order whichever is earlier.

Mile stone(s) as per table given below: -

Sl. No.	Description of Milestone (Physical)	Time Allowed in days ( <u>from date of reckoning start</u> )	Amount to be with-held in case of non-achievement of milestone
1	Submission of necessary drawings etc as mentioned in the tender document for the approval of the client before	10 Days	Rs. 50,000/-

	putting the transformer under manufacturing.		
2	Supply of power transformer at site of work at IIM Indore	3.5 Months	Rs. 2,00,000/-
3	Installation, Testing & Commissioning, getting necessary statutory approvals for beneficiary use and handing over of the power transformer to IIM Indore as per specification and satisfaction to the Engineer-in-Charge	04 Months	Rs. 1,00,000/-

**Total Time allowed for Completion of the Work: 04 (FOUR) Months including monsoon.**

Authority to decide:

- (i) Extension of time - Chief Engineer/Director, IIM Indore
- (ii) Rescheduling of mile stones- Chief Engineer, IIM Indore
- (iii) Shifting of date of start in case of delay in handing over of site- Chief Engineer, IIM Indore

Clause 6, 6A

Clause applicable - (6 or 6A)

6 A

Clause 7

Gross work to be done together with net payment /adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment

Rs. 10,00,000/-

Clause 10A

List of testing equipment to be provided by the contractor at site lab.- Deleted.  
Clause 10B(ii)

Whether Clause 10 B (ii) shall be applicable

Yes

Clause 10CA - Deleted.

Clause 10CC - Deleted.

Clause 11

Specifications to be followed

for execution of work  
works

Relevant BIS code, CPWD  
Specifications, CPWD  
manual, with up-to-date  
correction slips.

Clause 12

Type of work: “Design, Manufacture, Supply, Installation, Testing & Commissioning of 3.15 MVA, 33/11kV power transformer at Utility-I of IIM, Indore”

12.2 & 12.3 Deviation Limit beyond which clauses  
12.2 & 12.3 shall apply for work

50%

Clause 16

Competent Authority for  
Deciding reduced rates.

Director IIM Indore.

Clause 25

Constitution of Dispute Redressal Committee (DRC) - Construction Committee of IIM  
Indore.

Clause 36 (i) : Deleted.

Clause: 37: DELETED

Clause: 38: DELETED

**Form of Performance Security (Guarantee)  
Bank Guarantee Bond**

In consideration of the Director, IIM Indore (hereinafter called “The IIM Indore”) having offered to accept the terms and conditions of the proposed agreement between.....and ..... (hereinafter called “the said Contractor(s)”) for the work..... (hereinafter called “the said agreement”) having agreed to production of an irrevocable Bank Guarantee for Rs. .... (Rupees ..... only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We, ..... (hereinafter referred to as “the Bank”) hereby undertake to pay to the IIM Indore an amount not exceeding Rs. .... (Rupees..... Only) on demand by the IIM Indore.

2. We, .....(indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the IIM Indore stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. .... (Rupees .....only)

3. We, the said bank further undertake to pay the IIM Indore any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We, ..... (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the IIM Indore under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer-in- Charge on behalf of the IIM Indore certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. We, ..... (indicate the name of the Bank) further agree with the IIM Indore that the IIM Indore shall have the fullest liberty without our consent and without affecting in any manner our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any



of the powers exercisable by the IIM Indore against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the IIM Indore or any indulgence by the IIM Indore to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

7. We, ..... (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the IIM Indore in writing.

8. This guarantee shall be valid up to .....unless extended on demand by the IIM Indore. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. .... (Rupees .....) and unless a claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged. Dated the .....day of .....for.....(indicate the name of the Bank).

# TECHINICAL SPECIFICATION FOR 33/11KV (ONAN) 3.15 MVA POWER TRANSFORMERS

## 1. SCOPE

- 1.1 This Specification provides for design, engineering, manufacture, assembly, stage inspection, final inspection and testing before dispatch, packing and delivery at destination Sub-station by road transport, transit insurance, unloading at site , installation on the existing foundation, testing & commissioning of power transformer including necessary statutory approvals from the Electrical Safety Department & any other department as required for replacement of the old transformer & installation, testing & commissioning of the new power transformer complete with all fittings, accessories, associated equipments, spares, 10% extra Transformer Oil, required for it's satisfactory operation in sub-station of the IIM, Indore.
- 1.2 The core shall be constructed either from high grade, non-aging Cold Rolled Grain Oriented (CRGO) silicon steel laminations conforming to H1B grade with lamination thickness not more than 0.23mm to 0.27mm or better( Quoted grade and type shall be used). The maximum flux density in any part of the cores and yoke at normal voltage and frequency shall not be more than 1.5 Tesla. The Bidder shall provide saturation curve of the core material, proposed to be used. Laminations of different grade(s) and different thickness (s) are not allowed to be used in any manner or under any circumstances.
- 1.3 The Power Transformer shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer and the IIM, Indore shall have the power to reject any work or material, which, in his judgement, is not in full accordance therewith. The Transformer(s) offered, shall be complete with all components, necessary for their effective and trouble free operation. Such components shall be deemed to be within the scope of supply, irrespective of whether those are specifically brought out in this specification and / or the commercial order or not.  
The IIM, Indore reserves the right to reject the transformers if on testing the losses exceed the declared losses beyond tolerance limit as per IS or the temperature rise in oil and / or winding exceeds the value, specified in technical particular or impedance value differ from the guaranteed value including tolerance as per this specification and if any of the test results do not match with the values, given in the guaranteed technical particulars and as per technical specification. The IIM, Indore reserves the right to retain the rejected Transformer and take it into service until the supplier replaces it, at no extra cost to the IIM, Indore by a new transformer.  
Alternatively, the supplier shall repair or replace the Transformer within a reasonable period as decided by the IIM, Indore to IIM's satisfaction at no extra cost to the IIM Indore.

## 2. SPECIFIC TECHNICAL REQUIREMENTS

1	Rated MVA (ONAN rating)		3.15 MVA
2	No. of Phases		3
3	Type of installation		Outdoor
4	Frequency		50 Hz ( $\pm 5\%$ )
5	Cooling medium		Insulating Oil (ONAN)
6	Type of mounting		On Wheels, Mounted on rails
7	Rated voltage		
a)	High Voltage winding		33 KV
b)	Low Voltage winding		11 KV
8	Highest continuous system voltage		
a)	Maximum system voltage ratio (HV/LV)		36 KV / 12 KV
b)	Rated voltage ratio (HV/LV)		33 kV / 11 KV
9	No. of windings		Two winding Transformers
10	Type of Cooling		ONAN (Oil natural and Air natural)
11	MVA Rating corresponding to ONAN cooling system		100%
12	Method of connection :		
	HV		Delta
	LV		Star
13	Connection Symbol		DYn 11
14	System Earthing		Neutral of LV side to be solidly earthed
15	Percentage impedance voltage on normal tap and MVA base at 750 C corresponding to HV / LV rating and applicable tolerances		<b>% Impedance    % Tolerance</b>
a)	3.15 MVA		6.25                    +10
			(No negative tolerance will be allowed)
16	Intended regular cyclic overloading of windings		As per IEC - 76-1, Clause 4.2 /IS 6600
17	Anticipated unbalanced loading		Around 20%
a)			
b)	Anticipated continuous loading of windings (HV / LV)		110% of rated current
18a)	Type of tap changer	i)	On-load tap changer
b)	Range of taping	ii)	+5% to - 15% in equal steps of 1.25% each on HV winding for 3.15 MVA Transformers
19	Neutral terminal to be brought out		On LV side only

20	Over Voltage operating Capability and duration		112.5% of rated voltage (continuous)
21	Maximum Flux Density in any part of the core and yoke at rated MVA, rated voltage i.e. 33 KV / 11KV and system frequency of 50 HZ		1.5 Tesla
22	Insulation levels for windings		33 KV                      11 KV
a)	1.2 / 50 microsecond wave shape Impulse withstand (KVp)		170                              75
b)	Power frequency voltage withstand (KVrms)		70                                      28
23	Type of winding insulation		
a)	HV winding		Uniform / Insulating Paper (Min.TPC)
b)	LV winding		Uniform / Insulating Paper (Min.TPC)
24	Withstand time for three phase short circuit		2 Seconds
25	Noise level at rated voltage and frequency		As per NEMA Publication No. TR-1
26	Permissible Temperature Rise over ambient temperature of 50 ° C		
a)	Of top oil measured by thermometer		40 ° C
b)	Of winding measured by resistance		50 ° C
27	Minimum clearances in air (mm) :-		Phase to phase              Phase to ground
a)	HV		350                              320
b)	LV		255                              140
28	Terminals		
a)	HV Winding Line end		36 KV oil filled porcelain communicating type of bushings (Antifog type) as per IS 3347
b)	LV winding		12 KV porcelain type of bushing (Antifog type) as per IS 3347
29	Insulation level of bushing		HV                              LV
a)	Lightning Impulse withstand(KVP)		170                              75
b)	1 minute Power Frequency withstand Voltage (KV - 4ms)		70                                      28
c)	Creepage distance (MM)		900                              500

	(minimum)		
30	Material of HV & LV Conductor		Electrolytic copper
31	Maximum Current density for HV and LV winding for rated current		2.5 A / mm <sup>2</sup>
32	Polarisation index i.e. ratio of megger values at 600 Sec to 60 sec for HV to earth, LV to earth and HV to LV		Shall be greater than or equal to 1.5, but less than or equal to '5'
33	Core Assembly		Boltless type
34	Temperature Indicator		
a)	Oil		One number
b)	Winding		One number
35	Maximum permissible no load loss at rated voltage and rated frequency. (Max) for 3.15 MVA		3.6 KW
36	Maximum permissible load loss at rated current and at 75 °C (Max)		
	3.15 MVA		18.5 KW

## 2.1 MARSHALLING BOX

A metal enclosed, weather, vermin and dust proof marshalling box fitted with required glands, locks, glass door, terminal Board, heater with switch, illumination lamp with switch etc. shall be provided with transformer to accommodate temperature indicators, terminal blocks etc. It shall have degree of protection of IP 55 or better as per IS: 2147 (Refer Clause 3.12).

## 2.2 PERFORMANCE

- i) Transformer shall be capable of withstanding for two seconds without damage to any external short circuit, with the short circuit MVA available at the terminals.
- ii) The maximum flux density in any part of the core and yoke at rated MVA. Voltage and frequency shall be **1.5 Tesla** (maximum).
- iii) Transformer shall under exceptional circumstances due to sudden disconnection of the load, be capable of operating at the voltage approximately 25% above normal rated voltage for a period of not exceeding one minute and 40% above normal for a period of 5 seconds.
- iv) The transformer may be operated continuously without danger on any particular tapping at the rated MVA  $\pm$  12.5% of the voltage corresponding to the tapping.
- v) The thermal ability to withstand short circuit shall be demonstrated by calculation.
- vi) Transformer shall be capable of withstanding thermal and mechanical stress caused by any symmetrical and asymmetrical faults on any winding.

**2.3 DRAWINGS/ DOCUMENTS INCORPORATING THE FOLLOWING PARTICULARS SHALL BE SUBMITTED AFTER AWARD OF CONTRACT**

- a) General outline drawing showing shipping dimensions and overall dimensions, net weights and shipping weights, quality of insulating oil, spacing of wheels in either direction of motion, location of coolers, marshalling box and tap changers etc.
- b) Assembly drawings of core, windings etc. and weights of main components / parts.
- c) Height of center line on HV and LV connectors of transformers from the rail top level.
- d) Dimensions of the largest part to be transported.
- e) GA drawings / details of various types of bushing
- f) Tap changing and Name Plate diagram
- g) Type test certificates of similar transformers.
- h) Illustrative & descriptive literature of the Transformer.
- i) Maintenance and Operating Instructions.

**2.4 MISCELLANEOUS**

- i) Padlocks along with duplicate keys as asked for various valves, marshalling box etc. shall be supplied by the supplier, wherever locking arrangement is provided.
- ii) Foundation bolts for wheel locking devices of Transformer shall be supplied by the supplier.

**2.5 DELIVERY**

The quantity of the equipments shall be delivered as per the delivery schedule appended to this specification.

**2.6 SCHEDULES**

All Schedules annexed to the specification shall be duly filled by the bidder separately.

**2.7 ALTITUDE FACTOR**

If the equipment is to be installed in the hilly area, necessary correction factors as given in the Indian Standard for oil temperature rise, insulation level etc. shall be applied to the Standard Technical Parameters given above.

**2.8 NAME PLATE**

Transformer rating plate shall contain the information as given in clause 15 of IS-2026 (part-I). The details on rating plate shall be finalized during the detailed engineering. The name plate shall also include (i) The short circuit rating , (ii) Measured no load current and no load losses at rated voltage and rated frequency, (iii) measured load losses at 75°C ( normal tap only ), (iv) D.C resistance of each winding at 75°C.

### 3 SERVICE CONDITIONS

The service conditions shall be as follows

Peak ambient temperature	50 Degree C
Maximum oil temperature attainable	(45 Degree C + 50 Degree C) 95 degree C under maximum temperature and max. load conditions
Maximum relative humidity	95% (approaches saturation point)
Minimum relative humidity	10%
Average No. of thunderstorm days per annum	40 days
Average number of rainy days per annum	90 days
Number of months of tropical monsoon conditions	3 months
Average annual rainfall	125cm
Wind pressure	100 Kg/m <sup>2</sup>
Altitudes not exceeding	1000 meters

### 4 SYSTEM CONDITIONS

The equipment shall be suitable for installation in supply systems of the following characteristics.

Frequency	50 Hz + 5%
Nominal system voltages	33KV 11KV
Maximum system voltages	
33 KV System	36.3 KV
11 KV System	12 KV
Normal short circuit level (Basing on apparent power)	
33 KV System	1.1KA
11 KV System	3.3 KA
Insulation levels : 1.2/50 $\mu$ sec impulse withstand voltage	
33 KV System	170KV (peak)
11 KV System	75KV (peak)
Power frequency one minute withstand (wet and dry ) voltage	
33 KV System	70KV (rms)
11 KV System	28KV (rms)
Neutral earthing arrangements	
11 KV System	Solidly Earthed

### 5 CODES & STANDARDS

5.1 The design, material, fabrication, manufacture, inspection, testing before dispatch and performance of power transformers at site shall

comply with all currently applicable statutory regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the latest applicable standards and codes of practice. Nothing in this specification shall be construed to relieve the supplier of this responsibility.

5.2 The equipment and materials covered by this specification shall conform to the latest applicable provision of the following standards.

IS:5	:	Colour for ready mixed paints
IS:325	:	Three Phase Induction Motors
IS:335	:	New insulating oil for transformers, switch gears
IS:1271	:	Classification of insulating materials for electrical machinery and apparatus in relation to their stability in services
IS:2026 (Part I to IV)	:	Power Transformer
IS:2071	:	Method of high voltage testing
IS:2099	:	High voltage porcelain bushings
IS:2147	:	Degree of protection
IS:2705	:	Current Transformers
IS:3202	:	Code of practice for climate proofing of electrical equipment
IS:3347	:	Dimensions for porcelain Transformer Bushings
IS:3637	:	Gas operated relays
IS:3639	:	Fittings and accessories for power Transformers
IS:5561	:	Electric Power Connectors
IS:6600/BS:CP'10:0	:	Guide for loading of oil immersed Transformers
IS:10028	:	Code of practice for selection, installation and maintenance of transformers, Part I. II and III
C.B.I.P. Publication	:	Manual on Transformers

If the standard is not quoted for any item, it shall be presumed that the latest version of Indian Standard shall be applicable to that item.

The equipment complying other internationally accepted standards, may also be considered if they ensure performance superior to the Indian Standards.

### 5.3 DRAWINGS



- a) The contractor shall furnish, within ten days after issuing of Letter of Award. four copies each of the following drawings/documents incorporating the transformer rating for approval.
  - i) Detailed overall general arrangement drawing showing front and side elevations and plan of the transformer and all accessories including radiators and external features with details of dimensions, spacing of wheels in either direction of motion, net weights and shipping weights, crane lift for un-tanking, size of lugs and eyes, bushing lifting dimensions, clearances between HV and L.V terminals and ground, quantity of insulating oil etc.
  - ii) Assembly drawings of core and winging and weights of main components / parts
  - iii) Foundation plan showing loading on each wheel land jacking points with respect to centre line of transformer for reference only as the foundation is already there in position at site.
  - iv) GA drawings details of bushing and terminal connectors.
  - v) Name plate drawing with terminal marking and connection diagrams.
  - vi) Wheel locking arrangement drawing.
  - vii) Transportation dimensions drawings.
  - viii) Magnetization characteristic curves of PS class neutral and phase side current transformers, if applicable.
  - ix) Interconnection diagrams.
  - x) Over fluxing withstand time characteristic of transformer.
  - xi) GA drawing of marshalling box.
  - xii) Control scheme/wiring diagram of marshalling box.
  - xiii) Technical leaflets of major components and fittings.
  - xiv) Setting of oil temperature indicator, winding temperature indicator.
  - xv) Completed technical data sheets.
  - xvi) Details including write-up of tap changing gear.
  - xvii) HV conductor bushing for connection with 1 x 300 sq. mm HT power cable.
  - xviii) LV conductor bushing for connection with 3 x 300 sq. mm HT power cable.
  - xix) Bushing Assembly.
  - xx) Bi-metallic connector suitable for connection with HT power cable Conductor.
  - xxi) GA of HV & LV cable Box.
  - xxii) Radiator type assembly.
  
- b) All drawings, documents, technical data sheets and test certificates, results calculations shall be furnished.

5.4 Any approval given to the detailed drawings by the IIM, Indore shall not relieve the supplier of the responsibility for correctness of the drawing and in the manufacture of the equipment. The approval given by the IIM, Indore shall be general with overall responsibility with supplier.

## 6 GENERAL CONSTRUCTIONAL FEATURES

- 6.1 All material used shall be of best quality and of the class most suitable for working under the conditions specified and shall withstand the variations of temperature and atmospheric conditions without distortion or deterioration or the setting up of undue stresses which may impair suitability of the various parts for the work which they have to perform.
- 6.2 Similar parts particularly removable ones shall be interchangeable.
- 6.3 Pipes and pipe fittings, screws, studs, nuts and bolts used for external connections shall be as per the relevant standards. Steel bolts and nuts exposed to atmosphere shall be galvanized.
- 6.4 Nuts, bolts and pins used inside the transformers and tap changer compartments shall be provided with lock washer or locknuts.
- 6.5 Exposed parts shall not have pockets where water can collect.
- 6.6 Internal design of transformer shall ensure that air is not trapped in any location.
- 6.7 Material in contact with oil shall be such as not to contribute to the formation of acid in oil. Surface in contact with oil shall not be galvanized or cadmium plated.
- 6.8 Labels, indelibly marked, shall be provided for all identifiable accessories like Relays, switches current transformers etc. All label plates shall be of in corrodible material.
- 6.9 All internal connections and fastenings shall be capable of operating under overloads and over-excitation, allowed as per specified stands without injury.
- 6.10 Transformer and accessories shall be designed to facilitate proper operation, inspection, maintenance and repairs.
- 6.11 No patching, plugging, shimming or other such means of overcoming defects, discrepancies or errors will be accepted.
- 6.12 Schematic Drawing of the wiring, including external cables shall be put under the prospane sheet on the inside door of the transformer marshalling box.
- 6.13 **Painting**
  - 6.13.1 All paints shall be applied in accordance with the paint manufacturer's recommendations. Particular attention shall be paid to the following:
    - a) Proper storage to avoid exposure as well as extremes of temperature.
    - b) Surface preparation prior to painting.
    - c) Mixing and thinning
    - d) Application of paints and the recommended limit on time intervals between coats.
    - e) Shelf life for storage.
  - 6.13.1.1 All paints, when applied in normal full coat, shall be free from runs, sags, wrinkles, patchiness, brush marks or other defects.

6.13.1.2 All primers shall be well marked into the surface, particularly in areas where painting is evident, and the first priming coat shall be applied as soon as possible after cleaning. The paint shall be applied by airless spray according to the manufacturer's recommendations. However, wherever airless spray is not possible, conventional spray be used with prior approval of IIM, Indore.

6.13.1.3 The supplier shall, prior to painting protect nameplates, lettering gauges, sight glasses, light fittings and similar such items.

### **6.13.2 Cleaning and Surface Preparation**

6.13.2.1 After all machining, forming and welding has been completed, all steel work surfaces shall be thoroughly cleaned of rust, scale, welding slag or spatter and other contamination prior to any painting.

6.13.2.2 Steel surfaces shall be prepared by Sand/Shot blast cleaning or Chemical cleaning by Seven tank process including Phosphating to the appropriate quality.

6.13.2.3 The pressure and Volume of the compressed air supply for the blast cleaning shall meet the work requirements and shall be sufficiently free from all water contamination prior to any painting.

6.13.2.4 Chipping, scraping and steel wire brushing using manual or power driven tools cannot remove firmly adherent mill-scale and shall only be used where blast cleaning is impractical.

### **6.13.3 Protective Coating**

As soon as all items have been cleaned and within four hours of the subsequent drying, they shall be given suitable anticorrosion protection.

### **6.13.4 Paint Material**

Followings are the type of paints that may be suitably used for the items to be painted at shop and supply of matching paint to site:

- i) Heat resistant paint (Hot oil proof) for inside surface.
- ii) For external surfaces one coat of Thermo Setting Paint or 2 coats of Zinc chromate followed by 2 coats of POLYURETHANE. The color of the finishing coats shall be dark admiral grey conforming to No.632 or IS 5:1961.

### **6.13.5 Painting Procedure**

6.13.5.1 All painting shall be carried out in conformity with both specifications and with the paint manufacture's recommendations. All paints in any one particular

system. Whether shop or site applied, shall originate from one paint manufacturer.

6.13.5.2 Particular attention shall be paid to the manufacturer's instructions on storage, mixing, thinning and pot life. The paint shall only be applied in the manner detailed by the manufacturer e.g. brush, roller, conventional or airless spray and shall be applied under the manufacturer's recommended conditions. Minimum and maximum time intervals between coats shall be closely followed.

6.13.5.3 All prepared steel surfaces should be primed before visible re-rusting occurs or within 4 hours whichever is sooner. Chemical treated steel surfaces shall be primed as soon as the surface is dry and while the surface is warm.

6.13.5.4 Where the quality of film is impaired by excess film thickness,(wrinkling, mud cracking or general softness) the supplier shall remove the unsatisfactory paint coatings and apply another. As a general rule, dry film thickness should not exceed the specified minimum dry film thickness by more than 25% . In all instances, where two or more coats of the same paints are specified, such coatings may or may not be of contrasting colors.

6.13.5.5 Paint applied to items that are not be painted, shall be removed at supplier's expense, leaving the surface clean, un-stained and undamaged.

#### **6.13.6 Damages to Paints Work**

6.13.6.1 Any damage occurring to any part of the painting scheme shall be made good to the same standard of corrosion protection and appearance as that originally employed.

6.13.6.2 Any damaged paint work shall be made as follows:

- a) The damaged area, together with an area extending 25mm around its boundary, shall be cleaned down to bare metal.
- b) A priming coat shall immediately applied, followed by a full paint finish equal to that originally applied and extending 50mm around the perimeter of the originally damaged.

6.13.6.3 The repainted surface shall present a smooth surface. This shall be obtained by carefully chamfering the paint edges before & after priming.

#### **6.13.7 Dry Film Thickness**

6.13.7.1 To the maximum extent practicable, the coats shall be applied as a continuous film of uniform thickness and free of pores. Over-spray, skips, runs, sags and drips should be avoided. The different coats may or may not be same color.

6.13.7.2 Each coat of paint shall allowed to hardened before the next is applied as per manufacture's recommendations.

6.13.7.3 Particular attention must be paid to full film thickness at edges.

6.13.7.4 The requirement for the dry film thickness (DFT) of paint and the material to be used shall be as given below:

Sl. No	Paint Type	Area to be painted	No of Coats	Total Dry film thickness(Min)
1	Liquid paint			
	a) Zinc Chromate(Primer)	Out side	02	45 micron
	b) POLYURETHANE (Finish Coat)	Out side	02	35 micron
	c) Hot Oil paint	inside	01	35 micron

## 7.0 DETAILED DESCRIPTION

### 7.1 Tank

- 7.1.1 The Transformer tank and cover shall be fabricated from high grade low carbon plate steel of tested quality. The tank and the shall be of welded construction.
- 7.1.2 Tank shall be designed to permit lifting by crane or jacks of the complete transformer assembly filled with oil. Suitable lugs and bossed shall be provided for this purpose.
- 7.1.3 All breams, flanges, lifting lugs, braces and permanent parts attached to the tank shall be welded and where practicable, they shall be double welded.
- 7.1.4 The main tank body of the transformer, excluding tap changing compartments and radiators, shall be capable of withstanding pressure of 760mm of Hg.
- 7.1.5 Inspection hole(s) with welded flange(s) and bolted cover(s) shall be provided on the tank cover. The inspection hole(s) shall be of sufficient size to afford easy access to the lower ends of the bushings, terminals etc.
- 7.1.6 Gaskets of nitrile rubber or equivalent shall be used to ensure perfect oil tightness. All gaskets shall be closed design (without open ends) and shall be of one piece only. Rubber gaskets used for flange type connections of the various oil compartments, shall be laid in grooves or in groove-equivalent sections on bolt sides of the gasket, throughout their total length. Care shall be taken to secure uniformly distributed mechanical strength over the gaskets and retains throughout the total length. Gaskets of neoprene and / or any kind of impregnated / bonded core or cork only which can easily be damaged by over-pressing are not acceptable. Use of hemp as gasket material is also not acceptable.
- 7.1.7 Suitable guides shall be provided for positioning the various parts during assemble or dismantling. Adequate space shall be provided between the cores and windings and the bottom of the tank for collection of any sediment.

### 7.2 Tank Cover

The transformer top shall be provided with a detachable tank cover with bolted flanged gasket joint. Lifting lugs shall be provided for removing the cover. The surface of the cover shall be suitable sloped so that it does not retain rain water.

### 7.3 UNDER CARRIAGE

7.3.1 The transformer tank shall be supported on steel structure with detachable plain rollers completely filled with oil. Suitable channels for movement of roller with transformer shall be space accordingly, rollers wheels shall be provided with suitable rollers bearings, which will resist rust and corrosion and shall be equipped with fittings for lubrication. It shall be possible to swivel the wheels in two directions, at right angle to or parallel to the main axis of the transformers.

### 7.4 CORE

7.4.1 Stage level inspection for core construction shall be carried out by the owner.

7.4.2 Each lamination shall be insulated such that it will not deteriorate due to mechanical pressure and the action of hot transformer oil.

7.4.3 The core shall be constructed either from high grade, non-aging Cold Rolled Grain Oriented (CRGO) silicon steel laminations conforming to H1B grade with lamination thickness not more than 0.23mm to 0.27mm or better (Quoted grade and type shall be used). The maximum flux density in any part of the cores and yoke at normal voltage and frequency shall not be more than 1.5 Tesla. The Bidder shall provide saturation curve of the core material, proposed to be used. Laminations of different grade(s) and different thickness (s) are not allowed to be used in any manner or under any circumstances.

7.4.4(A) The bidder should offer the core for inspection starting from the material received at works to enable IIM, Indore for deputing inspecting officers for detail verification as given below and approval by the IIM, Indore during the manufacturing stage.

Core material shall be directly procured either from the manufacturer or through their accredited marketing organization of repute, but not through any agent.

7.4.4 (B) For Transformer Manufacturer (TM), who has in-house core-cutting facility, the packed core coils shall be verified at their works as per followings along with witnessing of core- cutting.

- a) Purchase Order No. & Date:
- b) No. of packed coils with Package nos.
- c) Gross Weight.
- d) Net Weight
- e) Mills test certificate
- f) Grade & Thickness of Core Material :
- g) Any other information as mentioned on the body of packed coils.

7.4.4 ( C ) For those bidders, who have no in-house core-cutting facility, they should mention the names of at least three sub-vendors to whom they intend to assign their core-cutting. Such sub-vendors should have accredited by some

internationally recognized certification body like ISO- 9000 etc. to ensure that a minimum quality parameters & tolerance are maintained. The experience, the details of core-cutting facilities finishing & testing facilities etc. as available which such sub-vendors should be clearly out-lined in the bid

- 7.4.4 (D) On award of Contract the TM is to assign the core-cutting to such sub-vendors for which approval is to be given by the IIM, Indore.
- 7.4.5 The laminations shall be free of all burrs and sharp projections. Each sheet shall have an insulating coating resistant to the action of hot oil.
- 7.4.6 The insulation structure for the core to bolts and core to clamp plates, shall be such as to withstand 2000 V DC voltage for one minute.
- 7.4.7 The completed core and coil shall be so assembled that the axis and the plane of the outer surface of the core assemble shall not deviate from the vertical plane by more than 25mm.
- 7.4.8 All steel sections used for supporting the core shall be thoroughly shot or sand blasted, after cutting, drilling and welding.
- 7.4.9 The finally assembled core with all the clamping structures shall be free from deformation and shall not vibrate during operation.
- 7.4.10 The core clamping structure shall be designed to minimize eddy current loss.
- 7.4.11 The framework and clamping arrangements shall be securely earthed.
- 7.4.12 The core shall be carefully assembled and rigidly clamped to ensure adequate mechanical strength.
- 7.4.13 Oil ducts shall be provided, where necessary, to ensure adequate cooling inside the core. The welding structure and major insulation shall not obstruct the free flow of oil through such ducts.
- 7.4.14 The design of magnetic circuit shall be such as to avoid static discharges, development of short circuit paths within itself or to the earth clamping structure and production of flux component at right angle to the plane of the lamination, which may cause local heating. The supporting framework of the cores shall be so designed as to avoid the presence of pockets, which would prevent complete emptying of the tank through the drain valve or cause trapping of air during filling.
- 7.4.15 The construction is to be of boltless core type. The core shall be provided with lugs suitable for lifting the complete core and coil assembly. The core and coil assemble shall be so fixed in the tank that shifting will not occur during transport or short circuits.
- 7.4.16 The temperature gradient between core & surrounding oil shall be maintained less than 20 deg. Centigrade. The manufacturer shall demonstrate this either through test (procurement to be mutually agreed) or by calculation.

## 7.5 INTERNAL EARTHING

- 7.5.1 All internal metal parts of the transformer, with the exception of individual laminations and their individual clamping plates shall be earthed.

- 7.5.2 The top clamping structure shall be connected to the tank by a copper strap. The bottom clamping structure shall be earthed by one or more the following methods:
- a) By connection through vertical tie-rods to the top structure.
  - b) By direct metal to metal contact with the tank base.
  - c) By a connection to the structure on the same side of the core as the main earth connection to the tank.
- 7.5.3 The magnetic circuit shall be connected to the clamping structure at one point only and this shall be brought out of the top cover of the transformer tank through a suitably rated insulator. A disconnecting link shall be provided on transformer tank to facilitate disconnections from ground for IR measurement purpose.
- 7.5.4 Coil clamping rings of metal at earth potential shall be connected to the adjacent core clamping structure on the same side as the main earth connections.

## 7.6 WINDING

- 7.6.1 Winding shall be subjected to a shrinking and seasoning process, so that no further shrinkage occurs during service. Adjustable devices shall be provided for taking up possible shrinkage in service.
- 7.6.2 All low voltage windings for use in the circular coil concentric winding shall be wound on a performed insulating cylinder for mechanical protection of the winding in handling and placing around the core.
- 7.6.3 Winding shall not contain sharp bends which might damage the insulation or produce high dielectric stresses. No strip conductor wound on edge shall have width exceeding six times the thickness.
- 7.6.4 Materials used in the insulation and assembly of the windings shall be insoluble, non catalytic and chemically inactive in the hot transformer oil and shall not soften or the otherwise affected under the operating conditions.
- 7.6.5 Varnish application on coil windings may be given only for mechanical protection and not for improvement in dielectric properties. In no case varnish or other adhesive be used which will seal the coil and prevent evacuation of air and moisture and impregnation by oil.
- 7.6.6 Winding and connections shall be braced to withstand shocks during transport or short circuit.
- 7.6.7 Permanent current carrying joints in the windings and leads shall be welded or brazed. Clamping bolts for current carrying parts inside oil shall be made of oil resistant material which shall not be affected by acidity in the oil steel bolts, if used, shall be suitably treated.
- 7.6.8 Terminals of all windings shall be brought out of the tank through bushings for external connections.
- 7.6.8.1 The completed core and coil assemble shall be dried in vacuum at not more than 0.5mm of mercury absolute pressure and shall be immediately impregnated with oil after the drying process to ensure the elimination of air



and moisture within the insulation. Vacuum may be applied in either vacuum over or in the transformer tank.

- 7.6.8.2 The winding shall be so designed that all coil assemblies of identical voltage ratings shall be interchangeable and field repairs to the winding can be made readily without special equipment. The coils shall have high dielectric strength.
- 7.6.8.3 Coils shall be made of continuous smooth high grade electrolytic copper conductor, shaped and braced to provide for expansion and contraction due to temperature changes.
- 7.6.8.4 Adequate barriers shall be provided between coils and core and between high and low voltage coil. End turn shall have additional protection against abnormal line disturbances.
- 7.6.8.5 The insulation of winding shall be designed to withstand voltage stress arising from surge in transmission lines due to atmospheric or transient conditions caused by switching etc.
- 7.6.8.6 Tapping shall not be brought out from inside the coil or from intermediate turns and shall be so arranged as to preserve as far as possible magnetic balance of transformer at all voltage ratios.
- 7.6.8.7 Magnitude of impulse surges transferred from HV to LV windings by electromagnetic induction and capacitance coupling shall be limited to BILL of LV winding.
- 7.6.8.8 The current density adopted in all winding shall not exceed 2.5 A/mm<sup>2</sup> . The total net cross sectional area of the strip conductors for calculating current density for each winding shall be obtained after deducting the copper area lost due to rounding up of the sharp edges at the rectangular conductors.

## 7.7 INSULATING OIL

- 7.7.1 The insulating oil for the transformer shall be of EHV grade, generally conforming to IS: 335. No inhibitors shall be used in the oil.
- 7.7.2 The quantity of oil required for the first filling of the transformer and its full specification shall be stated in the bid. The bidder shall quote the price of transformer complete with all fittings, accessories and new transformer oil required for first filling plus 10% extra oil. The extra quantity of oil shall be supplied in non-returnable drums along with the oil required for the radiator banks.
- 7.7.3 The design and materials used in the construction of the transformer shall be such as to reduce the risk of the development of acidity in the oil.
- 7.7.4 Supplier shall warrant that oil furnished is in accordance with the following specifications.

S.No	Characteristic	Requirement	Method of Test
01	Appearance	The oil shall be clear & transparent & free from suspended matter or	A representative sample of oil shall be examined in a

		sediment	100 mm thick layer at ambient temp.
02	Density at 20 °C	0.89 g/cm <sup>3</sup> Max.	IS:1448
03	Kinematic Viscosity at 27 deg. C Max	27 CST	IS:1448
04	Interfacial tension at 27 °C Min.	0.03 N/m	IS:6104
05	Flash Point	136 °C	IS:1448
06	Pour Point Max.	-6 °C	IS:1448
07	Naturalization Value (Total Acidity) Max.	0.03 mg KOH/gm	IS:335
08	Electric strength Breakdown (voltage) Min.	72.5 KV	IS:6792
09	Dielectric dissipation factor tan delta at 90°C	0.03 Max	IS:6262
10	Min specific resistance(resistively) at 90°C	35X10 <sup>12</sup> ohm cm (min.)	IS:6103
11	Oxidation stability		
12	Neutralization value after oxidation	0.40mg KOH/g	
13	Total sludge after oxidation	0.10% by weight max.	
14	Presence of oxidation Inhibitor	The oil shall not contain anti- oxidant Additives.	IS:335
15	Water content Max:	Less than 14ppm	IS:2362

## 7.8 VALVES

- i) Valves shall be of forged carbon steel up to 50mm size and of gun metal or of cast iron bodies with gun metal fittings for sizes above 50mm. They shall be of full way type with screwed ends and shall be opened by turning counter clockwise when facing the hand wheel. There shall be no oil leakage when the valves are in closed position.
- ii) Each valve shall be provided with an indicator to show the open and closed positions and shall be provided with facility for padlocking in either open or closed position. All screwed valves shall be furnished with pipe plugs for protection. Padlocks with duplicate keys shall be supplied along with the valves.
- iii) All valves except screwed valves shall be provided with flanges having machined faced drilled to suit the applicable requirements, Oil tight blanking plates shall be provided for each connection for use when any radiator is

detached and for all valves opening to atmosphere. If any special radiator valve tools are required the supplier shall supply the same.

- i) Each transformer shall be provided with following valves on the tank:
- a) Drain valve so located as to completely drain the tank & to be provided with locking arrangement.
- b) Two filter valves on diagonally opposite corners of 50mm size & to be provided with locking arrangement.
- c) Oil sampling valves not less than 8mm at top and bottom of main tank & to be provided with locking arrangement.
- d) One 15mm air release plug.
- e) Valves between radiators and tank.

Drain and filter valves shall be suitable for applying vacuum as specified in the specifications.

## 7.9 ACCESSORIES

### 7.9.1 Bushing

- i) All porcelain used in bushings shall be homogeneous, non-porous, uniformly glazed to brown colour and free from blisters, burns and other defects.
- ii) Stress due to expansion and contraction in any part of the bushing shall not lead to deterioration.
- iii) Bushing shall be designed and tested to comply with the applicable standards.
- iv) Bushing rated for 630A and above shall have non-ferrous flanges and hardware.
- v) Fittings made of steel or malleable iron shall be galvanized
- vi) Bushing shall be so located on the transformers that full flashover strength will be utilized. Minimum clearances as required for the BIL shall be realized between live parts and live parts to earthed structures.
- vii) All applicable routine and type tests certificates of the bushings shall be furnished for approval.
- viii) Bushing shall be supplied with bi-metallic terminal connector/ clamp/ washers suitable for fixing to bushing terminal and HT power cable as mentioned above. The connector/clamp shall be rated to carry the bushing rated current without exceeding a temperature rise of 55 °C over an ambient of 50 °C. The connector/clamp shall be designed to be corona free at the maximum rated line to ground voltage.
- ix) Bushing of identical voltage rating shall be interchangeable.
- x) The insulation class of high voltage neutral bushing shall be properly coordinated with the insulation class of the neutral of the low voltage winding.
- xi) Each bushing shall be so coordinated with the transformer insulation that all flashover will occur outside the tank.

### 7.9.2 Protection & Measuring Devices

- i) **Oil Conservator Tank**

- a) The Conservator tank shall have adequate capacity between highest and lowest visible levels to meet the requirement of expansion of the total cold oil volume in the transformer and cooling equipment.
- b) The conservator tank shall be bolted into position so that it can be removed for cleaning purposes.
- c) The conservator shall be fitted with magnetic oil level gauge with low level electrically insulated alarm contact.
- d) Plain conservator fitted with silica gel breather.

**ii) Pressure Relief Device.**

The pressure relief device provided shall be of sufficient size for rapid release of any pressure that may be generated in the tank and which may result in damage of the equipment. The device shall operate at a static pressure of less than the hydraulic test pressure of transformer tank. It shall be mounted directly on the tank. A pair of electrically insulated contacts shall be provided for alarm and tripping.

**iii) Buchholz Relay**

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

**iv) Temperature Indicator**

**a) Oil Temperature Indicator (OTI)**

The transformers shall be provided with a mercury contact type thermometer with 150 mm dial for top oil temperature indication. The thermometer shall have adjustable, electrically independent potential free alarm and trip contacts. Maximum reading pointer and resetting device shall be mounted in the local control panel. A temperature sensing element suitably located in a pocket on top oil shall be furnished. This shall be connected to the OTI by means of capillary tubing. Accuracy class of OTI shall be  $\pm 1\%$  or better. One No electrical contact capable of operating at 5 A ac at 230 volt supply.

**b) Winding Temperature indicator (WTI)**

A device for measuring the hot spot temperature of the winding shall be provided. It shall comprise the following.

- i) Temperature sensing element.
- ii) Image Coil.

- iii) Mercury contacts.
- iv) Auxiliary CTS, If required to match the image coil, shall be furnished and mounted in the local control panel.
- v) 150mm dial local indicating instrument with maximum reading pointer mounted in local panel and with adjustable electrically independent ungrounded contacts, besides that required for control of cooling equipment, one for high winding temperature alarm and one for trip.
- vi) Calibration device.
- vii) Two number electrical contact each capable of operating at 5 A ac at 230 Volt supply.

### 7.9.3 Oil Preservation Equipment

#### 7.9.3.1 Oil Sealing

The oil preservation shall be diaphragm type oil sealing in conservator to prevent oxidation and contamination of oil due to contact with atmospheric moisture.

The conservator shall be fitted with a dehydrating filter breather. It shall be so designed that.

- i) Passage of air is through a dust filter & Silica gel.
- ii) Silica gel is isolate from atmosphere by an oil seal.
- iii) Moisture absorption indicated by a change in colour of the crystals of the silica gel can be easily observed from a distance.
- iv) Breather is mounted not more than 1400 mm above rail top level.

### 7.10 MARSHALLING BOX

- i) Sheet steel, weather, vermin and dust proof marshalling box fitted with required glands, locks, glass door, terminal Board, heater with switch, illumination lamp with switch, water- tight hinged and padlocked door of a suitable construction shall be provided with transformer to accommodate temperature indicators, terminal blocks etc. The box shall have slopping roof and the interior and exterior painting shall be in accordance with the specification. Padlock along with duplicate keys shall be supplied for marshalling box. The degree of protection shall be IP-55 or better.
- ii) The schematic diagram of the circuitry inside the marshalling box be prepared and fixed inside the door under a prosopone sheet.
- iii) The marshalling box shall accommodate the following equipment:
  - a) Temperature indicators.
  - b) Terminal blocks and gland plates for incoming and outgoing cables.

All the above equipments except b) shall be mounted on panels and back of panel wiring shall be used for inter-connection. The temperature indicators shall be so mounted that the dials are not more than 1600 mm from the ground

level and the door (s) of the compartment(s) shall be provided with glazed window of adequate size.

- iii) To prevent internal condensation, a metal clad heater with thermostat shall be provided. The heater shall be controlled by a MCB of suitable rating mounted in the box. The ventilation louvers, suitably padded with felt, shall also be provided. The louvers shall be provided with suitable felt pads to prevent ingress of dust.
- iv) All incoming cables shall enter the kiosk from the bottom and the gland plate shall not be less than 450 mm from the base of the box. The gland plate and associated compartment shall be sealed in suitable manner to prevent the ingress of moisture from the cable trench.

## **7.11 TAP CHANGER**

### **7.11.1 ON-LOAD TAP-CHANGERS**

- i ) The transformers shall be provided with On-load Taps
- ii) The Transformer with on-load tap changing gear shall have taps ranging from +5% to -15% in equal steps of 1.25% each on HV winding for voltage variation
- iii) The tap changing switch shall be located in a convenient position so that it can be operated from ground level. The switch handle shall be provided with locking arrangement along with tap position indication, thus enabling the switch to be locked in position.

## **7.12 FITTINGS AND ACCESSORIES**

The following fittings and accessories shall be provided on the transformers:

- i) Conservator with isolating valves, oil filling hole with cap and drain valve. The conservator vessel shall be filled with constant oil pressure diaphragm oil sealing system.
- ii) Magnetic type oil level gauge (150 mm dia) with low oil level alarm contacts.
- iii) Prismatic/ toughened glass oil level gauge.
- iv) Silica gel breather with oil seal and connecting pipe complete with first fill of activated silica gel or Alumina mounted at a level of 1300 mm above ground level.
- v) Pressure relief devices (including pressure relief valve) and necessary air equalizer connection between this and the conservator with necessary alarm and trip contacts.
- vi) Air release plugs in the top cover.
- vii) Inspection cover, access holes with bolted covers for access to inner ends of bushing etc.
- viii) Winding temperature (hot spot) indicating device for local mounting complete in all respects. Winding temperature indicator shall have two set of contacts to operate at different settings :
  - a) To provide winding temperature high alarm

- b) To provide temperature too high trip
- ix) Dial thermometer with pocket for oil temperature indicator with one set of alarm and one set of trip contacts and maximum reading pointer.
- x) Lifting eyes or lugs for the top cover, core and coils and for the complete transformer.
- xi) Jacking pads
- xii) Haulage lugs.
- xiii) Protected type mercury / alcohol in glass thermometer and a pocket to house the same.
- xiv) Top and bottom filter valves on diagonally opposite ends with pad locking arrangement on both valves.
- xv) Top and bottom sampling valves.
- xvi) Drain valve with pad locking arrangement
- xvii) Rating and connection diagram plate.
- xviii) Two numbers tank earthing terminals with associated nuts and bolts for connections to existing grounding strip.
- xix) Bi-directional flagged rollers with locking and bolting device.
- xx) Marshalling Box (MB)
- xxi) Shut off valve on both sides of flexible pipe connections between radiator bank and transformer tank.
- xxii) Cooling Accessories :
  - a) Requisite number of radiators provided with:-
    - One shut off valve on top
    - One shut off valve at bottom
    - Air release device on top
    - Drain and sampling device at bottom
    - Lifting lugs.
  - b) Air release device and oil drain plug on oil pipe connectors:
- xxiii) Terminal marking plates for Current Transformer and Main Transformer
- xxiv) On- Load Tap Changer
- xxv) Oil Preservation Equipment
- xxvi) Oil Temperature indicator

**Note :**

- i) The fittings listed above are indicative and any other fittings which are generally required for satisfactory operation of the transformer are deemed to be included in the quoted price of the transformer.
- ii) The contacts of various devices required for alarm and trip shall be potential free and shall be adequately rated for continuous, making and breaking current duties as specified.

**7.13 CONTROL CONNECTIONS AND INSTRUMENT AND WIRING TERMINAL BOARD AND FUSES**

- i) Normally no fuses shall be used anywhere instead of fuses MCB's (both in AC & DC circuits) shall be used. Only in cases where a MCB cannot replace a fuse due to system requirements, a HRC fuse can be accepted.
- ii) All wiring connections, terminal boards, fuses MCB's and links shall be suitable for tropical atmosphere. Any wiring liable to be in contact with oil shall have oil resisting insulation and the bare ends of stranded wire shall be sweated together to prevent seepage of oil along the wire.
- iii) Panel connections shall be neatly and squarely fixed to the panel. All instruments and panel wiring shall be run in PVC or non-rusting metal cleats of the compression type. All wiring to a panel shall be taken from suitable terminal boards.
- iv) Where conduits are used, the runs shall be laid with suitable falls, and the lowest parts of the run shall be external to the boxes. All conduit runs shall be adequately drained and ventilated. Conduits shall not be run at or below ground level.
- v) All box wiring shall be in accordance with relevant ISS. All wiring shall be of stranded copper (48 strands ) of 1100 Volt grade and size not less than 2.5 sq.mm
- vi) All wires on panels and all multi-core cables shall have ferrules, for easy identifications, which bear the same number at both ends, as indicated in the relevant drawing.
- vii) At those points of interconnection between the wiring carried out by separate contractors, where a change of number can not be avoided double ferrules shall be provided on each wire. The change of numbering shall be shown on the appropriate diagram of the equipment.
- viii) The same ferrule number shall not be used on wires in different circuits on the same panels.
- ix) Ferrules shall be of white insulating material and shall be provided with glossy finish to prevent the adhesion of dirt. They shall be clearly and durably marked in black and shall not be affected by dampness or oil.
- x) All circuits in which the voltage exceeds 125 volts, shall be kept physically separated from the remaining wiring. The function of each circuit shall be marked on the associated terminal boards.
- xi) Where apparatus is mounted on panels, all metal cases shall be separately earthed by means of stranded (48 No.) copper wire of strip having a cross section of not less than 2 sq. mm where strip is used, the joints shall be sweated. The copper wire shall have green coloured insulation for earth connections.
- xii) Terminal blocks shall have pairs of terminals for incoming and outgoing wires. Insulating barriers shall be provided between adjacent connections. The height of the barriers and the spacing between terminals shall be such as to give adequate protection while allowing easy access to terminals. The terminals shall be adequately protected with insulating dust proof covers. No live metal shall be exposed at the back of the terminal boards. CT terminals shall have shorting facilities. The terminals for CTs should have provision to insert banana plugs and with isolating links.



- xiii) All interconnecting wiring, as per the final approved scheme between accessories of transformer and marshalling box is included in the scope of this specification and shall be done by the Transformer supplier.
- xiv) The schematic diagram shall be drawn and fixed under a transparent prospane sheet on the inner side of the marshalling box cover.
- xv) To avoid condensation in the Marshalling Box, a space heater shall be provided with an MCB and thermostat.
- xvi) Suitable MV, CFL light shall be provided in the Marshalling Box for lightning purpose.

#### 7.14 RADIO INTERFERENCE AND NOISE LEVEL

Transformers shall be designed with particular care to suppress at least the third and fifth harmonic voltages so as to minimise interference with communication circuits. Transformer noise level when energised at normal voltage and frequency shall be as per NEMA stipulations.

### 8 INSPECTION AND TESTING

#### 8.1 INSPECTION

- i) Tank and Conservator
  - a) Inspection of major weld.
  - b) Crack detection of major strength weld seams by dye penetration test.
  - c) Check correct dimensions between wheels, demonstrate turning of wheels, through 90 °C and further dimensional check.
  - d) Leakage test of the conservator.
- ii) Core
  - a) Sample testing of core materials for checking specific loss, properties, magnetization characteristics and thickness.
  - b) Check on the quality of varnish if used on the stampings.
  - c) Check on the amount of burrs.
  - d) Visual and dimensional check during assembly stage.
  - e) Check on completed core for measurement of iron loss, determination of maximum flux density,
  - f) Visual and dimensional checks for straightness and roundness of core, thickness of limbs and suitability of clamps.
  - g) High voltage DC test (2 KV for one minute ) between core and clamps.
- iii) Insulating Material
  - a) Sample check for physical properties of materials.
  - b) Check for dielectric strength

- c) Check for the reaction of hot oil on insulating materials.
- iv) Winding
  - a) Sample check on winding conductor for mechanical and electrical conductivity.
  - b) Visual and dimensional checks on conductor for scratches, dent mark etc.
  - c) Sample check on insulating paper for PH value, electric strength.
  - d) Check for the bonding of the insulating paper with conductor.
  - e) Check and ensure that physical condition of all materials taken for windings is satisfactory and free of dust.
  - f) Check for absence of short circuit between parallel strands.
- v) Checks Before Drying Process
  - a) Check condition of insulation on the conductor and between the windings.
  - b) Check insulation distance between high voltage connections, between high voltage connection cables and earth and other live parts.
  - c) Check insulating distances between low voltage connections and earth and other parts.
  - d) Insulating test for core earthing.
- vi) Check During Drying Process
  - a) Measurement and recording of temperature and drying time during vacuum treatment.
  - b) Check for completeness of drying
- vii) Assembled Transformer
  - a) Check completed transformer against approved outline drawing, provision for all fittings, finish level etc.
  - b) Jacking test on the assembled Transformer.
- viii) Oil
 

All standard tests in accordance with IS: 335 shall be carried out on Transformer oil sample before filling in the transformer.
- ix) Test Report for bought out items the supplier shall submit the test reports for all bought out / sub contracted items for approval.
  - a) Buchholz relay
  - b) Sudden pressure rise relay on Main Tank
  - c) Winding temperature indicators
  - d) Oil temperature indicators
  - e) Bushings

- f) Bushing current transformers in neutral (If Provided)
- g) Marshalling box
- h) On Load Tap changer
- i) Any other item required to complete the works.
- j) Porcelain, bushings, bushing current transformers, wherever provided, winding coolers, control devices, insulating oil and other associated equipment shall be tested by the supplier in accordance with relevant IS . If such requirement is purchased by the supplier on a sub-contract, he shall have them tested to comply with these requirements

## 8.2 FACTORY TESTS

- i) All standards routine tests in accordance IS: 2026 with dielectric tests corresponding as per latest amendments to IS: 2026 shall be carried out.
- ii) All auxiliary equipment shall be tested as per the relevant IS. Test certificates shall be submitted for bought out items.
- iii) High voltage withstand test shall be performed on auxiliary equipment and wiring after complete assembly.
- iv) Following additional routine tests shall also be carried out on each transformer:
  - a) Magnetic Circuit Test: Each core shall be tested for 1 minute at 2000 Volt DC
  - b) Oil leakage test on transformer

### 8.2.1 Type Test

The bidder must have successfully carried out type test of 3.15 MVA, 33/11 KV or above rating transformer from any NABL accredited laboratory. The said type test report should not be prior to 5 year from the date of opening of the technical bid. Type test is mandatory. The loss parameters of the offered transformer shall be identical to that of the one which has been type tested. Details of the type test certificates are as under:

- i. Dynamic ability to withstand short circuit test
- ii. Lightning impulse voltage withstand test.
- iii. Temperature rise test

### 8.2.2 STAGE INSPECTION

The supplier shall offer the core, windings and tank of transformer for inspection by the IIM, Indore representative(s). During stage Inspection, all the measurements like diameter, window height, leg centre, stack width, stack thickness, thickness of laminations etc. for core assembly, conductor size, Insulation thickness, I.D., O.D, winding height, major and minor insulations for both H.V and L.V windings, length, breadth, height and thickness of plates of Transformer tank, the quality of fittings and accessories will be taken / determined. The supplier can offer for final inspection of the transformer subject to clearance of the stage Inspection report by the IIM, Indore. The

contractor will have to arrange for the travelling etc for inspection at their own cost.

### 8.2.3 Routine Tests

Transformer routine tests shall include tests stated in latest issue of IS: 2026 (Part -1). These tests shall also include but shall not be limited to the following:

- (i) Measurement of winding DC resistance.
- (ii) Voltage ratio on each tapping and check of voltage vector relationship.
- (iii) Impedance voltage at all tapings.
- (iv) Magnetic circuit test as per relevant ISS or CBIP manual or latest standard being followed.
- (v) Measurement of Load losses at normal tap and extreme taps.
- (vi) No load losses and no load current at rated voltage and rated frequency, also at rated voltage in steps.
- (vii) Absorption index i.e insulation resistance for 15 seconds and 60 seconds ( R 60/ R 15 ) and polarization index i.e Insulation Resistance for 10 minutes and one minute ( R 10 mt / R 1 mt).
- (viii) Induced over voltage withstand test.
- (ix) Separate source voltage withstand test.
- (x) Tan delta measurement and capacitance of each winding to earth (with all other windings earthed) & between all windings connected together to earth.
- (xi) Measurement of zero sequence impedance
- (xii) Tests on on- load tap changer ( fully assembled on transformer ) as per IEC : 214/ 1976 and BS: 4571/ 1970.
- (xiii) Auxiliary circuit tests
- (xiv) Oil BDV tests
- (xv) Measurement of neutral unbalance current which shall not exceed 2% of the full rated current of the transformer.
- (xvi) Magnetic balance test
- (xvii) Leakage test

Six (6) set of certified test reports and oscillographs shall be submitted for evaluation prior to dispatch of the equipment.

### 8.4 TANK TESTS

#### a) Oil leakage Test:

The tank and oil filled compartments shall be tested for oil tightness completely filled with air or oil of viscosity not greater than that of insulating oil conforming to IS : 335 at the ambient temperature and applying a pressure equal to the normal pressure plus 35 KN/ m<sup>2</sup> measured at the base of the tank.

The pressure shall be maintained for a period of not less than 12 hours of oil and one hour for air and during that time no leak shall occur.

**b) Pressure Test**

Transformer tank of each size shall be subjected to a pressure corresponding to twice the normal head of oil or to the normal pressure plus 35 KN/m<sup>2</sup> (51b/sq.in) whichever is lower, measured at the base of the tank and will be maintained for one hour. The permanent deflection of flat plates, after the excess pressure has been released, shall not exceed the figure specified below:-

Horizontal length of flat plate (in mm)	Permanent deflection (in mm)
Upto and including 750	5.0
751 to 1250	6.5
1251 to 1750	8.0
1751 to 2000	9.5
2001 to 2250	11.0
2251 to 2500	12.5
2501 to 3000	16.0
Above 3000	19.0

**c) Vacuum Test**

One transformer tank of each size shall be subjected to the vacuum pressure of 60 mm of mercury. The tanks designed for full vacuum shall be tested at an internal pressure of 3.33 KN/m<sup>2</sup> (25 mm of mercury) for one hour. The permanent deflection of flat plates after the vacuum has been released shall not exceed the value specified in C.B.I.P. Manual on Transformers (Revised 1999) without affecting the performance of the transformer.

**8.5 PRE-SHIPMENT CHECK AT MANUFACTURERS WORKS**

- i) Check for proper packing and preservation of accessories like radiators, bushings, explosions vent, dehydrating breather, rollers, buchholz relay, control cubicle connecting pipes and conservator etc.
- ii) Check for proper

provision of bracing to arrest the movement of core and winding assembly inside the tank.

## 8.6 PERFORMANCE

The performance of the transformer shall be measured on the following aspects.

- i) The transformer shall be capable of being operated without danger on any tapping at the rated KVA with voltage variations and  $\pm 10\%$  corresponding to the voltage of the tapping
- ii) Radio interference and Noise Level
- iii) The transformer shall be designed with particular attention to the suppression of third and fifth harmonics so as to minimize interference with communication circuits.

## 8.8 FAULT CONDITIONS

- a) The transformer shall be capable of withstanding for two(2) seconds without damages any external short circuit to earth
- b) Transformer shall be capable of withstanding thermal and mechanical stresses conveyed by symmetrical or asymmetrical faults on any winding. This shall be demonstrated through calculation as per IS : 2026.
- c) Transformer shall accept, without injurious heating, combined voltage and frequency fluctuation which produce the 125% over fluxing condition for one minute and 140% for 5 seconds.

## 9.0 Transformer Losses and Impedance:

- 9.1 The no load losses at rated voltage and rated frequency and the total losses at rated full load current and rated frequency at 75 Deg. C and Percentage impedance values for transformers at 75 degree C on principal tap should be guaranteed as shown below for the desired rating of transformers subject to tolerance as per I.S.:2026 and shall be calculated at 75 degree C as per limits specified.

Sl. No.	KVA rating	No load loss (fixed losses) KW	Load losses at 75 Deg. C KW	Impedance (%)
1.	3150 KVA	3.6	18.5	6.25

- 9.2 The tenderers must clearly specify whether the losses quoted are FIRM or subject to IS tolerance.

- 9.3 The transformers in each rating with lowest losses would be given preference while the tenderers may offer their own design, it may be noted that the transformer losses should not exceed the aforesaid limits.

## **10.0 O & M MANUALS:**

**10.1** O & M manuals for the installation, operation and maintenance of transformers shall be furnished one month before dispatch of equipment.

**10.2** The manual should contain minimum following details:

- a) General description of equipment.
- b) Approved Technical Data Sheet
- c) Salient constructional features.
- d) Technical leaflets of fittings/ important parts.
- e) All drawings.
- f) Type and routine test certificates.
- g) Instructions to be followed on receipt of equipment at site & for storage.
- h) Instructions for foundation arrangement.
- i) Erection procedures and checks.
- j) Pre-commissioning checks.
- k) Commissioning procedures.
- l) Withdrawal arrangement/ material handling instructions.
- m) Operation instructions.
- n) Maintenance instructions.
- o) Trouble-shooting.
- p) Safety instructions.

All drawings/ documents indicated at clause no. 5.3 shall be computer generated. Drgs. / documents shall be required in soft form (PDF format) also. All drawings shall be prepared in AUTOCAD latest version. Drawings & documents shall be submitted in CD also.

**TECHNICAL DATA SCHEDULE FOR 3.15MVA, 33/11KV POWER TRANSFORMER  
(Bidder will have to fill and submit the same along with the technical bid)**

Sr. NO.		Description	Unit	Specified	Bidder's Offer
1	2	3	4	5	6
1		Name and address of the Manufacturer			
	a)	Transformer			
	b)	HV & LV Bushings			
	c)	Bimetallic connectors			
	d)	Transformer Oil			
	e)	On load tap changer			
	f)	Instruments			
2		Service ( Indoor / Outdoor )		Outdoor	
3		Normal continuous rating in KVA under site conditions at all taps :	KVA		
	a)	HV winding (KVA)	KVA	3150	
	b)	LV winding (KVA)	KVA	3150	
4		Rated Voltage			
	a)	HV winding (KV )	KV	33	
	b)	LV winding (KV)	KV	11	
5		Rated frequency (Hz)	Hz	50(+ -5%)	
6		No. of phases		3	
7		Type of transformer		Convention al Power Transforme r	
8		Connections			
	a)	HV winding		Delta	
	b)	LV winding		Star	
9		Connections symbols			
	a)	HV - LV	Dyn11		
10		Tappings			
	a)	Range		+ 5% to - 15%(in teps of 1.25%)	
	b)	Number of steps			
	c)	Position of tapping on HT winding for high voltage variation			
11		Reference ambient temperatures			



Sr. NO.		Description	Unit	Specified	Bidder's Offer
	a)	Maximum ambient air temperature (°C)	°C	50 ° C	
	b)	Maximum daily average ambient temperature (°C)	°C	35 ° C	
	c)	Minimum ambient air temperature (°C)	°C	10 ° C	
	d)	Maximum yearly weighted average ambient temperature (°C)	°C	35 ° C	
12		Maximum temperature rise over ambient temperature			
	a)	In oil by thermometer (°C)	° C	35 °C	
	b)	In winding by resistance measurement (°C)	° C	40 °C	
	c)	Limit for hot spot temperature for which the transformer is designed (°C)	° C	90 °C (as per Is 2026)	
	d)	Type and details of winding hot spot temperature detector (°C)	° C	WTI with 150 mm dia dial type instrument .temp. sensing element image coil , auxiliary CT, 2 nos of contacts of high winding temperature alarm and trip, calibration devices.	
	e)	Temperature gradient between windings and oil	°C		

Sr. NO.		Description	Unit	Specified	Bidder's Offer
		(°C)			
	f)	Type of maximum winding temperature indicator (°C)		Same as clause No-12(d)	
13		Voltage to earth for which the star point will be insulated	KV		
14		Cooling type		ONAN	
15		Losses			
	a)	Fixed (Iron ) losses of 3 phase Transformer (KW ) at rated voltage & rated frequency	KW	3.6 kW (Max)	
	b)	Load losses at rated current at principal Tap at 75°C (KW )	KW	18.5 kW (Max)	
16		Max. Current density in winding at rated current for normal tap position			
	a)	HV winding (Amps/ sq.mm.)	A/mm <sup>2</sup>	2.5 (Amps/ sq.mm)	
	b)	LV winding (Amps / sq.mm.)	A/mm <sup>2</sup>	2.5 (Amps/ sq.mm)	
17		Impedance voltage at rated current , frequency and at 75°C expressed as percentage of rated voltage at :-			
	a)	Principal (normal) tap (%)	%	6.25% + 10% Tolerance	
	b)	Highest tap (%)	%		
	c)	Lowest tap (%)	%		
18		Reactance at rated current & frequency as percentage of rated voltage at:			
	a)	Principal (normal) tap	%		

Sr. NO.		Description	Unit	Specified	Bidder's Offer
	b)	Highest Tap	%		
	c)	Lowest Tap	%		
<b>19</b>		Resistance at 75°C			
	a)	H.V. winding at normal tap position			
	b)	L.V. winding			
	c)	Resistance voltage drop at 75°C winding temperature expressed as percent of rated voltage (%)			
		i) Principal/ normal tap	%		
		ii) Highest tap	%		
		iii) Lowest tap	%		
<b>20</b>		Capacitance on open circuit conditions		<b>1800 pF (Approximately)</b>	
<b>21</b>		Insulation level			
	a)	Separate source power frequency voltage withstand			
		i) HV winding (KV rms)	KV rms	<b>70</b>	
		ii) LV winding (KV rms)	KV rms	<b>28</b>	
	b)	Induced over voltage withstand			
		i) HV winding (KV rms)	KV rms	--- Double Voltage &	

Sr. NO.		Description	Unit	Specified	Bidder's Offer
				Double Frequency -	
		ii) LV winding (KV rms)	KV rms	--- Double Voltage & Double Frequency -	
	c)	Full wave lightning impulse withstand voltage			
		i) HV winding (KV peak)	KV peak		
		ii) LV winding (KV peak)	KV peak		
	d)	Power frequency high voltage tests			
	i)	Test voltage for one minute withstand test on high voltage windings	KV rms		
	ii)	Test voltage for one minute withstand test on low voltage windings	KV rms		
	iii)	Test voltage for one minute withstand test on neutral end of low voltage	KV rms		
	e)	Lightning impulse withstand tests			
	i)	Impulse test on high voltage winding 1.2/50 $\mu$ sec full wave withstand (KV peak)	KV peak		
	ii)	Impulse test on low voltage winding 1.2/50 $\mu$	KV peak		

Sr. NO.		Description	Unit	Specified	Bidder's Offer
		sec full wave withstand (KV peak)			
	iii)	Wave form for impulse test	KV peak		
<b>22</b>		No load current, no load loss, no load power factor at normal ratio and frequency (Amp/ KW/ P.F.)	Amp/ KW/ P.F		
	a)	10 percent of rated voltage		Will be furnished by Bidders Offer	
	b)	25 percent of rated voltage			
	c)	50 percent of rated voltage			
	d)	85 percent of rated voltage			
	e)	100 percent of rated voltage			
	f)	105 percent of rated voltage			
	g)	110 percent of rated voltage			
	h)	112.5 percent of rated voltage			
	i)	115 percent of rated voltage			
	j)	120 percent of rated voltage			

Sr. NO.		Description	Unit	Specified	Bidder's Offer
	k)	125 percent of rated voltage			
<b>23</b>		Efficiency at 75°C at unity power factor			
	a)	Full load	%		
	b)	75% load	%		
	c)	50% load	%		
	d)	25% load	%		
<b>24</b>	a)	The minimum % of load at which the transformer will run at maximum efficiency (%)	%		
	b)	Maximum efficiency of the transformer	%		
<b>25</b>		Regulation at full load at 75°C			
	a)	At unity power factor (%)	%		
	b)	At 0.8 power factor (lagging) (%)	%		
<b>26</b>		Core data			
	a)	Grade of core material used		<b>CRGO HIB, M3 or better</b>	
	b)	Thickness of core plate lamination (mm)	mm	≤ 0.23 mm for M3 and ≤ 0.27mm for CRIB	
	c)	Whether core laminations are of cold rolled grain oriented		<b>CRGO HIB, M3 or better</b>	

Sr. NO.		Description	Unit	Specified	Bidder's Offer
	d)	Details of oil ducts in core			
		i) Whether in the plane & at right angle to the plane of winding			
		ii) Across the plane of lamination			
	e)	i) Insulation of core lamination			
		ii) Insulation of core plates			
		iii) Type of core joints			
<b>27</b>	<b>Flux density</b>				
	a)	Designed maximum flux density at normal tap at rated voltage and rated frequency	Tesla	1.5 Tesla	
	b)	Operating continuous flux density(Tesla)	Tesla	1.5 Tesla	
		i) at normal tap	Tesla		
		ii) at maximum tap	Tesla		
		iii) at minimum tap	Tesla		
	c)	Designed maximum operating flux density which the transformer can withstand for one minute at normal tap(Tesla)	Tesla	1.5 Tesla for all Tap	
	d)	Designed maximum operating flux density which the transformer can withstand for five seconds at normal	Tesla		

Sr. NO.		Description	Unit	Specified	Bidder's Offer
		tap(Tesla)			
<b>28</b>		Inter-Tap insulation			
	a)	Extent of extreme end turns reinforcement			
	b)	Extent of end turns reinforcement			
	c)	Extent of turn adjacent to tapping reinforced			
	d)	Test voltage for 10 seconds 50Hz inter- turn insulation test on (a)			
	e)	Test voltage for 10 seconds 50Hz inter- turn insulation test on (b)			
	f)	Test voltage for 10 seconds 50Hz inter- turn insulation test on (c)			
<b>29</b>		Windings:			
	a)	Material			
	b)	Type of windings:			
		i) HV windings			
		ii) LV windings			
	c)	Insulation of HV windings			
	d)	Insulation of LV windings			
	e)	Insulation between HV & LV windings			
<b>30</b>		Transformer Tank			
	a)	Material			
	b)	Thickness			
		- Top	mm	10 mm	
		- Sides	mm	10 mm	
		- Bottom	mm	12 mm	
	c)	Details of painting (inner / outer surface)			
<b>31</b>		Dimensions of 3 phase transformers:			
	a)	Max. Height to top of bushings (mm)	mm		
	b)	Over-all length (mm)	mm		
	c)	Over-all breadth (mm)	mm		
<b>32</b>		Weight data of transformer			



Sr. NO.	Description	Unit	Specified	Bidder's Offer
	components : (Tolerance + 5% ) ( approximate values not allowed )			
a)	Core excluding clamping (Kg)	Kg		
b)	Core with clamping (Kg)	Kg		
c)	HV winding insulated conductor (Kg)	Kg		
d)	LV winding Insulated conductor (Kg)	Kg		
e)	Coils with insulation (Kg.)	Kg		
f)	Core and windings (Kg)	Kg		
g)	Weight of steel (Kg)	Kg		
h)	Fittings and accessories (Kg)	Kg		
i)	Oil required for first filling including 10% extra	Ltr/ Kg		
	1. Oil in main tank ( Ltrs)	Ltr		
	2. Oil in the conservator (Ltrs)	Ltr		
	3. Oil in the radiators ( Ltrs )	Ltr		
	4. Oil in the OLTC (Ltrs )	Ltr		
	5. Overall total quantity of oil with 10%	ltr/Kg		
j)	1. Transportation weight excluding	Kg		
	2. Shipping details			

Sr. NO.	Description	Unit	Specified	Bidder's Offer
	i) Weight of heaviest package (Kg.)	Kg		
	ii) Dimension of largest package (L x W	mm		
	k) Untanking weight (Kg)	Kg		
	l) Total weight of transformer with oil and	Kg		
<b>33</b>	Bushing data :			
	a) Type of bushing insulator			
	i) HV		Out door type highly polluted a (as per IS-8603, 2099 & 3347)	
	ii) LV		-do-	
	iii) Neutral		-do-	
	b) Material of bushing (inner part / outer		Porcelain (as per IS-8603)	
	c) Weight of bushing insulator (Kg.)			
	i) HV	Kg		
	ii) LV	Kg		
	iii) Neutral	Kg		
	d) Quantity of oil in one bushing (lt.)			
	i) HV	ltr.		
	ii) LV	ltr.		
	iii) Neutral	ltr.		
	e) Minimum dry withstand & flash over power frequency voltage of bushing (KV)	KV		
	f) Minimum wet withstand	KV		

Sr. NO.	Description	Unit	Specified	Bidder's Offer
	& flash over power frequency voltage of bushing (KV)			
g)	Minimum withstand & flashover impulse level (KV)	V		
h)	Voltage rating (KV)			
	i) HV	KV		
	ii) LV	KV		
	iii) Neutral	KV		
i)	Current rating (Amps.)			
	i) HV	Amp		
	ii) LV	Amp		
	iii) Neutral	Amp		
j)	Thermal Short Time current & Duration	Sec	2 sec	
	i) HV	KA		
	ii) LV	KA		
	iii) Neutral	KA		
k)	Rated Dynamic current & its duration			
	i) HV	KA		
	ii) LV	KA		
	iii) Neutral	KA		
l)	Cantilever with stand loading			
m)	Clearance in oil			
	- phase to phase (mm)			
	i) HV	mm		
	ii) LV	mm		
	iii) Neutral	mm		
	- phase to earth (mm)			
	i) HV	mm		
	ii) LV	mm		
	iii) Neutral	mm		
n)	Creepage distance in oil & air (mm)			

Sr. NO.		Description	Unit	Specified	Bidder's Offer
		i) In oil			
		i) HV	mm		
		ii) LV	mm		
		iii) Neutral	mm		
		ii) In air			
		i) HV	mm		
		ii) LV	mm		
		iii) Neutral	mm		
	o)	Minimum level of immersing / medium	mm		
	p)	Maximum pressure of immersing medium	Kg/ cm <sup>2</sup>		
	q)	Free space required at top for removal of bushings	mm		
	r)	Angle of mounting			
<b>34</b>		Conservator (Main Transformer and OLTC )			
	a)	Total volume of the Conservator (Cub mtr)	M <sup>3</sup>		
	b)	Volume of the conservator between the highest and lowest level (Cubic mtr. / Ltrs)	M <sup>3</sup>		
<b>35</b>		Calculated time constants for natural cooling	Hrs		
<b>36</b>		Type of axial coil supports :			
	a)	HV winding			
	b)	LV winding			
<b>37</b>		Details of On load tap changer			
	a)	Make			
	b)	Type			
	c)	Rating			
		i) Rated Voltage	KV		
		ii) Rated current	Amp		
		iii) Step voltage	V		
		iv) Number of steps			
	d)	Whether Diverter switch provided with gas vent and buchholz relay (Yes / No )	Yes/ No		

Sr. NO.		Description	Unit	Specified	Bidder's Offer
	e)	Whether a separate oil surge relay with trip contracts provided (Yes / No)			
	f)	Whether Remote control panel provided with Control scheme for simultaneous operation of Tap changer when transformers running in Parallel and independent			
	g)	Details of motor device unit housed in kiosk mounted on tap changer			
	h)	Pressure relief valve			
<b>38</b>		<b>Bimetallic connectors: HV / LV</b>			
	a)	Normal current rating (A)	Amp		
	b)	Short time current rating (A)	Amp		
	c)	Tensile strength (Kg)			
	d)	Maximum temperature limit			
	e)	Dimensional sketch enclosed indicating tolerances (Yes/No)			
	f)	Minimum clearance (mm)			
		- Phase to phase	mm		
		- Phase to Earth	mm		
<b>39</b>		<b>CORE ASSEMBLY :-</b>			
	a)	Core diameter (mm )	mm		
	b)	Core window height (mm )	mm		
	c)	Core leg centre (mm )	mm		
	d)	Gross core cross - sectional area (m2)	M2		
	e)	Total height of core (mm )	mm		
	f)	Details of top end frame			
	g)	Details of Bottom end frame			
	h)	Details of clamp plate (material, thickness, insulation)			

Sr. NO.	Description	Unit	Specified	Bidder's Offer
	i) Total core weight (Kg )	Kg		
	j) Core loss, basing on core loss graph at operating flux density (rated voltage and rated frequency ) ( KW )	W/Kg		
	k) Core stacking factor			
	l) Net core area (Sq.m)	M2		
	m) Margin towards corner joints, cross- fluxing, dielectric loss (KW)	KW		
	n) Total core loss at rated voltage and rated frequency (KW )	KW		
	o) Describe location / method of core grounding			
	p) Details of core- belting			
	i) Material , grade and type			
	ii) Width	mm		
	iii) Thickness	mm		
	iv) Fixing method			
<b>40</b>	<b>DETAILS OF WINDING</b>			
	a) Type of winding			
	b) Material of the winding conductor			
	c) Maximum current density of windings at rated current and conductor area ( HV / LV )		<b>Electrolytic Copper</b>	
	c) Maximum current density of windings at rated current and conductor area ( HV / LV )	A/mm <sup>2</sup>	2.5 Amps /mm <sup>2</sup> ( at all taps)	
	d) Whether windings are pre-shrunk ?			
	e) Whether adjustable coil clamps			
	f) Whether steel rings are used for the windings ? If so, whether these are split ?			

Sr. NO.	Description	Unit	Specified	Bidder's Offer
	g) Whether electrostatic shields are provided to obtain uniform voltage distribution in the windings ?			
	h) Winding Insulation ( Type & Class )			
	i) Insulating material , used for			
	i) H.V winding			
	ii) LV winding			
	iii) Tapping connection			
	j) Insulating material used between			
	i) L.V and H.V winding			
	ii) Core & L.V winding			
	k) H.V to H.V winding between phases			
	l) Type of axial supports			
	i) H.V winding			
	ii) L.V winding			
	m) Type of radial supports			
	i) H.V winding			
	ii) L.V winding			
	n) Maximum allowable torque on			
	o) Clamping ring details			
	i) Thickness of ring mm	mm		
	ii) Diameter of ring mm	mm		
	iii) No. & size of pressure screw			
	p) Bare conductor size (mm <sup>2</sup> )			
	i) HV	mm <sup>2</sup>		
	ii) LV	mm <sup>2</sup>		
	w) Inside diameter (mm )			
	i) HV	mm		
	ii) LV	mm		
	x) Outside diameter (mm )			
	i) HV	mm		
	ii) LV	mm		
	y) Axial height after shrinkage (mm )			
	i) HV	mm		

Sr. NO.		Description	Unit	Specified	Bidder's Offer
		ii) LV	mm		
	z)	D.C Resistance			
	i)	L.V winding at 750 C (Ohms )	Ohm		
	ii)	H.V winding at normal tap at 750 C (Ohms )	Ohm		
	iii)	H.V winding at highest tap at 750 C (Ohms )	Ohm		
	iv)	H.V winding at lowest tap at 750 C (Ohms )	Ohm		
	v)	Total I <sup>2</sup> R losses at 750 C for normal tap (KW )	KW		
	vi)	Total I <sup>2</sup> R losses at 750 C for highest tap (KW )	KW		
	vii)	Total I <sup>2</sup> R losses at 750 C for lowest tap (KW )	KW		
	viii )	Stray losses including eddy current losses in winding at 750 C ( KW )	KW		
		a) Normal tap position	KW		
		b) Highest tap position	KW		
		c) Lowest tap position	KW		
		d) Any special measures, taken to reduce eddy current losses and stray losses. Mention in details			
	ix)	Load losses at 750 C (I <sup>2</sup> R + Stray )			
		a) Normal tap position (KW )	KW		
		b) Highest tap position (KW)	KW		
		c) Lowest tap position (KW )	KW		
	x)	Details of special arrangement, provided to improve surge voltage distribution in the windings.			
<b>41</b>	<b>DETAILS OF TANK :</b>				



Sr. NO.		Description	Unit	Specified	Bidder's Offer
	a)	Material of Transformer tank			
	b)	Type of tank			
	c)	Thickness of sheet (No approximate value to be mentioned)			
		i) Sides (mm)	mm		
		ii) Bottom (mm )	mm		
		iii) Cover (mm )	mm		
		iv ) Radiators (mm)	mm		
	d)	Inside dimensions of main tank (No approximation in dimensions to be used )			
		i) Length (mm)	mm		
		ii) Breadth (mm)	mm		
		iii) Height (mm )	mm		
	e)	Outside dimensions of main tank (No approximation in dimensions to be used )			
		i) Length (mm)	mm		
		ii) Breadth (mm)	mm		
		iii) Height (mm )	mm		
	f)	Vacuum recommended for hot oil circulation (torr / mm of Hg)	Kg/ cm2		
	g)	Vacuum to be maintained during oil filling in transformer tank (torr / mm of Hg)	Kg/ cm2		
	h)	Vacuum to which the tank can be subjected without distortion ((torr / mm of	Kg/ cm2		
	i)	No. of bi-directional wheels provided			
	j)	Track gauge required			

Sr. NO.		Description	Unit	Specified	Bidder's Offer
		for the wheels			
		i) Transverse axis	mm		
		ii) Longitudinal axis	mm		
	k)	Type and make of pressure relief device and minimum pressure at which it operates			
<b>42</b>	<b>CONSERVATOR :-</b>				
	a)	Thickness of sheet (mm)	mm		
	b)	Size (Dia x length ) (mm)	mm		
	c)	Total volume (Litres)	Ltrs		
	d)	Volume between the highest and lowest visible oil levels (Litres)	Ltrs		

### LIST OF APPROVED MAKE/MATERIALS

S.No.	Material	Manufacturer/Brand Name
1	HV Bushing with metal Parts	CJI/JP/AP/Genesis (Porcelain Type)
2	LV Bushing with metal Parts	CJI/JP/AP/Genesis (Porcelain Type)
3	Additional Neutral Bushing with Metal Parts	CJI/JP/AP/Genesis (Porcelain Type)
4	Oil Temperature Indicator	Precimeasure / perfect control
5	Winding Temperature indicator	Precimeasure / perfect control
6	Magnetic Oil Level Guage	Atvus / I & C / Sukrut / P & F / Precemeasure
7	Buchholz Relay	Atvus / Prayog/ I & C / P & F / Yogya
8	Oil Surge Relay (Applicable for OLTC Only)	Atvus / Reputed
9	Radiator Valves	Sunrise / Sarvidaya / Atvus / Petson / P & F / Reputed
10	Radiators	Sanman / Darshal / Ronak / Minar / SPI Industries / TRAFO / P.E. Engineers /Laxmark
11	Silica gel breather (flange)	Yogya / Press N Forge / I & C
12	Bottom Drain cum filter valve	Elms / Atam / Newman / Mudit Enterprise / Reputed
13	Top Filter Valve	Elms / Atam / Newman / Mudit Enterprise / Reputed
14	Shut off valve	Elms / Atam / Newman / Mudit Enterprise / Reputed
15	1 No. SOV for OSR	Elms / Atam / Newman / Mudit Enterprise / Reputed
16	OLTC	CTR / OLG
17	Transformer Oil	Savita / Apar / Raj oil
18	Transformer make	BHEL / CG / ABB/ Voltamp / Kirloskar

Indian Institute of Management Indore  
Part- II: Financial Bid

Ref: Tender Notice No. IIMI/Project/09/2017/43 File No. 353 (Re-Tender)

Name of Work: “Design, Manufacture, Supply, Installation, Testing & Commissioning of 3.15 MVA, 33/11kV power transformer at Utility-I of IIM, Indore”

Sl. No.	Item Description	Units	Quantity	Unit Rate	Total Amount	Total Amount in Words
1	<p>Design, Manufacture, Supply, delivery &amp; unloading at site 3 phase, 50 Hz, 3150 KVA, 33/11 KV, delta/star connected, copper wound oil filled ONAN, outdoor type, power transformer having On load tap changing switch with tapping range from +5% to -15% in steps of 1.25% each + RTCC + AVR and other accessories/fittings as per IS:2026 and other relevant IS complete with first filling of oil including Installation, terminations of HT Cable on both sides (HT &amp; LT side of the transformer), Control wiring with the terminals in the marshalling box , On load Tap changer , earthing connections at the power transformer side, testing &amp; commissioning complete as required.</p> <p>No load losses - 3.6 KW &amp; load losses at 75 degrees Celsius - 18.5 KW, impedance 6.25% complete as per technical specification of the tender and as per the direction of Engineer-in-Charge.</p> <p>Transformer Approved Makes: BHEL/CG/ABB/Voltamp/Kirloskar</p> <p><b>(Scope of work also includes the following as per detailed hereunder :)</b></p>	Nos	1.00			

	<p>a . Taking out the existing transformer and shifting of the same to the outside of switchyard including opening the LT &amp; HT side power terminations complete as required and as directed by the Engineer-in-Charge.</p> <p>b. Necessary statutory approvals from the Electrical Safety Department &amp; any other department as required for replacement of the old transformer &amp; installation, testing &amp; commissioning of the new power transformer</p>						
<b>Total Amount (in Rs.):</b>							
<b>Total Amount in words:</b>							

Name, Signature, Designation  
& Seal

\_\_\_\_\_

Date

\_\_\_\_\_

Name of Bidder Firm

\_\_\_\_\_

Contact Person

\_\_\_\_\_

Contact Number

\_\_\_\_\_

Email Address

\_\_\_\_\_